Interstate 80/Interstate 680/State Route 12 Interchange Project

SOLANO COUNTY, CALIFORNIA
DISTRICT 4-SOL-80 (PM 10.8/17.0); SOL-680 (PM 10.0/13.1);
SOL-SR 12 (PM 1.7/L2.8); and SOL-SR 12 (PM L1.8/4.8)
EA # 0A5300, Project # 04-0000-0150

Draft Environmental Impact Report/ Environmental Impact Statement

Volume 1

Prepared by the State of California Department of Transportation

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

Caltrans

August 2010

General Information about This Document

What's in this document:
The California Department of Transportation (the Department), as assigned by the Federal Highway Administration (FHWA), has prepared this draft environmental impact report/ environmental impact statement (EIR/EIS), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Solano County, California. The document describes why the project is being proposed; alternatives for the project; the existing environment that could be affected by the project; the potential impacts from each of the alternatives; and any proposed avoidance, minimization, and compensation measures.

What you should do:
- Please read this EIR/EIS. Additional copies of this document as well as the technical studies are available for review at the following locations:
  - Caltrans District 04, 111 Grand Avenue, Oakland, CA
  - Suisun City Library
  - Solano Transportation Authority
  - Fairfield Civic Center Library
  - On-line at www.sta.dst.ca.us.
  - On-line at www.dot.ca.gov\dist4\envdocs.htm
- Attend a public hearing.
- We welcome your comments. If you have any comments regarding the proposed project, please attend the public hearing or send your written comments to Caltrans by the deadline, or both.
  - Submit comments via U.S. mail to Caltrans at the following address:
    Howell Chan, Environmental Analysis Branch Chief
    California Department of Transportation, District 04
    P.O. Box 23660, MS-8B
    Oakland, CA 94623-0660
  - Submit comments via email to: howell_chan@dot.ca.gov.
- Submit comments by the deadline: October 11, 2010.

What happens next:
After comments are received from the public and reviewing agencies, the Department, as assigned by the 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 Department could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disc. To obtain a copy in one of these alternate formats, please write to California Department of Transportation, Attn: Howell Chan, Environmental Analysis Branch Chief, California Department of Transportation, District 04, 111 Grand Avenue, P. O. Box 23660, Oakland, CA 94623-0660; call (510) 286-5623 (voice); or use the California Relay Service at (800) 735-2929 (TTY), (800) 735-2929 (voice), or 711.

SCH #2003052021
04-SOL-80-PM 10.8/17.0; 04-SOL-680-PM 10.0/13.1;
04-SOL-SR 12-PM 1.7/L2.8; and 04-SOL-SR 12-PM L1.8/4.8
EA # 0A5300, Project # 04-0000-0150

Construct roadway widening and interchange improvements along Interstate 80/Interstate 680/State Route 12, near the cities of Fairfield and Suisun City.

DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

Volume 1

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2) (C) and 49 USC 303

THE STATE OF CALIFORNIA
Department of Transportation
and the Cooperating Agency
U. S. Army Corps of Engineers, San Francisco District

8-9-10
Date of Approval

Bijan Sartipi
District Director
California Department of Transportation, District 4

Abstract: The project consists primarily of improvements to the I-80/I-680/SR 12 Interchange to ease traffic congestions, accommodate projected growth, and improve safety. The project includes expansion and relocation of the westbound truck scales. Project impacts would occur in the following resource areas: Land Use, Growth, Farmlands, Community Impacts, Utilities, Traffic and Transportation, Visual Resources, Cultural Resources, Hydrology, Water Quality, Geology/Soils/Seismic, Paleontology, Hazardous Waste, Air Quality, Noise, Energy, and Biology.

Summary

Overview of Project Area

The project to improve the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) interchange and relocate the westbound truck scales facility is located in the vicinity of the city of Fairfield, Solano County, California. The project area covers some 13 miles encompassing all three highways. The project involves improvements on an approximate 4.5-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximate 3.5-mile-long segment of I-680 between Gold Hill Road and I-80, 2.0-mile-long segment of SR 12 West (SR 12W) between 0.5 mile west of Red Top Road and I-80, and an approximate 2.5-mile-long segment of SR 12 East (SR 12E) between I-80 and Main Street in Suisun City. The alternatives analyzed in this document consist of two full build alternatives (Alternative B and Alternative C), each with a corresponding fundable the first phase (Alternative B, Phase 1 and Alternative C, Phase 1).

Related Projects

Several related transportation projects are being planned or recently were completed in the general project area. These transportation projects and a number of non-transportation projects are discussed in the cumulative impacts section (Chapter 3.6) of this document and include:

- North Connector Project.
- Interstate 80 High-Occupancy Vehicle Lanes Project.
- I-80 Eastbound Cordelia Truck Scales Relocation Project.
- Jameson Canyon (SR 12) Widening from I-80 to SR 29.
- I-80 Express Lanes Project.
- I-80 Improvements through Fairfield.
- 2010 State Highway Operations and Protection Program (SHOPP) Projects.
- Jepson Parkway.
- Transit Improvements.

Purpose and Need

Purpose

The purposes of the project are listed below. The alternatives presented in this document meet all of the purposes listed below. Neither of the fundable first phases include the relocation of the truck scales and therefore, they would not address the purposes specified under numbers 5 and 6 below. However, they would meet the remaining purposes and would partially meet number 5 by providing congestion relief.

1. Reduce congestion through the I-80/I-680/SR12 interchange complex.
2. Reduce the amount of cut-through traffic on local roads.
3. Encourage the use of high-occupancy vehicle lanes and ridesharing.

4. Improve safety conditions.
5. Accommodate current and future truck volumes on highways.
6. Facilitate adequate inspection and enforcement at truck scales.

Need

The current I-80/I-680/SR 12 interchange complex was constructed approximately 40 years ago. Since the 1960s, the San Francisco Bay Area (Bay Area) and Northern California region have experienced rapid population growth, resulting in substantial increases in regional traffic and truck traffic passing through which results in congestion, delays, and unacceptable levels of service (LOS). The project will address these related deficiencies.

- **Traffic Congestion:** Current traffic volumes along segments of I-80 and I-680 in the project area create heavy traffic congestion with an average travel speed of 46 mph during the morning peak period and 33 mph during the afternoon peak period. These average speeds are well below the threshold of 59.7 miles per hour identified by the Highway Capacity Manual as the minimum operating speed associated with acceptable mainline freeway operations. There are several bottlenecks and LOS F (as defined in vehicles per hour per lane) locations within the freeway system as a result of this congestion. Chapter 3.1.6 discusses this in detail, and Tables 3.1.6-1 and 3.1.6-2 illustrate the correlations between congestion and LOS.
- **Traffic Diverting to Local Roads:** It is estimated that up to 1,450 vehicles (PM peak hour) currently divert from the northbound I-680 to eastbound I-80 connector to alternate routes to bypass the congestion and re-enter eastbound I-80 or eastbound SR12 at locations east of a bottleneck location. This cut-through traffic creates a series of problems along the local street system such as increase of congestion and delay on local roads; reduction of accessibility for local properties and increase of delay for transit and emergency service vehicles
- **Truck-Related Congestion:** The westbound truck scales are located on the most congested freeway segment in Solano County. Trucks slowing to enter the short (approximately 500 feet) off-ramp to the scales, and accelerating to enter I-80 on the short on-ramp from the scales, exacerbate the congestion problem, as do trucks queuing onto the mainline from the short off-ramp to the facility.
- **Unreliable Freight Transport:** Travel times for truck trips are unpredictable due to queues and congestion.
- **Traffic Safety:**. High vehicle volumes, short merge and diverge maneuvers, and short distances between interchanges, all contribute to safety issues in the area. Within the project limits most freeway segments of I-80 (from interchange to interchange) experience a higher total accident rate and a higher fatal and injury rate compared to the statewide averages for similar facilities. Over 60% of the accidents on I-80 were rear-end type collisions. Within the project limits of SR 12 East half of the sections experience higher total accident rates and fatal accident rates than the statewide average for similar facilities. 48% of the accidents on SR 12 East were rear-end type collisions. The majority of accidents on I-80, SR12 West and SR-12 East occurred during commute periods. The combination of high percentages of accidents during commute periods and high percentages of the rear-end type collisions are related to the congestion observed in these sections.

Proposed Project

The proposed project involves improvements on an approximately 4.5-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximately 3.5-mile-long segment of I-680 between Gold Hill Road and I-80, a 2.0-mile-long segment of SR 12 West (SR 12W) between 0.5 mile west of Red Top Road and I-80, and an approximately 2.5-mile-long segment of SR 12 East (SR 12E) between I-80 and Main Street in Suisun City. Within the limits of the project area, I-80 is a six to ten lane freeway. SR 12E is a divided four-lane highway, I-680 is a four-lane freeway, and SR 12W is an undivided two-lane highway.

Scope of Alternatives in this Document

The proposed project is a project by the California Department of Transportation (the Department) and is subject to state and federal environmental review requirements including the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In order to meet the requirements of both CEQA and NEPA, two alternatives were developed to meet the future traffic demand with the 20-year planning horizon, taking into consideration environmental and engineering constraints, but not near-term financial constraints (available funding in the short term). These alternatives each represent a comprehensive project on which a Notice of Determination (NOD) could be issued for the purposes of CEQA. In addition, a subset of each full-build alternative was developed that takes into account near-term financial constraints and therefore represents the fundable first phase of the project on which a Record of Decision (ROD) and Notice of Determination (NOD) could be issued for the purposes of NEPA and CEQA. This approach is more fully explained in Chapter 2, Section 2.2.1 of the EIR/EIS.

Alternatives Considered in this Document

Two alternatives (Alternatives B and C) and the associated fundable first phases (Alternative B, Phase 1 and Alternative C, Phase 1) are currently being analyzed in this document. Alternatives B and C are full build alternatives addressing comprehensive improvements to the I-80/I-680/SR 12W interchange; the widening of I-680 and I-80; and the relocation, upgrade, and expansion of the westbound truck scales on I-80.

Alternatives B and C differ primarily in the location of the I-80/I-680/SR 12W interchange improvements and the improvements on SR 12E. Under Alternative B, the I-80/I-680 and I-80/ SR 12W interchanges would be improved in place and a single interchange would be constructed on SR 12E to serve Beck Avenue and Pennsylvania Avenue. Under Alternative C, I-680 would be realigned to the west to connect with the I-80/SR 12W interchange, and two interchanges would be constructed on SR 12E to serve Beck Avenue and Pennsylvania Avenue.

The fundable first phases of the full-build alternatives are Alternative B, Phase 1 and Alternative C, Phase 1. Alternative B, Phase 1 would improve the I-80/Green Valley Road, I-80/I-680, I-80/Suisun Valley Road and the SR 12E/Beck Avenue interchanges. Alternative C, Phase 1 would realign I-680 to the west to connect with the I-80/SR 12W interchange and provide direct connections between all highways except eastbound SR 12W and southbound I-680. Red Top Road would be extended to meet Business Center Drive and interchanges at SR 12W/Red Top Road, I-80/Red Top Road, I-80/Green Valley Road, and I-680/Red Top Road would be constructed or improved. A third lane would be added to SR 12 East from west of Chadbourne Road Undercrossing to the Webster Street exit.

While the fundable first phases of the alternatives would not address all project needs, they would reduce congestion and cut-through traffic on local roads, and improve safety conditions.

No-Build Alternative

Under the No-Build Alternative, the facilities associated with the interchange project (freeway lanes, interchanges, ramps, westbound truck scales, and HOV lane direct connectors from I-80 to I-680) would not be constructed. Traffic congestion in the project vicinity would worsen substantially, causing delays of up to six hours and gridlock conditions on the freeway would force traffic onto local roads. Worsened congestion will further exacerbate congestion from truck weaving and backup to the mainline freeways from the truck scale facilities in the westbound direction and truck inspection and enforcement would be impaired due to substantially worsened conditions on the mainline in both directions. Fatal/injury accidents within the project limits, which already exceed statewide the average, will worsen substantially from the increased congestion.

Joint California Environmental Quality Act/National Environmental Policy Act Documentation

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

Following receipt of public comments on the Draft EIR/EIS and circulation of the Final EIR/EIS, the Department will be required to take actions regarding the environmental document. The Department will determine whether to certify the EIR and issue Findings and a Statement of Overriding Considerations under CEQA and to issue a Record of Decision under NEPA.

Project Impacts

Project impacts would occur in the following resource areas: Land Use, Growth, Farmlands, Community Impacts, Utilities, Traffic and Transportation, Visual Resources, Cultural Resources, Hydrology, Water Quality, Geology/Soils/Seismic, Paleontology, Hazardous Waste, Air Quality, Noise, Energy, and Biology. Significant and unavoidable impacts under CEQA would occur in the following resource areas: Agricultural Resources, Public Services, and Recreation. Project effects under NEPA are discussed fully in Chapter 3. Chapter 4 addresses impacts under CEQA. Table S-1, located at the end of this summary, summarizes the impacts of the project.

Coordination with Public and Other Agencies

Notice of Preparation and Scoping

A notice of preparation of (NOP) for the proposed project was published on April 28, 2003. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties.

A scoping meeting for the NOP was held on May 12, 2003 from 6 p.m. to 8:30 p.m. at Rodriguez High School, located at 5000 Red Top Road in Fairfield. An open house was held on March 17, 2009, from 6:30 p.m. to 8:30 p.m. at Nelda Mundy Elementary School, at 580 Vintage Valley Drive in Fairfield.

A number of means were utilized to inform the public of the scoping process and the public open house meeting. A public notice was distributed to the project mailing list, which included property owners, elected officials, city staff, special interest organizations, and neighborhood groups. The Department mailed a letter to agency representatives and elected officials.

Information pertaining to the scoping process and the public open house scoping meeting also appeared on the Solano Transportation Authority website at http://www.solanolinks.com.

Coordination with Agencies

The Department and STA have coordinated with the following federal, state, and local agencies.

- U.S. Environmental Protection Agency.
- U.S. Fish and Wildlife Service.
- U.S. Department of Agriculture, National Resources Conservation Service.
- NOAA, National Marine Fisheries.
- U.S. Army Corps of Engineers.
- California Department of Fish and Game.
- California Department of Conservation.
- Regional Water Quality Control Board.
- Office of Historic Preservation.
- Bay Conservation Development Commission.
- Metropolitan Transportation Commission.
- Solano County.
- City of Fairfield.
- Suisun City.
- California Highway Patrol.
- Bay Area Air Quality Management District.

Necessary Permits and Approvals

Table S-2 shows the permits and approvals that would be required.

Table S-2. Required Permits, Approvals and Consultation

Agency	Permit, Approval, or Consultation	Status
U.S. Fish and Wildlife Service	Consultation under Section 7 of the federal Endangered Species Act	To be completed before NEPA completed
National Marine Fisheries Service	Consultation under Section 7 of the federal Endangered Species Act and for Essential Fish Habitat under Magnuson-Stevens Fishery Conservation and Management Act	To be completed before NEPA completed
U.S. Army Corps of Engineers	Clean Water Act Section 404 individual permit for placement of fill	Application to be submitted after NEPA completed
California Department of Fish and Game	California Fish and Game Code Section 1602 streambed alteration agreement for waters of the state; potential consultation under Section 2081 of the California Endangered Species Act (CFG Code, Sections 2050 et seq.); CEQA trustee agency	To be completed after CEQA completed
San Francisco Bay Regional Water Quality Control Board	Non-point Clean Water Act Section 402 National Pollutant Discharge Elimination System permit (General Construction Permit), Clean Water Act Section 401 water quality certification	Application to be submitted after CEQA completed
Bay Area Air Quality Management District	Permit for air pollutant emission–generating equipment	Application to be submitted if portable engines and certain other equipment have not previously been registered with the California Air Resources Board after CEQA completed
California Public Utilities Commission	General Order 131-D filing requirements for high-voltage electrical lines	Application to be submitted after CEQA completed
Solano County	Marsh Development Permit	Application to be submitted after CEQA completed

Unresolved Issues

Section 15123(b) of the State CEQA Guidelines requires an EIR to identify areas of controversy known to the lead agency, including issues raised by agencies and the public. During preparation of the environmental document, no known issues of controversy were raised, and no issues remain unresolved.

Table S-1. Comparison of Alternatives

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
HUMAN ENVIRONMENT						
3.1.1—Land Use						
Effect on Fairfield Linear Park	No effect	Minimal impact	No effect	Minimal impact	No effect	None required
3.1.2—Growth						
Potential to Induce Growth	No effect	Any new or intensified development would occur in accordance with county and local plans	Same as Full Build	Same as B	Same as B	None required
3.1.3—Farmlands						
Direct Conversion of Farmland	No effect	18 parcels, ~140 acres affected	None	19 parcels, ~122 acres affected	9 parcels, ~77 acres affected	Provide Replacement Conservation Easement
Conversion of Agricultural Lands under Williamson Act Contracts	No effect	48.76 acres would be converted	None	40 acres would be converted	None	None required
Conversion of Agricultural Lands under Conservation Easements	No effect	22.5 acres of Valine easement converted	None	22.5 acres of Valine easement converted	None	Provide Replacement Conservation Easement
3.1.4—Community Impacts						
Community Character and Cohesion	No effect	No separation or division of an existing neighborhood	Effects would be similar to full build	Same as B; Possible beneficial effect on Cordelia area by moving highway further from residential areas	Effects would be similar to full build	None required
Displacement of Residences and Businesses	No effect	1 residential displacement. 201 partial and 27 full acquisitions of businesses; relocation parcels available	67 partial and 5 full acquisition of businesses; relocation parcels available	1 residential displacement; 144 partial and 32 full acquisitions of businesses; relocation parcels available	54 partial and 9 full acquisitions of businesses; relocation parcels available	None required

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Environmental Justice	No effect	9 displacements in Environmental Justice Block Groups; No residential displacements; business displacements are spread out over project area	Fewer than under full build; Same as B	10 displacements in Environmental Justice Block Groups; Same as B	Fewer than under full build; Same as B	None required
3.1.5—Utilities and Emergency Services						
Potential Effect to Utilities	No effect	Possible impacts on utilities or interruption of service during construction and operation	Same as B	Same as B	Same as B	Minimize Disruption of Utilities Services
Potential Effects on Police, Fire, and Emergency Service Providers during Construction	No effect	Possible short-term effects due to lane closures during construction	Same as B	Same as B	Same as B	Prepare Transportation Management Plan (TMP)
3.1.6—Traffic and Transportation/Pedestrian and Bicycle Facilities						
Effects on System-Wide MOEs	**2015:** in a.m. peak hour condition would not worsen significantly, but in p.m. peak hour VHD would increase more than 100%,duration of congestion would nearly double, queues on SR 12E would back traffic up on I-80 **2035:** Significant congestion and delays in a.m. peak hour; severe congestion on SR 12E in p.m. peak	Beneficial impact in a.m. peak hour (VMT up 7%, VHD down nearly 70%, network travel speed up 25%) and p.m. peak hour (VMT up 60%, VHD down 70%, network travel speed up 140%)	**2015:** Beneficial impact in p.m. peak hour (VMT up 11%, VHD down 58%, network travel speed up 32%) and very little effect in a.m. peak hour (VMT down less than 0.5%, VHD up nearly 20%, network travel speed up 3%) **2035:** Beneficial impact in a.m. peak hour (VMT up 5%, VHD down nearly 100%, network speed up 17%) and in the p.m. peak hour (VMT	Same as B	**2015:** Beneficial impact in p.m. peak hour (VMT up 7%, VHD down 39%, network travel speed up 20%) and minimal effect in a.m. peak hour (VMT down less than 0.5%, VHD up 3%, no change in network travel speed) **2035:** Beneficial impact in a.m. peak hour (VMT up 1%, VHD down 18%, network speed up 6%) and in the p.m. peak hour (VMT up 16%,	None required

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
	hour		up 39%, VHD down 47%, network speed up 82%)		VHD down 16%, network speed up 25%)	
Effects on Travel Times	**2015:** Peak direction travel times would increase to 8 to 15 minutes in the a.m. peak hour, and 12 to 34 minutes in the p.m. peak hour **2035:** Peak direction travel times would increase to 11 to 20 minutes in the a.m. peak hour and 17 to 48 minutes in the p.m. peak hour	Beneficial impact, peak direction reduction in travel time of 20%–40% in a.m. peak hour and 10%–85% in the p.m. peak hour	**2015:** Beneficial impact, peak direction reduction in travel time of 4%–35% in the a.m. peak hour and 30%–75% in the p.m. peak hour **2035:** Beneficial impact, peak direction reduction in travel time of 10%-50% in the a.m. peak hour and 19%-73% in the p.m. peak hour	Beneficial impact, peak direction reduction in travel time of 20%–25% in the a.m. peak hour and 15%–80% in p.m. peak hour	**2015:** Beneficial impact, peak direction reduction in travel time of 0%–7% in a.m. peak hour, and 0%–60% in p.m. peak hour. **2035:** Beneficial impact in a.m., peak direction reduction in travel time of 5%–20%; worsening of peak direction travel time in p.m. peak hour, of 29% to more than 200% (see Section 3.1.6)	None required
Effects on Freeway Operations	**2015:** In a.m. peak hour, bottleneck on WB SR 12E; congestion remains at near existing levels, with congested period lasting about 1.5 hours. In p.m. peak hour, bottlenecks on EB I-80, EB SR 12Et, and WB SR 12E; congested period increases to 3 hours. **2035:** In a.m. peak hour, bottlenecks on WB 12W, I-80, and 12E in a.m. peak hour, congested period increases to 3	In a.m. peak hour, no bottlenecks within project limits; congestion decreases to existing levels (relative to 3 hours under 2035 No Build). In p.m. peak hour, bottleneck on EB I-80 at Air Base Parkway (east of project limits), congested period decreases to 3 hours (relative to 6 hours under No Build).	**2015:** In a.m. peak hour, bottleneck on WB SR 12E; congestion remains near existing levels. In p.m. peak hour, bottleneck on EB SR 12E, congestion decreases to near existing levels (relative to 3 hours under 2015 No Build).**2035:** In a.m. peak hour, bottlenecks on SR 12W WB and SR 12E WB, congestion decreases to near existing levels (relative to No Build). In p.m. peak hour, bottlenecks on I-80	In a.m. peak hour, no bottlenecks within project limits; congestion decreases to near existing levels (relative to 3 hours under 2035 No Build). In p.m. peak hour, bottleneck on EB I-80 at Air Base Parkway (east of project limits), congested period decreases to 3 hours (relative to 6 hours under 2035 No Build).	**2015:** In a.m. peak hour, bottleneck on WB SR 12E; congestion remains near existing levels. In p.m. peak hour, bottleneck on EB and WB SR 12E; congested period decreases to about 2 hours (relative to 3 hours under 2015 No Build). **2035:** In a.m. peak hour, bottlenecks on EB and WB SR 12E; congested period decreases to 2.5 hours, relative to 3 hours under 2035 No	None required

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
	hours. In p.m. peak hour, bottlenecks in both directions on SR 12E and I-80, on SR 12W EB, and I-680 NB; congested period increases to 6+ hours.		WB, I-80 EB, SR 12W EB, and SR 12E EB; congested period would decrease to 4.5 hours (relative to 6 hours under 2035 No Build)		Build. In p.m. peak hour, I-80 WB, I-80 EB, SR 12W EB, and SR 12E WB and EB; congested period would decrease to 5 hours, relative to 6 hours under 2035 No Build	
Effects on Intersection Operations	**2015:** in the a.m. peak hour, 3 intersections would operate unacceptably (one ramp terminal intersection and two non-ramp terminal intersections); in the p.m. peak hour, 9 intersections would operate unacceptably (5 ramp terminal intersections and 4 non-ramp terminal intersections). **2035:** in the a.m. peak hour 8 intersections would operate unacceptably (4 ramp terminal intersections and 4 non-ramp terminal intersections); in the p.m. peak hour, 22 intersections would operate unacceptably (14 ramp terminal intersections and 8 non-ramp terminal intersections).	All intersections except Lopes Road/Gold Hill Road would operate acceptably in a.m. peak hour; in p.m. peak hour 4 non-ramp terminal intersections would continue to operate unacceptably	**2015:** two non-ramp terminal intersections would operate unacceptably in the a.m. peak hour; in p.m. peak hour, 1 ramp terminal intersection and 3 non-ramp terminal intersections would operate unacceptably **2035:** one ramp terminal intersection and 3 non-ramp terminal intersections would operated unacceptably in the a.m. peak hour; 8 ramp terminal intersections and 7 non-ramp terminal intersections would operate unacceptably in the p.m. peak hour	All intersections would operate acceptably in the a.m. peak hour; 3 non-terminal ramp intersections would operate unacceptably in the p.m. peak hour	**2015:** one ramp terminal intersection would operate unacceptably in the a.m. peak hour; in the p.m. peak hour, 3 ramp terminal intersections and 2 non-ramp terminal intersections would operate unacceptably **2035:** one ramp terminal intersection would operate unacceptably in the a.m. peak hour; in the p.m. peak hour, 3 ramp terminal intersections and 5 non-ramp terminal intersections would operate unacceptably	Design and Construct Intersection Improvements

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Effects on Pedestrian and Bicycle Facilities	No effect	May require special design or construction measures to ensure that existing facilities can be maintained	Same as B	Same as B	Same as B	Maintain Existing or Accommodate Planned Bicycle and Pedestrian Facilities
Effects on Transit Routes and Service	Worsened traffic conditions in p.m. peak hour in 2015 and 2035 will result in delays for buses and paratransit vehicles	Improved traffic operations would reduce delays for buses and paratransit vehicles	Same as B	Same as B	Same as B	Adjust Transit Routes and Stops as Needed
Construction Period Description of Vehicle, Pedestrian, and Bicycle Circulation	No effect	Construction would result in temporary condition of additional traffic from construction vehicles and workers and possibly temporary lane closures and detours	Same as B	Same as B	Same as B	Develop and Implement a Transportation Management Plan and Construction Scheduling to Minimize Adverse Effects
3.1.7—Visual and Aesthetic Resources						
Temporary Visual Impacts Caused by Construction Activities	No effect	Temporary impacts that would not contrast with existing visual character	Same as B, but to a lesser extent	Same as B	Same as B, but to a lesser extent	None required
Long-Term Changes in Visual Quality and Character	No effect	Result in adverse and beneficial changes to visual character. Adverse visual impacts would occur at Viewpoint 8 in Landscape Unit 1 and Viewpoint 2 in Landscape Unit 3.	Same as B, but to a lesser extent	Result in adverse and beneficial changes to visual character. Adverse visual impacts would occur at viewpoints 6 and 8 in Landscape Unit 1 and Viewpoint 2 in Landscape Unit 3.	Same as C, but to a lesser extent.	Use Appropriate Building Materials and Forms for the Westbound Truck Scales Incorporate Aesthetic Recommendations in Design of Freeway-Related Structures Replace Landscaping as Appropriate

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Effect on Officially Designated Scenic Highways	No effect	No effect; there are no existing scenic highways in the project area	Same as B	Same as B	Same as B	None required
Light and Glare	No effect	Increased lighting and glare during construction and, to some extent, during operations, but consistent with existing conditions	Same as B	Same as B	Same as B	Incorporate Appropriate Light and Glare Screening Measures
3.1.8—Cultural Resources						
Effects on Unknown or Known Resources from Construction	No effect	Potential to disturb buried cultural resources during construction	Same as B	Same as B	Same as B	Conduct Geomorphological Research and Subsurface Investigations Stop Work if Buried Cultural Deposits Are Encountered during Construction Activities
Discovery of Human Remains during Construction	No effect	Potential to disturb buried human remains during construction	Same as B	Same as B	Same as B	Protection of Human Remains if Encountered during Excavation Activities as per State Health and Safety Code Section 7050.5 and Public Resources Code 5097
Potential to Affect Historic Properties at 177 Main Street, the Suisun City Train Depot (APN 0032-020-240)	No effect	Construction on the parcel would create visual impact, but would not substantially alter the existing setting, so no adverse effect would result	No effect; no project improvements in the area	Same as B	No effect; no project improvements in the area	None required

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential to Affect Village of Cordelia Historic District	No effect	Construction on empty parcel within the district boundaries will not affect integrity of district	Same as B	Removal of elevated ramps may result in beneficial visual impact	Removal of elevated ramps may result in beneficial visual impact	None required
Potential to Affect Suisun City Historic District	No effect	Construction at the edge of the district would result in minor visual impact but would not substantially alter the existing setting, so no adverse effect would result	No effect; no project improvements in the area	Same as B	No effect; no project improvements in the area	None required
Effects to Historic Resource Protected under Section 4(f)	No effect	Minor or negligible impact on the Suisun City Train Depot (APN 0032-020-240), and the Village of Cordelia and Suisun City Historic Districts	Minor or negligible impact on the Village of Cordelia Historic District	Minor or negligible impact on Suisun City Train Depot (APN 0032-020-240) and Suisun City Historic District	No effect	None required
PHYSICAL ENVIRONMENT						
3.2.1—Hydrology and Floodplain						
Hydraulic Capacity and Floodplain of Green Valley Creek	No effect	Flow characteristics would be improved; existing structures would be replaced with freespan structures; existing piers would be removed	Same as B	Same as B	Same as B	None required
Hydraulic Capacity and Floodplain of Dan Wilson Creek	No effect	Flow characteristics would be improved; existing structures would be replaced with freespan structures; existing piers would be removed	Same as B	Same as B	No effect; no project improvements in the area	None required

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Hydraulic Capacity and Floodplain of Suisun Creek	No effect	Flow characteristics would be improved; existing structures would be replaced with freespan structures; existing piers would be removed	No effect; no project improvements in the area	Same as B	No effect; no project improvements in the area	None required
Hydraulic Capacity and Floodplain of Raines Drain	No effect	Increased mainline elevation (up to 3' higher) and relocation of westbound truck scales (reduction of floodplain storage) will result in impacts on the existing floodplain	No effect; no project improvements in the area	Same as B	No effect; no project improvements in the area	Construct Upstream Inlet Structure and Underground Flood Control Storage
Hydraulic Capacity and Floodplain of Alonzo Drain and Ledgewood Creek	No effect	New bridges over Ledgewood Creek would be freespan; bridge/culvert widening would not alter existing conditions	Bridge/culvert widening would not alter existing conditions	Same as B, Phase 1	Same as B, Phase 1	None required
Hydraulic Capacity and Floodplain of Pennsylvania Avenue Creek	No effect	Culvert widening and new culverts would not alter existing conditions	No effect; no project improvements in the area	Same as B	No effect; no project improvements in the area	None required
3.2.2—Water Quality and Stormwater Runoff						
Increased Runoff and Associated Operational Water Quality Issues	No effect	Increase in impervious surfaces would result in increase in runoff	Same as B, but to a lesser extent	Same as B	Same as B, but to a lesser extent	Construct Upstream Inlet Structure and Underground Flood Control Storage Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Water Quality, Erosion and Sediment Control Issues during Construction	No effect	Potential for sediment or pollutants associated with construction to enter waterways	Same as B, but to a lesser extent	Same as B	Same as B, but to a lesser extent	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices
Potential to Require Dewatering during Construction	No effect	Anticipated due to water level	Same as B	Same as B	Same as B	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices
3.2.3—Geology/Soils/Seismic/Topography						
Risk of Fault Rupture during Operations	No effect	Potential impact due to faults in the vicinity	Same as B	Same as B, though elevated structures are proposed in immediate vicinity of faults	Same as C	Implement Requirements from State and Local Standards into Final Project Design Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities
Risk from Ground Shaking during Operation	No effect	Potential impact due to active faults in the vicinity	Same as B	Same as B	Same as B	Implement Requirements from State and Local Standards into Final Project Design Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
						Conduct Future Geotechnical Investigations
Risks from Development on Unstable Materials	No effect	Potential impact at bridge and overcrossing locations	Same as B	Same as B	Same as B	Implement Requirements from State and Local Standards into Final Project Design Conduct Future Geotechnical Investigations Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction
Risk from Landslides or Other Slope Failure during Operation	No effect	Potential effects from landslides and debris flows in hilly areas of the project area	Same as B	Same as B	Same as B	Implement Requirements from State and Local Standards into Final Project Design Conduct Future Geotechnical Investigations Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities
Risk during Operation as a Result of Development on Expansive Soils	No effect	Soils in the project area have moderate to high shrink-swell potential	Same as B	Same as B	Same as B	Conduct Future Geotechnical Investigations

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Risk during Operation as a Result of Weak Foundation Materials and Postconstruction Settlement	No effect	Potential consolidation settlement hazard in the vicinity of Suisun Valley Road and Dan Wilson Creek	Same as B	Same as B	Potential consolidation settlement hazard in the vicinity of Suisun Valley Road; no project improvements proposed in the vicinity of Dan Wilson Creek	Implement Requirements from State and Local Standards into Final Project Design Conduct Future Geotechnical Investigations Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Consolidation Settlements on Project Facilities
Runoff, Erosion, and Sedimentation from Grading Activities Associated with Construction	No effect	Potential impact during construction activities	Same as B	Same as B	Same as B	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices
3.2.4—Paleontology						
Destruction of Vertebrate or Otherwise Scientifically Significant Paleontological Resources as a Result of Construction Activities	No effect	Excavation for foundations in sensitive units could result in the inadvertent destruction of fossil resources	Same as B, but to a lesser extent as less excavation occurs in high-sensitivity areas	Same as B, but to a greater extent as there would be more excavation in sensitive units	Same as B, but to a lesser extent as less excavation occurs in high-sensitivity areas	Conduct Preconstruction Surveys Educate Construction Personnel in Recognizing Fossil Material Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities Stop Work and Conduct Appropriate Treatment if Substantial Fossil Remains Are Encountered During Construction

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
3.2.5—Hazardous Waste/Materials						
Exposure of Humans and the Environment to Groundwater Contamination as a Result of Construction Activities	No effect	Project area has a moderate to high risk of groundwater contamination	Same as B	Same as B	Same as B	Perform Groundwater Contamination Testing
Potential for Exposure of Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials as a Result of Construction Activities	No effect	Project area has a moderate risk of previously unreported hazards	Same as B	Same as B	Same as B	Develop a Health and Safety Plan to Address Worker Health and Safety
Potential for Exposure of Known Hazardous Materials to Humans or the Environment as a Result of Construction Activities	No effect	Hazardous materials present may include heavy metals, ACMs, contaminated soils, ADL	Same as B	Same as B	Same as B	Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadways Dispose of Soils Contaminated with ADL, Arsenic, Pesticides, and Herbicides in Accordance with Appropriate Regulations Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals Sampling and Testing of Groundwater Perform Groundwater Contamination Testing

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential for Exposure of Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials as a Result of Construction Activities	No effect	Potential for accidental release of materials associated with construction equipment, or from utility lines	Same as B	Same as B	Same as B	Develop a Health and Safety Plan to Address Worker Health and Safety
3.2.6—Air Quality						
Conformity with the Regional Transportation Plan	No effect	N/A	Not in RTP	N/A	This alternative is included in 2035 RTP and 2009 TIP	Amend the Transportation Improvement Program to Include Additional Alternatives
Potential Violations of Carbon Monoxide NAAQS or CAAQS	Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS	Not anticipated to exceed 1- or 8-hour NAAQS or CAAQS	Same as B	Same as B	Same as B	None required
Potential Violations of PM2.5 NAAQS or CAAQS	No effect	Not yet determined whether considered Project of Air Quality Concern; consultation ongoing	Same as B	Same as B	Same as B	None required
Potential Generation of Significant Levels of MSAT Emissions	Lower MSAT emissions than all build alternatives except Alternative C, Phase 1 for 2035	Minor increase in all MSAT emissions compared to No Project conditions	Same as B	Same as B	Minor increase in all MSAT emissions for 2015; minor increase in all but 2 air toxics for 2035	Implement Measures to Reduce MSAT and Criteria Pollutant Emissions
Potential Generation of Significant Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter	Lower emissions of ozone precursors than all build alternatives except Alternative C, Phase 1 for 2035	Minor increase in emissions of all ozone precursors compared to No Project conditions	Same as B	Same as B	Same as B, except for decrease in ROG, PM10 and PM2.5 for 2035	Implement Measures to Reduce MSAT and Criteria Pollutant Emissions

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Temporary Increase in Ozone Precursors (ROG and NOx), CO, and PM10 Emissions during Grading and Construction Activities	No effect	Temporary increase in all ozone precursors due to construction	Same as B	Same as B	Same as B	Implement California Department of Transportation Standard Specification Section 14 Implement Additional Control Measures for Construction Emissions of Fugitive Dust Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel Powered Equipment
3.2.7—Noise						
Exposure of Noise Sensitive Land Uses to Increased Traffic Noise	Noise levels would increase as traffic congestion increases	Increased noise in areas D, E, and R affecting 49 units; no effect under NEPA	Increased noise in areas D, E, and R affecting 21 units; no effect under NEPA	Increased noise in areas E, H, and R affecting 37 units; no effect under NEPA	Increased noise is area E affecting 1 unit; no effect under NEPA	None required, abatement under consideration
Exposure of Noise-Sensitive Land Uses to Construction Noise	No effect	Construction equipment would generate noise	Same as B	Same as B	Same as B	Minimize Construction Noise
3.2.8—Energy						
None						
BIOLOGICAL ENVIRONMENT						
3.3.1—Natural Communities						
Loss or Disturbance of Riparian Woodland Resulting from Construction	No effect	Permanent loss of 1.28 acres; temporary disturbance of 0.34 acre	Permanent loss of 0.12 acre; temporary disturbance of 0.02 acre	Permanent loss of 1.12 acres; temporary disturbance of 0.41 acre	Permanent loss of 1.09 acres; temporary disturbance of 0.06 acre	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
						Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation
Permanent Loss and Temporary Disturbance of Oak Woodlands	No effect	Blue Oak: Temporary disturbance of 0.52 acre Valley Oak: Permanent loss of 0.47 acre; temporary disturbance of <0.01 acre Live Oak: Permanent loss of 6.37 acres; temporary disturbance of 4.12 acres	Blue Oak: Temporary disturbance of 0.52 acre Valley Oak: Permanent loss of 0.46 acre; temporary disturbance of 0.01 acre	Blue Oak: Permanent loss of 4.22 acres; temporary disturbance of 0.14 acre Valley Oak: Permanent loss of 0.54 acre; temporary disturbance of 0.05 acre Live Oak: Permanent loss of 12.85 acres; temporary disturbance of 3.14 acres	Valley Oak: Permanent loss of 0.44 acre Live Oak: Permanent loss of 13.19 acres; temporary disturbance of 2.03 acres	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
3.3.2—Wetlands and Other Waters						
Loss or Disturbance of Perennial Drainage Resulting from Construction	No effect	Permanent loss of 0.59 acre; temporary disturbance of 0.30 acre	Permanent loss of 0.06 acre; temporary disturbance of 0.17 acre	Permanent loss of 0.66 acre; temporary disturbance of 0.45 acre	Permanent loss of 0.08 acre; temporary disturbance of 0.05 acre	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat
Loss of Nonjurisdictional Constructed Seasonal Drainages	No effect	Permanent loss of <0.01 acre	No effect	Permanent loss of <0.01 acre	Permanent loss of <0.01 acre	None required
Loss or Disturbance of Jurisdictional Seasonal Drainages Resulting from Construction	No effect	Permanent loss of 1.78 acres; temporary disturbance of 0.85 acre	Permanent loss of 0.81 acre; temporary disturbance of 0.14 acre	Permanent loss of 2.05 acres; temporary disturbance of 0.56 acre	Permanent loss of 1.89 acre; temporary disturbance of 0.08 acre	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Loss or Disturbance of Nonjurisdictional Perennial Marsh		Permanent loss of 0.03 acre; temporary disturbance of 0.01 acre	Permanent loss of 0.03 acre; temporary disturbance of 0.01 acre	No effect	No effect	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat Restore Temporarily Disturbed Perennial Marsh Compensate for Permanent Loss of Wetlands
Loss or Disturbance of Jurisdictional Perennial Marsh Resulting from Construction	No effect	Permanent loss of 5.09 acres; temporary disturbance of 5.25 acres	Permanent loss of 0.39 acre; temporary disturbance of 1.97 acres	Permanent loss of 5.73 acres; temporary disturbance of 2.44 acres	Permanent loss of 0.41 acre; temporary disturbance of 1.41acre	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat Restore Temporarily Disturbed Perennial Marsh Compensate for Permanent Loss of Wetlands

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Loss or Disturbance of Alkali Seasonal Marsh Resulting from Construction	No effect	Permanent loss of 1.75 acres; temporary disturbance of 0.28 acre	No effect	Permanent loss of 1.03 acre; temporary disturbance of 0.13 acre	Permanent loss of 0.07 acre	Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat Compensate for Permanent Loss of Wetlands
Loss or Disturbance of Nonjurisdictional Seasonal Wetland	No effect	Temporary disturbance of 0.01 acre	No effect	Permanent loss of 0.78 acre	Permanent loss of 0.77 acre	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats
Loss or Disturbance of Jurisdictional Seasonal Wetland Resulting from Construction	No effect	Permanent loss of 8.19 acres; temporary disturbance of 1.64 acres	Permanent loss of 1.84 acres	Permanent loss of 8.30 acres; temporary disturbance of 1.07 acres	Permanent loss of 3.89 acres; temporary disturbance of 0.01 acre	Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat Compensate for Permanent Loss of Wetlands

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
3.3.3—Plant Species						
Potential direct and indirect effects on Alkali Milk-Vetch	No effect	Potential to remove or disturb plants if present in the future	No effect	Potential to remove or disturb plants if present in the future	No effect	Conduct preconstruction surveys for special-status plants Compensate for loss of special-status plants
Loss or Disturbance of Pappose Tarplant	No effect	Loss of 185 plants	No effect	Loss of 200 plants	Loss of 2 plants	Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Conduct preconstruction surveys for special-status plants Compensate for loss of special-status plants
Potential direct and indirect effects on Streamside Daisy	No effect	Potential to remove or disturb plants if present in the future	No effect	Potential to remove or disturb plants if present in the future	No effect	Conduct preconstruction surveys for special-status plants Compensate for loss of special-status plants
Direct and Indirect Effects to Saline Clover	No effect	Loss of 35 plants	No effect	Loss of 65 plants	No effect	Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Conduct preconstruction surveys for special-status plants Compensate for loss of special-status plants

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
3.3.4—Animal Species						
Potential Loss or Disturbance of Western Pond Turtles Resulting from Construction	No effect	Construction in and near ponds and streams could result in loss or disturbance of habitat	Same as B	Same as B	Same as B, but to a lesser extent as there would be less construction in or near suitable aquatic habitat	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Surveys for Western Pond Turtle
Potential Disturbance of Nesting White-tailed Kites Resulting from Construction	No effect	Tree removal and construction noise could result in disturbance to nesting birds	Same as B	Same as B	Same as B	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
						and Permanent Loss of Riparian Vegetation Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary
Potential Disturbance of Burrowing Owls and Permanent Loss of Habitat Resulting from Construction	No effect	Construction activities could disturb nesting owls and implementation of the project would result in loss of nesting and foraging habitat	Same as B	Same as B	Same as B	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary Compensate for Loss of Burrowing Owl Nesting Habitat

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Disturbance of Nesting Northern Harriers Resulting from Construction	No effect	Construction activities could disturb nesting birds and implementation of the project would result in loss of nesting and foraging habitat	Same as B	Same as B	Same as B	Conduct Preconstruction Nesting Surveys for Northern Harrier in the Annual Grassland Habitat North of SR 12W
Potential Disturbance of Nesting Loggerhead Shrikes Resulting from Construction	No effect	Construction activities could disturb nesting birds	Same as B	Same as B	Same as B	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary
Potential Disturbance of Nesting Tricolored Blackbirds Resulting from Construction	No effect	Construction activities could disturb nesting birds	Same as B	Same as B	Same as B	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
						Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary
Potential Disturbance of Nesting Migratory Birds and Raptors Resulting from Construction	No effect	Construction activities could remove or disturb occupied nests	Same as B	Same as B	Same as B	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Disturbance to Nesting Swallows Resulting from Construction	No effect	Construction activities associated with bridge construction could result in loss of active nests	Same as B	Same as B	Same as B	Prevent Swallows from Nesting Adjacent to New Bridge Construction
Potential Disturbance to Roosting Bats Resulting from Construction	No effect	Construction could result in removal of bat roosting habitat and disturb roosting bats	Same as B	Same as B	Same as B	Conduct Preconstruction Surveys for Roosting Bats in Mature Trees
River Lamprey						
Potential Effects on River Lamprey Resulting from Construction						
Water Quality Effects	No effect	Construction activities could result in sediments or contaminants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons
Habitat and Channel Morphology Effects	No effect	Construction in and adjacent to streams could affect channel morphology and streamside vegetation	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels
Water Temperature Effects	No effect	Minimal impact to water temperature from removal/addition of shading	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Interference with Movement	No effect	Dewatering activities associated with construction could interfere with fish movement	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels
Disturbance and Direct Injury	No effect	Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work	Same as B, but no effects at Suisun Creek	Same as B, but to a lesser extent due to less construction in the vicinity of Ledgewood Creek	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels Minimize Noise Impacts on Special-Status Fish Species
Potential Water Quality Effects on River Lamprey Associated with Operations	No effect	Increase in impervious surfaces could result in increase in pollutants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel
Central Valley Fall-Run/Late-Fall-Run Chinook Salmon						
Potential Effects on Chinook Salmon Resulting from Construction						
Water Quality Effects	No effect	Construction activities could result in sediments or contaminants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Habitat and Channel Morphology Effects	No effect	Construction in and adjacent to streams could affect channel morphology and streamside vegetation	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels
Water Temperature Effects	No effect	Minimal impact to water temperature from removal/addition of shading	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels
Interference with Movement	No effect	Dewatering activities associated with construction could interfere with fish movement	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels
Disturbance to Potential Spawning Habitat	No effect	Construction associated with the bridge over Suisun Creek could result in disturbance to spawning habitat located 20 feet downstream of bridge	No effect	Same a B	No effect	Minimize Impacts on Creek Channels Avoid Potential Fish Spawning Habitat
Disturbance and Direct Injury	No effect	Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work	Same as B, but no effects at Suisun Creek	Same as B, but to a lesser extent due to less construction in the vicinity of Ledgewood Creek	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels Minimize Noise Impacts on Special-Status Fish Species

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Water Quality Effects on Chinook Salmon Resulting from Operations	No effect	Increase in impervious surfaces could result in increase in pollutants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel
Potential Interference with Fish Movement Resulting from Operations	No effect	Culvert extension in Ledgewood Creek under SR 12E would worsen fish passage conditions	Same as B	Same as B	Same as B	Implement Culvert Retrofit at the SR 12E Crossing on Ledgewood Creek
Sacramento Splittail						
Potential Water Quality Effects on Sacramento Splittail Resulting from Construction	No effect	Construction associated with bridges over Ledgewood Creek could result in sediments or contaminants entering the creek	Same as B, but to a lesser extent	Same as B, but to a lesser extent	Same as B, but to a lesser extent	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel
Potential Water Quality Effects on Sacramento Splittail Associated with Operations	No effect	Increase in impervious surfaces could result in increase in pollutants entering Ledgewood Creek	Same as B, but to a lesser extent	Same as B	Same as B, but to a lesser extent	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
3.3.5—Threatened and Endangered Species						
Loss or Disturbance of Contra Costa Goldfields Resulting from Construction	No effect	Construction would result in the loss of 30 plants (this number may vary from year to year), and permanent loss of 55.91 acres and temporary disturbance of 14.02 acres of critical habitat	Construction would result in the permanent loss of 7.27 acres and temporary disturbance of 1.18 acres of critical habitat	Construction would result in the loss of 30 plants, and permanent loss of 39.59 acres and temporary disturbance of 8.55 acres of critical habitat	Construction would result in the permanent loss of 5.41 acres and temporary disturbance of 0.70 acre of critical habitat	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Compensate for the Loss of Contra Costa Goldfields
Potential Loss or Disturbance of Callippe Silverspot Butterfly Resulting from Construction	No effect	Construction would result in the loss of habitat and could result in the loss of individuals	No effect	Same as B	Same as B	Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Johnny Jump-Ups
Potential Loss or Disturbance of Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp Resulting from Construction	No effect	Construction would result in direct affect to 1.33 acres and indirect affect to 1.71 acres of potential habitat	Construction would result in direct affect to 0.20 acre and indirect affect to 0.04 acre of potential habitat	Construction would result in direct affect to 1.51 acres and indirect affect to 1.10 acres of potential habitat	Construction would result in direct affect to 1.45 acres and indirect affect to 0.26 acre of potential habitat	Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands Avoid and Minimize Potential Indirect Disturbance of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat Compensate for Loss of Direct and Indirect Impacts on Vernal Pool Fairy Shrimp or Vernal Pool Tadpole Shrimp Habitat
Potential Loss of Valley Elderberry Longhorn Beetle Habitat Resulting from Construction	No effect	Construction would result in direct affects to 11 shrubs and indirect affects to 1 shrub	Construction would result in direct affects to 1 shrub, and no indirect affects.	Construction would result in direct affects to 10 shrubs and indirect affects to 1 shrub	Construction would result in direct affects to 10 shrubs and indirect affects to 0 shrubs	Establish a Minimum 20-Foot-Wide Buffer around All Elderberry Shrubs Where Feasible Implement Dust Control Measures Compensate for Direct Effects

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
						on Valley Elderberry Longhorn Beetle Habitat
Potential Loss of California Red-legged Frog and its Habitat Resulting from Construction	No effect	Construction would result in permanent loss of 1.25 acres of aquatic habitat, 105.89 acres of upland habitat, and 16.47 acres of critical habitat and temporary disturbance of 2.20 acres of aquatic habitat, 36.40 acres of upland habitat and 2.94 acres of critical habitat	Construction would result in permanent loss of 0.16 of aquatic habitat, and 54.70 acres of upland habitat, and temporary disturbance of 1.45 acres of aquatic habitat, and 1.52 acres of upland habitat; no critical habitat would be affected	Construction would result in permanent loss of 1.56 acres of aquatic habitat, 126.57 acres of upland habitat, and 21.50 acres of critical habitat and temporary disturbance of 0.36 acre of aquatic habitat, 30.99 acres of upland habitat and 1.51 acres of critical habitat	Construction would result in permanent loss of 2.41 acre of aquatic habitat, 144.90 acres of upland habitat, and 22.54 acres of critical habitat and temporary disturbance of 0.17 acre of aquatic habitat, 6.38 acres of upland habitat and 0.48 acres of critical habitat	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Surveys for California Red-Legged Frog Monitor Construction Occurring near Potential California Red-Legged Frog Habitat Compensate for Loss and Disturbance of California Red-Legged Frog Habitat
Potential Loss of Swainson's Hawk Nesting and Foraging Habitat Resulting from Construction	No effect	Construction would result in the permanent loss of 447.42 acres of foraging habitat and 19.34 acres of potential nesting habitat and the temporary disturbance of 6.84 acre of potential nesting	Construction would result in the permanent loss of 56.51 acres of foraging habitat and 6.21 acre of potential nesting habitat and the temporary disturbance of 0.58 acre of potential	Construction would result in the permanent loss of 230.92 acres of foraging habitat and 27.49 acres of potential nesting habitat and the temporary disturbance of 6.62 acre of potential nesting	Construction would result in the permanent loss of 183.10 acres of foraging habitat and 17.85 acre of potential nesting habitat and the temporary disturbance of 3.10 acre of potential	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
		habitat	nesting habitat	habitat	nesting habitat	Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary Compensate for Loss of Swainson's Hawk Foraging Habitat
Central California Coast Steelhead						
Potential Effects on Steelhead Resulting from Construction						
Water Quality Effects	No effect	Construction activities could result in sediments or contaminants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons
Steelhead Habitat and Channel Morphology	No effect	Construction in and adjacent to streams could affect channel morphology and streamside vegetation	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Water Temperature Effects	No effect	Minimal impact to water temperature from removal/addition of shading	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Minimize Impacts on Creek Channels
Interference with Steelhead Movement	No effect	Dewatering activities associated with construction could interfere with fish movement	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels
Disturbance to Potential Spawning Habitat	No effect	Construction associated with the bridge over Suisun Creek could result in disturbance to spawning habitat located 20 feet downstream of bridge	No effect	Same a B	No effect	Minimize Impacts on Creek Channels Avoid Potential Fish Spawning Habitat
Disturbance and Direct Injury to Steelhead	No effect	Noise, vibration and other physical disturbances could disturb fish; direct injury could result during in-stream work	Same as B, but no effects at Suisun Creek	Same as B, but to a lesser extent due to less construction in the vicinity of Ledgewood Creek	Same as B, but no effects at Suisun Creek	Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons Provide Alternate Migration Corridor through Creek Channels Minimize Noise Impacts on Special-Status Fish Species
Potential Water Quality Effects on Steelhead Resulting from Operations	No effect	Increase in impervious surfaces could result in increase in pollutants entering streams	Same as B, but no effects at Suisun Creek	Same as B	Same as B, but no effects at Suisun Creek	Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices Prevent Contaminants and Hazardous Materials from Entering the Stream Channel

Table S-1. Continued

Impact	No Build	Alternative B		Alternative C		Avoidance, Minimization, and/or Mitigation Measures
		Full Build	Phase 1	Full Build	Phase 1	
Potential Interference with Fish Movement Resulting from Operations	No effect	Culvert extension in Ledgewood Creek under SR 12E would worsen fish passage conditions	Same as B	Same as B	Same as B	Implement Culvert Retrofit at the SR 12 Crossing on Ledgewood Creek
3.3.6—Invasive Species						
Potential Introduction and Spread of Invasive Plant Species Resulting from Construction	No effect	Construction activities have the potential to spread invasive plant species	Same as B	Same as B	Same as B	Avoid the Introduction and Spread of Invasive Plants—Minimize Soil Disturbance, Restore Disturbed Areas Using Native Species
3.3.7—Native Trees						
Removal of Native Trees	No effect	Loss of 13 mature native oak trees	Loss of 6 mature native oak trees	Loss of 14 mature native oak trees	Loss of 4 mature native oak trees	Place Environmentally Sensitive Area Fencing around all Sensitive Biological Resources in and near the Construction Area Conduct Environmental Awareness Training for Construction Employees Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats Avoid and Minimize Potential Disturbance of Riparian Communities Compensate for Temporary and Permanent Loss of Riparian Vegetation
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None						

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List of Abbreviated Terms

AB 1493	Assembly Bill 1493
AB 32	Assembly Bill 32
ABAG	Association of Bay Area Governments
AC	asphalt concrete
ACCM	asbestos-containing construction material
ACOE	U.S. Army Corps of Engineers
ADA	1990 Americans with Disabilities Act
ADL	Aerially deposited lead
Air Quality Study Report	Interstate 80/Interstate 680/State Route 12 Interchange Project Air Quality Study Report
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	Area of Potential Effects
APN	Assessor's Parcel Number
ARS	Acceleration Response Spectrum
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
basin plan	*Water Quality Control Plan for the San Francisco Bay Basin*
BAT/BCT	Best Available Technology economically achievable/Best Conventional Pollutant Control Technology
BCDC	Bay Conservation and Development Commission
BMPs	Best Management Practices
BOD	biochemical oxygen demand
BTUs	British thermal units
$CaCO_3$	calcium carbonate
CAFÉ	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBSC	California Building Standards Code
CCJPA	Capitol Corridor Joint Powers Authority
CDFG	California Department of Fish and Game
CeA	Clear Lake clay
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CERFA	Community Environmental Response Facilitation Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFPD	Cordelia Fire Protection District
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH4	methane
CHP	California Highway Patrol
CIA	Community Impact Assessment
CIMIS	California Irrigation Management System
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Co	Conejo gravelly loam

CO	carbon monoxide
CO2	carbon dioxide
COD	chemical oxygen demand
CRHR	California Register of Historic Resources
CRLF	California red-legged frog
CTP	Comprehensive Transportation Plan
CTP 2030	STA's Comprehensive Transportation Plan
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dBA	A-weighted decibels
dbh	diameter at breast height
Department	California Department of Transportation
DFG	California Department of Fish and Game
difluoroethane	HFC-152a
DTSC	California Department of Toxic Substances Control
DWR	State Department of Water Resources
EB	eastbound
ECR	Environmental Commitments Record
EDR	Environmental Data Resources
EFH	Essential Fish Habitat
EIR/EIS	environmental impact report/environmental impact statement
Energy Report	Interstate 80/Interstate 680/State Route 12 Energy Technical Report
EO	Executive Order
EOP	edge of pavement
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESAs	environmentally sensitive areas
ESU	evolutionarily significant unit
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FAST	Fairfield and Suisun Transit
FCVs	fuel cell vehicles
FDHA	fault displacement hazard
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	Facility Index System
FIRMs	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FSSD	Fairfield-Suisun Sewer District
FTA	Federal Transportation Administration
FTOR	Final Traffic Operations Report
GHG	greenhouse gas
GO	General Order
GSRDs	gross solids removal devices
HAPs	hazardous air pollutants
HCP	Habitat Conservation Plan
HDM	Highway Design Manual
HFC-134a	1, 1, 1, 2 –tetrafluoroethane
HFC-23	fluoroform

HFCs	hydrofluorocarbons
HOV	high-occupancy vehicle
HPTP	Historic Properties Treatment Plan
HWCA	Hazardous Waste Control Act
I-680	Interstate 680
I-80	Interstate 80
IAC	interagency consultation
IGR	Intergovernmental Review
IPCC	Intergovernmental Panel on Climate Change
IRIS	Integrated Risk Information System
ISA	initial site assessment
ITS	Intelligent Trans. System
JPC	Joint Policy Committee
kV	kilovolt
Land Evaluation and Site Assessment or LESA form	Federal AD-1006 Farmland Conversion Impact Rating Form
LCP	Lead-containing paint
LEDPA	least environmentally damaging practicable alternative
LHS	Location Hydraulic Study & Summary Floodplain Encroachment Report
LOP	Local Oversight Program
LOS	level of service
LUSTs	leaking underground storage tanks
mg/l	milligrams per liter
Mgd	million gallons per day
MIS	Major Investment Study
MLD	most likely descendent
MOEs	measures of effectiveness
MOU	memorandum of understanding
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan Statistical Area
MTC	Metropolitan Transportation Commission
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NADR	Noise Abatement Decision Report
NB	northbound
NBA	North Bay Aqueduct
NEPA	National Environmental Policy Act
NEPA/404 MOU	Memorandum of Understanding – National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966, as amended,
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOAA's NMFS	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NOC	Notice of Construction
NOCC	Notice of Completion of Construction

NOD	notice of determination
NOI	Notice of Intent
Noise Study	Noise Study Technical Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project
NOP	notice of preparation
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSIC	National Invasive Species Council
NWIC	Northwest Information Center
O_3	ozone
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Act
OSR	open space recreation
PA	Programmatic Agreement
Pb	lead
PCBs	polychlorinated biphenyls
PCC	Portland cement concrete
PF	public facility
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PM	particulate matter
POAQC	project of air quality concern
PRC	California Public Resources Code
proposed project	I-80/I-680/SR 12 Interchange Project
PUC	Public Utilities Commission
RAP	Relocation Assistance Program
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act of 1976
Resources Agency	Natural Resources Agency
ROD	record of decision
RP	Responsible Party
RSP	rock slope protection
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAA	streambed alteration agreement
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	southbound
SCR	Senate Concurrent Resolution
SCWA	Solano County Water Agency
SF6	hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFPD	Suisun Fire Protection District
SHOPP	State Highway Operation and Protection Program
SHPO	State Historic Preservation Officer
SID	Solano Irrigation District
SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigation, and Cleanup
SMA	Secondary Management Area
SMLPP	Suisun Marsh Local Protection Program

SNCI	Solano Napa Commuter Information
SO_2	sulfur dioxide
SQG and LQG	Small and Large Quantity Generator
Sr	Sycamore silty clay loam
SR 12	State Route 12
SR 12E	SR 12 East
SR 12W	SR 12 West
SRA	shaded riverine aquatic
STA	Solano Transportation Authority
STLC	soluble threshold limit concentration
SVP	Society of Vertebrate Paleontology
SWDR	Stormwater Data Report
SWMP	Statewide Storm Water Management Plan
SWPPP	stormwater pollution prevention program
SWRCB	State Water Resources Control Board
TDM	Transportation Demand Management
TDS	total dissolved solids
TIP	Transportation Improvement Program
TMDLs	total maximum daily loads
Tmk	Eocene-age Markley Formation
TMP	Transportation Management Plan
TNM 2.5	Traffic Noise Model Version 2.5
TOC	total organic carbon
TSCA	Toxic Substances Control Act
TSM	Transportation System Management
TSS	total suspended solids
TVSS	total volatile suspended solids
UBC	Uniform Building Code
UCL	upper confidence limit
UCMP	University of California Museum of Paleontology
UPRR	Union Pacific Railroad
USA	Underground Service Alert
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geologic Survey
VELB	valley elderberry longhorn beetle
VHD	vehicle hours of delay
VHT	vehicle hours of travel
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WB	westbound
WDRs	waste discharge requirements
WET	waste extraction test
WPCP	Water Pollution Control Plan
Ys	Yolo silty clay loam

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Department), in cooperation with the Solano Transportation Authority (STA), proposes to improve the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) interchange in the vicinity of the city of Fairfield, Solano County, California. The project area, shown in Figure 1-1, is located along 13 miles of the highways. The temporal and geographic scope of the analysis for each resource area is defined within each resource chapter. The existing I-80/I-680/SR 12 interchange complex was constructed approximately 40 years ago, and current traffic demands result in congestion, delays, and unacceptable levels of service (LOS). The proposed improvements are designed to reduce congestion, accommodate anticipated increases in traffic, and address safety concerns.

The fundable first phase of either alternative of the proposed project is fully funded in the financially constrained Regional Transportation Plan (RTP) *Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion* (Appendix 1, page 126). The 2009 RTP and 2009 Transportation Improvement Program (TIP) (Revised) were found to conform with the *State Implementation Plan* (SIP) by the Metropolitan Transportation Commission (MTC) on April 22, 2009. The Federal Highway Administration (FHWA) and Federal Transportation Administration (FTA) found the 2009 RTP and the 2009 TIP (Revised) to be in conformity with the SIP on May 29, 2009. The proposed project is also included in the MTC financially constrained 2009 TIP (Revised) as TIP ID SOL0070020. The TIP is being updated to be consistent with the RTP as part of the 2011 TIP process. The MTC adopted the 2009 TIP (Revised) on May 28, and the FHWA and FTA adopted the 2009 TIP (Revised) on November 17, 2008. The design concept and scope of the proposed project is consistent with the project description in the 2009 RTP, the 2009 TIP (Revised), and the assumptions in the Metropolitan Transportation Commission's regional emissions analysis.

1.2 Purpose and Need

1.2.1 Purpose of the Proposed Project

As described in more detail below, the purpose of the I-80/I-680/SR 12 Interchange Project (proposed project) is to reduce congestion through the interchange, reduce cut-through traffic on local roads, encourage the use of high-occupancy vehicle (HOV) lanes and ridesharing, improve safety conditions, accommodate existing and future traffic volumes on the highways, and facilitate adequate inspection and enforcement at the I-80 truck scale facilities. The alternatives presented in this document meet all of the purposes listed below. The fundable first phases of the alternatives do not include the relocation of the truck scales and therefore, would not address the purposes specified under 5 and 6 below. However, they would meet the remaining purposes and would partially meet number 5 by providing congestion relief.

1. **Reduce congestion through the I-80/I-680/SR 12 interchange complex:** Highway widening and interchange improvement would accommodate current and future traffic volumes, including trucks, as well as to reduce congestion and improve travel time reliability through the I-80/I-680/SR 12 Interchange complex.
2. **Reduce the amount of cut-through traffic on local roads:** Improvements to the mainline and highway interchanges would reduce congestion on the highways, thereby making it less attractive for motorists to use local roads instead of the mainline (as discussed below in Section 1.3). The proposed project would also improve access to local community resources and businesses and reduce delays for emergency service vehicles.
3. **Encourage the use of HOV lanes and ridesharing:** The addition of HOV lane connectors between I-80 and I-680 and HOV lanes on I-680 would encourage the use of HOV lanes and thereby encourage ridesharing. Both I-80 and I-680 are part of the planned High Occupancy Vehicle (HOV) network system (MTC Transportation 2030 Plan for the San Francisco Bay Area and the MTC Transportation 2035 Plan). Extending limits of HOV lanes increases time savings for carpool lane users. Similarly express bus routes use HOV lanes to bypass traffic and provide faster more reliable service.
4. **Improve safety conditions:** The proposed project would reduce accidents and improve safety in the I-80, I-680, and SR 12 corridors by relieving congestion through highway widening and by reducing lane changes over short distances through off- and on-ramp modifications for interchanges and the relocation of the westbound truck scale.
5. **Accommodate current and future truck volumes on highways:** The proposed project would improve the westbound truck scales and access to them from I-80 and SR 12 East (SR 12E). These improvements would accommodate current and future truck volumes on the mainlines by reducing the number of trucks queuing to exit at the truck scales and by providing longer on-ramps to allow trucks to gain speed before entering traffic.
6. **Facilitate adequate inspection and enforcement at truck scales:** The new westbound truck scale facility would be designed to accommodate anticipated truck traffic growth until at least 2035, ensuring that all trucks are weighed and inspected according to California Highway Patrol (CHP) requirements.

1.2.2 Need for the Proposed Project

The I-80/I-680/SR 12 interchange is a point at which two major interstate freeways and one state highway converge. When it was constructed in the 1960s, the interchange was located in a relatively rural setting, surrounded by agricultural lands with mountains to the north and the vast Suisun Marsh to the south.

Since the 1960s, the San Francisco Bay Area and northern California region in general have experienced rapid population growth. The Bay Area's population has grown by more than 86% during this time; Solano County's population has more than tripled. This tremendous amount of growth has resulted in substantial increases in regional traffic passing through the interchange complex area, as well as substantial changes in the immediately surrounding land uses. Societal and economic trends toward an increased numbers of cars per household, decreased affordability

of housing in the Bay Area, increased distances that people are willing to travel to work, and increased amounts of discretionary time and income for recreation have also contributed to an increase in regional traffic.

Eastbound and westbound regional truck scales and inspection facilities are also located within the I-80/I-680/SR 12 interchange complex. The location of the truck scales within the interchange complex is ideal for monitoring and enforcing truck weight and safety requirements because it provides a single location that can monitor truck traffic in both the eastward and westward directions on I-80, I-680, and SR 12. However, the volume of trucks to be weighed and inspected has increased dramatically since the 1960s. Trucks must exit the freeway mainline, then re-enter it after inspection. The exiting and entering of a large number of trucks creates a severe weaving problem, which is made worse by the size, limited maneuverability, and lower speeds of large trucks. In response to this issue, STA, in cooperation with the Department and the CHP, conducted the *Cordelia Truck Scales Relocation Study* (Solano Transportation Authority 2005), which was completed in February 2005. The study evaluated alternatives for relocating and expanding the truck scale facilities and determined that the preferred location for the expanded truck scale facilities was within the existing interchange complex. The relocation of the I-80 eastbound Cordelia Truck Scales facility south of I-80 was addressed previously as a separate project with independent utility. Relocation and expansion of the westbound truck scale facility north of I-80 are included as part of the proposed project.

The specific deficiencies to be addressed by the proposed project are described below.

Capacity, Transportation Demand and Safety

Traffic Congestion

The I-80/I-680/SR 12 interchange is vital to the mobility of both the local area and the entire northern California region because it serves a multitude of destinations. It is a critical corridor for local and regional commute travel. During the past ten years, commute travel through the area has increased substantially in response to the growing Bay Area economy and expansion of employment centers; these changes have increased housing prices in the Bay Area, pushing residents farther east in search of affordable housing. By 2030, commute traffic is projected to constitute between 40% and 75% of the total number of vehicles traveling through the project area.

The current traffic volumes along segments of I-80 and I-680 in the project area create heavy traffic congestion. The most congested period occurs during the p.m. peak hour.

During the a.m. peak hour, a queue typically develops on westbound I-80 at the SR 12 West (SR 12W) connector. This occurs primarily because of trucks that are unable to keep up speed on the SR 12W grade toward Napa, resulting in slow traffic in the outside lane on I-80. This queue, combined with trucks entering from the truck scales and weaving vehicles headed to the Suisun Valley Road off-ramp or southbound I-680 connector, in turn results in slow-moving queues in the two outermost lanes. The congestion typically extends from the westbound off-ramp from SR 12W to SR 12E.

During the p.m. peak hour, a bottleneck develops on eastbound I-80 between the Travis Boulevard on-ramp and the Air Base Parkway off-ramp, resulting in queues that extend back to the I-80/West Texas Street interchange. The signalized intersections on SR 12E at Beck and Pennsylvania Avenues also cause some queuing on eastbound SR 12E during the p.m. peak period.

Currently, the following roadway segments within the project area experience traffic operating speeds of less than 35 miles per hour (mph) during the peak.

- Westbound I-80 (outside lane only) between the I-80/I-680 interchange and SR 12W during the a.m. peak period.
- Westbound I-80 (outside two lanes only) between SR 12E and the Suisun Valley Road off-ramp during the a.m. peak period.
- Northbound I-680 between Central Avenue and I-80 during the p.m. peak period.
- Eastbound I-80 between SR 12W and the Cordelia Truck Scales during the p.m. peak period.
- Eastbound I-80 between Beck Avenue and Travis Boulevard during the p.m. peak period.

The current average freeway travel speeds through the project area are 46 mph during the a.m. peak period and 33 mph during the p.m. peak period. These average speeds are well below the 59.7-mph threshold identified in the *Highway Capacity Manual* as the minimum operating speed associated with acceptable mainline freeway operations as indicated in the 2009 *Traffic Operation Report* prepared for this project. The 2009 *Traffic Operations Report* indicates that without the proposed project, travel speeds will drop to 42 mph during the a.m. peak period and 16 mph during the p.m. peak period by 2035. With the freeway system operating at or near capacity, the duration of congestion would increase from 1–2 hours in the a.m. peak period to 3–4 hours. In the p.m. peak period, the duration of congestion would increase from 1.5 to 2.5 hours to 6–7 hours.

Traffic Diverting to Local Roads

The congestion and delays experienced on the freeway system encourage some motorists to exit the freeways at interchanges within the I-80/I-680/SR 12 interchange complex and use local surface streets in the vicinity to bypass the congestion on the freeway mainlines. Most notable is the amount of traffic using surface streets to bypass the congestion experienced at the transition from northbound I-680 to eastbound I-80. This segment operates poorly during the p.m. peak period, particularly on Fridays, when long queues develop between the I-80/I-680 interchange and the I-680/Gold Hill Road interchange. This diversion will increase substantially by 2035 without the proposed project because freeway travel times system-wide are projected to increase by up to 300% in the p.m. peak hour.

The three primary diversion routes on surface streets are:

- Central Way to Pittman Road.
- Gold Hill Road to Ramsey Road to Cordelia Road.
- Gold Hill Road to Lopes Road to Cordelia Road.

It is estimated in the *Traffic Operations Report* that up to 1,450 vehicles in the p.m. peak hour currently divert from the northbound I-680 to eastbound I-80 connector to alternate routes and re-enter eastbound I-80 or eastbound SR 12 at locations east of the bottleneck location (Abernathy Road, Chadbourne Road, or Beck Avenue). This cut-through traffic creates a series of problems along the local street system:

- **Increased congestion and delays on local roads:** Several local street intersections are currently operating at unacceptable levels of service (as defined in the 2009 *Traffic Operations Report*) because of drivers choosing local roads over the freeway system, including Ramsey Road/Bridgeport Avenue, Lopes Road/I-680 ramp/I-80 ramp, Pittman Road/Central Way, and Rockville Road/Suisun Valley Road. Several other diversion routes are anticipated to be used by 2035 without the proposed project, resulting in unacceptable operations at several locations along local streets such as Business Center Drive and the planned North Connector roadway that will parallel I-80 along its north side.
- **Reduced accessibility for local properties:** The increased volume of traffic and congestion on local roadways results in reduced accessibility for adjacent properties. These properties include important community resources, such as Solano Community College, Angelo Rodriguez High School, and Fairfield Fire Department Station 5.

The surface streets in the vicinity of the interchange project area serve as transit and emergency vehicle routes for area neighborhoods. Fairfield and Suisun Transit operate ten routes, including Routes 7 (Cordelia Villages) and 3 (Outer Fairfield Loop), which use surface streets in the project vicinity. Traffic diverted to local roadways from I-680 and I-80 during peak commute times creates more traffic on these local streets which can affect emergency vehicle response times and impedes transit service for area residents and businesses.

Also, within the project area, several interchanges provide access to local businesses and land uses, including I-680/Gold Hill Road; I-80 at Red Top, Green Valley, Suisun Valley, and Abernathy Roads; and SR 12/Chadbourne Road. Currently, congestion on I-80 and I-680 results in queues on several on- and off-ramps that provide local access.

In the a.m. peak period, the following ramps are congested:

- Green Valley Road on-ramp to westbound I-80.
- Suisun Valley Road off-ramp from westbound I-80.

In the evening peak period, the following ramps are congested.

- Green Valley Road off-ramp from eastbound I-80.
- Central Way off-ramp from northbound I-680.
- Suisun Valley Road on- and off-ramps to and from eastbound I-80.
- Travis Boulevard on-ramp to eastbound I-80.
- Air Base Parkway off-ramp from eastbound I-80.

In the future, as congestion worsens on I-80 and I-680, additional on- and off-ramps are projected to have significant queues or delays, including the Red Top Road on- and off-ramps to and from eastbound I-80 and the Gold Hill Road on- and off-ramps to and from northbound I-680.

Truck-Related Congestion

The Cordelia Truck Scales (known formally as the Cordelia Commercial Vehicle Enforcement Facility), located on I-80 between Suisun Valley Road and SR 12E, were built in 1958. There are two truck scale facilities located within the I-80/I-680/SR 12 interchange complex: one serving the eastbound direction and one serving the westbound direction. Only the facility serving westbound truck traffic is addressed as part of the proposed project; the relocation and replacement of the eastbound facility was addressed in a previous project.

Although the truck scales are currently in an optimal location to capture virtually all truck traffic traveling on I-80, I-680, and SR 12, they also are located along the most congested freeway segment in Solano County. Trucks slowing to enter the short (approximately 500-foot) off-ramp to the westbound truck scales, trucks queuing onto the mainline from the short off-ramp to the facility, and trucks accelerating to enter I-80 on the short on-ramp from the scales exacerbate the congestion problem. The *I-80/I-680/I-780 Major Investment Study/Corridor Study, Segment 1: I-80/I-680/SR 12 Tier 2 Evaluation Report* (MIS) (Solano Transportation Authority 2004) states that the truck scales cause substantial congestion within this segment of I-80 because of truck weaving and backup on the mainline facility. The location of the current truck scale facilities also constrains the widening of I-80 in this segment, requiring that the facilities be relocated before additional improvements are pursued along this section of I-80.

Currently, congestion develops on I-80 during the commute peak hours because of trucks weaving with traffic streams to and from the I-680 connector ramps, the Suisun Valley Road/Green Valley Road ramps, and the SR 12E and SR 12W connector ramps. This congestion will continue to compound by 2035. The a.m. peak-hour congestion in the westbound direction extends nearly 4.5 miles, from the I-80/I-680 junction to West Texas Street. Heavy westbound on-ramp volumes from the I-80/SR 12E and Air Base Parkway interchanges also contribute to the congestion during the a.m. peak period.

Although the current combination of general vehicle traffic and truck volumes creates congestion, the I-80 mainline traffic volume is projected to increase by about 2% per year, to 270,000 daily vehicles in 2035. Along with the truck traffic increase described above, the traffic increases will exacerbate current congestion if the westbound truck scales are not expanded to accommodate higher truck volumes and moved to a location that provides for maximum weaving lengths and for braiding of critical traffic streams.

Unreliable Freight Transport

Currently, travel times for truck trips through the corridor are unpredictable because of the queues that develop in the vicinity of the truck scale facility and congestion that is caused partially by trucks maneuvering into and out of the truck scale facility, as described above. This unpredictability will increase as general vehicle and truck volumes grow, as described above.

Traffic Safety

The Department maintains statistics for all State highway facilities for three types of accident rates: the total accident rate, accidents involving fatalities and accidents involving fatalities or injuries. Within the project limits most freeway segments of I-80 experience a higher total accident rate and higher fatal or injury accident rate compared to the average statewide rate for similar types of facilities (Table 1-1). Half of the segments experience a higher than average fatal accident rate than the average statewide rate. Within the project limits of SR-12 East half of the sections experience higher than average total and fatal accident rates compared to the average statewide rate for similar types of facilities and most sections experience a higher than average accident rate for fatal plus injury accidents compared to the average statewide rate for similar facilities.

In reviewing the accident summary records 65% of the accidents occurred on I-80 during commute periods, with over 50% of the accidents being rear-end collisions. On SR 12 East over 50% of the accidents occurred during the commute periods, with over 60% of the accidents being rear-end collisions. On SR 12 West 70% of the accidents occurred during the commute periods, with 48% of the accidents being rear-end collisions. This combination of high accident rates during commute periods and a high percentage of rear-end type collisions is likely related to the congestion observed in these sections.

The effect of slow moving trucks decelerating into, or accelerating out of, the westbound truck scales combined with already congested lanes is described in Chapter 3.1.6-6, and in the 2009 *Traffic Operations Report*. Increased vehicle traffic, and in particular increased truck volumes, will exacerbate the accident rate based on the general correlation between increased volumes and congestion and increased accident rates.

The proposed improvements will reduce current and projected congestion as well as braid several congested weave movements. Therefore, it is anticipated that construction of the proposed improvements will result in accident rates dropping to, or below, the statewide average for similar facilities.

Table 1-1. Accident History, January 1, 2006 to December 31, 2008

Location	Post Mile	Number of Accidents			Actual Accident Rate (Accidents per Million Vehicle Miles)			Average Accident Rate (Accidents per Million Vehicle Miles)		
		Total	Fatal	F+I	Total	Fatal	F+I	Total	Fatal	F+I
Western Segment										
I-80—westerly project limit to Red Top Road undercrossing	10.89 to 11.39	88	1	30	1.36	0.015	0.46	0.81	0.008	0.25
I-80—Red Top Road undercrossing to SR 12W/I-80 connector structure	11.39 to 11.98	69	0	22	0.90	0.000	0.29	0.81	0.008	0.25
I-80—SR 12W/I-80 undercrossing to Green Valley Road overcrossing	11.98 to 12.74	155	0	41	1.20	0.000	0.32	0.93	0.009	0.29
I-80—Green Valley Road overcrossing to I-680/I-80 connector structure	12.74 to 13.09	121	1	30	1.73	0.014	0.43	1.04	0.010	0.32
I-680—0.5 mile south of Gold Hill Road overcrossing to I-80/I-680 connector	9.5 to 13.1	94	0	29	0.48	0.000	0.15	0.97	0.010	0.31
SR 12W—0.5 mile west of Red Top Road to SR 12W/I-80 connector	1.75 to 2.76	42	0	16	1.19	0.000	0.45	1.28	0.030	0.58
I-80—I-680/I-80 connector structure to Suisun Valley Road overcrossing	13.09 to 13.49	141	1	31	1.65	0.012	0.36	1.08	0.011	0.33
Central Segment										
I-80—Suisun Valley Road overcrossing to SR 12E/I-80 connector structure	13.49 to 15.81	472	0	137	0.89	0.000	0.26	1.05	0.011	0.33
I-80—SR 12E/I-80 connector structure to Abernathy Road overcrossing	15.81 to 16.17	62	1	23	0.86	0.014	0.32	1.04	0.010	0.32
Eastern Segment										
I-80—Abernathy Road overcrossing to West Texas Street undercrossing	16.17 to 17.20	173	2	39	0.84	0.010	0.19	1.03	0.010	0.32
SR 12E—SR 12E/I-80 connector to Chadbourne Road undercrossing	1.85 to 2.22	8	0	1	0.55	0.000	0.07	0.71	0.007	0.23
SR 12E—Chadbourne Road undercrossing to Beck Avenue	2.22 to 3.20	63	1	31	1.23	0.019	0.60	1.13	0.011	0.42
SR 12E—Beck Avenue to Pennsylvania Avenue	3.20 to 4.07	64	1	32	1.51	0.024	0.75	1.55	0.018	0.63
SR 12E—Pennsylvania Avenue to Civic Center Boulevard	4.07 to 4.74	70	0	33	1.99	0.000	0.94	1.11	0.011	0.39

Source: California Department of Transportation 2006–2008.

Notes: Shading denotes locations that exceed the statewide average accident rate.
F+I = fatal plus injury.

Source: California Department of Transportation 2004–2006.

Notes: Shading denotes locations that exceed the statewide average accident rate.
F+I = fatal plus injury.

Logical Termini and Independent Utility

In its memorandum titled *The Development of Logical Project Termini*, the Federal Highway Administration provides guidance that establishes the logical termini (end points) and independent utility of a particular proposed project (Federal Highway Administration November 5, 1993). The proposed project must satisfy an identified need (e.g., safety, rehabilitation, economic development, or capacity improvements) and should be considered in the context of the local area (e.g., socioeconomics, topography, future travel demand, and other infrastructure improvements in the area). The U.S. Department of Transportation (USDOT)/FHWA regulations identify three general principles used in demonstrating a proposed project's logical termini and independent utility (23 Code of Federal Regulations [CFR] 771.111[f]). To ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are evaluated fully, the proposed project must meet the following criteria.

- **Connect logical termini and be of sufficient length to address environmental matters on a broad scope:** In *The Development of Logical Project Termini*, logical termini for project development are defined as: 1) rational end points for a transportation improvement, and 2) rational end points for a review of the environmental impacts. The environmental impact review frequently covers a broader geographic area than the strict limits of the transportation improvements. In the past, the most common termini have been points of major traffic generation, especially intersecting roadways. This is because, in most cases, traffic generators determine the size and type of facility being proposed. Choosing a corridor of sufficient length to evaluate all impacts need not preclude staged construction. Construction may be "staged," or programmed for shorter sections or discrete construction elements as funding permits.
- **Have independent utility or significance:** A project that is independent must be usable and must be a reasonable expenditure, even if no additional transportation improvements in the area are made. A project is considered "independent" when it can function, or operate, on its own, without further construction of an adjoining segment. The project must serve a significant purpose even if a second, related project is not built.
- **Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements:** A project must not preclude the opportunity to consider alternatives for a future, related transportation improvement. Project termini must be selected to prevent a highway improvement from "forcing" further improvements that may have negative consequences not addressed in environmental studies.

The proposed project meets these criteria, as described here.

- **The project has logical termini and is of sufficient length to address environmental matters on a broad scope:** The alternatives (and their fundable first phases) of the proposed project involve comprehensive interchange improvements, freeway auxiliary lanes, and connecting ramps and collector-distributor roadways to address the congestion and safety issues associated with the I-80/I-680/SR 12 interchange complex. The end points, inclusive of all alternatives, for the proposed project are as follows.
  - **I-80:** approximately 6.2 miles from west of Red Top Road in the west to west of West Texas Street in the east.

- **I-680:** approximately 3.0 miles from Gold Hill Road in the south to I-80 in the north.
- **SR 12W:** approximately 1.1 miles from west of Red Top Road in the west to I-80 in the east.
- **SR 12E:** approximately 3.0 miles from I-80 in the west to the Fairfield Overhead (railroad tracks) in the east.

The transportation needs discussed above fall within these segments. These needs can be addressed without creating needs upstream or downstream. Because the project area encompasses a geographic area of sufficient size and scope for improvements, environmental issues are assessed at a comprehensive study area level related to each particular resource and discussed in Chapter 3.

- **Other improvements would not be needed for the proposed project to improve traffic conditions:** As described in the 2009 *Traffic Operations Report*, the proposed project (and the fundable first phase) would provide substantial improvement over no-project conditions by clearing bottlenecks within the I-80 portion of the project corridor during the a.m. peak hour and substantially reducing queues in the p.m. peak hour. The facilities at each end of the project corridor would be designed to Department standards to conform to main freeway lanes; the proposed project would clear all mainline sections of deficiencies experienced under no-project conditions in the a.m. peak hour, and would greatly improve conditions in the p.m. peak hour over the no build. Some congestion would remain in the p.m. peak hour because of queuing some 6 miles outside the project area. This congestion will be addressed by a separate project.
- **The project does not need to be physically connected or otherwise related to another project to function. Rather, it can function as a separate and independent project:** The fundable first phase of the proposed project is included in the Metropolitan Transportation Commission's (MTC's) 2009 *Transportation 2035 Plan for the San Francisco Bay Area* and STA's 2004 MIS, which identified a set of independent, implementable projects to improve traffic flow on all Solano County freeways, including the I-80/I-680/SR 12 interchange improvements. The analysis presented in this document looks beyond the direct project area to ensure that the proposed project will not result in impacts outside the project area. As a result, the scope of the proposed project includes end points that extend beyond the actual interchange complex; further, because the proposed improvements are of sufficient length and scope, implementing the proposed project would not substantially increase congestion or safety problems outside the defined project area beyond those that would occur under no-project conditions. Therefore, the proposed project would not force immediate transportation improvements on the remaining segments of the freeways outside the project footprint. The proposed project would not confine future improvements to the facilities to which it connects.

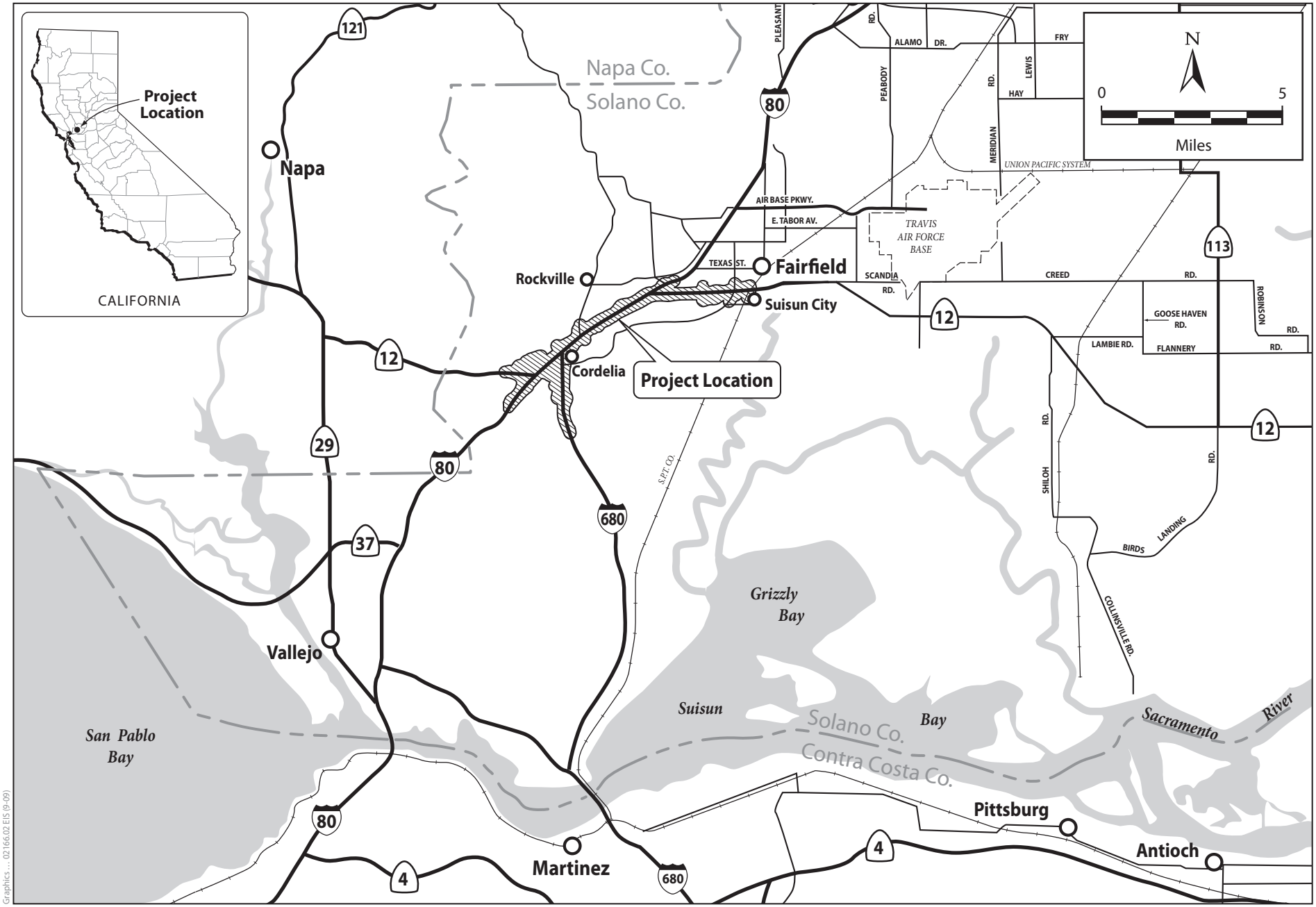

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Figure 1-1
Project Location

Chapter 2 Project Alternatives

2.1 Project Description

This chapter describes the proposed action and the design alternatives that were developed to achieve the project purpose and need while avoiding or minimizing environmental impacts. The alternatives are Alternative B and Alternative C; and the "No Build" Alternative. The purpose of the proposed project, described in detail in Chapter 1, is to reduce congestion through the I-80/I-680/SR 12 interchange complex, reduce the amount of cut-through traffic on local roads, accommodate current and future truck volumes on highways, facilitate adequate inspection and enforcement at the westbound truck scales, improve safety conditions, and encourage the use of high occupancy vehicle (HOV) lanes and ridesharing.

The proposed project is located along I-80, I-680, and SR 12 in Solano County, California (Figure 2-1). The proposed project involves improvements on an approximately 4.5-mile-long segment of I-80 between Red Top Road and Abernathy Road, an approximately 3.5-mile-long segment of I-680 between Gold Hill Road and I-80, an approximately 2.0-mile-long segment of SR 12W between 0.5 mile west of Red Top Road and I-80, and an approximately 2.5-mile-long segment of SR 12E between I-80 and Civic Center Boulevard. Within the limits of the project area, I-80 is a six- to ten-lane freeway, SR 12E is a divided four-lane highway, I-680 is a four-lane freeway, and SR 12W is currently an undivided two-lane highway. Because of the geographical extent of the proposed project, for the purpose of discussion in this study, the project area is divided into three segments: western, central, and eastern (Figure 2-1). The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/Suisun Valley Road interchange. The central segment begins at the I-80/Suisun Valley Road interchange and ends at the SR 12E/Chadbourne Road interchange. The eastern segment begins at the SR 12E/Chadbourne Road interchange and ends at the Fairfield overhead, where SR 12E crosses over the Union Pacific Railroad (UPRR) tracks just west of Suisun City.

2.2 Approach to Alternatives

2.2.1 Scope of Alternatives in this EIR/EIS

The I-80/I-680/SR 12 Interchange Project is a project by the Department and is subject to state and federal environmental review requirements, including the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). In developing the scope of this environmental impact report/environmental impact statement (EIR/EIS) and the project alternatives, three main factors were considered for the NEPA and CEQA analysis:

- Project alternatives need to meet the future traffic demand within the 20-year planning horizon.

- CEQA project alternatives must be comprehensive enough to allow for a Notice of Determination (NOD) under CEQA to be issued and project right-of-way to be acquired for the first phase and preserved for the full build alternative.
- A Phase 1 for each alternative that is "fundable" must be developed so that a Record of Decision (ROD) under NEPA can be issued.

Two alternatives, Alternative B and Alternative C, have been developed, as well as a fundable first phase for each respective alternative. Completing a CEQA analysis on the full build (albeit not fundable within MTC's RTP 2035 horizon) project alternative also facilitates environmental review of the project in the future, and allows STA and local agencies in the project area to proceed with planning activities and protecting land for future right-of-way needs. Local jurisdictions—in this case the City of Fairfield and Solano County—will be able to use the CEQA analysis in this EIR/EIS for planning purposes. The necessary right-of-way can be taken into account in local planning and development. This approach also provides analysis of a fully fundable first phase for each alternative that meets NEPA and FHWA criteria so that a Record of Decision can be issued while providing analysis and approval of the long-term interchange design for the proposed project.

2.2.2 Alternatives Analyzed in the EIR/EIS

In light of these requirements that are unique to CEQA and NEPA, two alternatives (Alternatives B and C) each with a corresponding fundable first phase (Alternative B, Phase 1, and Alternative C, Phase 1) are being evaluated in this EIR/EIS. Alternatives B and C are full build alternatives addressing comprehensive improvements to the I-80/I-680/SR 12 interchange complex; the widening of I-680 and I-80; and the relocation, upgrade, and expansion of the westbound truck scales on I-80. It is anticipated that at the end of the environmental review, the Department, as lead agency under CEQA, will adopt one of the alternatives so that STA and local agencies in the project area (as responsible agencies under CEQA) can proceed with planning activities and protecting land for future right-of-way needs. Additionally, the Department, as the lead agency under NEPA (assigned from FHWA under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users [SAFETEA-LU]), can proceed with issuing a Record of Decision on Alternative B, Phase 1 or Alternative C, Phase 1 . The Phase 1s of the alternatives in this EIR/EIS represent the fundable first phases of the alternatives. Phase 1 construction is expected to begin in 2012 and be completed by 2016.[1] There are no projected dates for construction of improvements beyond Phase 1 at this time. The total escalated cost for Alternative B, Phase 1 is estimated to be $580,000,000 and $690,000,000 for Alternative C, Phase 1. (Costs are more fully discussed in Section 2.4, and illustrated in Table 2-4.) All of the alternatives are discussed more completely below.

[1] This EIR/S uses the analysis year of 2015 to represent the construction-year for the project. The construction year analysis (2015) represents conditions and effects of the project alternatives upon completion of the fundable first phase (Phase 1s). Year 2015 was deemed appropriate for the construction-year because traffic forecasts and other environmental information is readily available for the year 2015 and the fundable first phase is anticipated to be complete in essentially the same time period (year 2016).

Both alternatives and both fundable first phases (Phase 1) meet the logical termini criteria and have independent utility. The intended project approvals are shown in Table 2-1.While the fundable first phases (Phase 1) for both alternatives would not address all project needs, they would reduce congestion and cut-through traffic on local roads, and improve safety conditions (Table 2-2). The fundable first phases (Phase 1) for both alternatives would be usable and function even if the full build project were not constructed.

Table 2-1. Required CEQA and NEPA Approvals

Agency	Permit, Approval, or Consultation	Status
California Department of Transportation (lead agency under CEQA)	Adopt Alternative B or Alternative C as the interchange alternative and adopt NOD under CEQA	To be adopted upon completion of final EIR/EIS
California Department of Transportation (lead agency under NEPA)	Adopt either Alternative B, Phase 1 or Alternative C, Phase 1 and adopt ROD under NEPA	To be adopted upon completion of final EIS
Solano Transportation Authority (responsible agency under CEQA)	Adopt Alternative B or Alternative C as the interchange and adopt NOD under CEQA	To be adopted after the Department adopts NOD for EIR
California Transportation Commission	Adopt Alternative B and Alternative C as the interchange alternative and adopt NOD under CEQA	To be adopted upon completion of the final EIR/S

Alternatives B and C differ primarily in the location of the I-80/I-680/SR 12W interchange improvements and the new interchanges on SR 12E. Under Alternative B, the I-80/I-680 and I-80/SR 12W interchanges would be improved in place, and a single interchange would be constructed on SR 12E to serve Beck and Pennsylvania Avenues. Under Alternative C, I-680 would be realigned to the west to connect with the I-80/SR 12W interchange, and two interchanges would be constructed on SR 12E to serve Beck and Pennsylvania Avenues.

Table 2-2. Phase 1 of Alternatives Addressing Key Project Purpose and Need

Underlying Need	Existing Conditions	No Project 2035	Alternative B 1 2035	Alternative C 1 2035
Congestion	**Duration of Congestion:** **A.M.:** 1–2 hours **P.M.:** 1.5–2.5 hours Accumulated vehicle hours of delay during a.m. peak hour is 1,140 hours and during p.m. peak hour is 1,885 hours	**Duration of Congestion:** Increase to **A.M.:** 3 hours **P.M.:** 6 hours Bottleneck on SR 12E reduces traffic on I-80; not at capacity during a.m. peak Bottleneck on SR 12E at Beck and Pennsylvania, with associated queuing on I-80 back to Green Valley Road in p.m. peak hours Bottleneck on WB I-80 due to breakdown of Suisun Valley Road /I-80 interchange	**Duration of Congestion:** Decrease to **A.M.:** 1.5 hours **P.M.:** 4.5 hours Nearly 100% reduction of vehicle hours of delay in a.m. and 47% in p.m. peak hours in 2035 Partial relief of bottlenecks on SR 12E during a.m. peak Improved operations on WB I-80 during a.m. peak hours Partial relief of p.m. bottleneck at SR 12E and improved operations on WB I-80 in p.m. peak hours No improvements to SR 12W, I-680/Red Top Road Interchange; I-80 Red Top Road Interchange	**Duration of Congestion:** Decrease to **A.M.:** 2.5 hours **P.M.:** 5 hours 18% reduction in vehicle hours of delay in 2035 5-20% reduction in travel times during a.m. peak hour; Increase in travel time over no-project in the EB direction (due , to some extent, to increased distances) and 70% decrease in WB direction during p.m. peak hours Improved operations for WB SR 12E from Main Street to Pennsylvania Ave during a.m. peak Queue on WB SR 12E during p.m. hours remains, but is reduced Reduced congestion on WB I-80 and SR 12W during a.m. peak hours Bottleneck at EB SR 12E would result in congestion on EB I-80 during p.m. peak hours
Reduce cut through traffic	Congestion on mainline causes freeway traffic to use local roads	Substantial increase in diversions to local roads; Gridlock conditions on freeway would force traffic onto local roads	Reduced congestion on mainline would reduce cut-through traffic to local roads	Reduced congestion on mainline would reduce cut-through traffic to local roads
Accommodate truck volumes	Substantial congestion from truck weaving and backup to mainline from facility queuing	Congestion to worsen significantly, causing worsened truck weaving conditions	Phase 1 of both alternatives will accommodate current and future truck volumes to the extent that they increase overall highway capacity and reduce overall congestion, but the westbound truck scales will not be constructed in either Phase 1 alternative.	
Facilitate truck inspection and enforcement	Westbound truck scales cause substantial congestion due to truck back up on the mainline and weaving	Westbound truck inspection and enforcement impaired due to substantially worsened conditions on mainline	Phase 1 of both alternatives will not address WB Truck Scales	
Improve safety	Fatal/injury accidents rates exceed statewide average	Reduced safety due to increased congestion and weaving	Reduced weaving and congestion would improve safety	Reduced weaving and congestion would improve safety
Encourage HOV use	No HOV lane connectors proposed	No HOV lane connectors proposed	Direct connectors between HOV lanes on I-80 and I-680 would allow for improved efficacy of HOV lanes	Direct connectors between HOV lanes on I-80 and I-680 would allow for improved efficacy of HOV lanes

2.3 Project Alternatives

This section describes the build alternatives. The alternatives are discussed first, with both common and unique features described in detail. The fundable first phases of the alternatives, subsets of the full build alternatives, have few common features and no discussion of such features is presented. The unique features of the Alternative B, Phase 1 and Alternative C, Phase 1 are described in detail.

2.3.1 Features Common to Alternatives (Alternatives B and C)

Western Segment

Mainline Improvements

Under both alternatives, I-80 and I-680 would be widened. I-80 would be widened to a minimum of ten lanes (four mixed-flow lanes and one HOV lane in each direction) and a maximum of 19 lanes east of the interchange with I-680 (Figures 2-2 and 2-3). I-680 would be widened to a minimum of six lanes (two mixed-flow lanes and one HOV lane in each direction) and a maximum of eight lanes (three mixed-flow lanes and one HOV lane in each direction).

Freeway-to-Freeway Interchange Improvements

Under both alternatives, the connector ramps between SR 12W (Jameson Canyon Road) and eastbound I-80 would be reconstructed as two-lane connectors on new alignments. These connectors would also be braided with the new ramps for the I-80/Green Valley Road interchange. The existing UPRR underpass at I-80 would be replaced 45 feet west of the existing structure.

Interchange Improvements

SR 12W/Red Top Road/Business Center Drive Interchange Improvements

A new diamond interchange would be constructed where the relocated Red Top Road and the extension of Business Center Drive meet at SR 12W. The existing Red Top Road undercrossing at I-80 would be widened to accommodate additional HOV lanes on I-80. The westbound on- and off-ramps would be realigned. Under both alternatives, traffic in both directions traveling between I-80 west of Red Top Road and SR 12W (Jameson Canyon Road) would use the realigned portion of Red Top Road.

I-680/Red Top Road Interchange Improvements

A new interchange would be constructed at I-680/Red Top Road, consisting of an extension of Red Top Road from Lopes Road to an overcrossing over I-680 connecting to on- and off-ramps. Southbound I-680 on- and off-ramps would be located within the existing curve at Lopes Road. Ramsey Road would be realigned to accommodate the northbound on- and off-ramps, but would not be connected to the interchange. There would be a loop on-ramp to northbound I-680. Access between the interchange and Ramsey Road would not be provided.

I-80/Green Valley Road Interchange Improvements

The I-80/Green Valley Road interchange would be reconstructed under both alternatives. The general configuration would be the same under each alternative, with diagonal westbound off- and on-ramps and a diagonal off-ramp and loop on-ramp in the eastbound direction. The addition of the diagonal westbound off-ramp would allow the removal of Neitzel Road, the frontage road connecting Suisun Valley Road to Green Valley Road.

Local Road Improvements

A new road would be constructed to connect the I-80/Red Top Road interchange with Business Center Drive. Between I-80 and SR 12W, Red Top Road would be realigned to cross over the UPRR tracks and SR 12W approximately 0.25 mile west of the existing SR 12W/Red Top Road intersection. From SR 12W to Business Center Drive, the new road would be an extension of Business Center Drive, originally proposed as part of the overall North Connector project. However, improvements to the interchange at SR 12W would necessitate a slight realignment of the extended road. Therefore, this improvement is included as a component in this proposed project. Construction of the new road would necessitate considerable excavation, and the excavated soils would be used as fill in the construction of embankment associated with the proposed project.

Bicycle and Pedestrian Facilities

Under both alternatives the existing I-80 bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection would be closed. After construction is complete, bicyclists and pedestrians would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR12W, the UPRR tracks and connect with Red Top and McGary Road.

Central Segment

Mainline Improvements

Both alternatives propose the same basic improvements for I-80 east of Dan Wilson Creek. There would be 19 lanes on I-80 in the central segment, dropping to 12 lanes at the I-80/SR 12E interchange. Single-span bridges would replace existing bridges over Dan Wilson and Suisun Creeks. Additionally, a new single-span bridge would be constructed over Suisun Creek to accommodate traffic from the westbound truck scales.

The westbound truck scales would be relocated east of the existing truck scales and east of Suisun Creek, and they would be upgraded and expanded. The truck scales' connectivity from SR 12E would be improved by a new direct connection from westbound SR 12E to the westbound truck scales. The ramp from I-80 to the truck scales would be braided with (pass under) the connector from SR 12E to westbound I-80.

Freeway-to-Freeway Interchange Improvements

The I-80/SR 12E interchange would be improved by grade-separating the I-80/SR 12E connector from the off-ramp from I-80 into the westbound truck scales. Westbound SR 12E would be widened to three lanes, and a separate exit into the westbound truck scales facility would be added. Access from westbound I-80 to eastbound SR 12E and from westbound SR 12E to

eastbound I-80 would continue to be provided by the I-80/Abernathy Road (Suisun Parkway) and SR 12E/Chadbourne Road interchanges.

Interchange Improvements

The I-80/Suisun Valley Road overcrossing would be rebuilt with four lanes under each alternative. The ramp configurations are different under each alternative. The I-80/Abernathy Road interchange would be improved. The existing westbound on- and off-ramps would be reconstructed to accommodate a loop on-ramp. This interchange would become the I-80/Suisun Parkway interchange with completion of the eastern segment of STA's North Connector project.

Eastern Segment

Mainline Improvements

SR 12E would be widened from four to six mixed-flow lanes (three in each direction), and the at-grade intersections of SR 12E with Beck and Pennsylvania Avenues would be replaced with overcrossings. To accommodate additional lanes on SR 12E, two box culverts containing Ledgewood Creek and a drainage canal (Alonzo Drain) west of Ledgewood Creek would be lengthened.

Interchange Improvements

The Chadbourne Road undercrossing at SR 12E would be widened on each side to accommodate additional SR 12E lanes.

Local Road Improvements

Beck Avenue would be reconstructed on a retaining wall–supported embankment between Meyer and Diamond Ways. Beck Avenue (between Meyer Way and SR 12E) would be widened by one through lane northbound.

Pennsylvania Avenue would be reconstructed on fill from 1,000 feet south of SR 12E to Illinois Street. Between Illinois Street and SR 12E, Pennsylvania Avenue would be widened by one through lane southbound. On the south side of SR 12E, Pennsylvania Avenue would be widened from one through lane in each direction to two through lanes in each direction.

A road located south of SR 12E (the southern frontage road—Meyer Way—under Alternative B, and the eastbound off-ramp to Pennsylvania Avenue under Alternative C) would intersect with Pennsylvania Avenue and then cross above the UPRR tracks, connecting to an extended West Street in Suisun City. West Street in Suisun City would be extended from Solano Street north to Spring Street. It would be on an embankment supported by retaining walls to intersect the roadway crossing over the UPRR tracks.

Utilities

As part of both alternatives, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield, Vallejo, and Benicia; the California Department of Water Resources; and the Suisun-Solano Water Authority. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area.

These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

Pacific Gas and Electric Company (PG&E)–owned electrical and gas lines within the project area will be affected by construction and operation. Towers for two 115–kilovolt (kV) electrical transmission lines that cross I-80 at the SR 12E interchange (Vaca-Dixon-Ignacio Line 1 and Line 2) and one tower on Line 1 in the vicinity of the extension of Red Top Road between I-80 and SR 12W would be relocated. Additionally, the Suisun Tap 115–kV line that crosses SR 12E at Pennsylvania Avenue would be relocated perpendicular to the highway. The Vaca-Suisun-Jameson tower line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. Under both alternatives, the line would be raised to accommodate the proposed project. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges would be modified or realigned, and it may be necessary to acquire new easements. Cable lines belonging to Comcast and located within local roads will be relocated where necessary. Qwest Communications has a fiber conduit mounted on the UPRR bridge that will be relocated along the new bridge.

Kinder Morgan operates a liquid fuel line that runs along the UPRR line near Suisun City and leaves the UPRR right-of-way along the proposed West Street realignment. The extension of West Street would necessitate relocation of this pipeline.

Telephone facilities within the project area include local, long-distance, and local service (i.e., TelNet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department’s procedures.

Bicycle and Pedestrian Facilities

As part of the proposed project, existing Fairfield Linear Park would be reconstructed north of the proposed project prior to project construction so that there would be no interruption of use. It would be realigned along the north side of the roadway in the vicinity of the Abernathy Road/I-80 interchange.

2.3.2 Unique Features of Alternative B

This section describes improvements under Alternative B that are different from those under Alternative C.

Western Segment

Mainline Improvements

Eastbound I-80 would be realigned to the south in the vicinity of Green Valley Creek to accommodate both the I-680 connectors and through I-80 HOV lanes in the median (Figure 2-2). The UPRR overhead on I-680 (where I-680 crosses the UPRR tracks) would be widened to accommodate the widening of the highway. Westbound I-80 would be realigned to the north in the vicinity of Green Valley Creek to accommodate both the I-680 connectors and through I-80 HOV lanes in the median.

Freeway-to-Freeway Interchange Improvements

Improvements to the I-80/SR 12W interchange would include widening existing facilities and braiding the ramps for SR 12W and Green Valley Road. A new, wider grade-separation structure between SR 12W and I-80 accommodating three mixed-flow lanes would be constructed to provide access from SR 12W to eastbound I-80 and southbound I-680. The connector would split after the bridge, with a two-lane branch providing access to eastbound I-80, and a one-lane branch providing access to southbound I-680 with an undercrossing at Lopes Road. The existing connector ramp from westbound I-80 to westbound SR 12W would be reconstructed to the north and would cross over the on-ramp to westbound I-80 from Green Valley Road.

The I-80/I-680 interchange would be reconstructed at the existing location. Access from northbound I-680 to eastbound I-80 would be via a grade separation crossing the eastbound lanes of I-80 and entering the highway between the mixed-flow and through HOV lanes on eastbound I-80. This connector would have three lanes—two mixed-flow and one HOV—with the mixed-flow lanes adding lanes to I-80 and the HOV lane merging with the through HOV lane on eastbound I-80. A two-lane connector from northbound I-680 would provide access to Suisun Valley Road and eastbound I-80 (for trucks accessing the truck scales). This connector would include single-span bridges over Green Valley Creek and the Suisun Valley Road off-ramp from I-80.

The two left mixed-flow lanes from westbound I-80 would transition to southbound I-680, together with a single HOV lane diverging from the through HOV lane of I-80. A separate right-side connector accommodating trucks leaving the westbound truck scales for southbound I-680 would be provided, crossing underneath the Suisun Valley Road overcrossing before crossing I-80. Access to this connector from Suisun Valley Road would also be provided.

The through HOV lanes on I-80 would pass through the I-680 interchange on their own alignment between the three-lane connectors described above.

Eastbound traffic on I-80 would access southbound I-680 via a slip ramp from the eastbound I-80 off-ramp to Green Valley Road, and then transition to the adjacent connector from westbound SR 12W to southbound I-680.

There would be no freeway-to-freeway connection from northbound I-680 to westbound I-80. This connection would be made via Lopes Road and the Green Valley Road interchange, from a new I-680 interchange to the existing I-80 interchange. The northbound I-680 to westbound I-80 movement is an out-of-direction movement and the traffic volumes for it are forecast to be at or

below 50 vehicles per hour during the peak hour in 2035. A number of alternatives were analyzed to provide a direct connection for this movement, but none were considered feasible due to constrained connection points, out-of-direction movements, high costs of right-of-way acquisition, and impacts, in addition to the low projected traffic demand. However, it should be noted that FHWA's preference is that interstate freeway to interstate freeway interchanges include all movements (connections). Should Alternative B be selected as the Preferred Alternative, the Department would need to request FHWA consideration to grant the Engineering and Operations Acceptability (EOA) on Alternative B without the movement.

Interchange Improvements

The I-80/Green Valley Road interchange would be reconstructed with a four-lane overcrossing connecting to existing Lopes Road on the south side of I-80. Access from Green Valley Road to southbound I-680 via the loop ramp connecting eastbound I-80 with I-680 would be removed (traffic would continue down Green Valley Road/Lopes Road to the proposed I-680/Red Top Road interchange). See the discussion of common features for a description of the proposed ramps.

The northbound I-680 exit to Central Way would be removed. Alternate traffic routes would be via the new off-ramp from I-680 to Red Top Road and then Lopes Road, or via the new ramp from I-680 to Suisun Valley Road.

The I-80/Suisun Valley Road interchange would be reconstructed, incorporating a loop on-ramp in the eastbound direction. The road would be realigned, and a replacement Suisun Valley Road overcrossing would be constructed over I-80. The right-side connector for trucks from westbound I-80 to southbound I-680 would also pass underneath the Suisun Valley Road overcrossing. In the westbound direction, ramps would be elevated to meet the overcrossing in a tight diamond configuration. The westbound on-ramp would provide access to I-80 and southbound I-680. The eastbound on-ramp would loop under the overcrossing, and the eastbound off-ramp would be accessible from eastbound I-80 and northbound I-680.

Local Road Improvements

Central Way would be realigned to accommodate the I-80/I-680 interchange. A new single-span bridge would be constructed on Central Way over Green Valley Creek to accommodate two lanes of traffic.

Eastern Segment

Interchange Improvements

Alternative B would construct a combined diamond interchange to serve both Beck and Pennsylvania Avenues, with one-way frontage road couplet between Beck and Pennsylvania Avenues. The existing SR 12E ramps at Jackson and Webster Streets (both in Fairfield) would remain.

The eastbound off-ramp from SR 12E to Beck Avenue would become a two-lane, one-way eastbound frontage road on the south side of the highway between Beck and Pennsylvania Avenues. There would be a two-lane, one-way westbound frontage road on the north side of the highway from Pennsylvania Avenue to Beck Avenue, where it would become the westbound on-

ramp to SR 12E. Midway between Beck and Pennsylvania Avenues, there would be a central overcrossing connecting the one-way frontage road couplet and extending south to intersect the Meyer Way extension. Eastbound traffic to Pennsylvania Avenue would exit SR 12E west of Beck Avenue and continue on the south-side eastbound frontage road, past the on-ramp to SR 12E to access Pennsylvania Avenue. Traffic from Pennsylvania Avenue would access westbound SR 12E via the north-side frontage road and the on-ramp at Beck Avenue. Westbound traffic on SR 12E would exit the highway west of Pennsylvania Avenue to the north-side westbound frontage road and continue onto Beck Avenue. Traffic from Pennsylvania Avenue would access eastbound SR 12E by heading west on the north-side westbound frontage road and then circling back to use the south-side eastbound on-ramp at the central overcrossing.

Separate bridges over Ledgewood Creek would be constructed to support the frontage road couplet.

Local Road Improvements

The intersection at Beck Avenue and Meyer Way would be widened, and Meyer Way would be extended east from Beck Avenue to Pennsylvania Avenue as a four-lane, two-way road with a new three-span bridge constructed over Ledgewood Creek. A “T” intersection on Meyer Way just east of Ledgewood Creek would provide access to the new central SR 12E interchange. Meyer Way would continue east through a new intersection with Pennsylvania Avenue and over the UPRR tracks to extend West Street in Suisun City.

2.3.3 Unique Features of Alternative C

This section describes improvements under Alternative C that are different from those under Alternative B.

Western Segment

Mainline Improvements

I-680 would be realigned to the west to connect with SR 12W. The former alignment of I-680 would likely be relinquished to the City of Fairfield and become Lopes Road (Figure 2-3). The existing bridges over Green Valley Creek on eastbound and westbound I-80 would be replaced with single-span structures, and a westbound diagonal off-ramp would be constructed (including a bridge crossing Green Valley Creek).

Freeway-to-Freeway Interchange Improvements

The I-80/I-680/SR 12W interchange would be consolidated in the location of the existing I-80/SR 12W interchange. Both I-680/SR 12W movements would be via direct connectors. These direct connectors would cross over I-80, the UPRR tracks, and Fulton Drive before merging/diverging with the connectors between I-680 and the eastern leg of I-80.

I-80/I-680 movements would be via freeway-to-freeway connectors. Motorist access from northbound I-680 to westbound I-80 would be served by a loop ramp off the I-680 to SR 12W connector. A separate direct connector structure would be provided for HOV traffic between the median of I-680 and the median of the eastern leg of I-80; the two directions would be separated

by a barrier. A two-lane mixed-flow connector ramp would cross over the UPRR tracks and local roads, and would allow traffic to transfer from northbound I-680 to eastbound I-80. Traffic from eastbound I-80 to southbound I-680 would use a new two-lane ramp. A connector would carry traffic from westbound I-80 to southbound I-680 over I-80, the UPRR tracks, Fulton Drive, and Lopes Road.

Interchange Improvements

Improvements to I-680 would include the construction of an interchange at Red Top Road. Green Valley Road would be realigned and connected with the former location of I-680 south of I-80 to provide access for local residents, as well as a north-south arterial. The I-80/Green Valley Road interchange would be reconstructed with a seven-lane overcrossing. The westbound on-ramp to I-80 and eastbound off-ramp from I-80 would be braided with the ramps between I-80 and SR 12W and therefore would not provide access to and from SR 12W (this connection is provided by Business Center Drive connecting to the proposed SR 12W/Red Top Road interchange).

The I-80/Suisun Valley Road interchange would be improved, incorporating a loop off-ramp and diagonal on-ramp in the westbound direction. Suisun Valley Road would be realigned, and the overcrossing at I-80 would be reconstructed. The eastbound on- and off-ramps would be reconstructed in a tight diamond configuration.

Local Road Improvements

An undercrossing would be constructed at Lopes Road and I-680. Lopes Road would be realigned to the west between Jameson Creek and Red Top Road. Fermi Drive would be realigned to intersect Lopes Road west of I-680. Between the UPRR overhead and the Green Valley Road overcrossing of I-80, Auto Plaza Court would be extended to provide access to Old Lopes Road/Green Valley Road and Central Way. There would be new at-grade intersections on Auto Plaza Court with Old Green Valley Road, Lopes Road (formerly the I-680 embankment), and Central Way. Old Lopes Road would have a cul-de-sac between Fulton Drive and Jameson Creek.

Eastern Segment

Interchange Improvements

Alternative C would construct separate interchanges at Beck and Pennsylvania Avenues. The existing SR 12E ramps between Jackson and Webster Streets (both in Fairfield) would be removed.

A tight diamond interchange, including an overcrossing, would be constructed at Beck Avenue. Elevated two-lane on- and off-ramps would intersect the overcrossing of SR 12E. The Ledgewood Creek box culvert would be lengthened to accommodate the westbound off-ramp, eastbound on-ramp, and additional lanes on SR 12E.

The interchange at Pennsylvania Avenue would include an overcrossing and loop on-ramps in both directions. The westbound off-ramp would provide access to northbound and southbound Pennsylvania Avenue.

Local Road Improvements

Jackson Street would terminate at Illinois Street. Webster Street would continue south under SR 12E, connecting to the proposed south-side frontage road west of the proposed UPRR crossing. A two-way street would connect to Pennsylvania Avenue at the eastbound ramp terminal, providing access to Suisun City (as under Alternative B) and also to an extension of Webster Street.

Utilities

In addition to the utility modifications and relocations common to both alternatives, under Alternative C, further modifications would be made to the Vaca-Suisun-Jameson tower line that runs parallel to and southeast of I-80. To accommodate the proposed connectors, one tower would be relocated, two to six existing truss towers would be replaced with steel-tube towers, and the line height would be raised by 90 feet (twice the height of the existing line) between Dittmer Road and the Jameson substation on Watt Court.

The existing power line south of Fulton Drive would be raised by 40 feet to accommodate the height of I-680 as it rises to pass over Fulton Drive. Two existing utility towers will be replaced by four towers.

PG&E gas transmission facilities would need to be relocated in the vicinity of the I-80/I-680 interchange and at Green Valley and Lopes Roads. It may be necessary to acquire a parcel adjacent to I-680, just south of the I-80/I-680 interchange, to house a gas transmission facility. The Vaca-Dixon 115–kV line that crosses I-680 between Fermi and Fulton Drives tower would be relocated and potentially raised by 40 feet.

2.3.4 Unique Features of Alternative B, Phase 1

The discussion below describes a subset of Alternative B that represents a fundable first phase with logical termini and independent utility; it is being analyzed in this document as the fundable first phase of Alternative B for the purposes of federal approval. It includes improvements to the I-80/Green Valley Road interchange, the I-80/I-680 interchange, and the I-80/Suisun Valley Road interchange, as well as improvements to the SR 12E/Beck Avenue interchange (Figure 2-4).

Western Segment

Mainline Improvements

Eastbound I-80 would be widened from six lanes to eight lanes between I-680 and the eastbound truck scales off-ramp, where it would conform to the existing lane configuration after construction of the I-80 Eastbound Cordelia Truck Scales project. Westbound I-80 would be widened from six lanes to seven lanes between the existing westbound truck scales and I-680. New single-span bridges over Green Valley Creek would replace the current bridges to accommodate the realignment of the through lanes on I-80 and the separate HOV lane in the new interchange with I-680. The existing bridge for I-80 at Dan Wilson Creek would be widened on both sides to accommodate the additional through lanes between I-680 and the truck scales.

A third mixed-flow lane would be added to northbound I-680 beginning about 1,000 feet south of the Cordelia overhead, and an HOV lane would be added just north of the Cordelia overhead. Southbound I-680 would be widened per the full build Alternative B in the vicinity of the I-80/I-680 interchange, continuing with four lanes (three mixed-flow and one HOV) from just after the merge from the outside truck connector to around the future I-80/Red Top Road interchange. From that point to just north of the I-680/Gold Hill Road interchange, there will be three mixed-flow lanes, with the third lane dropping at the Gold Hill Road exit. The southbound HOV designation will drop within the limits of the I-80/Red Top Road interchange.

Freeway-to-Freeway Interchange Improvements

Improvements to the I-80/I-680 interchange would include all four connectors between I-680 and I-80 to the east described in Alternative B, and would provide for direct connection between HOV facilities on I-80 to the east and I-680 (see the detailed discussion of this interchange in the Alternative B discussion above). The improvements include the direct ramp from northbound I-680 to Suisun Valley Road. The outside truck connector from westbound I-80 to southbound I-680 would exit from I-80 just west of the Suisun Valley Road overcrossing in this phase, forcing the postponement of the direct connection from Suisun Valley Road to westbound I-80 and southbound I-680 until the full build. (This movement will continue to use a relocated Neitzel Road to Green Valley Road to I-680 or westbound I-80.)

The ramp from northbound I-680 to westbound I-80 would be removed, consistent with improvements for Alternative B. Traffic from northbound I-680 to westbound I-80 and SR 12W would exit on the Suisun Valley Road off-ramp, cross over the freeway on the overcrossing, take Neitzel Road to Business Center Drive to Green Valley Road, and use the westbound Green Valley Road on-ramp.

Interchange Improvements

The Green Valley Road overcrossing at I-80 would be replaced to accommodate the proposed realignment and widening of I-80. The overcrossing would consist of the four western lanes of the seven-lane structure described in the full build alternative. Green Valley Road approaching from the north would be widened. The on- and off-ramps would be realigned in Phase 1 and changed in later phases, as would the Neitzel Road off-ramp at Suisun Valley Road.

Improvements to the I-80/Suisun Valley Road interchange would include reconstructing the Suisun Valley Road interchange and realigning the eastbound on- and off-ramps. Eastbound on- and off-ramps would be the same as under the full build Alternative B, incorporating a loop on-ramp. The westbound off-ramp and access to Neitzel Road (the westbound frontage road) would be realigned slightly to accommodate the widening of westbound I-80 and the Suisun Valley Road overcrossing. This realignment would be temporary, and Neitzel Road would be removed under the full build Alternative B when a new westbound I-80 off-ramp is built to Green Valley Road.

Eastern Segment

Interchange Improvements

A tight diamond interchange with an overcrossing would be constructed at Beck Avenue on SR 12E. Improvements to the associated on- and off-ramps would include lengthening the existing culverts carrying Ledgewood Creek and the Alonzo Drain.

Local Road Improvements

The intersections at Beck Avenue/Diamond Way (north of the highway) and Beck Avenue/Courage Drive (south of the highway) would be improved.

Utilities

As part of the proposed project, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield and Vallejo. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

PG&E-owned electrical and gas lines within the project area will be affected by construction and operation. The Vaca-Suisun-Jameson (115-kV) power line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. The line would be raised by 25 feet to accommodate the project. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges, would be modified or realigned, and new easements will likely need to be acquired. Although the specific plan lines of the new easements have not been established, they are expected to be within the proposed project limits. Cable lines belonging to Comcast and located within local roads will be relocated where necessary.

Telephone facilities within the project area include local, long–distance, and local services (i.e., telnet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long-distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department’s procedures.

2.3.5 Unique Features of Alternative C, Phase 1

The discussion below describes a subset of Alternative C that represents a fundable phase with logical termini and independent utility; it is being analyzed in this document as the fundable first phase of Alternative C for the purposes of federal approval. It would improve the connections

from westbound I-80 to I-680 and SR 12W; directly connect northbound I-680 and SR 12W; connect the I-80/Red Top Road interchange with Business Center Drive; and construct or improve interchanges at SR 12W/Red Top Road, I-80/Red Top Road, I-80/Green Valley Road, and I-680/Red Top Road (Figure 2-5).

Western Segment

Mainline Improvements

Westbound I-80 would be realigned between a point west of Suisun Valley Road to just west of the SR 12W/I-680 interchange by constructing a new six-lane highway alignment north of the existing highway alignment. The realignment would create space in the median for direct HOV connector ramps to be built between I-80 and I-680, as well as future widening of the eastbound lanes. The realigned westbound I-80 would have six lanes, including an HOV lane and an auxiliary lane matching the existing cross section at the existing Suisun Valley Road overcrossing. Immediately west of the Suisun Valley Road overcrossing, a seventh lane would be added, as well as an eighth lane with the on-ramp from Suisun Valley Road. A ninth lane would be added immediately west of the Green Valley Road off-ramp. The four right lanes would exit from I-80 to connect to SR 12W and I-680. There would be a left exit from the HOV lane to an HOV connector to I-680. A wider, single-span bridge would replace the existing bridge over Green Valley Creek. The existing loop on-ramp from northbound I-680 to westbound I-80 would be removed. The connector from northbound I-680 to SR 12W would be constructed to replace this movement. The segment of I-680 north of Red Top Road would be realigned.

Freeway-to-Freeway Interchange Improvements

New connector ramps from westbound I-80 to westbound SR 12W and southbound I-680 would be constructed, similar to those described under Alternative C. The proposed westbound I-80 to southbound I-680 connector would cross over I-80, the eastbound SR 12W connector to eastbound I-80, the UPRR tracks, Fulton Drive, and the realigned Lopes Road. Access from westbound I-80 to westbound SR 12W would be braided with (cross over) the Green Valley Road on-ramp to westbound I-80. A separate direct connector structure would be built to carry the HOV lanes in both directions between I-680 and I-80 east of the I-80/I-680/SR 12 interchange. Direct connectors between northbound I-680 and westbound I-80 and eastbound I-80 and southbound I-680 would be constructed similar to those described under Alternative C. Motorist access from northbound I-680 to westbound I-80 would be served by a loop ramp off the I-680 to SR 12W connector. Traffic from eastbound I-80 to southbound I-680 would use a new two-lane ramp.

The direct connection from SR 12W to southbound I-680 would not be built as part of Phase 1; traffic would use Red Top Road from the new SR 12W/Red Top Road interchange to the new I-680/Red Top Road interchange. Motorists traveling eastbound on SR 12W who wish to go to southbound I-680 would exit SR 12W at the proposed SR 12W/Red Top Road interchange and continue along Red Top Road to an on-ramp at the new I-680/Red Top Road interchange.

Interchange Improvements

The I-80/Green Valley Road interchange would have a tight diamond configuration westbound and a partial cloverleaf (loop on-ramp) configuration eastbound. The same interchange and

overcrossing would provide access to the existing alignment of I-680 (which would be relinquished as a local arterial, as described earlier in this chapter).

The connection from eastbound SR 12W and eastbound I-80 to southbound I-680 would be removed, with traffic expected to use Red Top Road from the new SR 12W/Red Top Road interchange to the new I-680/Red Top Road interchange. A new on-ramp at Green Valley Road would provide access to the new westbound I-80 alignment.

The I-80/Red Top Road interchange would be partially reconstructed to have a westbound exit loop. Red Top Road would be realigned to connect this interchange on I-80 with a new SR 12W/Red Top Road interchange, as under Alternative C. The I-680/Red Top Road interchange would be constructed as under Alternative C.

Local Road Improvements

During the initial construction of Phase 1, a bicycle path would be relocated along the western boundary of the business park at the west end of the existing Business Center Drive parking lot, and along the north side of the new connector from westbound I-80 to westbound SR 12W to maintain access between the existing bicycle path along Jameson Canyon Road (SR 12W) and Business Center Drive. This path would be removed when Business Center Drive is extended to the SR 12W/Red Top Road interchange because bicyclists would be able to utilize the extension of Business Center Drive to reach Red Top Road and points west. The existing Green Valley Road overcrossing at I-80 would be removed, and a new one would be constructed on a different alignment. The overcrossing would consist of the western four lanes of the seven-lane structure described in the full build alternative.

Eastern Segment

Mainline Improvements

A third lane would be added to eastbound SR 12E. This lane would connect (start) at the eastbound SR 12E/Chadbourne Road interchange and would extend east, connecting and ending at the eastbound SR 12E/Webster Street exit.

Utilities

As part of the proposed project, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the Cities of Fairfield, Vallejo, and Benicia. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the Cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

PG&E-owned electrical and gas lines within the project area will be affected by construction and operation. One 115-kV electrical transmission line that crosses I-680 between Fermi and Fulton Drives would be realigned, and towers would be relocated. The Vaca-Suisun-Jameson tower line crosses I-680 and Green Valley Road near the eastbound I-80 ramps intersection. The line would be raised by 45 feet to accommodate the project. Additionally, to accommodate the proposed connectors, one tower would be relocated and the line height raised by 90 feet between Dittmer

Road and the Jameson substation on Watt Court. Several other overhead distribution or transmission lines would be realigned, as would a 12-kV underground line that crosses I-80 just east of the existing Green Valley Road overcrossing. Additionally, PG&E gas lines, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges, would be modified or realigned, and it may be necessary to acquire new easements.

PG&E gas transmission facilities would need to be relocated in the vicinity of the I-80/I-680 interchange and at Green Valley and Lopes Roads. It may be necessary to acquire a parcel adjacent to I-680, just south of the I-80/I-680 interchange, to house a gas transmission valve lot.

Cable lines belonging to Comcast and located within local roads will be relocated where necessary. Qwest Communications has a fiber conduit mounted on the UPRR bridge that will be relocated along the new bridge.

Telephone facilities within the project area include local, long–distance, and local services (i.e., TelNet) lines owned by AT&T. These include both overhead and underground lines and conduit. These facilities will be relocated where they conflict with the proposed project. All relocations of the long distance and TelNet lines will be handled through AT&T California.

Impacts associated with the various utility relocations are addressed in this EIR/EIS pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design in accordance with the Department's procedures.

2.3.6 Transportation System Management and Transportation Demand Management Alternatives

Transportation System Management

Transportation System Management (TSM) strategies focus on improving the efficiency of existing facilities without increasing the number of through lanes. Options such as ramp metering, auxiliary lanes, and reversible lanes are generally implemented under TSM and help reduce traffic congestion. TSM strategies are a critical component of STA's Comprehensive Transportation Plan (CTP) as part of the Arterials, Highways, and Freeways Element. The CTP integrates TSM strategies into a comprehensive approach to address transportation needs within the County over the next 20 years. Some TSM strategies, such as the Interstate 80 High-Occupancy Vehicle Lane Project, which consisted of high-occupancy lanes, auxiliary lanes, and ramp metering, are identified in the CTP as standalone projects. Other TSM strategies are identified as critical components of larger improvements. For example, the I-80/I-680/SR 12 Interchange Project includes specific TSM measures such as direct ramps to HOV lanes and auxiliary lanes.

Transportation Demand Management

STA is implementing numerous Transportation Demand Management (TDM) strategies as part of its ongoing operations and programs to reduce the number of vehicle trips and vehicle miles travelled and increase vehicle occupancy in its service area. TDM strategies are critical components of STA's CTP as part of the Transit and Alternative Modes Elements. The CTP

integrates TDM strategies into a comprehensive approach to address the transportation needs within the County over the next 20 years.

One of STA's primary goals is improving mass transit systems (bus and train) and providing incentives for carpooling and using alternate forms of transportation, and many such programs are currently offered by STA through its Solano Napa Commuter Information (SNCI) program. The SNCI program focuses on encouraging the use of non-drive alone travel modes to maximize roadway efficiencies, improve air quality, present mobility options, and address climate change issues. The program includes nine major elements: Customer Service, Employer Program; Vanpool Program; Incentives, Emergency Ride Home, SNCI Awareness Campaign; Bike to Work Campaign; General Marketing, and Partnerships (Solano Transportation Authority 2009).

Additionally, the following TDM programs and plans are currently being implemented by STA, Solano County, and communities within the project area to reduce vehicle trips and promote alternative modes of transportation:

- Intercity Express Bus Plan.
- SR 12 Transit Corridor Plan.
- Employer programs (e.g., Emergency Ride Home, vanpool support, bike-to-work week, Solano Commute Challenge, commuter tax benefits).
- Rideshare measures (HOV lanes, park-and-ride lots, rideshare matching).
- Alternative Modes Element in the *Solano County Comprehensive Transportation Plan.*
- *Community-Based Transportation Plan for Cordelia/Fairfield/Suisun Project Area.*
- *Solano Countywide Bicycle Plan.*

No-Project (No-Build) Alternative

NEPA, CEQA, and the State CEQA Guidelines require that an EIS and EIR include an evaluation of a no-project/no-build alternative. The purpose of including a no-project/no-build alternative is to allow the lead agencies to consider the effects of not implementing the proposed project. Under the No-Project Alternative for the proposed project, the facilities associated with the interchange project (freeway lanes, interchanges, ramps, westbound truck scales, and HOV lane direct connectors from I-80 to I-680) would not be constructed, and impacts that would occur from project construction would be avoided. However, traffic congestion in the project vicinity would deteriorate substantially, extending the peak periods up to six hours forcing traffic onto local roads. These effects would occur during the 3+ hour a.m. and p.m. peak commute periods, for both the immediate near-term, construction year (2015) and design year (2035). Worsened congestion will further exacerbate congestion from truck weaving and backup to the freeway mainlines from the truck scale facilities in the westbound direction, and truck inspection and enforcement would be impaired because of substantially deteriorated conditions on the mainline in both directions. Fatal/injury accidents in the project limits, which already exceed the statewide average, will likely worsen from the increased congestion.

2.4 Comparison of Build Alternatives

The primary difference between the build alternatives is that Alternative B would improve the I-80/I-680 and I-80/SR 12W interchanges in their current locations. Alternative C would relocate I-680 north of Red Top Road to combine the interchanges into a single interchange in the current location of the I-80/SR 12W interchange. Though the configurations of the Green Valley and Suisun Valley interchanges would be different, they would both provide equal access. On SR 12E, the alternatives would take different approaches to providing access to the highway. Under Alternative B, there would be a single, central interchange with access provided by frontage roads. Under Alternative C, there would be interchanges at both Beck and Pennsylvania Avenues. While both alternatives would provide access to Suisun City via an overcrossing over the Union Pacific Railroad, access to that overpass under Alternative B would be from an extension of Myer Lane.

Overall, Alternative C has a slightly smaller footprint than that of Alternative B, allowing it to have a lesser impact on agricultural land than Alternative B would have, and to result in the acquisition of less acreage (though more parcels) than Alternative B would require. Impacts on hydrology and floodplain, water quality, geology, air quality, traffic, and visual resources are essentially the same for both alternatives. The fundable first phases of the alternatives would have a lesser impact on these resources.

Both alternatives would result in one residential relocation, though Alternative B would result in seven more business relocations than Alternative C. Alternative C (and Alternative C, Phase 1) would result in the acquisition of a small portion of Rodriguez High School. More sensitive receptors would experience increased noise levels as a result of Alternative B, than would as a result of Alternative C.

Generally, both alternatives would result in similar impacts on most biological resources. Alternative B would result in more California red-legged frog upland and critically habitat being temporarily affected, but the permanent impact acreages would be slightly higher under Alternative C. Alternative B would have a greater impact on Swainson’s hawk habitat, and on seasonal and alkalai marsh. Alternative C would have a greater impact on pappose tarplant and Contra Costa goldfields. Alternative C would affect slightly more acreage of seasonal wetlands and perennial drainage, while Alternative B would affect slightly more jurisdictional seasonal drainages.

The STA Board of Directors formally identified the Locally Preferred Alternative as Alternative C (and the fundable first phase) on July 14, 2010.

Both full build alternatives meet the project purpose and need in its entirety. The initial phases of the alternatives do not address inspection and enforcement of truck traffic at the truck scales. However, both fundable first phases meet the remaining purpose and need elements, thought not to the degree that would be realized under the full build alternatives. The fundable first phases of the alternatives will reduce congestion, reduce cut through traffic, accommodate current and future truck volumes, improve safety, and encourage HOV use. An analysis of the impacts and consideration of comments from agencies and the public will be considered in selecting a preferred alternative.

After the public circulation period, all comments will be considered, and the preferred alternative will be selected by the Project Development Team, documented in the Project Report, and then approved by the Department. In accordance with CEQA, the Department will certify that the proposed project complies with CEQA, prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations for impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. The Department will then file a Notice of Determination with the State Clearinghouse that will identify whether the proposed project will have significant impacts, if mitigation measures were included as conditions of project approval, that findings were made, and that a Statement of Overriding Considerations was adopted. With respect to NEPA, the Department, as assigned by FHWA, will document and explain its decision regarding the selected alternative, project impacts, and mitigation measures in a Record of Decision in accordance with NEPA.

2.5 Alternatives Considered but Eliminated from Further Discussion

2.5.1 Overview of Alternatives Screening Process

The Department, in working with FHWA and STA, developed a preliminary set of potential alternatives that could meet the project purpose and need. Alternative screening was used to determine a set of reasonable and feasible alternatives to be studied in detail in this EIR/EIS. Information used in the screening process was based on preliminary studies and evaluations, including traffic forecast modeling, field studies and mapping, literature and data reviews, and discussions with federal, state, and local agency officials.

2.5.2 First-Level Screening and Alternatives Eliminated

Through an initial screening evaluation, 12 different interchange alternatives and variations were developed and evaluated. These original 12 alternatives were reduced to four feasible alternatives through a first-level screening process. The first-level screening process involved weighing the initial alternatives qualitatively for fatal flaws against critical criteria, including ability to meet the proposed project's defined purpose and need, potential for unavoidable environmental impacts, overall project cost, and ability to provide adequate traffic operation improvements.

Several of the initial alternatives included elimination of various interchanges with local roadways. However, traffic analysis of these alternatives showed that elimination of even one local road interchange within the greater project limits would push so much local traffic to an adjacent local interchange that the affected interchange would then operate at level of service (LOS) F, even with modifications to improve traffic flow and capacity. An LOS F for any interchange was considered an unacceptable result of implementing an alternative.

Alternatives that included I-680 connecting with I-80 on the outside (i.e. right-side connections) at the current I-80/I-680 interchange location were determined to be operationally unacceptable

because there are too many vehicles using the outside (right) lanes of I-80 entering from SR 12W and SR 12E. Because the I-680 ramps are connecting with I-80 between them, there is not enough distance for the incoming traffic from SR 12W and SR 12E to shift to median lanes, and the weaves with I-680 traffic become problematic.

Additionally, transit-oriented and non-traditional alternatives were considered in the initial set of alternatives. These alternatives, as stand-alone alternatives, were determined insufficient to meet the project purpose and need. These alternatives, and the reasons for eliminating them as stand-alone alternatives, are described below.

Eliminate I-80/Green Valley Road Interchange Alternative

This alternative would have involved removing the I-80/Green Valley Road interchange and routing traffic through Suisun Valley Road, two proposed Red Top Road interchanges (SR 12W, I-680), and the existing Red Top Road interchange on I-80. This alternative was removed from further consideration because it would not sufficiently address traffic operations.

Combine I-80/Green Valley Road and I-80/Suisun Valley Road Interchanges Alternative

This alternative would have combined the I-80/Green Valley Road and I-80/Suisun Valley Road interchanges as a couplet by eliminating the ramps between them and routing traffic through frontage roads to the adjacent interchange. This alternative was removed from further consideration because it would not sufficiently address traffic operations.

Eliminate I-80/Suisun Valley Road Interchanges Alternative

This alternative would have removed the I-80/Suisun Valley Road interchange and routed traffic through Green Valley Road and two of the three proposed Red Top Road interchanges (SR 12, I-680). This alternative was removed from further consideration because it would not sufficiently address traffic operations.

South Parkway—Four-Lane Arterial Alternative

This alternative would have involved widening Cordelia Road to a four-lane facility to connect I-680 and SR 12E. This alternative was rejected because of the proposed use of the local road network for regional trips and because it would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974).

South Parkway—Expressway/Freeway Alternative

This alternative proposed a parallel arterial south of I-80 intended to connect I-680 and SR 12E. This alternative was rejected because it would place a transportation facility within the Primary Suisun Marsh, which is prohibited by state law (the Suisun Marsh Preservation Act of 1974).

South Parkway—Frontage Alignment Alternative

This alternative would have constructed a new alignment parallel to the existing freeways east of I-680 and south of I-80, to connect I-680 and SR 12E. This alternative was rejected because of impacts on historic resources and its limited ability to improve traffic operations, which provided minimal incentive for commuters to travel an arterial with multiple signals instead of a freeway segment of the same length.

Transportation System Management (TSM) Alternative

The objective of TSM is to reduce congestion using the existing infrastructure. A stand-alone TSM alternative would typically involve construction of auxiliary lanes, reversible HOV lanes, and ramp metering facilities to improve the efficiency of the existing facilities without increasing the number of through lanes on the freeways. However, HOV lanes, auxiliary lanes, and ramp metering are already in operation or planned in the project area under other, separate projects (i.e., I-80 HOV lanes, auxiliary lanes associated with I-80 improvements through Fairfield) which are the primary TSM strategies for maximizing efficiency of the existing facilities. In addition, the project alternatives include specific TSM components such as construction of HOV lanes on I-680 within the project limits and HOV direct connector ramps between I-680 and I-80. As a result, TSM measures would not be effective as a stand-alone alternative to meet the purpose and need to reduce congestion and improve safety within the corridor. STA also will continue to implement TSM strategies throughout the County guided by plans and programs contained in the CTP regardless of the proposed project. Based on this assessment, the TSM alternative was withdrawn from further consideration.

Transportation Demand Management (TDM) Alternative

A stand-alone TDM alternative would consist of programs and projects to improve mass transit systems (i.e., bus and train) by providing incentives for using alternate forms of transportation to reduce the number of vehicle trips and reduce vehicle miles traveled within the project area. As discussed in Section 2.3.6, STA is already implementing numerous TDM strategies as part of its ongoing programs and projects. TDM strategies are critical components of STA's CTP, as part of both the Transit and Alternative Modes Elements. The CTP integrates TDM strategies into a comprehensive approach to address transportation needs within the County over the next 20 years.

STA and its member and partner agencies currently operate or are planning rail, ferry and intercity bus systems that serve the project area.

The Capitol Corridor intercity rail service which is operated by the Capitol Corridor Joint Powers Authority (CCJPA) provides train service paralleling the I-80 corridor between Sacramento and Oakland/San Francisco and is the third busiest intercity passenger rail service in the nation with a 12-month ridership of 1,723,422 between March 2008 and February 2009. The Capitol Corridor currently operates 32 weekday trains between Sacramento and Oakland, and 14 daily trains between Oakland and San Jose. The CCJPA has a Capital Improvement Program intended to increase reliability and capacity, upgrade track infrastructure, build or renovate stations, add rolling stock, and reduce travel times.[2]

Nine public intercity bus routes are presently operated by Solano County transit agencies. One route (Route 20) connects Fairfield-Vacaville, another (Route 30) connects to Davis and Sacramento, two routes (Routes 40 and Benicia Route 1) connect to the Pleasant Hill BART Station, two routes (Route 85 and Benicia Route 1) connect to the Vallejo Ferry Terminal and three routes (Routes 80, 90 & 91) connect to the El Cerrito del Norte BART Station. Public intercity bus connections to Napa from Vallejo are provided by VINE Transit and YoloBus

[2] *Capitol Corridor Intercity Passenger Rail Service, Business Plan Update*, FY 2009-10 – FY 2010-11, March 2009

provides connections to Winters and Davis from Vacaville. No Sunday service is currently provided on these lines. Each of the transit providers that serve the project area have short-term plans focused on upgrading existing service and equipment. The Solano Comprehensive Transportation Plan, Transit Element (STA 2005) sets forth the long-term plan for improving transit, rail and ferry service in the region. A critical component of the local transit system is the Fairfield Transportation Center which was opened in 2001 with 400 parking spaces and has proven very successful. A 234 space Phase 2 expansion to the Center was completed at the end of 2004.

The I-80/I-680/I-780 Transit Corridor Study (STA July 2004) analyzes existing transit services and demand, and provides short and long range transit plans for intercity express bus services and auxiliary facility improvements, such as direct access ramps to center median High Occupancy Vehicle (HOV) lanes, park and ride, and transit center demand & site planning. This study indicated that bus service quality and efficiency along with patronage are all impacted by congestion. Under current traffic conditions, there are hot spots of peak period congestion on Solano County's freeways. Without investment in the transportation infrastructure, this congestion will worsen and spread. In the a.m. peak period, congestion occurs in the following locations: I-80 westbound from east of SR 12E to the SR 12W exit and westbound from I-780 to the Carquinez Bridge; I-680 southbound to the Benicia Bridge; and I-780 eastbound leading up to the Benicia Bridge. In the p.m. peak period, congestion occurs in the following locations: I-680 northbound and I-80 eastbound before the I-80/680 merge; and I-80 eastbound from SR 12E to North Texas. At the time of this study there were no HOV lanes in Solano County. The report concluded that the buses are simply delayed along with general traffic on these segments at peak commute times.[3] Since this study was published in 2004, HOV lanes have been constructed along the portion of I-80 between SR 12W and Airbase Parkway. The proposed I-80/I-680/SR 12 Interchange project would include HOV direct connector ramps between I-80 and I-680 which are specifically called out in the Transit Corridor Study as important to improving transit efficiency.

As described above, numerous TDM programs are already in place within the project area including substantial rail and transit options and programs. As indicated in the I-80/I-680/I-780 Transit Corridor Study, transit service is greatly affected by existing and future congestion on the freeway system. The proposed project alternatives would involve substantial improvements to reduce congestion and include HOV direct connectors which would directly benefit transit users. In addition, there are well established existing rail and transit options available to the public in the project area and plans to continue to improve and expand these services. Finally, a stand-alone TDM alternative would not be able to meet key elements of the project purpose and need, particularly the need to reduce truck congestion and improve automobile safety and truck inspection. For these reasons, a stand-alone TDM alternative was withdrawn from further study.

Smart Growth/Sustainable Communities Land Use Policy Alternative

A smart-growth alternative would help redefine commuter's transportation choices by providing them with more options in housing, shopping, communities, and transportation, which is a key objective of smart growth. Communities are increasingly seeking these choices (especially a wider range of transportation options) in an effort to improve congested roadways and stressed

[3] *STA I-80/I-680/I-780 Transit Corridor Study*, Wilbur Smith Associates, July 2005, page 1.

transportation systems. Under a smart-growth alternative, new approaches to transportation planning, such as better coordinating land use and transportation; increasing the availability of high-quality transit service; creating redundancy, resiliency and connectivity within the local road networks; and ensuring connectivity between pedestrian, bike, transit, and road facilities, would be implemented. Essentially, a multi-modal approach to transportation with supportive development patterns would be implemented to create a variety of transportation options. This alternative was considered as a stand-alone option, but removed because it would not achieve many of the objectives of the proposed project, and neither the Department nor STA has the authority to require local governments to implement specific land use policies tied to smart growth. Therefore this is not a viable alternative for the proposed project. However, as explained above under TSM/TDM alternatives, elements of this stand-alone alternative are being implemented by STA, including providing transit service and incentives for carpooling and using alternate forms of transportation. These programs include an employer program; a vanpool program; emergency ride home, an outreach /awareness campaign; a bike to work campaign; a general marketing; and partnerships. These programs are being implemented by STA as part of its overall operations program, independent of any particular project.

2.5.3 Second-Level Screening and Alternatives Eliminated

Only four of the 12 alternatives were determined feasible from the initial first-level screening process and were carried forward for further analysis as Alternatives A to D. Alternative A would realign I-680 to connect with I-80 in the I-80 median with parallel collector-distributor (C-D) roads constructed along the outside edges of I-80. Alternative B would realign I-680 to connect with I-80 in the I-80 median, but with minor variations to allow the C-D roads to be eliminated. Alternative C would realign I-680 westward to connect with I-80 at the existing I-80/SR 12W interchange. Alternative D would realign I-680 along a viaduct to connect with I-80 east of the existing truck scales.

Alternatives A to D were then further developed and evaluated along with a no-project/no-build alternative through a second-level screening process, which involved a more rigorous and quantitative assessment of the alternatives against several measures and objectives. Alternatives A and D were eliminated from further consideration, and are described below. The second-level screening process identified Alternatives B and C as the two most reasonable and feasible alternatives to be carried forward and studied in detail in this EIR/EIS.

Alternative A—I-680 to Median with Collector-Distributor Roads Alternative

Alternative A would have retained the same basic alignments that exist today, but would have included eastbound and westbound C-D roads parallel to I-80 to handle local traffic from the I-80/Green Valley Road and Suisun Valley Road interchanges. The I-80/SR 12W interchange would have been braided with C-D roads. The I-80/I-680 interchange would have been reconfigured so that the I-680 connectors come into and out of the median of I-80, along with the HOV connectors. Local traffic would have used C-D roads to access the I-80/Suisun Valley Road interchange, and trucks would have used them to travel between the truck scales and I-680 without having to weave across the median or I-80. There would have been no direct connections from northbound I-680 to westbound I-80 or westbound SR 12. Traffic would have needed to use local arterial roads. The truck scales would have been reconstructed and braided ramps with the

C-D roads and the SR 12E interchange would have been provided. All proposed project changes on I-80 east of Suisun Creek would have been identical to Alternatives B and C.

Traffic analysis indicated that Alternative A would have greater environmental and right-of-way impacts than Alternative B would have but with little added benefit. This alternative had the highest anticipated impact on wetlands and waters of the United States, and would have been the most problematic for effective operation of the truck scales. Additionally, this alternative had the second-highest estimated overall cost after Alternative D. Because of the higher cost and greater environmental impacts and right-of-way acquisition, this alternative was eliminated.

Alternative D—I-680 Viaduct Alternative

Alternative D would have retained the same basic alignment as the existing interchange complex, but would have replaced the I-80/I-680 connectors with parallel viaducts running along the outside of I-80 between I-680 and SR 12E to allow traffic commuting between I-680 and I-80 to bypass the I-80/Suisun Valley Road interchange and the truck scales. The viaducts would have connected to I-80 near the relocated truck scales and would have been braided with SR 12E. Direct connector ramps would have also been maintained between eastbound I-80 and southbound I-680, allowing access from I-680 to the I-80/Suisun Valley Road interchange, the truck scales, and SR 12E via I-80. There would have been no direct connections from I-680 northbound to I-80 westbound and SR 12 westbound. Traffic would have needed to use local arterials. HOV connectors between I-680 and I-80 would have been provided. The I-80 viaduct would have been braided with the SR 12E connector ramps. The truck scales would have been reconstructed and would have braided ramps on the east. SR 12W would have been braided with the I-80/Green Valley Road interchange, and the slip ramps would have been braided with the I-80/Suisun Valley Road interchange.

Although Alternative D would have provided some operational benefits during peak-hour traffic periods, it would have performed less effectively during uncongested travel periods. This alternative would have had the greatest negative visual impact because of the elevated structures (viaducts) and would have affected a much larger area of wetlands, waters of the United States, and riparian habitat than Alternatives B and C. This alternative also lacked political support because it reduced access to commercial land uses in the area. Finally, it was the most expensive of the alternatives. Therefore, Alternative D was removed from consideration because the significant visual impact, alteration of access to commercial areas, greater environmental impacts, and high cost.

2.6 Permits and Approvals Needed

Table 2-3 lists the permits and other approvals that would likely be necessary for the various project elements.

Table 2-3. Required Permits, Approvals and Consultation

Agency	Permit, Approval, or Consultation	Status
U.S. Fish and Wildlife Service	Consultation under Section 7 of the federal Endangered Species Act for Phase 1 project	To be completed before NEPA is completed
National Marine Fisheries Service	Consultation under Section 7 of the federal Endangered Species Act for Phase 1 project	To be completed before NEPA is completed
U.S. Army Corps of Engineers	Clean Water Act Section 404 individual permit for placement of fill for Phase 1project	Application to be submitted after NEPA is completed
California Department of Fish and Game	California Fish and Game Code Section 1602 streambed alteration agreement for waters of the state; potential consultation under Section 2081 of the California Endangered Species Act (CFG Code, Sections 2050 et seq.); CEQA trustee agency for Phase 1 project	To be completed after CEQA is completed
San Francisco Bay Regional Water Quality Control Board	Non-point Clean Water Act Section 402 National Pollutant Discharge Elimination System permit (General Construction Permit), Clean Water Act Section 401 water quality certification for Phase 1 project	Application to be submitted after CEQA is completed
Bay Area Air Quality Management District	Permit for air pollutant emission–generating equipment for Phase 1 project	Application to be submitted if portable engines and certain other equipment have not previously been registered with the California Air Resources Board after CEQA is completed
California Public Utilities Commission	General Order 131-D filing requirements for high-voltage electrical lines	Application to be submitted after CEQA is completed
Solano County	Marsh development permit	Application to be submitted after CEQA is completed
Federal Highways Administration	Air Quality Conformity Concurrence	To be completed before NEPA is completed

2.7 Project Cost, Funding and Schedule

2.7.1 Cost

Two alternatives were developed for this project. These were developed to meet the transportation demands of the project area, taking into consideration engineering, environmental, and other constraints with little focus on near-term financial constraints (i.e., to meet local agency CEQA and right-of-way acquisition needs). The fundable first phase of each alternative (Phase 1) was developed as a subset of the alternative and represents a fundable project based on near-term Department and FHWA financial constraints.

The total escalated cost is $2.24 billion for Alternative B and $2.12 billion for Alternative C. The total escalated cost for Alternative B, Phase 1 is $580 million and $690 million for Alternative C, Phase 1. The cost estimates for the project alternatives are provided in Table 2.4.

Table 2-4. Construction Cost Estimate Summary

	Alternative B (Including SR12 East Option 2)	Alternative C (Including SR12 East Option 1)	Alternative B1 (Fundable First Phase of Alternative B)	Alternative C1 (Fundable First Phase of Alternative C)
Total roadway items	$ 654,000,000	$ 595,000,000	$ 226,000,000	$ 232,000,000
Total structure items	$ 200,000,000	$ 258,000,000	$ 96,000,000	$ 152,000,000
Truck scales	$ 25,000,000	$ 25,000,000	$ –	$ –
Subtotal construction costs	$ 879,000,000	$ 878,000,000	$ 322,000,000	$ 384,000,000
Total right of way items	$ 175,000,000	$ 167,000,000	$ 81,000,000	$ 115,000,000
Support	$ 209,000,000	$ 209,000,000	$ 77,000,000	$ 86,000,000
Environmental mitigation	$ 13,900,000	$ 13,700,000	$ 1,400,000	$ 5,100,000
Subtotal	$ 223,000,000	$ 223,000,000	$ 78,000,000	$ 91,000,000
Total alternative cost (2010 $)	$ 1,277,000,000	$ 1,268,000,000	$ 481,000,000	$ 590,000,000
Escalated total alternative cost	$ 2,208,000,000	$ 2,092,000,000	$ 577,000,000	$ 686,000,000

The cost escalation was calculated beginning with 2010 dollars. No escalation was assumed through the year 2013. An escalation rate of 2% was used for both right-of-way and construction and support costs for 2014. For 2015 through 2019 an escalation rate of 2% for right-of-way costs and 5% for construction and support costs was used. After 2019, an escalation rate of 2% for right-of-way costs and 3% for construction and support costs was assumed.

2.7.2 Funding

Revenues for transportation improvement projects are generated from a variety of sources. The primary traditional sources for state transportation projects are state gasoline and diesel fuel taxes, vehicle weight fees, and federal revenues. Additional sources include regional bridge toll funds, local funds, and private funds.

In order for a project to obtain federal transportation funding, it must be included in the Regional Transportation Plan (RTP). The Metropolitan Transportation Commission (MTC) is responsible for adopting the Bay Area's RTP. The current version is titled as the Transportation 2035 Plan. Adopted by MTC on April 22, 2009, the Transportation 2035 Plan describes the strategies and investments required to maintain, manage, and improve the transportation network within the nine-county San Francisco Bay Area. MTC now updates the RTP every four years.

The I-80/I-680/SR12 Interchange Project is included in the current RTP, in the Financially Constrained Element, as part of several identified improvements, with a combination of programmed and planned local, state, and federal funds available over the long term of the Transportation 2035 Plan. Table 2-5 presents proposed funding types and sources and associated amounts for the Phase 1 of the alternatives.

Table 2-5. Project Funding Sources (dollars in millions and escalated)

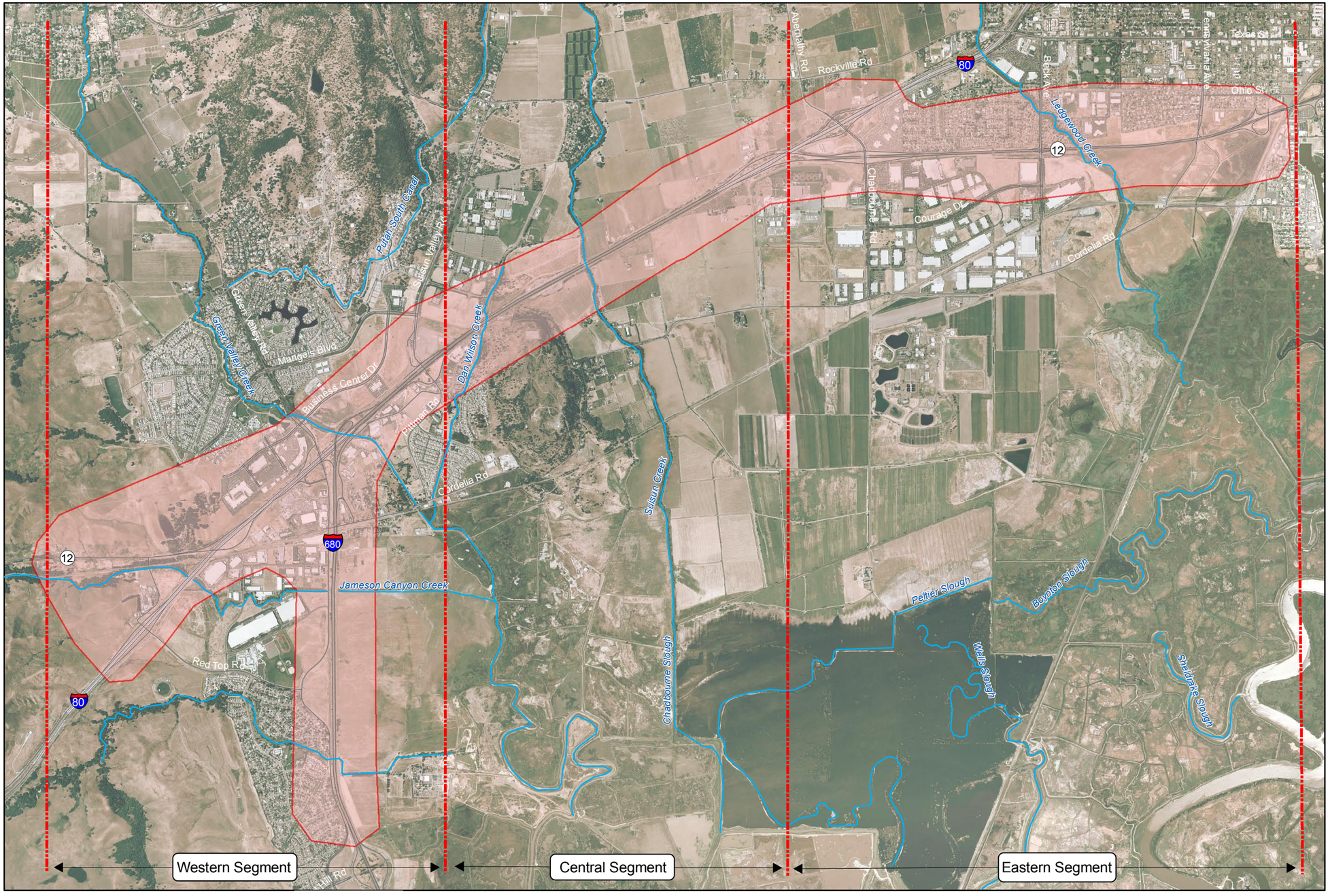
Funding Type and Source	Funding Amount
Bridge Toll Funds	$ 99.0
CMIA	24.0
STIP	11.4
Committed Funds	261.2
Discretionary Funds	362.0
Total Funding	**$757.6**

2.7.3 Schedule

This Draft EIR/S will be available for public comment for 60 days. After the public circulation period, all comments from the public and reviewing agencies will be considered. At that time, the Department, as assigned by 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 preferred alternative will be selected, and documented in the Project Report. After the preferred alternative has been selected, a Notice of Determination will be issued on one of the alternatives under CEQA, and a Record of Decision will issued on the corresponding fundable first phase under NEPA.

Construction of Phase 1 of the selected project is expected to begin in 2012 and be completed by 2016[4].

[4] This EIR/S uses the analysis year of 2015 to represent the construction-year for the project. The construction year analysis (2015) represents conditions and effects of the project alternatives upon completion of the fundable first phase (Phase 1s). Year 2015 was deemed appropriate for the construction-year because traffic forecasts and other environmental information is readily available for the year 2015 and the fundable first phase is anticipated to be complete in essentially the same time period (year 2016).



Source: Circle Point 2008.

Legend

I680/I80/SR12 Interchange

- Proposed Project Area
- Segment Lines

1 inch equals 3,000 feet

Meters: 0 750 1,500

Feet: 0 3,100 6,200

Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.

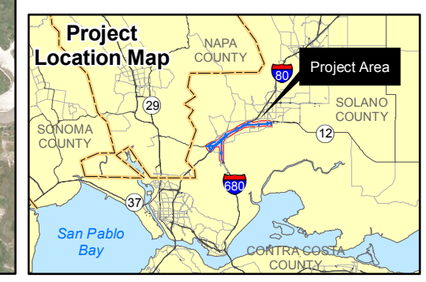


Figure 2-1
Project Area Map

Graphics: 02166.02 EIS (6-9-09)

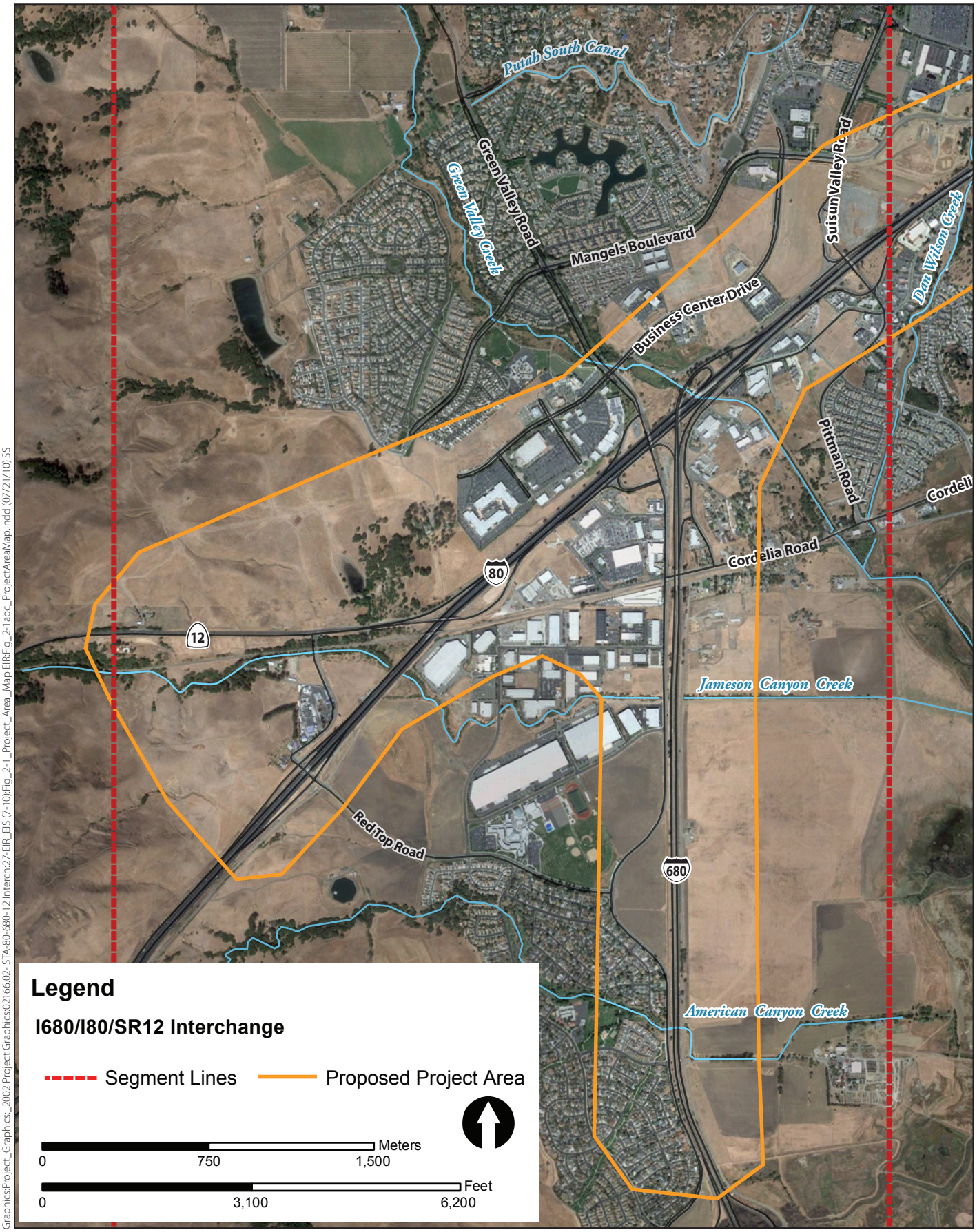


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Figure 2-1a
Project Area Map - Western Segment

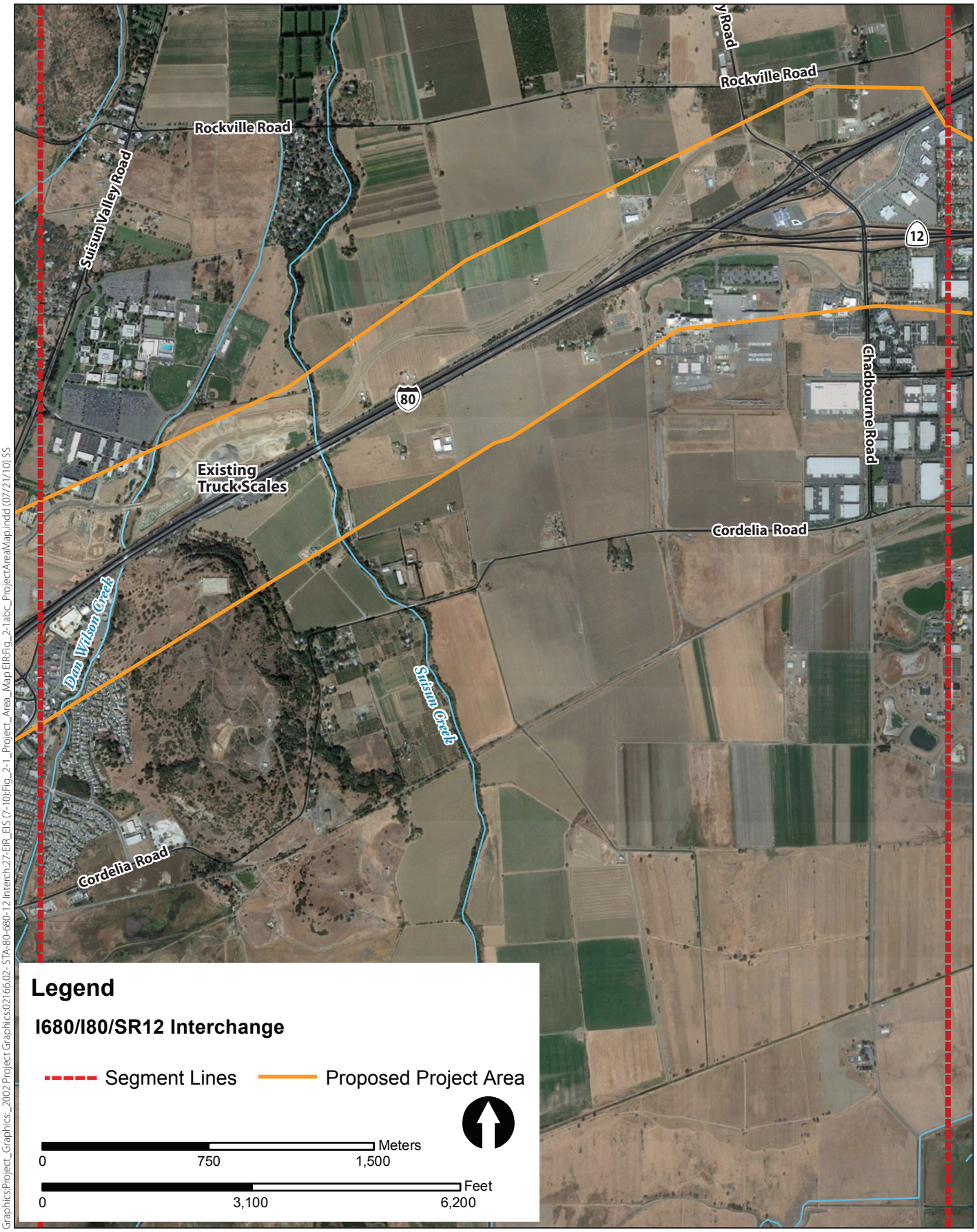

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Figure 2-1b
Project Area Map - Central Segment

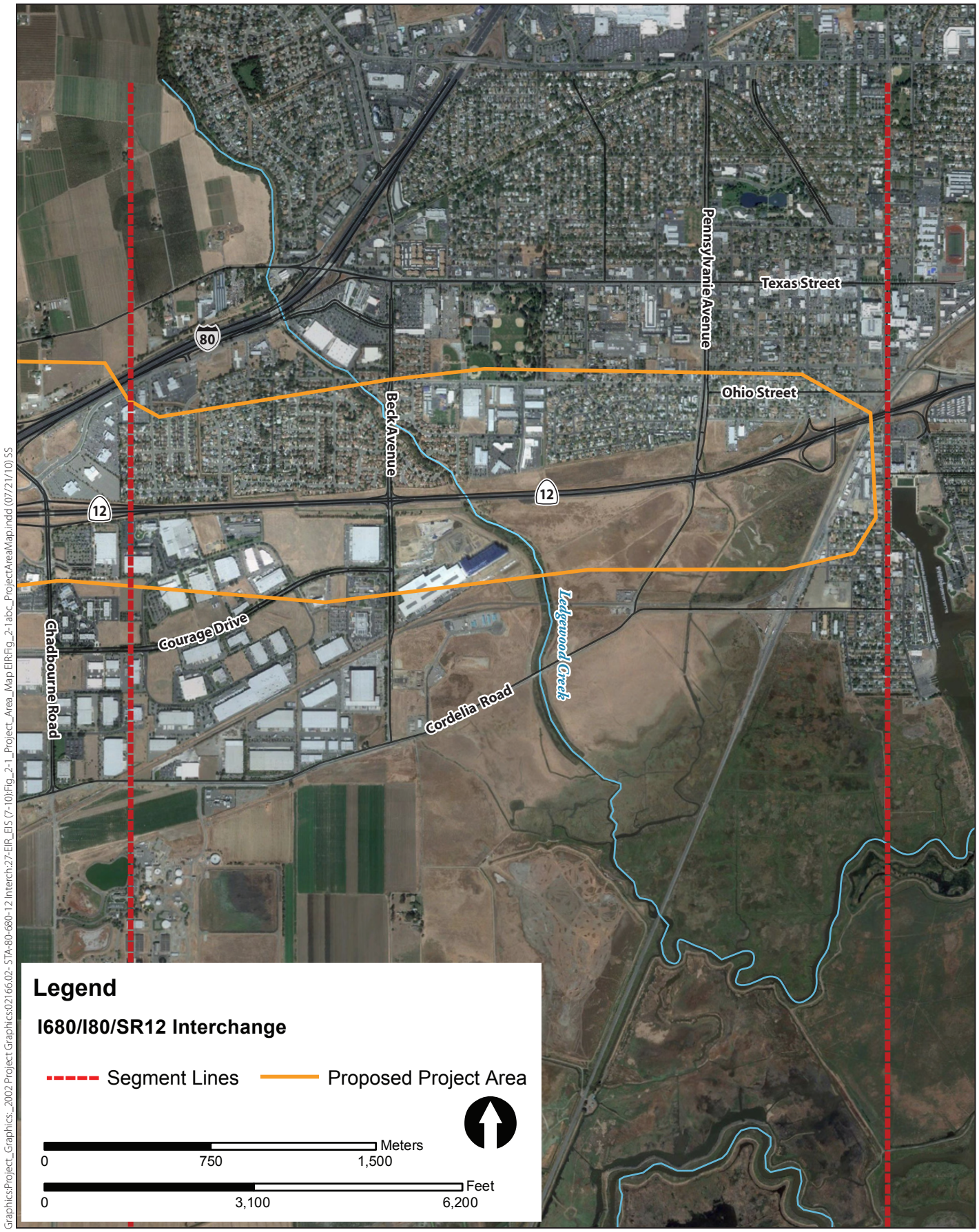

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Figure 2-1c
Project Area Map - Eastern Segment

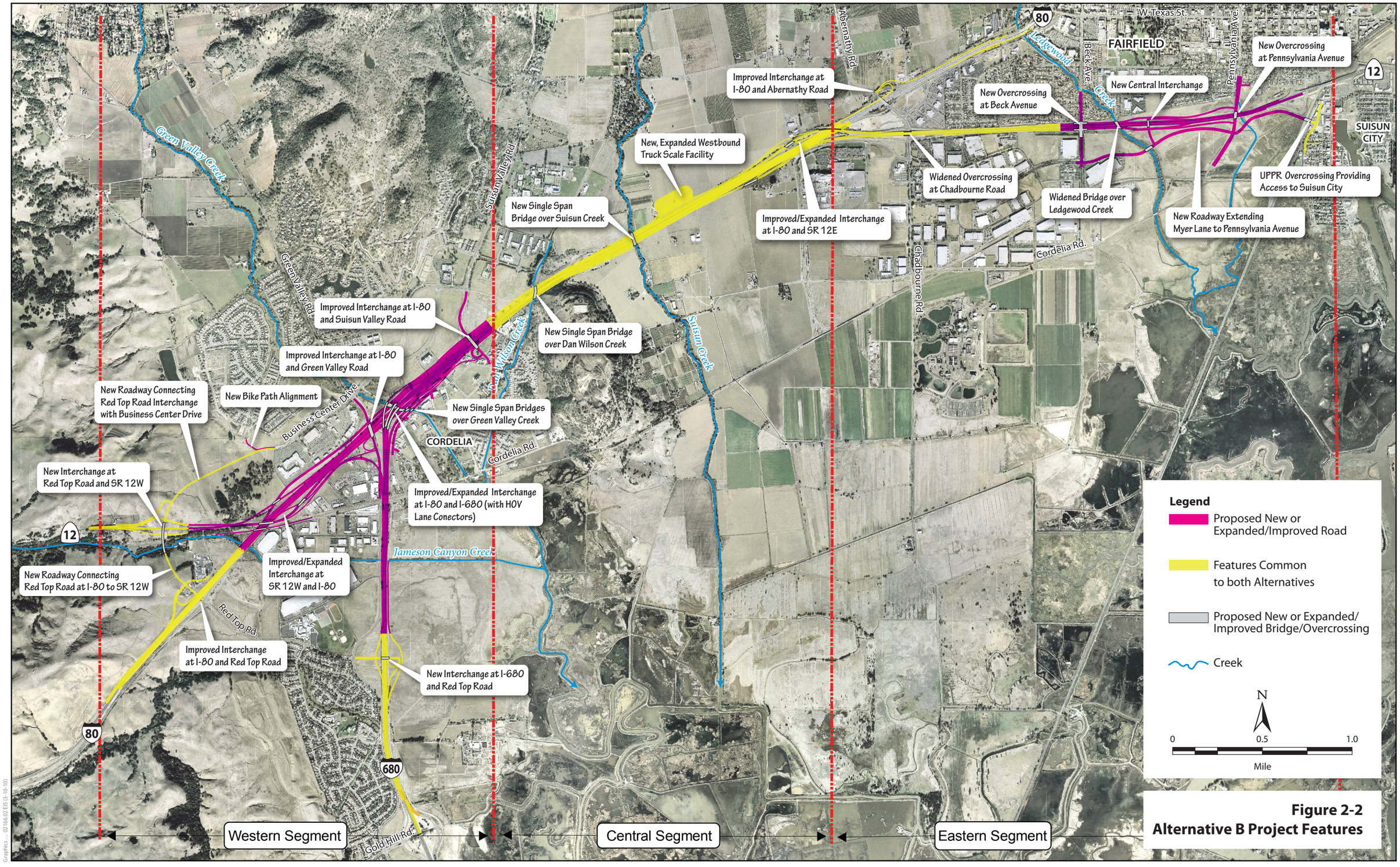


Figure 2-2
Alternative B Project Features

Graphics... 02166.02 EIS (3-10-10)

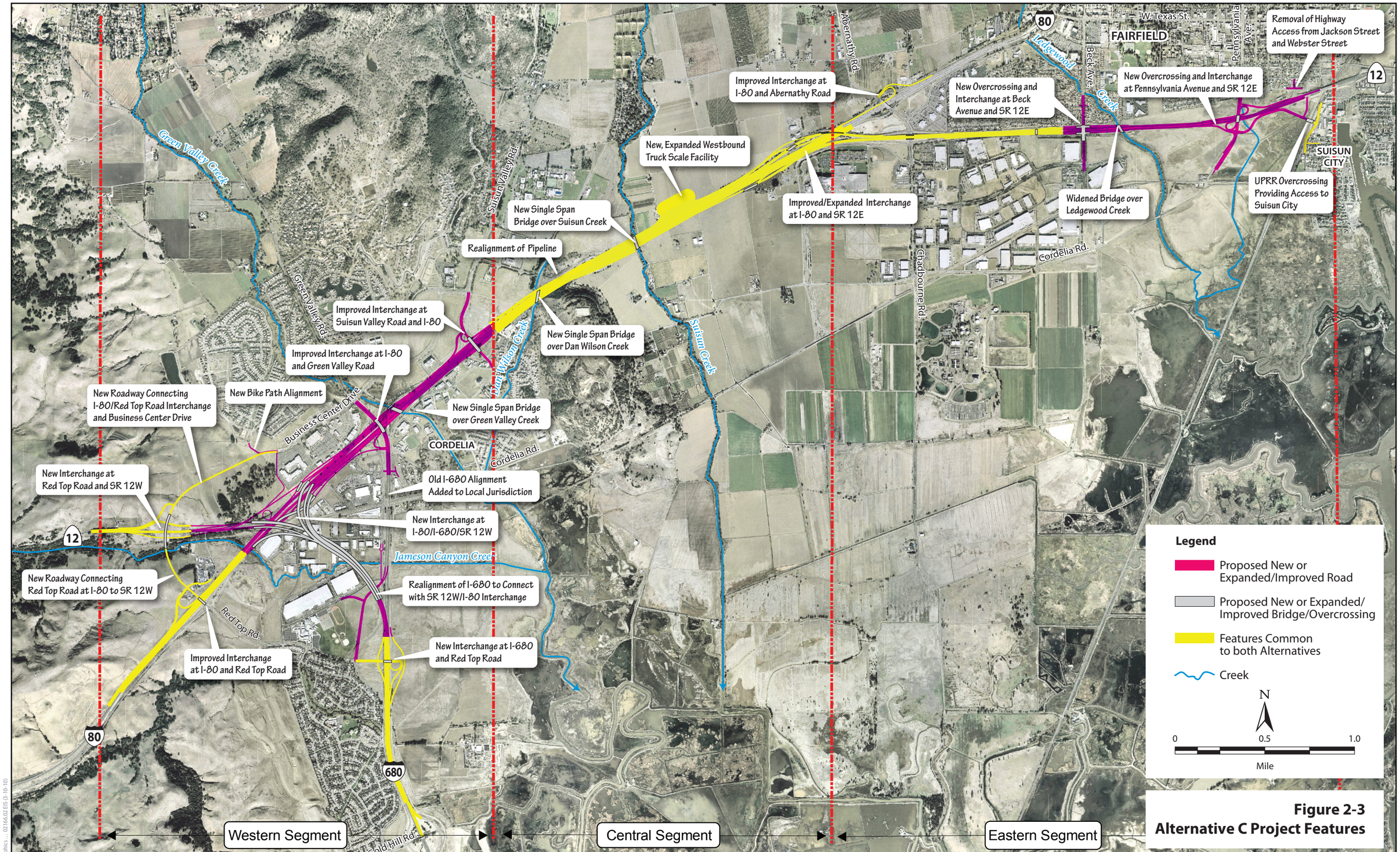


Figure 2-3
Alternative C Project Features

Graphics: 021166.02 EIS (3-10-10)

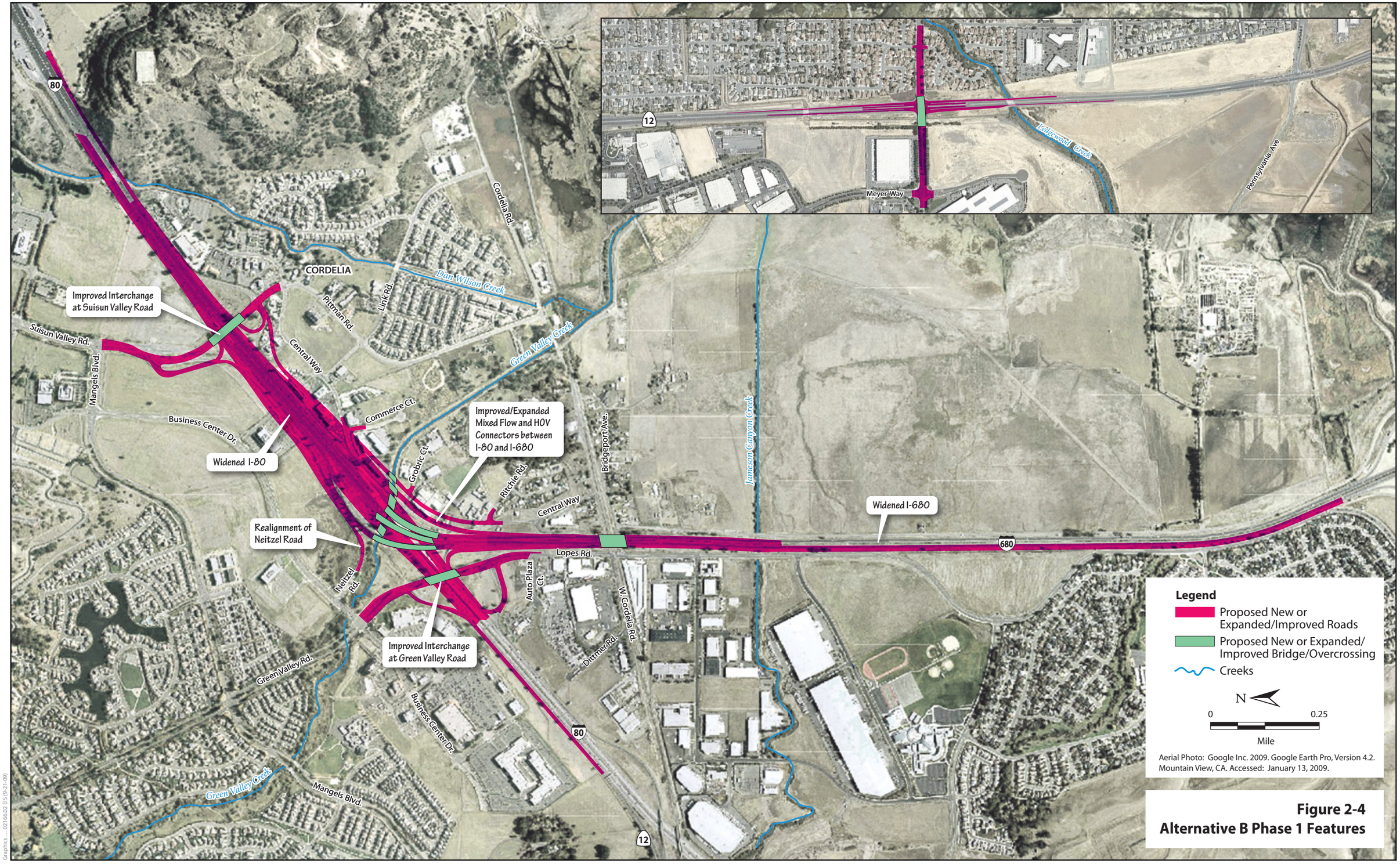


Figure 2-4
Alternative B Phase 1 Features

Graphics ... 02166.02 EIS (9-21-09)

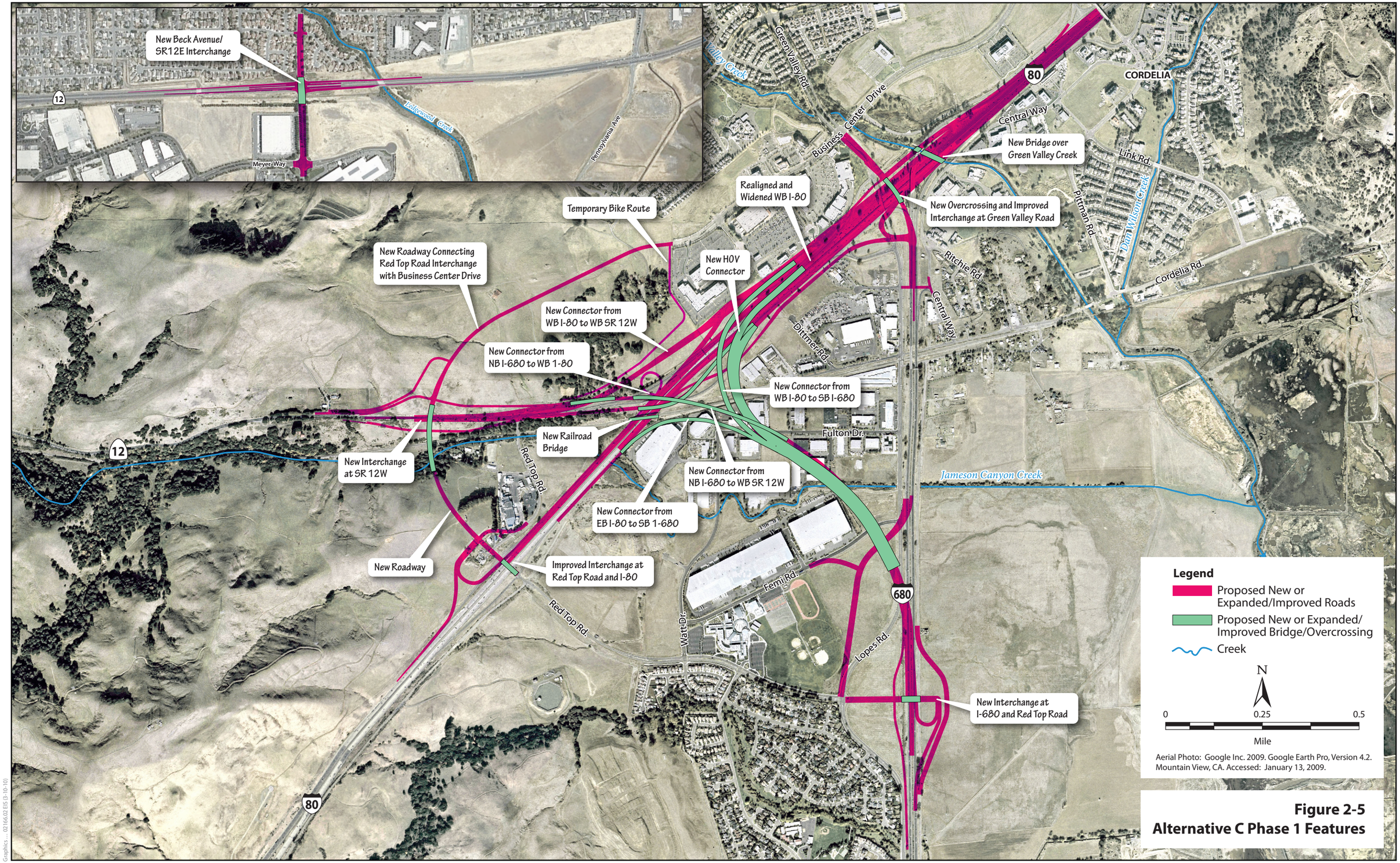


Figure 2-5
Alternative C Phase 1 Features

Graphics: 02166.02 EIS (3-10-10)

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

This chapter presents the analyses of environmental effects and the measures developed to address them. The resource areas listed below are addressed in this chapter.

- Human Environment:
  - Land Use (except Coastal Zone and Wild and Scenic Rivers).
  - Growth.
  - Farmlands.
  - Community Impacts.
  - Utilities and Emergency Services.
  - Traffic and Transportation/Pedestrian and Bicycle Facilities.
  - Visual and Aesthetic Resources.
  - Cultural Resources.
- Physical Environment:
  - Hydrology and Floodplain.
  - Water Quality and Stormwater Runoff.
  - Geology/Soils/Seismic/Topography.
  - Paleontology.
  - Hazardous Waste/Materials.
  - Air Quality.
  - Noise.
  - Energy.
- Biological Environment:
  - Natural Communities.
  - Wetlands and Other Waters.
  - Plant Species.
  - Animal Species.
  - Threatened and Endangered Species.

  - Invasive Species.
  - Native Trees.
  - Suisun Marsh Secondary Management Area.
- Relationship between Local Short-Term Uses of the Human Environment and the Maintenance of Long-Term Productivity.
- Irreversible and Irretrievable Commitments of Resources.
- Cumulative Impacts.

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

- Timberlands. There are no Timberlands in the project area.
- Coastal Zone (within Land Use). The project area is not within a Coastal Zone.
- Wild and Scenic Rivers (within Land Use). The proposed project does not have the potential to affect a Wild and Scenic River or a river under study for designation as a Wild and Scenic River.

3.1 Human Environment

3.1.1 Land Use

The *I-80/I-680/SR 12 Interchange Community Impact Assessment* (CIA) was prepared for the project in 2009, and this discussion is based largely upon that document.

3.1.1.1 Existing and Future Land Use

The I-80/I-680/SR 12 interchange was originally constructed during the 1960s. At the time, the interchange was located in a rural setting and surrounded entirely by agricultural lands. The Bay Area and Northern California region have since experienced substantial population growth; the Bay Area's population has grown by 86% since the interchange's original construction, and the population of Solano County has tripled. Over time, I-80 and I-680 have become major commute corridors linking Solano County and the Sacramento region beyond to the San Francisco Bay area. Solano County, including the Cities of Fairfield and Suisun City, contributes substantial numbers of commuters to traffic on I-80, I-680, and SR 12.

The population growth in Northern California, the Bay Area and surrounding communities has made the I-80/I-680/SR 12 interchange one of the most congested stretches of roadway in the state. Additionally, population growth in the City of Fairfield has caused extensive changes in the land uses surrounding the interchange area over the past several decades. The general land uses along the proposed project area are discussed below by segment.

Land Use

In order to characterize the setting which the project would unfold, a study area was established that represents a much larger area than the project area. Statistical information for Solano County, the Cities of Fairfield and Suisun City, and nine 2000 Census Tract Block Group areas in which the project is situated is used to describe the study area.

Western Segment

The Western Segment begins just east of Red Top Road and ends at the I-80/Suisun Valley Road interchanged. Land uses at the western end of this segment consist primarily of grazing lands. Areas of current development (gas stations, fast food) are located at the I-80/Red Top Road interchange. Industrial (a dairy distribution facility) and rural residential uses are located between I-80 and SR 12W and to the north of SR 12W.

As I-80 and SR 12W converge, land uses change dramatically. To the northeast of this intersection is a major retail shopping and commercial center that includes a Costco, Safeway, and other regional retailers. To the south, the predominant land use is industrial with many warehouses and distribution businesses. Land uses to the east include residential and retail uses in the town of Cordelia. Commercial uses such as gas stations, car dealerships, and smaller retail outlets are located in areas immediately visible from the I-80 and I-680 freeways.

Along I-680, land uses to the west are dominated by residential subdivisions with commercial and retail uses located at major intersections. Rodriguez High School occupies a large amount of land along the north side of Red Top Road, west of its intersection with I-680. In general, lands south of Cordelia Road and east of I-680 are within the Suisun Marsh and support agriculture and open space uses.

Land uses along I-80 between I-680 and Suisun Valley Road are characterized by a large commercial/office park to the north and smaller retail/highway commercial uses to the south, including many gas stations and fast food outlets centered around the I-80/Suisun Valley Road interchange.

Central Segment

The Central Segment begins at the I-80/Suisun Valley Road interchange and ends at the Abernathy/Chadbourne Road interchange. Along I-80 from Suisun Valley Road to SR 12E, land uses on the north side between Suisun Valley Road and Suisun Creek include the currently vacant lands that are now under development for the mixed-use Fairfield Corporate Commons Project and the existing westbound truck scales facility. East of Suisun Creek, land uses are primarily agricultural with scattered residential and commercial uses (farm equipment sales). Land uses on the south side of I-80 include the freeway commercial (hotels and RV sales) and retail (fast food outlets and gas stations) uses located immediately east of the I-80/Suisun Valley Road interchange. Further east, land uses are agricultural with scattered residential uses and the eastbound truck scales facility (which is planned to be relocated to the east as part of a separate project). At the eastern end of this segment, land uses include a large industrial use (Budweiser brewery) that extends along SR 12E.

Eastern Segment

The Eastern Segment begins at the Abernathy/Chadbourne Road interchange and ends on Civic Center Boulevard in downtown Suisun City. Land uses along the north side of SR 12E include commercial uses focused along Chadbourne Road, such as several large auto dealerships. Farther east, land uses are dominated by residential neighborhoods with scattered commercial/retail uses along Beck and Pennsylvania Avenues. Land uses along the south side of SR 12E include industrial warehouse and distribution centers located off Beck and Pennsylvania Avenues. Further east of Pennsylvania Avenue to Suisun City, the predominant land use to the north is residential while to the south is predominately undeveloped land designated for general industrial development.[1] Suisun City is separated from Fairfield by the Union Pacific Railroad (UPRR) alignment and SR 12E. The only currently operational passenger rail terminal in Solano County is located in Suisun City and is directly north of the proposed eastern terminus of the proposed project at West Road. The portions of the study area within Suisun City are devoted to residential and commercial uses east of the UPRR tracks and undeveloped land west of the UPRR tracks.

Development Trends

Solano County and Fairfield have experienced substantial growth in population over the past several decades. Suisun City, while experiencing a brief decline in population following the

[1] Solano County, 2008 General Plan Land Use Diagram (http://solanocountygeneralplan.net/GP%20Documents/12-15-08/X06264476_04_067_FigureLU-1_Land_use_diagram.pdf).

construction of I-80 in the 1960s, has also demonstrated a general trend toward increased population growth. The population in all three jurisdictions is expected to continue growing, with substantial future growth centered on Fairfield and, to a lesser extent, Suisun City. Effects of the proposed project on growth are discussed in Section 3.1.2, "Growth."

Solano County

As an agricultural county, Solano County typically channels large development projects into its cities, and limits development in its unincorporated areas to small residential subdivisions. According to the CIA prepared for the proposed project, there are currently no proposed development projects on unincorporated land within the immediate project area. Future urban growth identified in the Solano County General Plan, such as the area adjoining Nelson Hill, will be allowed only upon annexation to the appropriate city.

City of Fairfield

Table 3.1.1-1 shows current and planned development projects in the city of Fairfield. The predominant type of development currently taking place in Fairfield is residential, with more than 8,000 residential units currently under development or planned for development. In addition, several commercial and office development projects are also planned or currently under development. Planning is also underway for a new train station in northeast Fairfield, providing service to the residents of Fairfield and neighboring Vacaville on the Amtrak Capitol Corridor commuter line between Sacramento and Oakland.

Table 3.1.1-1. Current and Planned Development Projects as of April 2009—City of Fairfield

Name of Project	Project Status	Project Location	Type of Project
Hillside Terrace	Completed	North Texas Street and Dickson Hill Road	Community Commercial/Retail—33,035 square feet
Oakmont Plaza Phase II	Completed	North Texas Street and Acacia Street	Thoroughfare Commercial Retail—35,000 square feet
Del Taco Retail	Completed	Pittman Road and Central Way	Regional Commercial/Retail—9,875 square feet
Staples	Under construction	Oliver Road and Hartford Avenue	Regional Commercial/Retail—25,000 square feet
Residence Inn	Plan check (Building Division)	Holiday Lane and Travis Boulevard	Regional Commercial/Hotel—70,000 square feet
Fresh-N-Easy	Tenant improvements largely completed; project is delayed	Beck Avenue and West Texas Street	Community Commercial/Grocery—20,000 square feet
Orchard Supply	Tenant improvements approved and underway	Travis Boulevard and North Texas Street	Community Commercial/Home Store—20,000 square feet
Wal Mart	Approved	North Texas Street and Air Base Parkway	Community Commercial/Retail—187,480-square-foot building, 15,130-square-foot seasonal garden center, 1,103-square-foot parking spaces
Ortega Meat Market	Approved; in plan check	Travis Boulevard and North Texas Street	Mixed Commercial/Retail—2,400 square feet

Name of Project	Project Status	Project Location	Type of Project
Green Valley Ranch	Project approved for approximately 115,000-square-foot retail center and hotel; 40,000-square-foot hotel already completed and occupied; Dave Reilly received approval for 6,800-square-foot retail building	Central Way and Pittman Road	Regional Commercial/Retail—75,000 square feet
Laurel Creek Plaza	Approved; currently planning for infrastructure improvements to accompany the Villages at Fairfield project	Air Base Parkway and Claybank Road	Community Commercial/Retail—110,186 square feet
Green Valley Corporate Park Retail	Approved	Business Center Drive and Neitzel Road	Regional Commercial/Retail—8,450 square feet
Saturn	Approved	Auto Mall Court	Regional Commercial/Auto Dealer—24,160 square feet
Texas Corners	Approved	North Texas Street and West Texas Street	Thoroughfare Commercial/Retail—5,994 square feet
Texas Roadhouse	Approved	North Texas Street and Marigold Drive	Regional Commercial—7,200 square feet
Mercedes Benz	Approved	Auto Mall Parkway and Abernathy Road	Regional Commercial – Auto Dealer—77,-914 square feet
Premium Auto Mall	Application under review	Auto Plaza Court	Regional Commercial—10,000 +/- square feet
Sparkles Express Car Wash	Application under review	North Texas Street and Marigold Drive	Regional Commercial—3,000 square feet
KFC/Long John Silvers	Application under review	North Texas Street and Pacific Avenue	Thoroughfare Commercial/Retail—3,000 square feet
COSTCO Expansion	Submitted, but on hold	Business Center Parkway and Business Center Drive	Regional Commercial/Retail—22,168 square feet
Green Valley Plaza	Application incomplete	Suisun Valley Road and Rockville Road	Regional Commercial—455,000 square feet
Fairfield Corporate Commons	Under construction	Suisun Valley Road and Mangels Boulevard	Mixed-Use Office and Commercial—72 acres, parcel sizes range from 1.4 acres to 47 acres 846,000 sf of office and hotel use, 269 multi-family housing units, 167 single-family housing units Four office buildings at four stories each: Building 1: 73,000 square feet of office space; Building 2: 110,000 square feet of office space; Building 3: 130,000 square feet of office space; Building 4: 59,000 square feet of office space
Pony Express Business Park	Construction complete; space available	West America Drive and Mason Street	Office Commercial—45,660 square feet
Horizon Business Park	Under construction	Horizon Drive and Western Street	Service Commercial/Flex Space—62,179 square feet

Name of Project	Project Status	Project Location	Type of Project
Northbay Healthcare Corporate Headquarters	Under construction	Business Center Drive and Neitzel Road	Office Commercial/Headquarters—69,000 square feet
Western Business Center II	Under construction	Horizon Drive and Western Street	Service Commercial/Flex Space—29,600 square feet
Busch Campus Park (CDI)	Plan check (Building Division)	Chadbourne Road and Courage Drive	Office Commercial/Office—12,000 square feet
Sierra Pacific Cordelia	Plan check (Building Division)	Fermi Drive and Pascal Court	Limited Industrial/Flex Space—115,350 square feet
Buntain Phase IV	Approved; awaiting Plan check submittals	Courage Drive	Limited Industrial/Industrial—74,440 square feet
Diamond Services	Approved; time extension April 2007	Commerce Court and Central Road	Service Commercial/Truck Rental—13,200 square feet
Meyer Expansion	Approved	2000 Meyer Way	Limited Industrial/Warehouse—363,400 square feet
Penske Truck Rental	Approved	Pennsylvania Avenue and Illinois Street	Service Commercial/Truck Rental—13,200 square feet
Rinker Materials	Approved	Huntington Drive and Crocker Circle	General Industrial/Heavy Industrial—22,500 square feet
Green Valley Corporate Park Professional Building III	Approved	Business Center Drive and Neitzel Road	Industrial and Business Park—9,800 square feet
Green Valley Corporate Park Professional Building IV	Approved	Business Center Drive and Neitzel Road	Industrial and Business Park—9,800 square feet
Verizon MSC	Approved	North Watney Way and Courage Drive	Limited Industrial/Data Center—49.235 square feet
Amir Watney	Approved	South Watney Way and Courage Drive	Limited Industrial/Flex Space—50,677 square feet
NOI Industrial	Approved	Industrial Drive and Dobe Lane	Limited Industrial—42,000 square feet
Lincoln Cordelia Road	Under review	Cordelia Road and Chadbourne Road	Limited Industrial/Flex Space—177,000 square feet
Bella Vita (Cordelia Heights)	Approved	587 Via de Bella	Total units—25 Permits Issued—23 Permits Remaining—2
East Tabor Townhomes	Approved	855 E Tabor Avenue	Attached or multi-family housing units with single-story house plans Total Units—94 Permits Issued—0 Permits Remaining—94
Eastridge	Approved	902 Eastridge Drive	Single-story house plans Total Units—217 Permits Issued—155 Permits Remaining—62
Fieldcrest	Approved	Southwest of Red Top Road/Oakbrook Drive intersection	Single-story house plans Total Units—394 Permits Issued—0 Permits Remaining—394
Garibaldi Ranch	Approved	Far south side of the city Between Lopes and Gold Hill Road	Single-story house plans Total Units—673 Permits Issued—0 Permits Remaining—673

Name of Project	Project Status	Project Location	Type of Project
Goldridge	Approved	Southeast of Joseph Gerevas Drive/Peabody Road intersection	Single-story house plans Total Units—1458 Permits Issued—864 Permits Remaining—594
Green Valley Lake	Approved	5100 Lake Shore Road	Single-story house plans Total Units—475 Permits Issued—472 Permits Remaining—3
Hidden Meadows	Approved	North side of the city along Mangles Boulevard	Single-story house plans: 157 homes plus 53 second dwellings Total Units—210 Permits Issued—196 Permits Remaining—14
Hidden Oaks	Approved	West side of Suisun Valley Road 100 yards north of West America Drive	Attached or multi-family housing units Total Units—55 Permits Issued—0 Permits Remaining—55
Ivy Wreath	Approved	Eastern end of East Tabor Avenue near Walters Road	Medium-density single-family detached housing with lots below 4,500 square feet in area Total Units—73 Permits Issued—0 Permits Remaining—73
Madison Square	Approved	2728 Midtown Lane	Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units Total Units—221 Permits Issued—27 Permits Remaining—194
Paradise Valley: The Masters Collection	Approved	North of Dover Road/Foothill Parkway intersection; Paradise Valley Golf Course	Single-story house plans Total Units—164 Permits Issued—129 Permits Remaining—35
Paradise Valley: Paradise Valley Townhomes	Approved	North of Dover Road/Foothill Parkway intersection; Paradise Valley Golf Course	Attached or multi-family housing units Total Units—220 Permits Issued—0 Permits Remaining—220
Brush Creek	Approved	4405 Avondale Circle; Paradise Valley Golf Course	Single-story house plans Total Units—150 Permits Issued—1 Permits Remaining—149
Paradise Crest	Approved	Manuel Campos Parkway/Mystic Drive intersection; Paradise Valley Golf Course	Single-story house plans Total Units—334 Permits Issued—108 Permits Remaining—226
Rancho Solano Phase III	Approved	3250 Rancho Solano Parkway; Rancho Solano Golf Course	Single-story house plans Total Units—217 Permits Issued—170 Permits Remaining—47
River Oaks	Approved	East of Pittman Road/Link Road intersection	Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units Total Units—28 Permits Issued—7 Permits Remaining—21

Name of Project	Project Status	Project Location	Type of Project
Southbrook	Approved	West of I-680/Smith Drive undercrossing	Single-story house plans Total Units—1,355 Permits Issued—1,340 Permits Remaining—15
Strawberry Fields	Approved	Southwest corner of east Tabor Avenue and Walters Road	Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units Total Units—39 Permits Issued—0 Permits Remaining—39
Turnstone	Approved	4587 Turnstone Way	Medium-density single-family detached housing with lots below 4,500 square feet in area with attached or multi-family housing units Total Units—136 Permits Issued—106 Permits Remaining—30
Villages at Fairfield	Approved	North of Air Base Parkway, between Clay Bank Road and Peabody Road	Single-family projects with single-story house plans Total Units—611 Permits Issued—0 Permits Remaining—611 Medium-density residential with attached or multi-family housing units and lots below 4,500 square feet in area Total Units—872 Permits Issued—0 Permits Remaining—872 Apartments with attached or multi-family housing units Total Units—923 Permits Issued—0 Permits Remaining—923
Shaded Boxes	= Current or Planned Projects located within or in close proximity to the I-80/I-680/SR 12 Interchange project study area.		

Source: City of Fairfield Planning Commission 2008; I80/I-680/SR 12 Community Impact Assessment

Suisun City

Table 3.1.1-2 describes the current and planned development projects in Suisun City. Several projects are focused on revitalizing the downtown area of Suisun City and other projects involve residential, mixed-use, and commercial development in areas outside Suisun City limits but within the city's sphere of influence and proposed for incorporation into the city.

Table 3.1.1-2. Current and Planned Development Projects as of April 2009—Suisun City

Name of Project	Project Status	Project Location	Type of Project
Suisun-Gentry Development	In planning	SR 12 and Pennsylvania Avenue[a]	Mixed-use—retail/commercial/residential Retail/commercial area (regional power center, general merchandise stores, small shops, home improvement center, service providers)—71.3 acres Residential area (medium to high density, small lot single-family attached and/or detached townhomes and condominiums)—17.1 acres
Four Seasons RV, Boat and Self Storage	Under construction	1600 Peterson Road	Open and covered RV and boat storage, plus enclosed self-storage units with office and on-site caretaker's residence on 4.76-acre parcel
Bank of America Kiosk	Under construction	Sunset Avenue and Highway 12	Walk-up ATM kiosk in Sunset Shopping Center
Rick's Auto Spa	Under construction	Anderson Drive and McCoy Creek Way	Three-bay full-service car wash center with detached 1,975-square-foot two-unit retail building
Hampton Inn & Suites	Under construction	Harbor Center and Lotz Way	Four-story 63,412-square-foot hotel with 102 suites, conference room, indoor swimming pool, and a number of other amenities
McCoy Creek	Building permit for office is ready to issue, mixed-use units are under construction	South side of Highway 12—between McCoy Creek Way and Suisun Marsh, and between Grizzly Island Road and Crescent Elementary School	Office building—6,818-square-foot, four-unit, one-story building with potential 2,234-square-foot mezzanine area Residential area—19 units Live-work units—ten units are single-family homes with additional commercial/business area; five units include an apartment Work/retail portion: five units with 533-square-foot business area plus additional 732-square-foot apartment above; five units with 693-square-foot business area with no additional apartment
Dollar Tree	Building permit ready to issue	Corner of Highway 12 and Sunset Avenue	10,944-square-foot tenant improvement
Washington Mutual Drive-Thru ATM	In plan review	Corner of Sunset Avenue and Merganser Drive	New drive-through ATM
Travis Credit Union	Awaiting construction drawings	SR 12 and Sunset Avenue	2,100-square-foot tenant improvement for new branch office
Main Street West Development: Parcels 1 & 2	Under construction	Southeast corner of Main Street and Solano Street	Two-story 34,456-square-foot commercial building: first floor 17,956 square feet of retail sales possibly including a restaurant; second floor 16,500 square feet of office space. Building configuration would be U-shaped, creating a public courtyard to the south, which would contain an open fireplace/firepit feature
Main Street West Development: Parcel 3	In plan review	Northeast corner of Main Street and Solano Street	Two-story 10,579-square-foot commercial or mixed-use building: first floor 5,437 square feet of retail sales possibly including a restaurant; second floor 5,142 square feet of office space or residential units
Main Street West Development: Parcel 7	In plan review	Solano Street and Suisun Street	Two-story 7,626-square-foot restaurant and banquet room overlooking the marina and Harbor Plaza: Ground floor restaurant 4,060 square feet; upstairs banquet room 3,616 square feet.
Almond Tree Storage	Awaiting construction drawings	West of Olive Avenue, between East Tabor Avenue and Railroad Avenue[b]	59,050-square-foot expansion of existing self-storage complex that includes five new buildings and extension of one existing building
Walters Road West Development	Awaiting construction drawings	Highway 12 and Walters Road	175,000-square-foot Wal-Mart Supercenter, plus restaurant, garden center, and service station with market and car wash on 20.86 acres

Name of Project	Project Status	Project Location	Type of Project
Peterson Ranch	Under construction	Between East Tabor Avenue and Bella Vista Drive	546 detached single-family homes
Main Street West: Parcel 10	Awaiting construction drawings	North of Lotz Way, between Civic Center Boulevard and Port Way/Alder Street	16 detached single-family homes
Courtyards at Sunset/ Summerwood	Construction temporarily suspended due to market	North of Railroad Avenue and west of Sunset Avenue	69 detached courtyard-style single-family units; 30 units have been built

Shaded boxes indicate projects that occur within or in close proximity to the eastern project area.
Source: I80/I-680/SR 12 Community Impact Assessment.
[a] Within the project area.
[b] This project would include the rerouting of the eastern portion of Railroad Avenue, which would connect directly to Olive Avenue. This is phase one of the Railroad Avenue Reroute Project.

3.1.1.2 Consistency with State, Regional, and Local Plans and Programs

Suisun Marsh Protection Act

In 1974, the California Legislature passed the Suisun Marsh Protection Act (Public Resources Code Section 29000 et seq.), designed to preserve Suisun Marsh from residential, commercial, and industrial development. The Act directs the Bay Conservation and Development Commission and the California Department of Fish and Game (DFG) to prepare a protection plan for Suisun Marsh "to preserve the integrity and assure continued wildlife use" of the marsh. The objectives of the protection plan are to preserve and enhance the quality and diversity of the Suisun Marsh's aquatic and wildlife habitats and to ensure retention of upland areas adjacent to the marsh in uses compatible with its protection.

Under the Suisun Marsh Protection Act, Solano County and other agencies having jurisdiction within the Suisun Marsh were required to bring their policies, regulations, programs, and operating procedures into conformity with the provision of the Suisun Marsh Protection Act and the Suisun Marsh Protection Plan through the preparation of a Local Protection Program. Solano County's component of the Local Protection Program includes General Plan policies and other policies, programs, and regulations to preserve and enhance the wildlife habitat of the Suisun Marsh and to assure retention of upland areas adjacent to the marsh in uses compatible with its protection. The Solano County General Plan policies are discussed below.

Alternative B, Alternative C, and Alternative C, Phase 1 would encroach on portions of the Suisun Marsh Secondary Management Area[2] which are privately owned. Construction would involve installation of culverts and placement of fill for construction of the Red Top Road/I-680 interchange and realignment of Ramsey Road, resulting in direct disturbance of jurisdictional seasonal drainages in the Suisun Marsh secondary management area. Construction in this area will additionally remove nonnative annual grassland within the secondary management area. These activities would be subject to issuance of a Marsh Development Permit by Solano County. All conditions that are attached to the permit will be implemented as part of the proposed project

[2] "Secondary management area" means the upland grasslands, cultivated lands, and low-lying areas adjacent to the primary management area as shown on the Suisun Marsh Protection Plan Map. Suisun Marsh Protection Plan, December 1976.

and included in the Environmental Commitments Record (ECR) for the project (see Appendix I). The conditions will be clearly identified in the construction plans and specifications and monitored during and after construction to ensure compliance. With issuance of that permit, the alternative would be consistent with the General Plan, as well as the Suisun Marsh Act.

Farmland Mapping and Monitoring Program

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) keeps track of changes in farmland use, including the conversion of farmland to urban use. This program is informational only, and does not regulate land uses. The FMMP classifies farmland according to four types: Prime Farmland is considered land with the best physical and chemical features able to sustain long-term production of crops; Farmland of Statewide Importance is land that is similar to Prime Farmland but has minor faults such as slopes or limited ability to store soil moisture; Unique Farmland has lesser-quality soils, is used for the production of the state's leading crops, and may be irrigated or include non-irrigated orchards or vineyards (together, these three farmland classifications constitute "Important Farmland"); and Grazing Land contains existing vegetation suitable for livestock. This is a program for identifying agricultural lands and tracking the conversion of such lands to other uses. It is not a plan, per se, and does not require any consistency from the proposed project.

Regional Transportation Plan & Transportation Improvement Program—Metropolitan Transportation Commission

The MTC is responsible for preparation and adoption of the Bay Area's RTP. The current RTP, *Transportation 2035 Plan for the San Francisco Bay Area*, identifies the major transportation projects needed to accommodate the present and future demands of motorized and non-motorized transportation within the Bay Area. The proposed project is identified in the RTP as project number 230326.

Both Alternative B, Phase 1 and Alternative C, Phase 1 are fully funded in the financially constrained Regional Transportation Plan *Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion* (RTP). The project is also included in the MTC's financially constrained 2009 Transportation Improvement Program as TIP ID SOL070020. The TIP is being updated to be consistent with the RTP as part of the 2011 TIP process. The 2009 RTP and 2009 TIP (Revised) were found to conform with the *State Implementation Plan* (SIP) by the MTC on April 22, 2009. The FHWA and FTA found the 2009 RTP to be in conformity with the SIP on May 29, 2009. The FHWA and FTA found the 2009 TIP (Revised) to be in conformity with the SIP also on May 29, 2009.

An air quality conformity concurrence finding will be made by the FHWA after identification of the Preferred Alternative and will be included in the FEIS following the public comment period. The draft conformity analysis for the preferred alternative will be conducted in the Final Environmental Impact Statement to allow for public comment. Currently, only Alternative C, Phase 1 is listed in the 2035 RTP and 2009 TIP (Revised). The design concept and scope of Alternative C, Phase 1 is consistent with the project description in the most recent 2035 RTP and 2009 TIP (Revised). The design concept and scope of the proposed project are consistent with the project listings in the 2035 RTP and 2009 TIP (Revised) and would not interfere with timely implementation of TCMs.

The STA, as sponsor of the project, would be required to submit a TIP amendment if the selected alternative is other than Alternative C, Phase 1.

Solano Transportation Authority

The Solano Transportation Authority (STA) was created in 1990 through a Joint Powers Agreement between Solano County and the cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo to serve as the congestion management agency for the jurisdictions within Solano County. The STA is also responsible for countywide transportation planning and programming transportation funds. The proposed project is identified in the STA's Comprehensive Transportation Plan (CTP 2030), which identifies the proposed project as the "top transportation priority for Solano County" (Metropolitan Transportation Commission 2009; Solano Transportation Authority 2005).

The proposed project is included in, and therefore conforms to, the adopted transportation plans and programs of the STA and the MTC.

Habitat Conservation Plan/Natural Communities Conservation Plan

There is currently no approved Habitat Conservation Plan (HCP) or Natural Communities Conservation Plan in effect for the project area.

A multi-species habitat conservation plan is being prepared for Solano County by the Solano County Water Agency. A final administrative draft HCP was prepared in June 2009 but has not been formally adopted. The proposed Solano HCP establishes a framework for complying with state and federal endangered species regulations while accommodating future urban growth, development of infrastructure, and ongoing operation and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Plan Participants within the Plan Area.[3]

Solano County General Plan

Solano County has land use jurisdiction over lands that are outside the incorporated city limits of the cities of Fairfield and Suisun City. The county establishes formal goals and policies for the regulation of land uses through its General Plan. This follows from California Planning Law, which requires each city and county to adopt a comprehensive general plan that acts as a "blueprint" for growth from the perspectives of land use, housing, open space, conservation, circulation, noise, and safety (Solano County 2008).

In November 2008 the people of Solano County approved Measure T which confirmed approval of a new County General Plan including an amendment to Solano County's 1994 Orderly Growth Initiative that updates certain provisions of the Solano County General Plan relating to agricultural and open space policies and land use designations, and extends the initiative until December 2028. A cornerstone principal of the new General Plan and Orderly Growth Initiative is the direction of new urban growth and development toward municipal areas.

[3] Solano County Water Agency website, http://www.scwa2.com/Conservation_Habitat_FinalAdminDraft.aspx.

Lands within the Suisun Marsh to the south of Fairfield and east of I-680 are protected by strict limitations on development within the primary and secondary management areas of the Marsh under the Solano County General Plan (Solano County 2008). Portions of the proposed project would encroach into the secondary management area of the Marsh as discussed above.

Unincorporated lands adjoining the proposed project are designated as "Agriculture" on the Solano County General Plan land use map. The Agriculture designation "provides areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy, and allows for secondary uses that support the economic viability of agriculture. Agricultural land use designations protect these areas from intrusion by nonagricultural uses and other uses that do not directly support the economic viability of agriculture" (Solano County 2008).

An area on the east side of Nelson Hill, south of the proposed project alignment, is designated an "Urban Project Area" with a "Neighborhood Agricultural/Tourist Center" adjoining it. The Urban Project Area designation "reflects city-designated master plan, specific plan, or other future plan areas. This designation is applied to these areas to reflect the current city designation for this area. Once specific land uses have been applied to these areas by the cities, the County will amend the General Plan to reflect such changes" (Solano County 2008).

The Neighborhood Agricultural/Tourist Center designation provides for areas supporting complementary agricultural and tourism commercial facilities that are compatible with surrounding agricultural uses. In addition, permitted uses should enhance the agricultural character of surrounding areas, develop brand recognition, and create a destination for tourists. Permitted uses include small hotels, restaurants, retail shops, and facilities for the sale of local produce (Solano County 2008).

Lands within the Suisun Marsh, to the south of Fairfield and east of I-680 are designated "Marsh," with a "Resource Conservation" overlay. The Marsh designation "provides for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands." The Resource Conservation overlay "identifies and protects areas of the county with special resource management needs. This designation recognizes the presence of certain important natural resources in the county while maintaining the validity of underlying land use designations. The overlay protects resources by (1) requiring study of potential effects if development is proposed in these locations, and (2) providing mitigation to support urban development in cities" (Solano County 2008).

The General Plan's Suisun Marsh Policy Addendum's "Utilities, Facilities, and Transportation" Policy 1(e) provides that:

> New roadways (highways, primary and secondary roads) and rail lines that form barriers to movement of terrestrial wildlife should not be constructed in the Suisun Marsh or in adjacent uplands necessary to protect the Marsh except where such roadways and rail lines are necessary in the secondary management area for the operation of water-related industry and port uses within

> the area designated by the Protection Plan as a water-related industry reserve area at Collinsville. Rail access to serve the water-related industrial reserve area may be permitted within the existing Sacramento Northern Railroad right-of-way or along the east side of the Marsh, whichever route would result in the least disturbance to wetlands and wildlife. Wherever possible, rail access to the Sacramento River and through the area designated as a water-related industrial reserve area should be located above the ten-foot contour in order to avoid adverse effects to wetlands. Whenever the reconstructed line would pass through wetland areas, it should be constructed on trestles or in a manner which allows for the natural movement of water and wildlife beneath the alignment.

Policy 1(f) further provides:

> The Solano County General Plan acknowledges the need for the possible future expansion of Highway 12. When future traffic loads warrant the widening of Highway 12, such expansion must be designed so as to minimize adverse environmental effects on the Marsh.

Section 28.52 of the Solano County Zoning Ordinance authorizes the granting of marsh development permits that may conditionally allow uses within the secondary management area of the Suisun Marsh. A permit application must be filed with the County Environmental Management Department, which will hold at least one noticed public hearing on the proposed permit in front of the County Zoning Administrator or Planning Commission. In granting a marsh development permit, the Zoning Administrator or Planning Commission must find that:

- The proposed project has complied with the California Environmental Quality Act (CEQA).
- The proposed use is consistent with the County General Plan relative to traffic circulation, population densities and distribution, and all other pertinent aspects.
- Adequate utilities, access roads, drainage, and other necessary facilities have been or will be provided.
- The proposed use will not constitute a nuisance or be detrimental to the public health, safety, and welfare.

and

- The proposed project is consistent with the County's certified Suisun Marsh Local Protection Program.[4]

The Solano County General Plan continues the county's long-time commitment to preserving agricultural land by limiting urbanized development outside of the incorporated cities and their "municipal service areas." The Solano County General Plan Land Use Element establishes the following goals.

[4] Solano County is required to prepare and adopt a component of the local protection program required under the 1997 Suisun Marsh Preservation Act (Marsh Act) to implement the Suisun Marsh Protection Plan within the Suisun Marsh Management area. The County component of the LPP is comprised of polices contained in the County General Plan; County Code provisions including the Zoning Code (Chapter 28), Drainage and Flood Control (Chapter 9), and Grading and Erosion Control (Chapter 31); policies regulating sewage disposal systems; and findings of consistency between the Marsh Act and existing county policy.

LU.G-1: Preserve and protect the current development pattern of distinct and identifiable cities and communities.

LU.G-2: Encourage a development pattern that first seeks to maintain existing communities, second, to develop vacant lands within existing communities presently served by public services, and third, to develop lands immediately adjacent to existing communities where services can easily be provided.

LU.G-3: Create sustainable communities with areas for employment, shopping, housing, public facilities and services, and recreation in close proximity to each other.

LU.G-4: Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.

Key Solano County General Plan Land Use Element policies include the following.

LU.P-1: Collaborate with cities to guide development to the county's urban centers and promote sustainable development patterns.

LU.P-2: A cornerstone principle of this General Plan is the direction of new urban development and growth toward municipal areas. In furtherance of this central goal, the people of Solano County, by initiative measure, have adopted and affirmed the following provisions to assure the continued preservation of those lands designated "Agriculture", "Watershed", "Marsh", "Park & Recreation", or "Water Bodies & Courses"; Land Use policy LU.P-3 and Agricultural policies AG.P-31, AG.P-32, AG.P-33, AG.P-34, AG.P-35, and AG.P-36. The General Plan may be reorganized, and individual goals and policies may be renumbered or reordered in the course of ongoing updates of the General Plan in accord with the requirements of state law, but the provisions enumerated in this paragraph shall continue to be included in the General Plan until December 31, 2028, unless earlier repealed or amended by the voters of the County.

LU.P-3: The designation of specific lands and water bodies as "Agriculture", "Watershed", "Marsh", "Park & Recreation", or "Water Bodies & Courses" on the Solano County Land Use Diagram, adopted by the Solano County Board of Supervisors on December 19, 1980, and as amended subsequently consistent with Proposition A, and the Orderly Growth Initiative, shall remain in effect until December 31, 2028 except lands designated Agriculture may be redesignated pursuant to the procedure specified in Agricultural Policies AG.P-32 through AG.P-36 (providing for re-designation upon the making of specific findings, or as necessary to comply with state law requirements regarding provision of low and very low income housing, or permitting certain re-designations to open space).

In addition, these agricultural and open space lands may also be redesignated after a final judgment by a court of competent jurisdiction determining that the absence of a redesignation would constitute an unauthorized taking of private property or is otherwise unconstitutional, but only to the minimum geographical extent and intensity of use necessary to avoid such unconstitutional result. Any such redesignation shall be designed to carry out the goals and provisions of this policy to the maximum extent possible.

Further, the precise boundaries of land use designations may be subject to minor adjustment and refinement prior to development, or upon request of an affected landowner, provided such

refinements reflect the overall boundaries indicated on the General Plan Land Use Diagram and are consistent with all other General Plan policies, in particular, the General Plan policies prohibiting piecemeal conversions of agricultural lands to nonagricultural uses.

The Solano County General Plan Agricultural Element has the following policies that are relevant to the proposed project.

AG.P-1: Ensure that agricultural parcels are maintained at a sufficient minimum parcel size so as to remain a farmable unit. Farmable units are defined as the size of parcels a farmer would consider viable for leasing or purchasing for different agricultural purposes. A farmable unit is not considered the sole economic function that will internally support a farm household.

AG.P-3: Encourage consolidation of the fragmented pattern of agricultural preserves and contracts established under the Land Conservation Act (Williamson Act) and the retention of agricultural preserves and contracts in agricultural, watershed, and marshland areas.

AG.P-4: Require farmland conversion mitigation for either of the following actions:

a. General Plan amendment that changes the designation of any land from an agricultural to a nonagricultural use, or

b. an application for a development permit that changes the use of land from production agriculture to a nonagricultural use, regardless of the General Plan designation.

The Solano County General Plan Transportation Element contains the following policies that are relevant to the proposed project.

TC.P-1: Maintain and improve current transportation systems to remedy safety and congestion issues, and establish specific actions to address these issues when they occur.

TC.P-6: Participate in transportation programs that promote technical solutions resulting in more efficient use of energy, reduced greenhouse gas emissions and noise levels, and improved air quality.

TC.P-8: Actively participate with the California Department of Transportation, Solano Transportation Authority, cities, and other agencies to plan for any proposed future realignments of current interregional routes.

TC.P-11: Maintain and improve the current roadways and highway system to meet recommended design standards set forth by the County, including streets that also carry transit and nonmotorized traffic.

Solano County has entered into Williamson Act contracts on several parcels of agricultural land in the project area. These contracts encumber approximately 388 acres in the project area (see Table 3.1.3-2).

In addition, the project area includes lands restricted by conservation easements. Typically, conservation easements are legal agreements between property owners and government agencies or non-profit organizations that permanently limit land development. Easements can restrict land to a prior use or preserve land for purposes of creating and maintaining open space or

agricultural uses. In the project area, there is approximately 72 acres encumbered by conservation easements (see Table 3.1.3-3).

The portion of the study area east of I-680 between the Gold Hill Road overpass and just south of Jameson Canyon Creek is within the Suisun Marsh Secondary Management Area (SMA). The secondary management area provides a buffer of upland grasslands and cultivated areas between the primary marsh and development. Development in the SMA is regulated by Solano County through marsh development permits. This part of the study area supports nonnative annual grassland, with stands of eucalyptus trees, several seasonal wetlands, and ruderal vegetation adjacent to I-680.

The proposed project is generally consistent with the goals and objectives included in the Land Use Element of the Solano County General Plan. The proposed project is linear in nature and would not result in substantial changes in land uses that would conflict with the General Plan. A primary goal of the General Plan is to "provide and maintain a safe, economical, and efficient circulation and transportation system to ensure adequate multi-modal movement of people and goods within, to, and from the county while incurring the least social, economic, and environmental harm to existing or planned activities and land uses." As a transportation improvement project, the proposed project directly serves and is consistent with this goal.

A second objective of the Solano County General Plan Land Use Element is to encourage land use development patterns and circulation and transportation systems that minimize energy consumption. The proposed project is fully consistent with this objective. By widening the existing roadway and building new access to I-80, I-680, and SR 12, the proposed project would provide for a reduction in traffic congestion within the project area, reducing the amount of fuel utilized by idling automobiles and the amount of emissions produced as a result of congestion.

Another Solano County land use goal applicable to the proposed project calls for "orderly growth which assures a harmonious relationship of land uses and maintains the distinctive character of each community."

City of Fairfield General Plan

The City of Fairfield General Plan Land Use Element policies restrict urban development to areas within the City's defined Urban Limit Line, reflecting a commitment on the part of the city to preserve the character of rural areas surrounding the city. In general, the City of Fairfield General Plan supports a buffer, or greenbelt, separating the city from other urban areas in Solano County. The Land Use and Agriculture Elements of the City of Fairfield General Plan include the following objectives, policies, and programs that are relevant to implementation of the proposed project.

> **Objective LU 2—**Achieve a pattern of development that reinforces the city's desired image.
>
> **Policy LU 2.1—**Encourage the preservation of agricultural land surrounding the city and permanently preserve agriculture in the Suisun Valley.

The City of Fairfield General Plan Circulation Element includes the following goal, objectives, policies, and programs that are relevant to the proposed project.

Goal—The goal of the Circulation Element is to create and maintain an efficient, safe, and coordinated multi-modal circulation system, serving the needs of a variety of users.

Objective CI 1—Establish a circulation system that is consistent with the land use patterns of the city. (See Objective LU 4 and Policy LU 4.2)

Policy CI 1.1—Develop a network of roads that is compatible with the general land use patterns of the city.

Objective CI 2—Achieve a coordinated regional and local transportation system that minimizes traffic congestion and efficiently serves users.

Policy CI 2.3—Work with the California Department of Transportation (Caltrans) to identify needed improvements to its highway/interstate facilities in the city and implement necessary programs on the state highway system and its interchanges/intersections with local roadways.

Policy CI 2.4—Work with Caltrans and adjacent jurisdictions to improve the operational performance of I-80, I-680, and SR 12 as regional facilities.

The build alternatives are consistent with the applicable City of Fairfield General Plan land use policies and programs. The primary focus of the City of Fairfield General Plan Land Use Element is the preservation of lands used for agricultural purposes within the City of Fairfield. Within Fairfield city limits, the majority of land used for agricultural purposes is located north of the city and Travis Air Force Base, well outside the project area.

City of Suisun City General Plan

The City of Suisun City 1992 General Plan Land Use Element addresses future land use in light of the county policy of directing growth to the cities and Suisun City's constraints from its location between two areas with very limited development potential: Travis Air Force Base on the east (land uses on lands surrounding the base are restricted in order to avoid conflicts with base operations) and Suisun Marsh to the south (state law limits development within the geographic marsh area). Whereas Fairfield is several miles long and adjoins most of the proposed project, Suisun City is relatively compact and is affected only by the eastern terminus of the proposed project.

The affected portion of Suisun City is located within the city's 1999 Downtown/Waterfront Specific Plan. The policies of the Specific Plan are intended to enhance the city's attractiveness to visitors, leading to potential development of water and tourist-oriented commercial services in the downtown area. SR 12 and the Capitol Corridor/UPRR line are emphasized as infrastructure important to attracting new commercial and light industrial development in adjacent areas of the city. The Downtown/Waterfront Specific Plan's circulation system map indicates that a "bypass road" is to be built on the east side of the railroad tracks from Cordelia Street north to Spring Street at the train station.

The Land Use Element of the City of Suisun City General Plan includes the following land use policy that is relevant to implementation of the proposed project.

> **Policy 20:** Gentry-Pierce Property. The Gentry-Pierce property, located south of SR 12 and east of the Southern Pacific Railroad tracks, is appropriate for business park land uses and should be developed as such. The intersection of Pennsylvania Avenue and SR 12 is also appropriate for a retail commercial center because of its location at this key intersection and as part of the entryway to the development. The retail center would serve businesses and employees of the development as well as the community at large. For this reason, the area immediately adjacent to the intersection on both sides of Pennsylvania Avenue is designated general commercial. The exact size and shape of the general commercial area would be determined through the development review process, but would not be less than 30 net acres (net area is defined as gross area less public right-of-way dedicated for arterial streets and non-developable areas such as wetlands).

The City of Suisun City General Plan Circulation and Transportation Element includes the following goal and objective that are relevant to the proposed project.

> **Goal—**To develop a street and highway system which provides for both local and regional vehicular circulation needs while maintaining a level of service (LOS) "E" on public streets wherever feasible. This level of service represents stable, high-volume traffic flows.
>
> **Objective 1—**Construct SR 12 to a four-lane expressway standard to Walters Road. Add an additional two lanes when conditions on any segment east of Sunset Avenue fall below LOS "E." Provide for the long-term possibility of a grade separation at Sunset Avenue.

A major development project, referred to as the Gentry-Suisun Project, was proposed for the unincorporated portion of the city's sphere of influence south of SR 12E and west of the extension of Pennsylvania Avenue. The Gentry-Suisun Project proposed to annex this site to the city and amend the City of Suisun City General Plan to allow mixed-use residential, commercial/retail, and business park uses on the site. The proposal did not progress beyond the environmental analysis stage and is no longer active.

The build alternatives are generally consistent with the City of Suisun City General Plan and Downtown/Waterfront Specific Plan. The eastern terminus includes improvements that will improve access to the transit center west of Main Street, as discussed in the City of Suisun City General Plan Downtown/Waterfront Specific Plan. Improvements to SR 12E are consistent with city policies for widening the state highway.

The build alternatives would be consistent with local land use plans and not induce growth beyond that envisioned in the General Plan.

3.1.1.3 Parks and Recreational Facilities

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Under the National Environmental Policy Act (NEPA) assignment provisions, the Department is responsible for undertaking Section 4(f) analysis for the proposed project.

The Department's analysis is prepared in accordance with federal requirements. Per FHWA and FTA regulations at 23 CFR 774.17, a Section 4(f) "use" occurs when 1) land is permanently incorporated into a transportation facility, 2) there is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservationist purpose as determined by the criteria in Section 774.13(d); or 3) when there is a constructive use of a Section 4(f) property as determined by the criteria in Section 774.15.

To note, the requirements of Section 4(f) will also be considered satisfied with respect to a Section 4(f) resource if it is determined that a transportation project will have only a "*de minimis* impact" on the 4(f) resource. The provision allows avoidance, minimization, mitigation, and enhancement measures to be considered in making the *de minimis* determination. The agencies with jurisdiction must concur in writing with the determination. Additional requirements for a *de minimis* impact finding include providing the public an opportunity to review and comment on the effects of the proposed project on the Section 4(f) resource. *De minimis* impact is defined in 23 CFR 774.17. For parks and recreation areas, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). Per Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), once the U.S. Department of Transportation determines that a transportation use of Section 4(f) property results in a *de minimis* impact on the property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete.

Recreational Resources

There are a number of parks and recreational resources in the general area of the proposed project. In addition, Rodriguez High School is located along I-680.

Fairfield Linear Park: The linear park is a 94-acre "rails-to-trails" publicly owned park located entirely within Fairfield. The length of the park is approximately five miles, reaching from the intersection of North Texas Street and East Tabor Avenue at the eastern terminus to Solano Community College at the western terminus. Within the project area, the trail parallels the northern side (westbound lanes) of I-80. Future plans include an extension of the park's eastern boundary to the Fairfield city limits, which would bring the park's total length to approximately eight miles.

The park is a multi-use facility that provides opportunities for both active and passive outdoor recreation. Some of the more common activities that occur at the park include jogging, biking, and walking, all of which mostly take place on a concrete/asphalt path that spans the entire distance between the park's termini. The path is eight to ten feet wide, on average, and is located entirely within the park right-of-way, which varies between 40 and 100 feet in width, depending on location. Jogging, bicycling, and walking are all permitted on the path.

The Fairfield City Council amended the General Plan designation of a portion of the Fairfield Linear Park between Abernathy Road and Solano Community College from open space recreation (OSR) to public facility (PF) on September 16, 2008. The change in designation allows this approximately 2-mile long segment of the Fairfield Linear Park to be replaced by a new joint-use pathway to be constructed as part of the North Connector Project (now referred to

as the Suisun Parkway Project). The new joint-use pathway would connect with the Fairfield Linear Park at Abernathy Road and Suisun Valley Creek.

Vintage Green Valley Neighborhood Park: This city park is located at the northeast corner of Vintage Valley Drive and Mangels Boulevard, north of the intersection of Business Center Drive and Green Valley Road. It has a picnic area and landscaped open space.

Rodriguez High School: The high school is located west of I-680, adjoining the north side of Red Top Road. The school has a track and playing fields.

Ridgeview Neighborhood Park: This small city park is located on the north side of Silver Creek Road, in the residential neighborhood west of Lopes Road. It has a picnic area, basketball courts, and play fields.

American Canyon Creek Trail: This is a linear city park that runs along American Canyon Creek from Lopes Road on the east to Silverado Drive on the north. It consists of passive open space land and adjoins the north side of Ridgeview Neighborhood Park.

Suisun Marsh: Lands within the Suisun Marsh, to the south of Fairfield and east of I-680 are designated "Marsh," with a "Resource Conservation" overlay. The Marsh designation "provides for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands."

Impacts on Facilities

Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be relocated prior to construction of the proposed project. The park is considered a 4(f) resource. There would be no effect to the recreational activities, features, or attributes of this facility because the resource would be replaced and there would be no interruption of use.

A small portion of Rodriguez High School would be affected by Alternative C and Alternative C, Phase 1. The realignment of Lopes Road north of its intersection with Red Top Road would cause part of the new roadway to displace a small area of landscaping beyond the outfield fence of the school's softball field. This land is school property but does not function as a recreational facility and is therefore not a Section 4(f) resource. Additionally, this does not represent an effect to recreational resources.

Vintage Green Valley Neighborhood Park, Ridgeview Neighborhood Park, and American Canyon Creek Trail would not be impacted either directly or indirectly by any of the build alternative (including the fundable first phases).

Both full build alternatives would involve improvements within the Suisun Marsh Secondary Management Area. However, as these improvements occur on land which is privately owned, this portion of the Suisun Marsh is not a Section 4(f) resource. Therefore, the provisions of Section 4(f) are not triggered.

The No-Build Alternative would not alter existing conditions and therefore would have no effect on parks or recreation facilities.

Impact on Fairfield Linear Park

As noted above, the Linear Park Trail is a multi-use facility that provides opportunities for both active and passive outdoor recreation. Bicycling, running, and walking are all permitted on the path. Because the Linear Park Trail is a Class I publicly owned trail, is used for recreational purposes, and is not used primarily for transportation or as part of a local transportation system, it is considered a Section 4(f) resource.

Impacts on the Linear Park Trail

Alternative B and Alternative C include an improvement common to both that would have an impact on the Linear Park Trail.

Both alternatives include changes to the Abernathy Road/I-80 interchange. The existing westbound on- and off-ramps would be reconstructed to accommodate a loop on-ramp. This interchange would become the Suisun Parkway/I-80 interchange with completion of the eastern segment of the North Connector Project. Approximately 0.65 mile of the existing Linear Park Trail would potentially be affected under both of the alternatives (Figure 3.1.1-1).

However, as part of the project design, both alternatives would permanently realign the existing trail north of the proposed improvements at the Abernathy Road/I-80 interchange prior to construction. This realignment would allow for the continued use of the trail facilities during and after construction activities for either alternative. The Linear Park Trail would remain open and in use under both alternatives. Some minor visual effects for trail users would occur during construction, but these effects would be temporary in nature and would occur only during the construction period. This temporary change in view would not affect the use of Linear Park Trail. The proposed project would not adversely affect the activities, features, and attributes that qualify the trail for protection under Section 4(f).

Potential indirect impacts on the Linear Park Trail were also evaluated. As part of the traffic noise modeling study, the noise level at one prediction site, located 500 feet north of I-80 and the trail, was analyzed for existing and future conditions with and without the proposed project. At this location, the existing traffic noise level at the loudest hour was predicted to be 63 dBA. The future noise level (2035) at this site was predicted to be 65 dBA with the buildout of the four build alternatives and 64 dBA without buildout of the proposed project. Although the alternatives would be one dBA higher under design-year with-project conditions compared to design-year no-project conditions, noise levels do not approach or exceed the NAC for the land use (67 dBA) under 23 CFR 772. Therefore, there would be no noise-related impacts on this Section 4(f) resource due to implementation of the proposed project.

The proposed project would not result in any violations of CO NAAQS, is not considered a project of air quality concern (POAQC) for PM10, would not exceed operational thresholds for ROG, NO_X, CO, and PM10 emissions, and would result in decreases (not increases) in all MSAT emissions. For PM2.5, it has not yet been determined whether the proposed project is a POAQC. Interagency consultation is underway. With implementation of measures outlined in Section 3.2-6 (Air Quality) in the EIR/EIS, construction of the project would not result in a significant

increase in ROG, NO_X, CO, and particulate matter emissions. Therefore, no air quality-related effects on this Section 4(f) resource would occur as a result of this project.

No natural communities of special concern or special-status plant species are present within this portion of the proposed project. The full build alternatives could have adverse effects on potential nesting habitat for western burrowing owl, Swainson's hawk, migratory birds, and raptors found within this area. However, implementation of the measures outlined in Section 3.3 "Biological Resources" in the EIR/EIS would minimize these potential effects. A stormwater pollution prevention program (SWPPP) would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality occur as a result of project construction (see Chapter 3, Section 3.2-2, "Water Quality" in the EIR/EIS for additional information). There would be no vegetation, wildlife or water quality related effects on this Section 4(f) resource as a result of the proposed project.

The preliminary determination is that the use of this property under Alternative B and Alternative C appears to qualify for a *de minimis* determination under Section 4(f). Thus, per Section 6009(a) of SAFETEA-LU, no discussion of avoidance alternatives is listed for this resource.

Measures to Minimize Harm to the Linear Park Trail

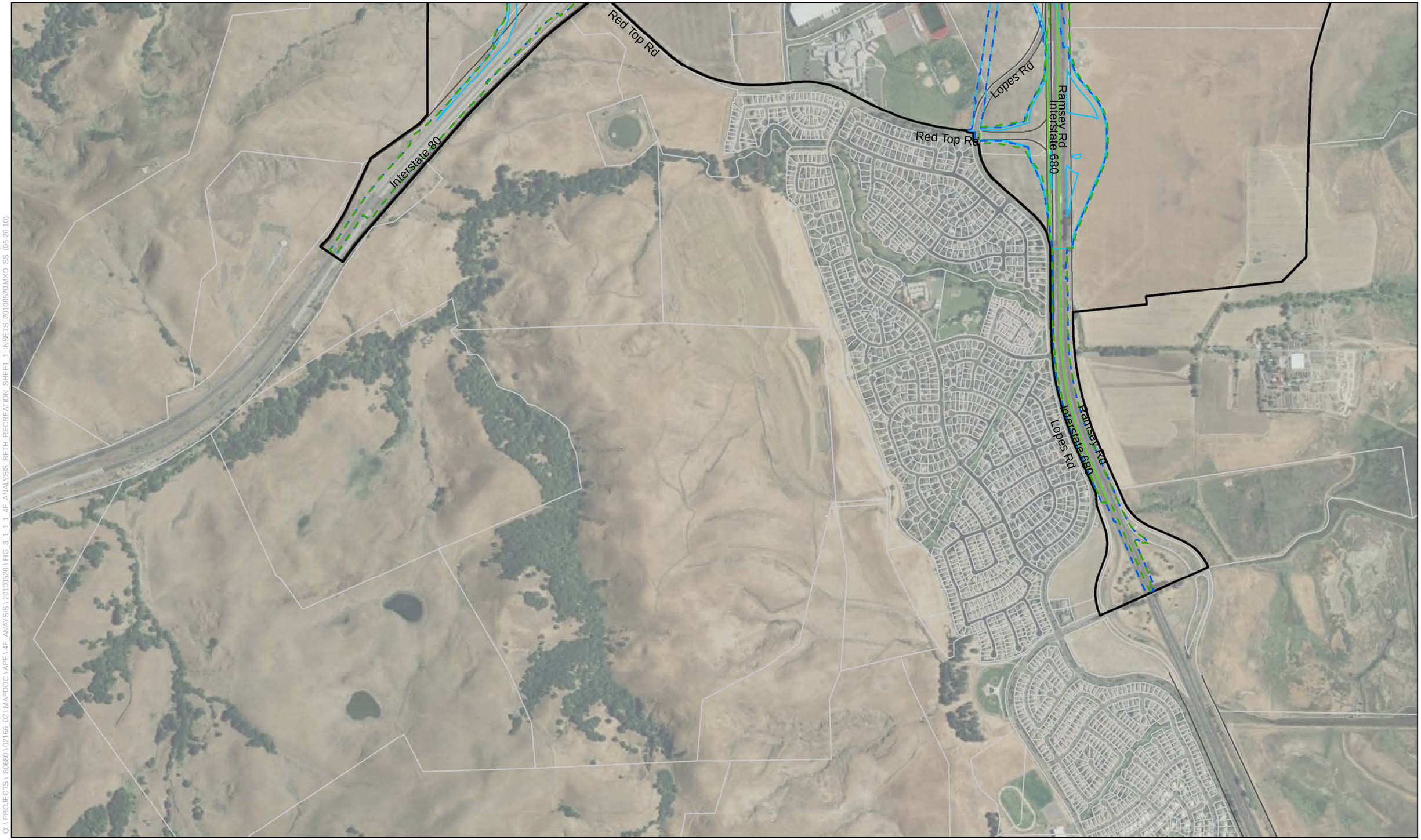
Measures to minimize harm to the Linear Park Trail would include realigning the existing trail north of both alternatives at the Abernathy Road/I-80 interchange prior to their construction. This realignment would allow for the continued use of the trail facilities while construction activities under the two alternatives were underway.

Coordination for the Linear Park Trail

Pending the City of Fairfield's concurrence, the preliminary determination is that the effects on this Section 4(f) resource as a result of implementation of Alternative B and alternative C would be de minimis under Section 4(f). Concurrence from the City of Fairfield that the effect of the project is minimal will enable the Department to make a de minimis finding.

Concluding Statement for the Linear Park Trail

Pending the City of Fairfield's concurrence, the preliminary determination is that the effects on this Section 4(f) resource as a result of implementation of Alternative B and Alternative C would be *de minimis* under Section 4(f).



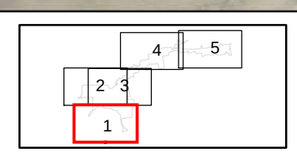
Architectural APE
Existing ROW
Existing Approved Facilities/ Development
Area of Project Impact

Project Alternatives

Alternative B, Phase 1
Alternative B
Alternative C
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources

Historic Resource
Trails



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Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet:1

v. 5/20/2010

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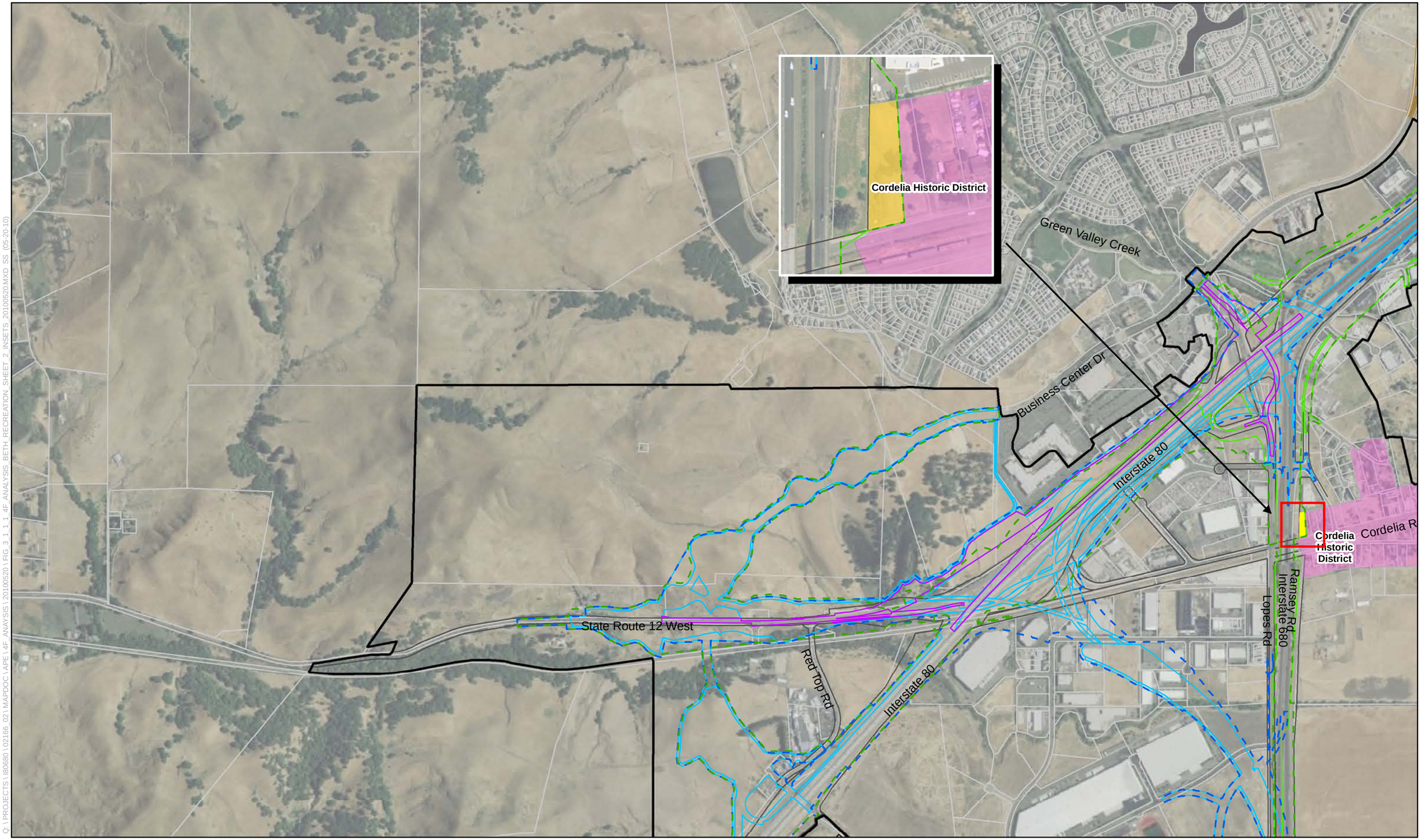
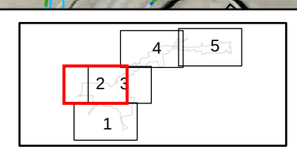


Architectural APE
Existing ROW
Existing Approved Facilities/ Development
Area of Project Impact

Project Alternatives
Alternative B, Phase 1
Alternative B
Alternative C
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources
Historic Resource
Trails



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Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet:2

v. 5/20/2010

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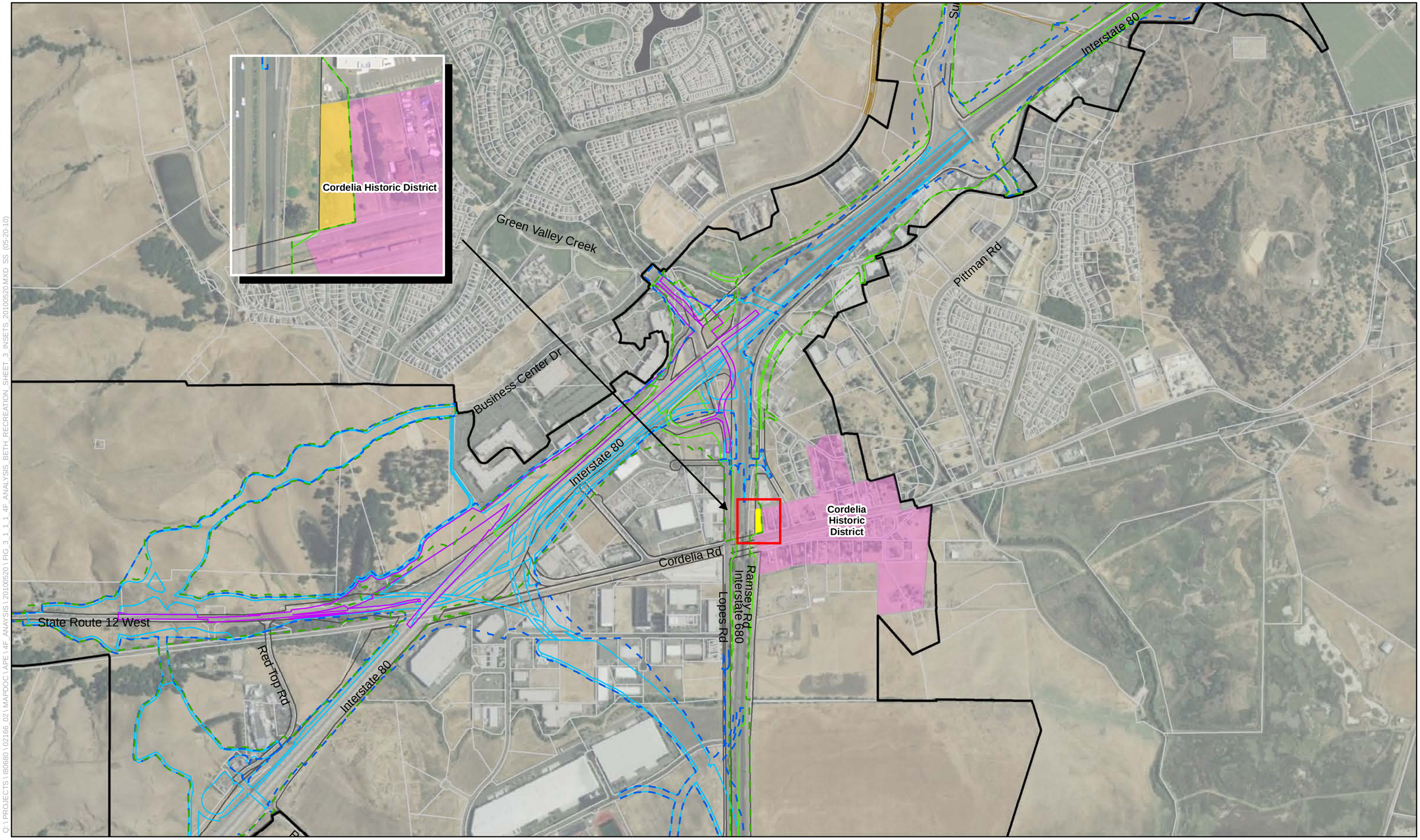
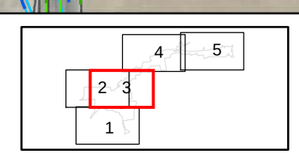


Architectural APE
Existing ROW
Existing Approved Facilities/ Development
Area of Project Impact

Project Alternatives
Alternative B, Phase 1
Alternative B
Alternative C
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources
Historic Resource
Trails



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Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
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v. 5/20/2010

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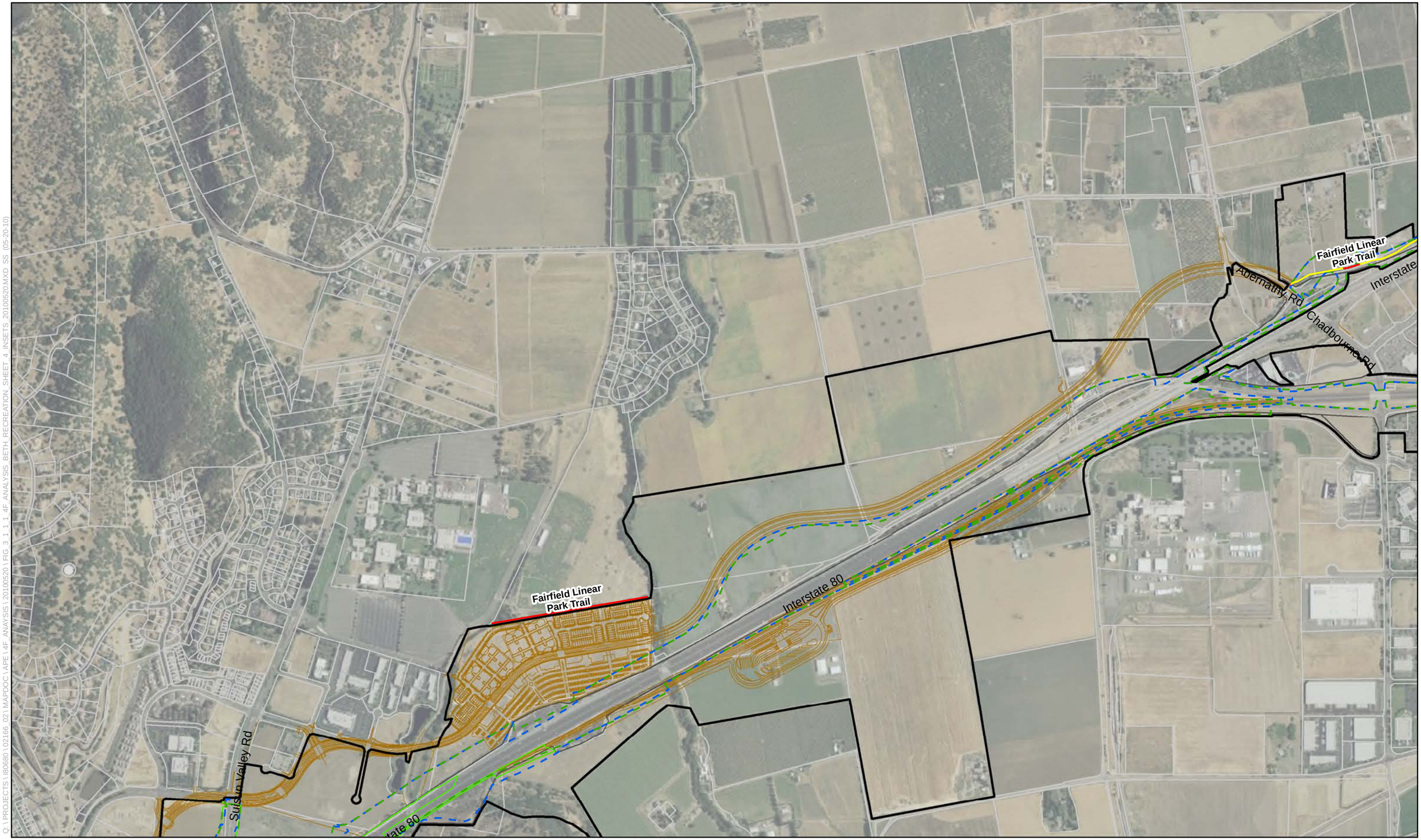
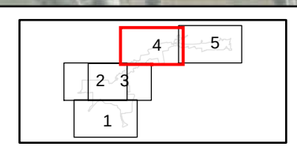


Architectural APE
Existing ROW
Existing Approved Facilities/ Development
Area of Project Impact

Project Alternatives
Alternative B, Phase 1
Alternative B
Alternative C
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources
Historic Resource
Trails



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Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
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v. 5/20/2010

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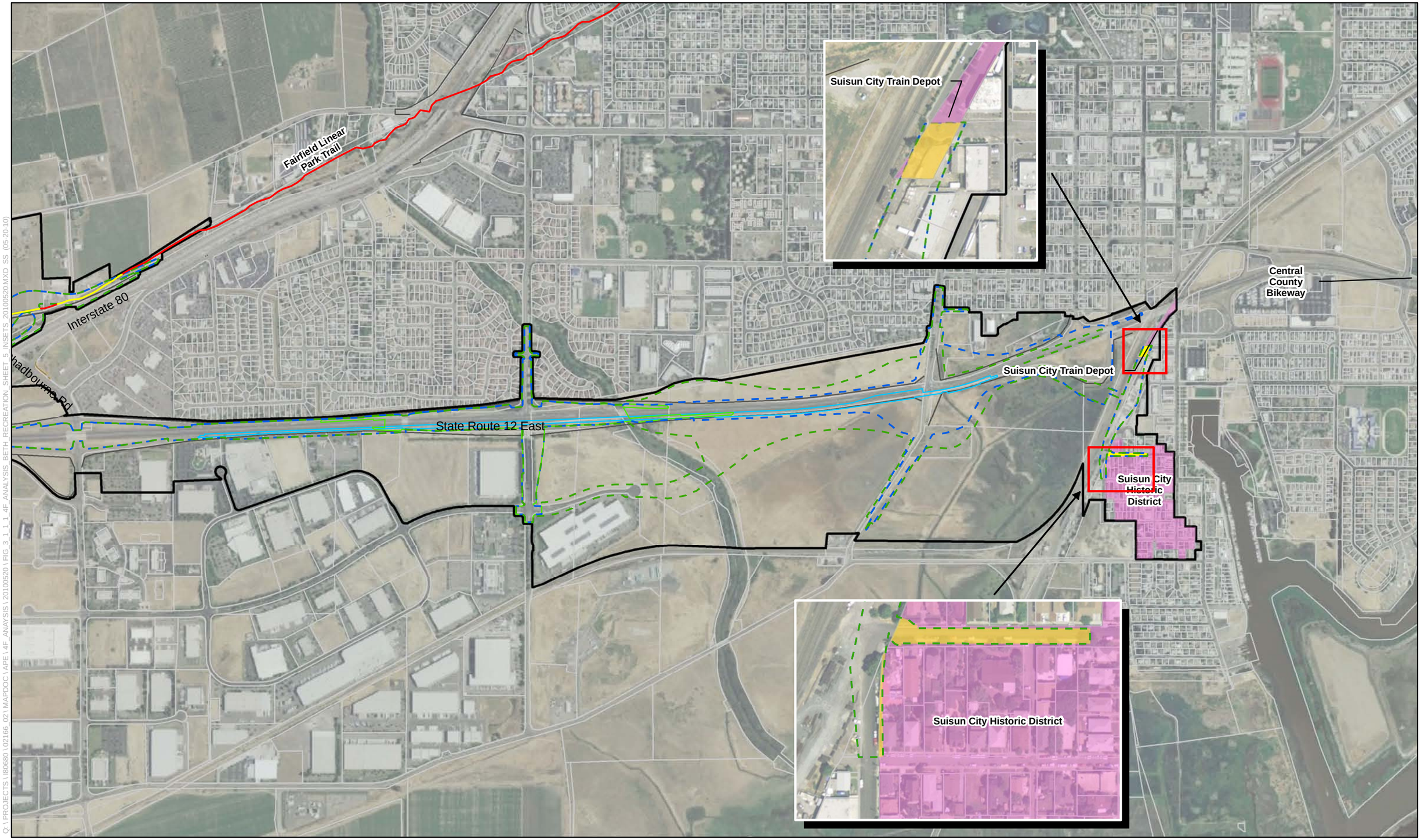

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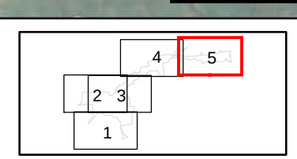
Architectural APE
Existing ROW
Existing Approved Facilities/ Development
Area of Project Impact

Project Alternatives
Alternative B, Phase 1
Alternative B
Alternative C
Alternative C, Phase 1
Initial Phase 1

Section 4(f) Resources
Historic Resource
Trails



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Aerial Photo Source: Aerials Express, 2007; © i-cubed, 2008

Figure 3.1.1-1
Section 4(f) Resources in the Project Vicinity
Sheet:5

v. 5/20/2010

3.1.2 Growth

This discussion is based primarily on the CIA prepared for the proposed project.

Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act of 1969, requires evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

Affected Environment

For the purposes of this analysis, the study area was defined by available statistical data describing Solano County, the cities of Fairfield and Suisun City, and eleven 2000 Census Tract Block Group areas that encompass the project area and its environs.

Population and Housing Trends in the Study Area

The nine-county Bay Area region, or San Francisco–San Jose–Oakland Metropolitan Statistical Area (MSA), is the twelfth largest metropolitan area in the United States, with a population of 7,039,362 as of the 2000 U.S. Census. The 1990 U.S. Census reported the region's population as 6,253,311; this change constitutes a 13% increase. Solano County has grown the fastest of the nine counties, with an increase of 68% between 1980 and 2000. Fairfield alone grew by 66% between 1980 and 2000. This trend is expected to continue well into the twenty-first century. Table 3.1.2-1 shows the projected increase in population for the Bay Area, Solano County, Fairfield, and Suisun City from 2000 to 2035.

Table 3.1.2-1. Regional and Local Population—2000 through 2035

Jurisdiction	2000	2005	2010	2015	2020	2025	2030	2035
Bay Area Region	6,783,762	7,096,100	7,412,500	7,730,000	8,069,700	8,389,600	8,712,800	9,031,500
Solano County	392,542	421,600	455,200	488,400	514,900	539,900	562,900	585,800
City of Fairfield	96,178	106,000	115,500	123,700	129,700	135,000	139,600	144,500
Suisun City	26,118	27,600	29,700	31,600	32,900	34,400	35,900	37,400

Sources: ABAG Projections 2007; U.S. Census Bureau 2000.

The Association of Bay Area Governments' (ABAG's) Projections 2007 places the 2000 Bay Area regional population at 6,783,762. By 2035, the region is expected to have a population of

9,031,500, a 25% increase. The population of Solano County is expected to increase by 49%, Fairfield by 50%, and Suisun City by 43% in that same period.

As would be expected with the increase in population described above, housing has grown rapidly in the study area, both in total number and in average household size.

Approximately 63% of housing units in the county and 61% of housing units in Fairfield–Suisun City are owner occupied. Average household size is larger in Fairfield–Suisun City than in Solano County as a whole. Table 3.1.2-2 shows housing characteristics for Solano County (including the incorporated cities of Benicia, Dixon, Vacaville, Vallejo, and Fairfield–Suisun City) and Fairfield–Suisun City as a discrete unit.

Table 3.1.2-2. Housing Characteristics in 2000

	Solano County	Fairfield–Suisun City
Total Housing Units	134,513	41,635
Average Household Size	2.9	3.02
Owner-Occupied Units	84,994	25,549
Renter-Occupied Units	45,409	14,920
Two-Person Household	33,062	10,347
Three-Person Household	22,778	7,340
Four-Person Household	21,946	7,375
Five-Person Household	11,331	3,890
Six-Person Household	4,777	1,634
Vacant Units	4,110	1,166

Source: U.S. Census Bureau 2000.

The number of households in the Bay Area region is anticipated to grow by 34% between 2000 and 2035. Solano County is expected to experience a 50% increase, Fairfield a 52% increase, and Suisun City a 43% increase during the same period. Table 3.1.2-3 shows the projected number of households for the Bay Area Region, Solano County, Fairfield, and Suisun City between 2000 and 2035.

Table 3.1.2-3. Number of Regional and Local Households—2000 through 2035

Jurisdiction	2000	2005	2010	2015	2020	2025	2030	2035
Bay Area Region	2,466,020	2,583,080	2,696,580	2,819,030	2,941,760	3,059,130	3,177,440	3,292,530
Solano County	130,403	142,040	152,400	162,620	172,050	180,360	188,290	196,220
City of Fairfield	30,870	34,690	37,530	40,050	42,060	43,780	45,400	47,030
Suisun City	7,987	8,590	9,130	9,580	10,020	10,500	10,960	11,420

Source: ABAG Projections 2007; U.S. Census Bureau 2000.

Persons per household in the Bay Area region overall has increased from 2.61 in 1990 to 2.73 in 2005. Again, there is substantial variation within the region. With fewer families and more young singles than the rest of the Bay Area, San Francisco has the smallest average household size, reported at 2.30 persons per household in 2000. Solano County, on the other hand, has the second-highest average household size, estimated at 2.90 persons per household in 2000. ABAG expects household sizes across the Bay Area to level off, projecting a ratio of 2.71 persons per household for the region in 2025.

Environmental Consequences

The Department's *Environmental Handbook Volume 4, Community Impact Assessment* states that "growth inducement is defined as the relationship between the proposed transportation project and growth within the project area." The Department has development a checklist for determining if a project is considered to be growth inducing. The proposed alternatives were evaluated in accordance with this checklist as shown in Table 3.1.2-4.

Table 3.1.2-4. Growth-Inducement Checklist

Question	Answer
1. Would the project attract more residential development or new population into the community or planning area?	No. Though the project would increase highway capacity and allow some growth, it would do so in accordance with local planning documents. The project would increase the capacity of the I-80/I-680/SR 12 interchange complex to accommodate existing and planned increases in traffic. These improvements would allow, to some extent, future population growth both locally and regionally to occur. However, the project would not result in the direct development of residential land uses nor would it provide access to areas that currently do not have access. Furthermore, increases in population and residential development have been planned for by the City of Fairfield and Suisun City.
2. Would the project encourage the development of more acreage of employment-generating land uses in the area (such as commercial, industrial, or office)?	No. The project would not encourage the acreage of employment-generating land uses in the area beyond what is accounted for in local planning documents. By increasing the capacity of the interchange, the project could result in population growth both regionally and locally. Locally, several locations within the study area could be developed with employment-generating land uses. However, these areas have been planned for such development by the City of Fairfield or Suisun City.
3. Would the project lead to the increase of roadway, intersection, sewer, water supply, or drainage capacity?	Yes. The project would lead to an increase of freeway capacity by improving the interchange complex. The project would involve the reconstruction of several local interchanges and one new interchange on SR 12W. However, beyond the interchanges there would not be substantial improvement to local streets that would increase their capacity. The project would not result in increased sewer, water, or drainage capacity.
4. Would the project encourage the rezoning or reclassification of lands in the community General Plan from agriculture, open space, or low-density residential to a more intensive land use?	No. Rezoning and intensification of land uses is most likely to occur in areas where interchanges are reconstructed or new interchanges provided. While the project (both build alternatives) would result in the reconstruction of several interchanges and the construction of new interchanges at I-680/Red Top Road and SR12W, most areas around these interchanges are either already fully developed and intensification of land uses is highly unlikely, or current zoning is for continued agricultural use. Interchanges that would be reconstructed such as the I-80/Green Valley Road and I-80/Suisun Valley Road interchanges are already surrounded by commercial development making rezoning of existing land uses unlikely. The new interchange at I-680/Red Top Road is located in an area were Land uses to the west of the new interchanges at I-680/Red Top Road include residential areas and a high school to the west, and agricultural lands and the Suisun Marsh, which cannot be reclassified or rezoned, to the east. The new interchange at SR 12W is located in an area of the County zoned for continued agricultural use and due to the county's strong agricultural preservation policies, is unlikely to see reclassification or rezoning.
5. Is the project not in conformance with the growth-related policies, goals, or objectives of the local General Plan or the area growth management plan?	No. While the project would increase the capacity of the freeway system to accommodate existing and future increases in traffic, the growth generating this increase in traffic has been planned for both locally and regionally in the general plans of the county, City of Fairfield and Suisun City, and regional transportation plans.

Question	Answer
6. Would the project lead to the intensification of development densities or accelerate the schedule for development or would it facilitate actions by private interests to redevelop properties within four miles of a limited access highway interchange?	No. The project would not lead to intensification of development beyond that planned for by the cities. As stated above, the project could influence growth and intensification in the surrounding communities in some indirect way. However, the areas in which this intensification would occur have been planned for such development by the City of Fairfield or Suisun City.
7. Would the project measurably and significantly decrease home to work commuter travel times to and from or within the project area (more than 10% overall reduction or five minutes or more in commute time savings?)	Yes. Because the project would increase the capacity of the I-80/I-680/SR 12 interchange complex, it would result in decreasing commute times by more than 10% overall and five minutes or more in commute time savings.
8. Is the project directly related to the generation of cumulative effects as defined by the CEQA guidelines?	No. The project is not directly related to cumulative growth in Solano County and surrounding communities.

Potential to Induce Growth

The proposed alternatives would add capacity to the I-80/I-680/SR 12 interchange complex to accommodate existing and future projected increases in traffic. By doing so, the proposed project would result, to some extent, in accommodating growth both locally and regionally. This growth in traffic is the result of local and regional land use plans, which, in turn, have been considered in regional transportation plans. However, this development would most likely occur in areas already planned for such development by the County, City of Fairfield, and Suisun City. Therefore, the proposed alternatives would not foster local development or growth beyond that which is already planned.

In November 2008 the people of Solano County approved Measure T which confirmed approval of a new County General Plan including an amendment to Solano County's 1994 Orderly Growth Initiative that updates certain provisions of the Solano County General Plan relating to agricultural and open space policies and land use designations, and extends the initiative until December 2028. A cornerstone principal of the new General Plan and Orderly Growth Initiative is the direction of new urban growth and development toward municipal areas. Adoption of the new County General Plan and extension of the Orderly Growth Initiative further supports the conclusion that the project alternatives would accommodate growth in areas already planned for such growth and that those areas are located within municipal areas. Under the No-Build Alternative, no new effects associated with growth would occur.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are necessary because the project alternatives would not induce growth beyond areas that have been planned for such growth by the City of Fairfield and Suisun City.

3.1.3 Farmlands

As stated in the Department's *Environmental Handbook Volume 4, Community Impact Assessment*, "The intent of the California Department of Transportation is to avoid, whenever practical, locating public improvements within agricultural preserves or acquiring high quality agricultural land for transportation improvements" (California Department of Transportation 1997). This section presents a discussion of the agricultural resources and nature of agriculture in the project area, including a description of state, county, and city farmland preservation policies.

Regulatory Setting

The National Environmental Policy Act (NEPA) and the Farmland Protection Policy Act (FPPA, 7 USC 4201-4209; and its regulations, 7 CFR Part 658) require federal agencies, such as the FHWA, to coordinate with the Natural Resources Conservation Service (NRCS) if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

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

County of Solano

The 2008 Solano County General Plan continues the County's long-time commitment to preserving agricultural land by limiting urbanized development outside the incorporated cities and their "municipal service areas." County voters have established policies, by initiative, which restrict the conversion of lands designated for agricultural use on the General Plan to other uses. Solano County administers the Williamson Act on lands outside city limits.

The Solano County 2008 General Plan Agriculture Element identifies the Suisun Valley as one of ten agricultural regions within the county that will be the subject of additional strategic planning for the purpose of encouraging the conservation of agricultural uses. Minimum parcel size within the Suisun Valley is set at 20 acres, and general land use is intended to include "agricultural production, agricultural processing facilities, and facilities to support the sale of produce, and tourist services that are ancillary to agricultural production."

At the present time, the County has issued a Draft Suisun Valley Strategic Plan that is intended to establish the means to implement the County's vision for the Suisun Valley in support of family farms and increased economic vitality from farming (County of Solano 2009). The draft is still being prepared (three public workshops have been held in 2009) and has not been formally adopted. As the plan is being drafted, the following have emerged as the top five priorities of the area's stakeholders, in order: maintain agricultural character; improve farm production and income; create agri-tourism serving centers; provide infrastructure to support expanded use of Suisun Valley; and enable value-added agriculture.

The General Plan contains the following strategies for agriculture.

- Ensuring that agriculture endures as an essential part of Solano County's identity and lifestyle.
- Maintaining and promoting agriculture as an important business and major contributor to Solano County's economy.
- Preserving additional values of agricultural land, including important scenic value within the rural environment, providing habitat, providing options for recreation, and serving as community separators defining the county's distinct cities.
- Providing opportunities for agriculture to serve as an educational tool and tourist draw.

The goals listed below, excerpted from the County Agriculture Element, are pertinent to the proposed project.

> **AR.G-1:** Recognize, value, and support the critical roles of all agricultural lands in the stability and economic well-being of the county.
>
> **AR.G-2:** Preserve and protect the county's agricultural lands as irreplaceable resources for present and future generations.
>
> **AR.G-5:** Reduce conflict between agricultural and nonagricultural uses in Agriculture-designated areas.
>
> **AR.G-7:** Preserve and enhance the landscape and economy of the Vaca, Pleasants, Lagoon, and Suisun Valleys as rural agricultural communities.

In addition, the following policies from the County Agriculture Element are pertinent to the proposed project.

> **AG.P-1**: Ensure that agricultural parcels are maintained at a sufficient minimum parcel size so as to remain a farmable unit. Farmable units are defined as the size of parcels a farmer would consider viable for leasing or purchasing for different agricultural purposes. A farmable unit is not considered the sole economic function that will internally support a farm household.
>
> **AG.P-17:** Minimize potential conflicts between automobile and bicycle traffic and agricultural operations through transportation planning and capital improvement efforts.
>
> **AG.P-29:** Support the unique agricultural uses found in the interior valleys (Suisun, Pleasants, Vaca, and Lagoon) and encourage the development of complementary agritourism, processing, and commercial uses in these regions.

The Agricultural Element also provides the following pertinent implementation recommendations.

> **AG.I-1:** Create and adopt a farmland conversion mitigation program and ordinance. Require compensation for loss of agricultural land. Establish appropriate mitigation ratios for the program or utilize a graduated mitigation mechanism. The mitigation ratio shall be a minimum of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted). The program shall not present regulatory barriers to agritourism, agricultural services, and agricultural processing in regions and within land use designations where such uses are permitted and encouraged. The program shall also establish mitigation within the same agricultural region as the proposed development project, or within the Agricultural Reserve Overlay district, as a preferred strategy. The program shall incorporate a fee option, and shall provide an exemption for farmworker housing. Mitigation lands shall be of similar agricultural quality to the lands being converted.
>
> **AG.I-8:** In coordination with programs in the Transportation and Circulation chapter, create a comprehensive plan for roadway improvements to support agricultural needs. The plan shall include increased connectivity across I-80 for farmers and their equipment, turnouts on agricultural roads, and grading/paving of unimproved roads. The plan shall also provide strategies to reduce automobile and bicycle conflicts with agricultural operations throughout the county. Recommendations shall be integrated into County transportation plans, recreation plans, and capital improvement programs. Partner with cities and the Solano Transportation Authority to address funding strategies for planned facilities.

City of Fairfield

The City of Fairfield General Plan Land Use Element includes the following goals, objectives, policies, and programs relevant to the proposed project.

> **Goals [Goal A]—**Preserve agricultural and grazing lands within the General Plan area which define the visual setting of Fairfield; and, recognize the economic importance of agriculture in Solano County by directing the city's growth away from Important Farmlands and prime agricultural soils.
>
> **Objective AG 1—**Support preservation of existing agricultural lands.
>
> **Policy AG 1.4—**Permanently preserve productive agricultural lands within the Suisun Valley by continuing to direct new urban development away from the Suisun Valley.
>
> **Program 1.4A—**Where land is identified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the most recent Important Farmland maps prepared by the California Department of Conservation and is proposed for conversion to urban uses, the city shall arrange for preservation of an equal amount of the same class of farmland within the area. Such an arrangement may be through fee purchase, purchase of conservation easements, payment of an in-lieu fee, or other mechanisms.
>
> **Objective AG 2—**Encourage the preservation and expansion of the local agricultural economy.

> **Policy AG 2.1—**Cooperatively work with farmers, property owners, universities, colleges, and agricultural organizations and agencies to enhance the viability of agricultural uses and activities.
>
> **Policy AG 2.3—**Development shall not encroach upon or consume productive cropland in areas such as the Suisun Valley.

Suisun City

The City of Suisun City General Plan Land Use Element includes the following policy relevant to the proposed project.

> **Policy 6—Open Space for Agriculture.** Open spaces suitable for agricultural production within the city's sphere of influence should be preserved under Solano County General Plan policies for agricultural preservation until such a time as these lands are needed and are determined to be feasible for urban development.

Affected Environment

The information below is summarized from the CIA prepared for the proposed project. Additional information comes from the County of Solano's 2008 General Plan.

The California Department of Conservation's FMMP tracks changes in farmland use, including the conversion of farmland to urban use. This program is informational only, and does not regulate land uses. The FMMP classifies farmland into four types. Prime Farmland is considered land with the best physical and chemical features able to sustain long-term production of crops. Farmland of Statewide Importance is land that is similar to Prime Farmland, but has minor faults, such as slopes or limited ability to store soil moisture. Unique Farmland has lesser quality soils used for the production of the state's leading crops; it may be irrigated or include non-irrigated orchards or vineyards (together, these three farmland classifications constitute "Important Farmland"). Grazing Land contains existing vegetation suitable for livestock.

As of 2006, Solano County had a total of 360,562 acres of land under cultivation. Of this total, 139,536 acres were designated as Prime Farmland, 7,164 acres were designated as Farmland of Statewide Importance, 11,036 acres were designated as Unique Farmland, and 202,826 acres were used for grazing purposes (California Department of Conservation 2006). In 2006, the county produced a grand total of $233,505,000 worth of agricultural products, accounting for 10% of all county economic activity but also representing a 2.2% decline from 2005, when Solano County produced a record $238,689,600 worth of agricultural products (Solano County Department of Agriculture 2006). Farm production supports between 2,500 and 4,200 jobs and results in personal income of approximately $140 million. However, it is important to keep in mind that these numbers do not reflect the sum of agriculture's contribution to the economy of Solano County. A "multiplier effect" exists, whereby transportation, processing, marketing, and other farm-related activities significantly increase these values to the benefit of the regional economy.

Fairfield contains 2,981 acres of farmland within its urban limit line. Of this total, 1,179 acres are Prime Farmland, 314 acres are Farmland of Statewide Importance and 1,488 acres are Unique Farmland. Most of this land is concentrated in areas north of Travis Air Force Base and between I-80 and I-680 on the city's far western edge. According to the City of Fairfield General Plan, almonds, walnuts, and grapes are the city's primary agricultural products. Apricots, cherries, peaches, pears, prunes, and row crops are also grown.

Areas designated for agricultural purposes within the Suisun City planning area are limited. Remaining agricultural areas are primarily located east of Walters Road and south of SR 12E. Because of the high water table and poor soil conditions, these lands are used for grazing purposes only. No higher-quality farmlands are located within Suisun City limits.

According to U.S. Agricultural Census figures, the total dollar value of agricultural output in Solano County has steadily increased over the past 20 years. This trend has occurred in spite of the fact that total farmland acreage in the county has declined over the same period. Table 3.1.3-1 illustrates the trend of farmland conversion in Solano County from 1984 to 2006.

Between 1984 and 2006, 40,537 acres (1,843 acres per year) of agricultural land was converted to non-agricultural uses in Solano County. This conversion included 23,221 acres of Important Farmland at a rate of 1,056 acres per year. Approximately half of the converted acreage, or 12,689 acres, was considered Prime Farmland (California Department of Conservation 2006). During this same period, about 13,000 acres inside the cities' spheres of influence were converted to non-agricultural uses. This trend has caused local and regional governments to implement measures to preserve farmland.

In 2007, there were 265,629 acres of land held under Williamson Act contracts in Solano County. Table 3.1.3-2 and Figure 3.1.3-1 show parcels within the project area that are currently bound by Williamson Act contracts, as well as the acres that are being removed from the contract through cancellation or non-renewal.

Table 3.1.3-1. Historical Agricultural Conversion in Solano County, 1984–2006

Land Use Category	Acreage By Category[a]												Net Change	Average Annual Change
	1984	1986	1988	1990	1992	1994	1996	1998	2000[b]	2002	2004	2006		
Prime Farmland	152,225	152,261	152,044	151,795	151,525	150,796	150,865	150,356	144,667	143,210	141,575	139,536	-12,689	-577
Farmland of Statewide Importance	12,620	12,293	12,084	12,125	11,580	11,345	11,498	11,088	10,772	7,582	7,286	7,164	-5,456	-248
Unique Farmland	16,112	15,972	17,211	13,641	13,469	13,380	13,504	13,969	14,495	13,736	12,012	11,036	-5,076	-231
Important Farmland Subtotal	180,957	180,526	181,339	177,561	176,574	175,521	175,867	175,413	169,934	164,528	160,873	157,736	-23,221	-1,056
Grazing Land	220,142	218,919	208,984	205,626	203,983	204,334	202,121	199,270	201,813	201,339	201,303	202,826	-17,316	-787
Agricultural Land Subtotal	401,099	399,445	390,323	383,187	380,557	379,855	377,988	374,683	371,747	365,867	362,176	360,562	-40,537	-1,843
Urban and Built-Up Land	40,171	40,610	41,594	46,066	48,374	48,651	51,015	53,130	53,801	55,434	57,717	58,628	18,457	839
Other Land[c]	90,489	91,791	99,832	102,497	102,714	101,548	101,184	102,375	107,129	111,376	112,730	113,433	22,944	1,043
Water Area	50,612	50,524	50,622	50,621	50,726	52,316	52,182	52,182	49,695	49,696	49,749	49,749	-863	-39
Total Area Included in Inventory	582,371	582,370	582,371	582,371	582,371	582,370	582,369	582,370	582,372	582,373	582,372	582,372	1	0

Source: Solano County 1984-2006 Land Use Summary. California Department of Conservation Farmland Mapping and Monitoring Program 2006.

[a] Figures are generated from the most current version of the GIS data. Files dating from 1984 through 1992 were reprocessed with a standardized county line in the Albers Equal Area Projection and other boundary improvements.

[b] Due to the incorporation of digital soil survey data (SSURGO) in 2000, acreages for farmland, grazing and other land categories may differ from those published in the 1998–2000 Farmland Conversion Report. Water acreage also changed due to improvements to more accurately reflect the shoreline of San Pablo Bay.

[c] Other Land consists of nonagricultural land larger than 40 acres in size, and vacant land.

Table 3.1.3-2. Affected Williamson Act Lands

Map #	APN	Contract Number	Total Acres in Contract[a]
1	0027-251-330 0027-271-060	739	69.97
2	0148-260-010 0148-270-010	97	268.9
3	0148-270-340	1100	42.2
4	0150-270-050 0150-270-060	2	7.51
Total			**388.58**

Source: Solano Transportation Authority 2008.

[a] Acres for contracts 739 and 2 have been adjusted to account for land removed from these contracts by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

In addition to lands under Williamson Act contract, the project area includes lands restricted by conservation easements. Typically, conservation easements are legal agreements between property owners and government agencies or nonprofit organizations that permanently limit land development. Easements can restrict land to a prior use or preserve land for purposes of creating and maintaining open space. Some parcels in the project area are under both an agricultural easement and an open space easement. These easements are held by the Solano Land Trust. Table 3.1.3-3 shows the parcels in the project area that are restricted by conservation easements.

Table 3.1.3-3. Conservation Easements in the Project Area

Map #	APN	Type of Easement	Total Acres
1	0027-251-330 0027-271-060	Agricultural	69.97[a]
5	0027-251-340	Agricultural	0.15
6	0027-251-400	Agricultural	0.06
7	0027-251-420	Agricultural	0.23
8	0027-251-440	Agricultural	2.05
Total			72.46

Source: Solano Transportation Authority 2008

[a] Acres have been adjusted to account for land removed from this easement by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

Environmental Consequences

The method for determining affected agricultural parcels was identical to that used for determining parcel acquisitions (see Section 3.1.1). Additionally, affected acreage for each acquired agricultural parcel was determined by measuring the area of overlap between the project roadway linework and the edge of the parcel. Table 3.1.3-4 and Figures 3.1.3-2 and 3.1.3-3 show agricultural parcels affected by the proposed project alternatives. Parcels located in the footprint of more than one alternative are listed under each relevant alternative.

Table 3.1.3-4. Impacted Agricultural Parcels

Map #	APN	Project Segment	Total Acreage	Impacted Acreage
Alternative B				
1	0148-260-010[a, b]	Western	256.1	19.2
2	0148-260-050[a]	Western	44.0	11.5
3	0148-260-080[a]	Western	21.7	14.1
4	0148-270-010[a, b]	Western	12.8	2.2
5	0148-270-060	Western	6.0	3.0
6	0148-270-240[a]	Western	15.0	4.8
7	0148-270-340[a, b]	Western	42.2	4.4
8	0046-050-180[a]	Western	157.6	12.5
9	0027-251-330[c, d]	Central	54.71	11.2
10	0027-271-060[b, c, d]	Central	15.26	11.3
11	0148-260-060[a]	Western	2.72	2.6
12	0027-510-160	Central	4.9	0.3
13	0150-270-050[b]	Central	7.7	1.0
14	0150-270-060	Central	10.5	2.1
15	0032-010-390	Eastern	65	23.45
16	0032-020-040	Eastern	5	3.28
17	0032-020-140	Eastern	21.51	10.05
18	0032-020-160	Eastern	4.54	1.91
Total			**747.24**	**138.89**
Alternative B, Phase -1				
	No Agricultural Parcels Impacted		0	0
Alternative C				
1	0148-260-010[a, b]	Western	256.1	19.3
2	0148-260-050[a]	Western	44.0	10
3	0148-260-080[a]	Western	21.7	13.7
4	0148-270-010[a, b]	Western	12.8	3.9
5	0148-270-060	Western	6.0	4.5
6	0148-270-240[a]	Western	15.0	6.8
7	0148-270-340[a, b]	Western	42.2	4.6
8	0046-050-180[a]	Western	157.6	11.8
9	0027-251-330[c, d]	Central	54.71	11.2
10	0027-271-060[b, c, d]	Central	15.26	11.3
12	0027-510-160	Central	4.85	0.27
13	0150-270-050[b]	Central	7.66	1.01
14	0150-270-060	Central	10.47	2.05
15	0032-010-390	Central	65	7.06
16	0032-020-040	Central	5	0.87
17	0032-020-140	Central	21.51	8.6
18	0032-020-160	Central	4.54	2.83
19	0148-260-060[a]	Western	2.72	2.6
Total			**747.12**	**122.39**
Alternative C, Phase -1				
1	0148-260-010[a]	Western	256.1	19.3
2	0148-260-050[a]	Western	44.0	10
3	0148-260-080[a]	Western	21.7	13.7
4	0148-270-010[a]	Western	12.8	3.9
5	0148-270-060	Western	6.0	4.5

Map #	APN	Project Segment	Total Acreage	Impacted Acreage
6	0148-270-240[a]	Western	15.0	6.8
7	0148-270-340[a]	Western	42.2	4.6
8	0046-050-180[a]	Western	157.6	11.8
19	0148-260-060[a]	Western	2.72	2.6
Total			**680.51**	**77.2**

Source: Solano County Assessor's Office 2007.
[a] Not Prime Farmland.
[b] Williamson Act Parcels.
[c] Valine Conservation Easement.
[d] Total Acreage adjusted to account for land removed by the North Connector Project which was approved by STA, May 14, 2008, and is under construction as of November 2009.

The federal AD-1006 Farmland Conversion Impact Rating form (also known as the Land Evaluation and Site Assessment or LESA form), which was completed in conjunction with the NRCS, allows the alternatives of the proposed project to be assessed for their impact on the viability of farmlands. This assessment helps to determine the impact each alternative might have on the farmlands in the project area. Correspondence with the NRCS and the completed AD-1006 Farmland Conversion Impact Rating form are contained in Appendix E.

For purposes of NEPA analysis, the LESA approach rates the impact of a proposed project on the basis of a scoring system. Specific criteria related to agricultural viability are examined by both the NRCS and the federal agency involved. Each criterion has a set number of points it may be awarded. A project's point total is compared to the "significance score" created by the U.S Department of Agriculture. If the total site assessment is less than 160 points, a minimal level of consideration of protection would be given, but no further alternative analysis would be needed. The completed form may be found in Appendix C of the CIA. The LESA site assessment for Alternatives B and C are 137.7 and 134.3 respectively which are below the "significance score" of 160 points. As such, the NEPA analysis concludes that the proposed project would not adversely affect agriculture.

Direct Conversion of Farmland

Alternative B would affect 18 parcels, converting roughly 140 acres of agricultural land to roadway, while Alternative B, Phase 1 would not affect agricultural land. Alternative B would encroach upon 48.76 acres of land held in Williamson Act contracts. Additionally, Alternative B would affect 22.5 acres of land protected by the Valine Ranch Conservation Easement through construction of the westbound truck scales relocation.

Alternative C would affect 19 parcels, converting roughly 122 acres of agricultural land, while Alternative C, Phase 1 would affect nine parcels, converting roughly 77 acres of agricultural land.

Affected farmlands in the western segment are not categorized as Prime Farmland and are used for dryland grazing. Prime Farmland in the central segment between Dan Wilson Creek and Suisun Creek have already been approved for development of a mixed-use project (Fairfield Corporate Commons Project) and is therefore not included in calculation of affected farmland. Alternative C would affect 22.5 acres of land protected by the Valine Ranch Conservation

Easement and 40 acres of land under a Williamson Act contract through construction of the westbound truck scales relocation.

Based on the results of the LESA scoring, neither Alternative B nor Alternative C would result in a substantial adverse effect on farmland and therefore Alternatives B, Phase 1 and Alternative C, Phase 1, because they represent a subset of improvements under Alternatives B and C, would also not result in a substantial adverse effect on farmlands

The No-Build Alternative would make no physical changes and therefore would have no effect on existing agricultural uses.

Conversion of Agricultural Lands under Williamson Act Contracts

Alternative B, Alternative C, and Alternative C, Phase 1 would not be able to avoid the conversion of land held in Williamson Act contracts in the vicinity of the extension of Red Top Road to Business Center Drive and in the area of the westbound truck scales relocation. The affected portion of the Williamson Act parcels would be removed from the Williamson Act contract by cancellation, upon acquisition by the Department. The remainder of the parcels would be unaffected. Because Williamson Act contracts are related to the tax status of the parcel, and since the remainder of the Williamson Act contract would remain in place, this is not considered an adverse effect.

Alternative B, Phase 1 would not include construction in the vicinity of any Williamson Act parcels and therefore no conversion of lands under Williamson Act contracts would result. The No-Build Alternative would not result in any physical changes to the project area and therefore, would have no effect on lands under Williamson Act Contracts.

Conversion of Agricultural Lands under Conservation Easements

Lands under the Valine Conservation Easement would also be affected by the proposed project. Both Alternative B and C would result in the acquisition and conversion of all of this land between the North Connector and I-80 for the westbound truck scales, approximately 22.5 acres. Because a conservation easement has been placed over this land, it is considered to have higher agricultural value than other agricultural land in the project area.

The No-Build Alternative would not result in any physical or land use changes and therefore would have no effect on agricultural lands under conservation easements.

Avoidance, Minimization, and/or Mitigation Measures

The Department's *Environmental Handbook Volume 4, Community Impact Assessment*, Section 4-5.3 offers many possible mitigation measures for significant impacts on agriculture. They include choosing alternative alignments that would avoid farmland altogether, or that would convert fewer acres of farmland or take other farmland that has a lower relative value. However, Alternatives B and C have very similar impacts on agricultural lands in terms of the number of parcels and total acreage affected. Of the fundable first phases, Alternative B, Phase 1 would affect the least amount of agricultural land. The manual lists a number of measures to mitigate

farmland impacts, of which the proposed project has implemented the use of concrete median barriers instead of wider medians.

Compensate for Conversion of Important Farmland

The Department does not have a specific policy or regulation regarding mitigation for agricultural conversion, nor is the Department bound by local government policies or regulations regarding mitigation for agricultural conversion. However, the Department does consider local government policies and regulations in evaluating impact and determining what constitutes appropriate mitigation. In that context, the Department considered mitigation ratios used by STA as part of the North Connector Project (Final EIR certified May 18, 2008), as well as the recently adopted Solano County General Plan. In both those examples, the mitigation centers on protecting farmland within the county through purchase of conservation easements based on the acreage of farmland affected.

The Department applied the following mitigation ratios to the I-80 EB Cordelia Truck Scales Relocation Project (Final EIR/EA, October 2009, page 3-12) which represents the most recent and relevant example for mitigation of agricultural impacts associated with transportation projects in Solano County. To mitigate impacts on important farmland (those lands classified as “prime farmlands”), long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County at a 1:1 ratio (one acre protected for every one acre directly affected). Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area. As such, the mitigation for the loss of lands under easement will be implemented at a higher ratio of 1.25:1.

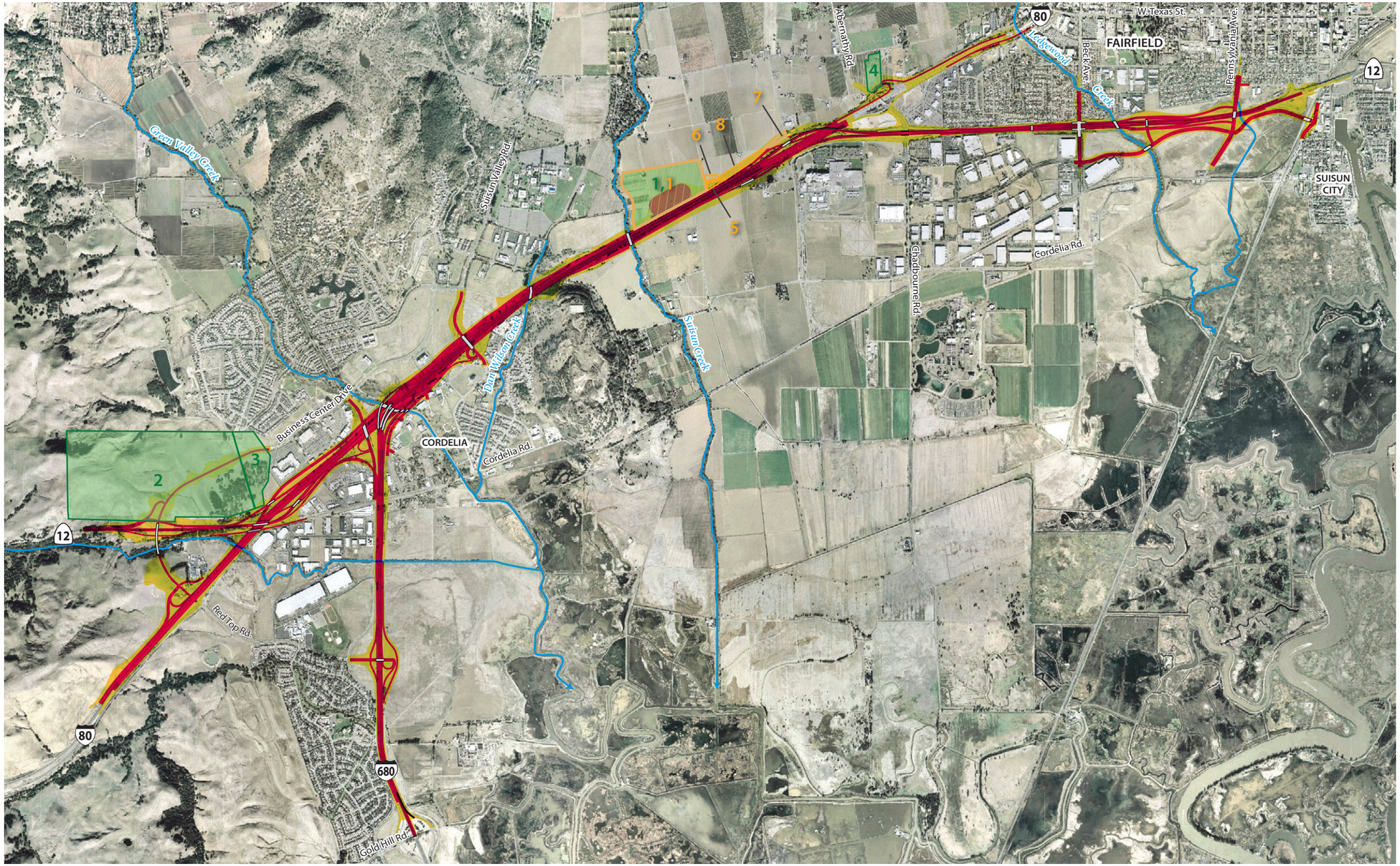

Figure 3.1.3-1
Lands under Williamson Contract and Conservation Easements

Graphics... 03166.03 EIS (11-09)

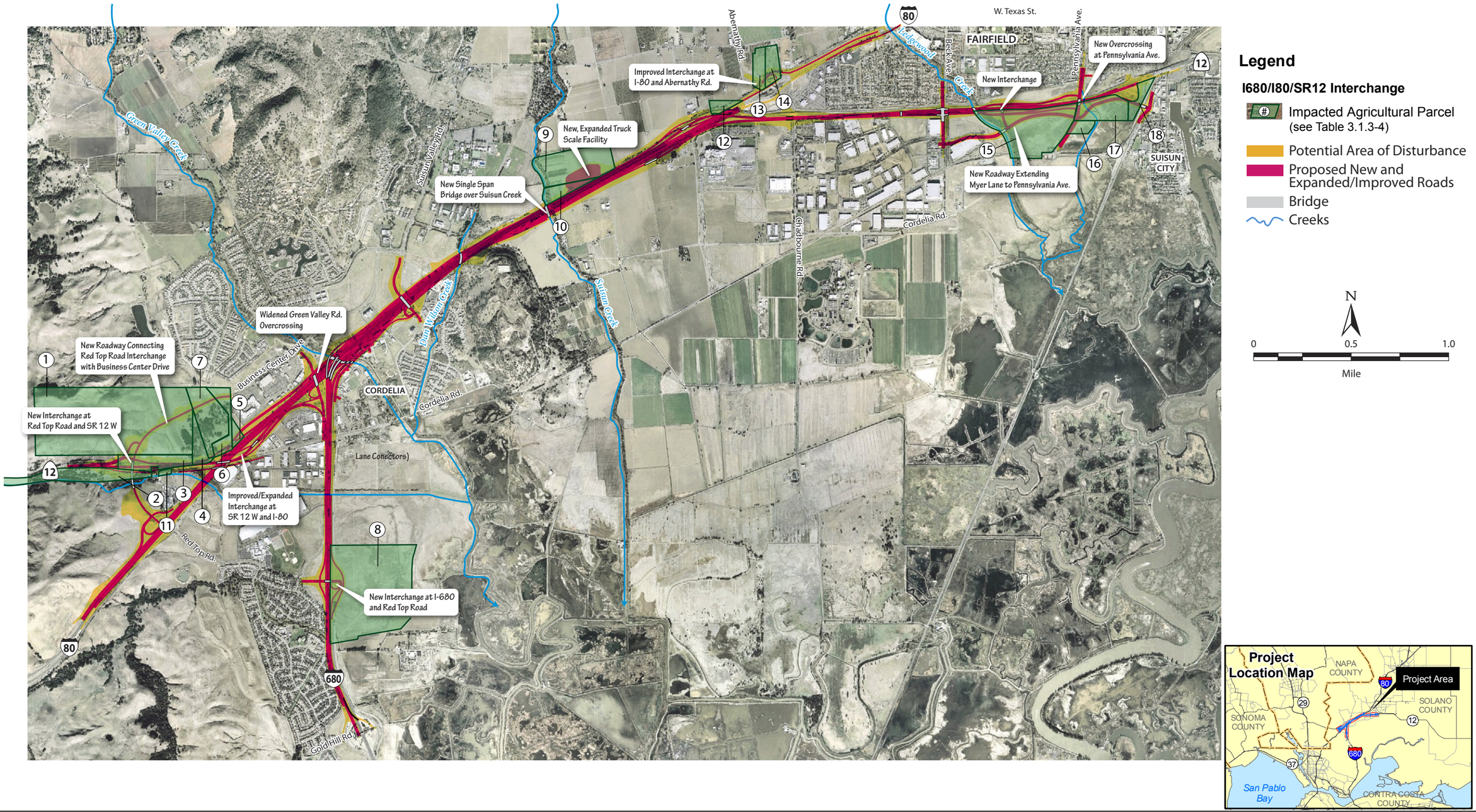

Figure 3.1.3-2
Alternative B: Impacted Agricultural Parcels

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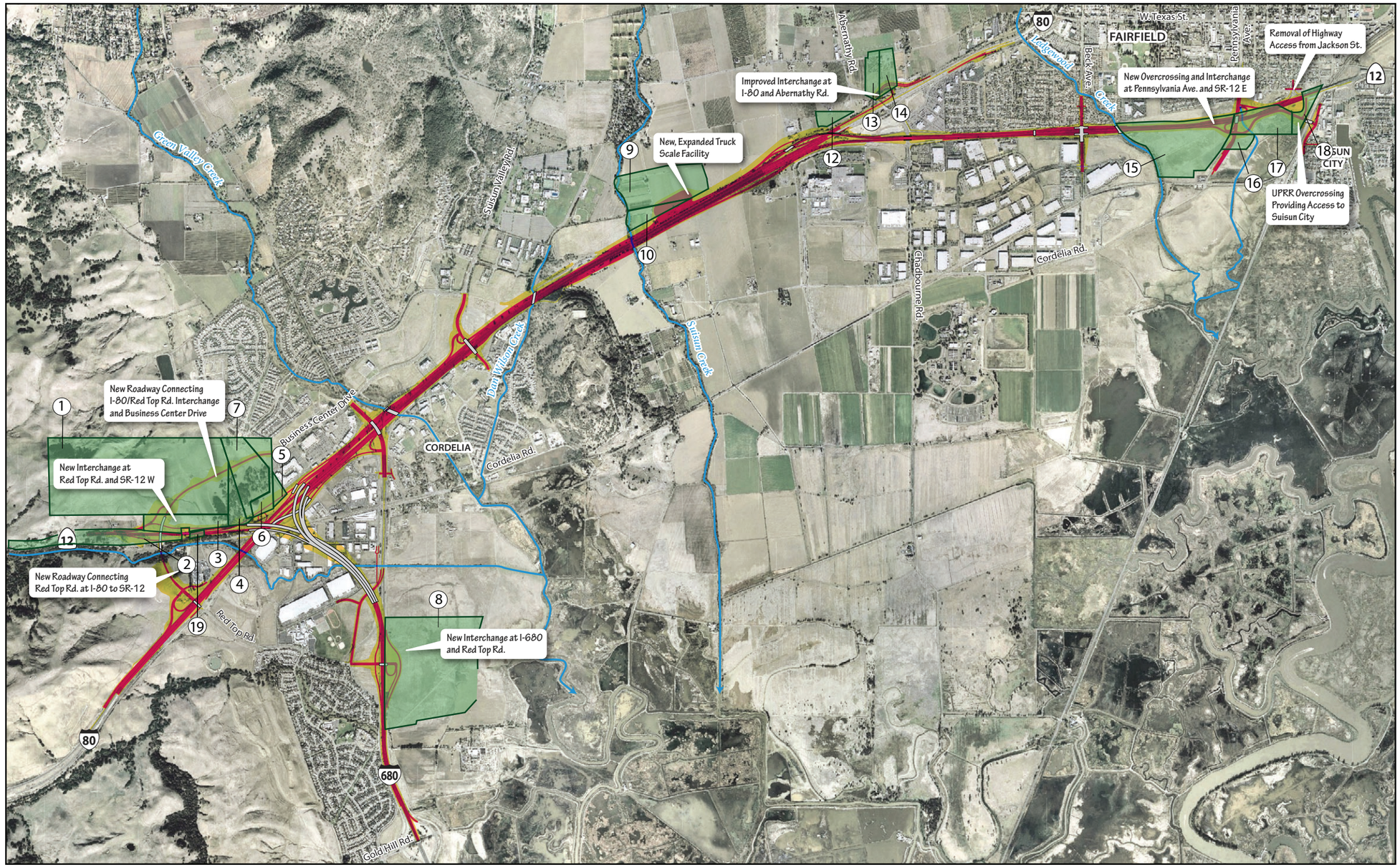


Legend

I680/I80/SR12 Interchange

- Impacted Agricultural Parcel (see Table 3.1.3-4)
- Potential Area of Disturbance
- Proposed New and Expanded/Improved Roads
- Bridge
- Creeks

N

0 0.5 1.0

Mile

Figure 3.1.3-3
Alternative C: Impacted Agricultural Parcels

Graphics... 02166.02 (07/10) SS

3.1.4 Community Impacts

3.1.4.1 Community Character and Cohesion

Regulatory Setting

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

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

Affected Environment

For the purposes of this analysis, the study area was defined by available statistical data describing Solano County, the cities of Fairfield and Suisun City, and eleven 2000 Census Tract Block Group areas that encompass the project area and its environs. The information below is summarized from the CIA prepared for the proposed project.

Solano County's land use pattern is one of city-centered growth focused around six urban areas separated by land designated for intensive and extensive agricultural uses. The six urban areas are Vallejo/Benicia, Cordelia, Fairfield/Suisun, Vacaville, Dixon, and Rio Vista. Approximately 45,000 acres in the county are designated for residential uses, of which 30,000 acres are in urban areas. In addition, 5,500 acres are designated for commercial development and 20,000 acres are designated for industrial uses. Of these designations, 11,400 acres are within urban areas. The majority of the county's land area, 314,200 acres, is devoted to extensive and intensive agriculture. An additional 119,500 acres are designated as multi-use marsh and watershed.

The study area is in the southwestern part of Solano County and occupies unincorporated land (primarily in the central segment of the proposed project), as well as portions of the cities of Fairfield (both western and eastern segments of the proposed project) and Suisun City (eastern segment of the proposed project). Much of the project area is in Fairfield, including its Cordelia community.

The primary land use in Fairfield is residential, followed by commercial and industrial uses. Travis Air Force Base, the city's largest employer, occupies most of the area adjacent to the eastern end of the city. Central Fairfield includes some of the oldest residential neighborhoods in Solano County. Various commercial corridors exist within the city, primarily centered along

major streets within central Fairfield and along portions of the I-80 and SR 12 corridors. Industrial uses are generally clustered in areas adjacent to the existing I-80/I-680/SR 12 interchange, south of SR 12 immediately west of Suisun City, and immediately west and north of Travis Air Force Base.

Suisun City was historically a regional transportation and commercial hub due to the city's location midway between the agricultural areas of the Central Valley, Sacramento, and San Francisco and its easy access to the San Francisco Bay System via the Suisun Channel. The city is separated from Fairfield by the UPRR alignment and SR 12E. The only currently operational passenger rail terminal in Solano County is in Suisun City. Land use in Suisun City is predominantly residential, with commercial and limited industrial uses centered around the downtown area and along major thoroughfares.

Western Segment

Land uses at the western end of this segment consist primarily of agricultural land used for grazing. A small highway-oriented commercial area (gas station, fast food) is located at the I-80/Red Top Road interchange. A dairy distribution facility and rural residential uses are located between I-80 and SR 12W and north of SR 12W. See Figures 3.1.4-1 and 3.1.4-2 for aerial views of the project area.

As I-80 and SR 12W converge, land uses change dramatically. To the north is a major retail shopping and commercial center, which includes a Costco, a Safeway, and other regional retailers. To the south, the predominant land use is industrial, with many warehouses and distribution businesses. Commercial uses such as gas stations, car dealerships, and smaller retail outlets are located in areas immediately visible from the I-80 and I-680 freeways.

Along I-680, land uses to the west are dominated by residential subdivisions, with commercial and retail uses at major intersections. Rodriguez High School fronts approximately half of the north side of Red Top Road between I-680 and Lopes Road. Land uses to the east include residential and retail uses in the community of Cordelia. In general, the area south of Cordelia Road and east of I-680 comprises agricultural and open space uses at the edge of the Suisun Marsh.

Land uses along I-80 between I-680 and Suisun Valley Road are characterized by a large commercial/office park to the north and smaller retail/highway-oriented commercial uses to the south, including motels, gas stations, and fast food outlets centered around the I-80/Suisun Valley Road interchange.

Central Segment

Along I-80, from Suisun Valley Road to SR 12E, land uses on the north side are characterized by vacant lands between Suisun Valley Road and Suisun Creek that are now under construction as a mixed-use development (Fairfield Corporate Commons Project) and the existing westbound truck scales facility. East of Suisun Creek, land uses are primarily agricultural with scattered residential and commercial uses (farm equipment sales). To the south, freeway commercial (hotel and RV sales), retail (fast food and gas stations), and a recreation center are located near the I-80/Suisun Valley Road interchange. Farther east, land uses are agricultural with scattered residential uses and the eastbound truck scales facility, which is planned to be relocated to the

east as part of a separate project. At the eastern end of the segment, land uses change to include a large industrial use (Budweiser brewery) that extends along SR 12E.

Eastern Segment

Land uses along the north side of SR 12E comprise commercial uses focused along Chadbourne Road, including several large auto dealerships. Farther east, land uses are dominated by residential neighborhoods with scattered commercial/retail uses along Beck and Pennsylvania Avenues. Along the south side of SR 12E, land uses primarily include industrial warehouses and distribution centers off Beck and Pennsylvania Avenues. Farther east of Pennsylvania Avenue to Suisun City, the predominant land use on the north side of SR 12E is residential, while the south side is predominantly undeveloped land. The portion of the project area within Suisun City consists primarily of older, small industrial and retail uses adjacent to the UPRR alignment.

Environmental Consequences

Impacts on communities arising from transportation projects are generally related to division of existing neighborhoods, or disruption of the perceived urban "fabric" of a neighborhood. This is a particularly sensitive issue in ethnic neighborhoods. However, transportation projects may also increase cohesion within neighborhoods by diverting vehicular traffic to other roadways and increasing the desirability of pedestrian activity through a neighborhood.

All the build alternatives would result in the expansion of existing freeways and highways in the project area. This expansion would result in impacts on individual parcels and displacement of a number of commercial, retail, and industrial businesses. However, these effects would not result in the separation or disruption of an existing neighborhood. Because the displaced businesses in these areas are predominantly highway and regional commercial or industrial enterprises, they are not inherently tied to the character of local neighborhoods, but rather are typically large corporate franchises such as fast food restaurants and gas stations. As such, their removal would not significantly affect the cohesiveness of the local community.

Alternative C may have a beneficial effect on the community of Cordelia, because this alternative would reconstruct the alignment of I-680 farther to the west to connect with I-80 and SR 12W, moving the I-680 freeway farther from established residential areas in Cordelia. Manufacturing, warehousing, and light industrial facilities in the western segment would primarily be displaced by the realignment of I-680 under Alternative C.

In the central segment, the predominant land use is agricultural. However, one residence would be displaced as a result of constructing the westbound truck scales relocation and one business would be displaced by the interchange improvements at Abernathy Road. The residence and the business are both surrounded by agricultural land, adjacent to I-80 and are not part of a larger neighborhood that would be affected by their removal. Because the land use pattern in the central segment consists of large agricultural parcels, the proposed project would not significantly affect the cohesiveness of the local community.

In the eastern segment, Alternatives B and C would displace a number of businesses in downtown Suisun City. Because these businesses are located on the western perimeter of the downtown, their displacement would not be divisive. Additionally, most of the businesses are industrial/manufacturing concerns. As such, they are not destinations for shoppers or pedestrians and do not contribute to the character of the downtown neighborhood. Therefore, it is reasonable to conclude that their displacement would not significantly affect Suisun City's downtown neighborhood.

Under the fundable first phases, the effects would be similar to those of the associated full build alternatives, but less extensive (see Tables 3.1.4-2 and 3.1.4-4)

The No-Build Alternative would not change the existing environment and therefore would not result in any effects on community character and cohesion.

Avoidance, Minimization, and/or Mitigation Measures

Because the proposed project would not significantly affect the character and/or cohesiveness of the local community, no avoidance, minimization, and/or mitigation measures would be required.

3.1.4.2 Relocations and Real Property Acquisition

Regulatory Setting

The Department's Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. See Appendix D for a summary of the RAP.

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

Affected Environment

Existing land uses in the project area and surrounding region are discussed in detail in Section 3.1.1, "Land Use." Right-of-way will be acquired along the existing alignments of I-80/I-680/SR 12 under Alternative B. Alternative C would require acquisition of right-of-way along these same roadways plus additional right-of-way to the west of I-680. The general locations of right-of-way acquisitions are discussed under Section 3.1.4.1, "Community Character and Cohesion." Tables 3.1.4.1 through 3.1.4.4 below identify the specific residences, and business that would be displaced by the proposed project.

Environmental Consequences

Displacement of Residences and Businesses

The methodology for determining affected land uses included overlaying the proposed right-of-way requirements for each alternative on a Solano County Assessor's Parcel Number (APN) map and on an aerial photograph. Maps depicting the roadway geometry and right-of-way regents used in this analysis were developed by the project engineers and are on file at the Department. Tables 4.1-1 and 4.1-2 of the project CIA provide a complete list of the parcels that would be affected by the alternatives.

Where the proposed right-of-way overlapped a parcel, that parcel was considered affected by the proposed project. For parcels that did not fall completely within the right-of-way lines, those where less than 50% of the total parcel area was overlapped by the proposed right-of-way were considered partial acquisitions unless the affected portion of the parcel contained the primary structure (business or residence) on the property. Where more than 50% of the parcel would be overlapped, the parcel was considered to be fully acquired by the project alternative.

A parcel is considered affected if land from that parcel is needed for either temporary construction activities or permanent roadway or associated facilities. Effects can range from partial acquisition of a parcel, in which the existing use would not be displaced and could continue without significant change, to full acquisition of the parcel and displacement of the existing land use.

Alternative B would affect approximately 228 parcels in total. Approximately 27 of the parcels would be full acquisitions and 201 would be partial acquisitions. Appendix I contains a complete list of affected parcels under Alternative B. The majority of the parcels consist of retail and commercial land uses, primarily south of I-80 between I-680 and Suisun Valley Road, which would be affected by the widening of the existing I-680/I-80 interchange complex and I-80 main line; and agricultural/grazing lands north of I-80 from Red Top Road to SR 12W and Business Center Drive, which would be affected by the extension of Red Top Road to Business Center Drive and the new Red Top Road/ SR 12W interchange. Based on a 2008 reconnaissance survey of the project area, an estimated 56 businesses (including vacant spaces) would be displaced.

Alternative B, Phase 1 would affect approximately 72 parcels. Appendix I contains a complete list of affected parcels under Alternative B, Phase 1. Five parcels would be full acquisitions and 67 parcels would be partial acquisitions. Based on a 2008 reconnaissance survey of the project area, an estimated 21 businesses (including vacant spaces) would be displaced.

Alternative C would affect approximately 176 parcels in total; 32 would be full acquisitions and roughly 144 would be partial acquisitions. Appendix I contains a complete list of affected parcels under Alternative C. The predominant land use of the parcels affected by the realignment of I-680 and the new I-680/I-80/SR 12W interchange that would be constructed under this alternative is industrial and warehousing, mainly located south of I-80 and west of I-680. Based on a 2008 reconnaissance survey of the project area, an estimated 49 businesses (including vacant spaces) would be displaced.

Alternative C, Phase 1 would affect approximately 63 parcels. Appendix I contains a complete list of affected parcels under Alternative C, Phase 1. Nine parcels would be full acquisitions and 54 parcels would be partial acquisitions. Based on a 2008 reconnaissance survey of the project area, an estimated 22 businesses (including vacant spaces) would be displaced. All of the businesses displaced by these two alternatives are located in Fairfield.

All of the alternatives would result in the displacement of businesses. The majority of the businesses that would be displaced by the alternatives are established businesses (e.g., auto repair, furniture, appliances sales). Newer businesses (e.g., Starbucks, fast food outlets) that would be displaced are located in the vicinity of the I-80/Suisun Valley interchange. Most of the businesses that are considered to be declining and that would be displaced are located in the eastern segment of the proposed project in Suisun City.

Table 3.1.4-1 lists the 56 businesses displaced under Alternative B; Figure 3.1.4-1 shows their locations. Most displacements associated with Alternative B would occur in the western segment of the alignment along the south side of I-80. As discussed above, these businesses are predominantly highway-oriented service commercial uses in the Cordelia area. They include relatively new facilities, as well as older facilities dating to the 1970s or earlier.

Table 3.1.4-1. Alternative B Displaced Businesses

Map #	APN	Size of Parcel (acres)	Business	Reason for Displacement
Western Segment				
1	0045-300-070	0.44	Fairfield Suisun Unified School District (two buildings, vacant), Central Way	Widening of I-680/I-80 interchange
2	0045-300-080	1.70	California's Teacher's Association (one building), 4751 Central Way	Realignment of local roads
3	0045-300-350	0.01	Continental Auto Glass, 4737 Central Way Vacant Space, 4739 Central Way Cordelia Automotive, 4741 Central Way Warehouse Furniture, 4743 Central Way	Realignment of local roads
4	0045-300-370	0.20	Metro II, 4733 Central Way Anyone's Off-Road & Custom, 4733 Central Way Al's Tile and Marble Fino, 4733 Central Way	Realignment of local roads
5	0045-300-360	0.19	Room Express Furniture (one building), 4731 Central Way	Realignment of local roads
6	0045-300-200	0.001	Ponder Environmental Services, 125 Grobric Court	Realignment of local roads
7	0045-300-290	0.27	California Marine Sports, 101 Grobric Court	Realignment of local roads
8	0045-310-010	1.75	Pearson's Appliance & TV, 4685 Central Way	Realignment of local roads
9	0045-310-860	1.62	Jack in the Box (one building), 4490 Central Way Chevron Gas Station (one building), 4490 Central Way	Widening of I-80
10	0045-310-850	0.50	Starbucks (one building), 4470 Central Way	Widening of I-80
11	0045-340-110	0.17	Scandia Family Center (part of mini golf course), 4300 Central Way	Widening of I-80
12	0180-010-050	0.86	Sunnyside Farms (one building), 199 Red Top Road	I-80/Red Top Road interchange
13	0045-300-260	0.11	Statewide Safety & Signs Inc., 130 Grobric Court	Realignment of local roads
14	0148-260-040	0.51	Government Land (one building), 1827 SR 12	Widening of SR 12
15	0045-310-550	0.04	Golf Shop, 104 Commerce Court Campways, 104 Commerce Court	Realignment of local roads

Map #	APN	Size of Parcel (acres)	Business	Reason for Displacement
16	0045-310-650	3.19	Davita Fairfield Dialysis, 4670 Central Way Boot Barn Western & Work Wear, 4670 Central Way Bischoff's Medical Supplies, 4670 Central Way Ultimate Water Sports, 4670 Central Way	Realignment of local roads
17	0045-310-660	2.71	Cordelia Junction Antiques Lounge	Realignment of local roads
18	0180-120-150	0.32	Ashley Furniture Homestore (one building), 4865 Auto Plaza Court	Widening of I-680/I-80 interchange
19	0180-110-240	3.36	ARCO Gas (one building), 4800 Auto Plaza Court	Widening of I-680/I-80 interchange
20	0045-300-030	0.19	Residential House Showroom (one building), 4912 Central Way	Widening of I-680/I-80 interchange
21	0045-300-040	0.19	SFR Land (one building, old shack), Central Way	Widening of I-680/I-80 interchange
22	0180-110-040	1.91	Saturn Dealership (one building), 4850 Auto Plaza Court	Widening of I-680/I-80 interchange
	0045-310-880	1.05	Leased Commercial Land, 103 Commerce Court Furniture Expo, 103 Commerce Court Frellen's Casual & Outdoor Furniture, 103 Commerce Court Vacant Space, 103 Commerce Court	Realignment of local roads
Central Segment				
23	0027-271-060	11.05	Garage/Sheds/Barns/Home (seven buildings, one residential), 4018 Russell Road	Interchange improvements at Abernathy Road
24	0150-270-080	0.99	Suisun Family Fruit Growers (two buildings), 4163 Chadbourne Road	Interchange improvements at Abernathy Road
25	0150-240-020	0.18	Suisun Family Fruit Growers (two buildings), 4162 Chadbourne Road	Widening of I-80 and truck scales relocation
Eastern Segment				
26	0032-081-310	0.03	Suisun Roofing Supply (one building), 260 Benton Court	Road extension to downtown Suisun City
27	0032-081-060	0.21	Suisun Roofing Supply (one building), 263 Benton Court	Road extension to downtown Suisun City
28	0032-081-030	0.21	One Building, 241 Benton Court	Road extension to downtown Suisun City
29	0032-052-210	0.33	The Hitman, 229 Benton Court Clear Image, 225 & 227 Benton Court Marine Industrial Fire Safety, 223 Benton Court Castle Rock Construction, 221 Benton Court	Road extension to downtown Suisun City
30	0032-052-100	0.10	Xtreme Cyclez, 213 & 215 Benton Court Rich Campbell, 211 Benton Court Vacant Space, 209 Benton Court Iron Riders Inc., 207 Benton Court	Road extension to downtown Suisun City
31	0032-052-090	0.04	Kyron's Body Shop, 205 Benton Court Tweed Hut, 201 Benton Court	Road extension to downtown Suisun City
32	0032-052-120	0.04	Tidy Tails, 305 Spring Street Osaka Massage, 311 Spring Street Good Life Health Spa, 313 Spring Street	Road extension to downtown Suisun City
	0032-081-040	0.20	Vacant Space (two buildings), 247 Benton Court	Road extension to downtown Suisun City

Source: I-80/I-680/SR 12 Interchange Community Impact Assessment, 2008.
Appendix I contains a complete list of affected parcels under Alternative B.

Table 3.1.4-2 lists the 21 businesses, all in Fairfield, which would be displaced as a result of Alternative B, Phase 1. Because this Alternative is a subset of Alternative B, the displacements under Alternative B, Phase 1 would be a subset of those under Alternative B, and the character of displacement would also be similar.

Table 3.1.4-2. Alternative B, Phase 1 Displaced Businesses

Map #	APN	Size of Parcel (Acres)	Business	Reason for Displacement
Western Segment				
1	0045-300-070	0.39	Fairfield Suisun Unified School District (two buildings, vacant), Central Way	Widening of I-680/I-80 interchange
2	0045-300-080	1.70	California's Teacher's Association (one building), 4751 Central Way	Realignment of local roads
3	0045-300-350	0.01	Continental Auto Glass, 4737 Central Way Vacant Space, 4739 Central Way Cordelia Automotive, 4741 Central Way Warehouse Furniture , 4743 Central Way	Realignment of local roads
4	0045-300-370	0.20	Metro II, 4733 Central Way Anyone's Off-Road & Custom, 4733 Central Way Al's Tile and Marble Fino, 4733 Central Way	Realignment of local roads
5	0045-300-360	0.19	Room Express Furniture (one building) 4731 Central Way	Realignment of local roads
6	0045-300-200	0.001	Ponder Environmental Services 125 Grobric Court	Realignment of local roads
7	0045-300-290	0.54	California Marine Sports 101 Grobric Court	Realignment of local roads
8	0045-310-010	1.75	Pearson's Appliance & TV 4685 Central Way	Realignment of local roads
9	0045-310-860	1.62	Jack in the Box (one building) 4490 Central Way Chevron Gas Station (one building) 4490 Central Way	Widening of I-80
10	0045-310-850	0.50	Starbucks (one building), 4470 Central Way	Widening of I-80
11	0045-340-110	0.17	Scandia Family Center (part of mini golf course), 4300 Central Way	Widening of I-80
33	0045-310-880	1.05	Leased Commercial Land, 103 Commerce Court Furniture Expo, 103 Commerce Court Frellen's Casual & Outdoor Furniture, 103 Commerce Court Vacant Space, 103 Commerce Court	Realignment of local roads

Source: I-80/I-680/SR12 Interchange Community Impact Assessment, 2008.
Appendix I contains a complete list of affected parcels under Alternative B, Phase 1.

Table 3.1.4-3 lists the 49 businesses displaced under Alternative C; Figure 3.1.4-2 shows their locations. Most displacements associated with Alternative C would occur in the western segment of the alignment, between the I-80 and I-680 corridors. In contrast to the highway-oriented businesses displaced under Alternative B, Alternative C would displace industrial and warehouse uses that lie west of the current SR 12 interchange.

Table 3.1.4-3. Alternative C Displaced Businesses

Map #	APN	Size of Parcel (Acres)	Business	Reason for Displacement
Western Segment				
1	0180-130-090	0.95	UMA Solar, 499A Edison Court Formaggi Di Ferrant, 499A2 Edison Court The Picture Company, 499B Edison Court California Imaging, 499C Edison Court Vacant Space, 499D Edison Court	Realignment of I-680
2	0180-130-080	1.68	Vacant Space, 495A Edison Court Vacant Space, 495D Edison Court SDH Enterprises, 495B&C Edison Court	Realignment of I-680
3	0180-130-070	1.21	Fire Department, 473 Edison Court O'Hara Metal, 473 Edison Court Clothes Recycle Center, 5005 Fulton Drive	Realignment of I-680
4	0180-130-050	1.85	Valley Rubber & Gasket, 5045 Fulton Drive Family Celebration Center, 5045 Fulton Drive	Realignment of I-680
5	0180-030-060	1.00	Marin Medical, 497A Edison Court Don's Transport/Liquid Trends Northbay, 497B Edison Court Brewer Metal Products, 497C Edison Court Super Store Industries, 497D & E Edison Court Euro-Machines, 497F & G Edison Court	Realignment of I-680
6	0180-140-180	1.48	Woodline Cabinets (one building), 5165 Fulton Drive	Realignment of I-680
7	0180-140-030	Unknown	Pacific Coast Steel (one building), 5160 Fulton Drive	Realignment of I-680
8	0180-140-060	2.00	Unknown (1 building), 355 Watt Drive	Realignment of I-680
9	0180-010-050	0.71	Sunnyside Farms (one building), 199 Red Top Road	I-80/Red Top Road realignment
10	0180-140-040	2.14	Beutter Corp., 5170 Fulton Drive Ciesco, 5170 Fulton Drive	Realignment of I-680
11	0045-310-860	0.34	Jack in the Box (one building), 4490 Central Way Chevron Gas Station (one building), 4490 Central Way	Widening of I-80
12	0045-340-110	0.51	Scandia Family Center (part of mini golf course), 4300 Central Way	Widening of I-80
Central Segment				
13	0027-271-060	11.05	Garage/Sheds/Barns/Home (seven buildings, one residential), 4018 Russell Road	Widening of I-80 and truck scales relocation
14	0150-270-080	0.99	Suisun Family Fruit Growers (two buildings), 4163 Chadbourne Road	Interchange improvements at Abernathy Road
15	0150-240-020	0.18	Suisun Family Fruit Growers (two buildings), 4162 Chadbourne Road	Interchange improvements at Abernathy Road
Eastern Segment				
16	0032-020-210	1.51	Fairfield Suisun Sewer Distribution, Unknown	Realignment of Jackson Street on ramp.
17	0032-052-100	0.10	Xtreme Cyclez, 213 & 215 Benton Court Rich Campbell, 211 Benton Court Vacant Space, 209 Benton Court Iron Riders Inc., 207 Benton Court	Road extension to downtown Suisun City
18	0032-052-090	0.04	Kyron's Body Shop, 205 Benton Court Tweed Hut, 201 Benton Court	Road extension to downtown Suisun City
19	0032-052-120	0.04	Tidy Tails, 305 Spring Street Osaka Massage, 311 Spring Street Good Life Health Spa, 313 Spring Street	Road extension to downtown Suisun City

Map #	APN	Size of Parcel (Acres)	Business	Reason for Displacement
20	0032-052-210	0.33	The Hitman, 229 Benton Court Clear Image, 225 & 227 Benton Court Marine Industrial Fire Safety, 223 Benton Court Castle Rock Construction, 221 Benton Court	Road extension to downtown Suisun City
21	0032-081-030	0.21	Unknown (one building), 241 Benton Court	Road extension to downtown Suisun City
22	0032-081-040	0.20	Vacant Space (two buildings), 247 Benton Court	Road extension to downtown Suisun City
23	0032-081-060	0.20	Suisun Roofing & Supply (one building), 263 Benton Court	Road extension to downtown Suisun City
24	0032-081-310	0.02	Suisun Roofing & Supply (one building), 260 Benton Court	Road extension to downtown Suisun City

Appendix I contains a complete list of affected parcels under Alternative C.
Source: I-80/I-680/SR 12 Interchange Community Impact Assessment, 2008.

Table 3.1.4-4 lists the 22 businesses, all in Fairfield, which would be displaced as a result of Alternative C, Phase 1. Because this Alternative is a subset of Alternative C, the displacements under Alternative C, Phase 1 would be a subset of those under Alternative C, and the character of displacement would also be similar.

Table 3.1.4-4. Alternative C, Phase 1 Displaced Businesses

Map #	APN	Size of Parcel (Acres)	Business	Reason for Displacement
Western Segment				
1	0180-130-090	0.95	UMA Solar, 399A Edison Court Formaggi Di Ferrant, 399A2 Edison Court The Picture Company, 399B Edison Court California Imaging, 399C Edison Court Vacant Space, 399D Edison Court	Realignment of I-680
2	0180-130-080	1.68	Vacant Space, 495A Edison Court Vacant Space, 495D Edison Court SDH Enterprises, 495B & C Edison Court	Realignment of I-680
3	0180-130-070	1.21	Fire Department, 473 Edison Court O'Hara Metal, 473 Edison Court Clothes Recycle Center, 5005 Fulton Drive	Realignment of I-680
4	0180-130-050	1.85	Valley Rubber & Gasket, 5045 Fulton Drive Family Celebration Center, 5045 Fulton Drive	Realignment of I-680
5	0180-030-060	1.00	Marin Medical, 497A Edison Court Don's Transport/Liquid Trends Northbay, 497B Edison Court Brewer Metal Products, 497C Edison Court Super Store Industries, 497D & E Edison Court Euro-Machines, 497F & G Edison Court	Realignment of I-680
6	0180-140-180	1.48	Woodline Cabinets (one building), 5165 Fulton Drive	Realignment of I-680
7	0180-140-030	1.98	Pacific Coast Steel (one building), 5160 Fulton Drive	Realignment of I-680
8	0180-140-060	0.05	Unknown (one building), 355 Watt Drive	Realignment of I-680
9	0180-010-050	0.71	Sunnyside Farms (two buildings), 199 Red Top Road	I-80/Red Top Road realignment

Source: I-80/I-680/SR 12 Interchange Community Impact Assessment, 2008.
Appendix I contains a complete list of affected parcels under Alternative C, Phase 1.

As of October 2008, Fairfield had an estimated 260 acres of vacant commercial land and approximately 738 acres of vacant industrial land available within its borders. This includes

approximately 177 acres of vacant commercially zoned land at the Cordelia/Green Valley intersection and 308 acres of vacant industrial land in the Cordelia Growth Center. The availability of vacant land in the area indicates there are substantial relocation resources available in the community. Tables 4.2-2a and 4.2-2b of the proposed project's CIA show the amount of vacant acres for commercial and industrial lands, respectively.

In 2001, Suisun City conducted a retail leakage analysis and economic base analysis, *Revenue Generation vs. Traditional Land Use Zoning*, to identify vacant sites that could be best used for commercial purposes. This report identified 15 vacant sites that would provide an estimated 35-year supply of vacant land that Suisun City could use to increase their retail and commercial sectors. Of these 15 sites, three would be suitable to use as land for the relocation of businesses that would be displaced under the alternatives. These three sites combined total approximately 16.34 acres and could be used for service commercial or light industrial purposes, which indicates substantial relocation resources are available within the local community. Figure 7.1a of the proposed project's CIA shows the locations of all 15 vacant sites. Based on this report it would appear that there are sufficient relocation resources located in close proximity to those business that would be displaced by the alternatives in Suisun City. Therefore the business displacement impacts of the proposed alternatives (including the fundable first phases) would not result in a significant adverse impact.

One residential displacement would occur under Alternatives B and C as a result of the westbound truck scales relocation. No residential displacements would occur under the fundable first phase of either of the alternatives. The California Department of Finance's 2009 housing vacancy estimate for Solano County indicates that there are substantial residential vacancies in the unincorporated county (6.48% vacancy rate) and in the city of Fairfield (6.54% vacancy rate) (State of California 2009). This indicates that there are sufficient opportunities for the occupants of this residence to find replacement housing in the vicinity. Therefore the residential displacement impact of the proposed alternatives (Alternatives B and C) would not result in a significant adverse impact.

The No-Build Alternative would not change the existing environment and so would not result in any displacements.

Avoidance, Minimization, and/or Mitigation Measures

All rights and services provided under Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, would be strictly adhered to. The rights of non-tenured occupants of displaced properties would be preserved. Department policy provides that persons displaced as a result of Department-sponsored transportation programs shall receive fair and humane treatment and shall not suffer unnecessarily as a result of projects designed for the benefit of the public. No residents would be required to relocate until comparable replacement housing has been made available to them.

Because the proposed project would provide for the equitable relocation of occupants and businesses, and there are sufficient residential opportunities and available land in the area for the relocation of businesses and industry, no avoidance, minimization, and/or mitigation measures would be required.

3.1.4.3 Environmental Justice

Regulatory Setting

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

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

Affected Environment

This section uses the NEPA framework to assess whether the proposed project meets the goals and requirements of E.O. 12898, first by determining whether the proposed project meets the community participation goals and then by analyzing impacts on minority and low-income communities.

Disproportionately high and adverse impacts on minority and low-income populations are defined as an adverse effect that meets either of two criteria.

- It is predominantly borne by a minority population and/or a low-income population.
- It would be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population.

Environmental Justice Communities are communities that meet at least one of the following criteria.

- The low-income population is greater than 25% of the total population of the community, or the minority population is greater than 50% of the total population of the community.
- The low-income or minority population is more than 10percentage points higher than the city or county average.

To determine the presence of Environmental Justice communities within the project area, an assessment was undertaken of the existing population in the project area utilizing data collected for the 2000 U.S. Census. The project area is contained within 11 Census Tract Block Groups in Solano County:

- Census Tract 2522.01 Block Group 1.
- Census Tract 2522.01 Block Group 4.

- Census Tract 2522.02 Block Group 1.
- Census Tract 2522.02 Block Group 2.
- Census Tract 2523.05 Block Group 1.
- Census Tract 2523.05 Block Group 2.
- Census Tract 2524.02 Block Group 1.
- Census Tract 2524.02 Block Group 2.
- Census Tract 2524.02 Block Group 3.
- Census Tract 2527.02 Block Group 1.
- Census Tract 2527.02 Block Group 2.

Considered collectively, the population (as of 2000) in the 11 Census Tract Block Groups in which the project area is situated contained a lower percentage of minority groups than the county, Fairfield, and Suisun City. Of the total combined population, 60% is white, 18% is Hispanic or Latino, 10% is black, 12% is Asian, 1% is Hawaiian Native/Pacific Islander, and less than 1% is Native American. The Hispanic/Latino percentage is consistent with the ratio of Solano County and Fairfield–Suisun City and slightly lower than Fairfield.

When reviewed individually, three of the 11 Census Tract Block Groups were noted to have a minority (non-white) population greater than 50% of the total population of the community (Census Tract 2524.02 with Block Groups 2 and 3 and Census Tract 2527.02 with Block Group 2). Two of these same block groups also contain low income populations that comprise more than 25% of the total population of the community (Census Tract 2524.02 with Block Group 3 and Census Tract 2527.02 with Block Group 2). These Block Groups are generally located east of Chadbourne Road. The housing characteristics, racial characteristics, and income/poverty characteristics of the 11 Census Tract Block Groups are presented in Tables 3.1.4-5 through 3.1.4-7, respectively. Figure 3.1.4-3 illustrates the locations of these Census Tract Block Groups in relation to the proposed project.

Considering the individual minority groups within each census tract/block group, it was noted that the Hispanic/Latino ratio was more than ten percentage points higher in Census Tract 2524.02 Block Group 3 and Census Tract 2527.02 Block Group 2 than in the cities or county. The latter census tract/block group was also found to have a larger population of Asians than the cities or county.

Table 3.1.4-5. Project Area Housing Characteristics in 2000

	CT[a] 2522.01		CT 2522.02		CT 2523.05		CT 2524.02			CT 2527.02		City of Fairfield-Suisun City	Solano County	Total of All CT/ BG's
	BG[b] 1	BG 4	BG 1	BG 2	BG 1	BG 2	BG 1	BG 2	BG 3	BG 1	BG 2			
Total Housing Units	366	937	1,335	678	174	293	354	686	572	435	84	40,469	130,403	5,914
Average Household Size	2.83	3.03	3.30	3.31	2.52	2.75	3.25	3.29	2.50	2.38	3.73	3.02	2.9	3.33[c]
Owner-occupied Units	303	848	1,230	568	135	228	238	531	123	162	11	25,549	84,994	4,377
Renter-occupied Units	63	89	105	110	39	65	116	155	449	273	74	14,920	45,409	1,538
2-Person Household	124	327	261	136	72	87	82	154	91	93	9	10,347	33,062	1,436
3-Person Household	65	177	259	154	17	42	52	128	88	68	16	7,340	22,778	1,066
4-Person Household	56	203	352	154	22	41	68	143	70	41	13	7,375	21,946	1,163
5-Person Household	25	74	162	86	10	28	51	82	39	24	12	3,890	11,331	593
6-Person Household	14	32	60	32	7	12	16	37	16	6	8	1,634	4,777	240
Vacant Units	12	20	22	5	7	13	13	32	38	27	2	1,166	4,110	191

Source: U.S. Census Bureau 2000.

Note: Shading indicates blocks that meet Environmental Justice criteria.

[a] CT=Census Tract.

[b] BG=Block Group.

[c] Represents average household size.

Table 3.1.4-6. Project Area Racial Characteristics in 2000

	CT[a] 2522.01		CT 2522.02		CT 2523.05		CT 2524.02			CT 2527.02		City of Fairfield/ Suisun City	Solano County	Total of All CT/BG's
	BG[b] 1	BG 4	BG 1	BG 2	BG 1	BG 2	BG 1	BG 2	BG 3	BG 1	BG 2			
Total Population	1,035	2,838	4,471	2,254	469	805	1,152	2,260	1,526	1,036	313	126,603	394,542	18,159
White	833	1,936	2,522	1,611	334	534	571	1,027	634	717	118	69,718	222,387	10,837
Black/African American	45	279	546	155	6	103	134	313	347	84	39	19,667	58,827	2,051
American Indian and Alaska Native	7	12	28	24	2	7	15	23	16	9	6	965	3,110	149
Asian	60	354	738	180	41	54	117	356	113	50	85	15,250	50,299	2,148
Native Hawaiian and Other Pacific Islander	3	2	30	4	2	1	28	17	33	6	1	1,207	3,078	127
Some Other Race	52	73	265	138	36	67	188	337	253	99	47	10,852	31,612	1,555
Two or More Races	35	182	342	142	48	39	99	187	130	71	17	9,484	25,229	1,292
Hispanic/Latino	148	245	720	324	102	137	285	562	460	160	109	23,226	69,598	3,252
Non Hispanic/ Latino	887	2,593	3,751	1,930	367	668	867	1,698	1,066	876	204	103,377	324,944	14,907

Source: U.S. Census Bureau 2000.

Note: Shading indicates blocks that meet Environmental Justice criteria.

[a] CT=Census Tract.

[b] BG=Block Group.

[c] Represents average household size.

Table 3.1.4-7. Project Area Income and Poverty in 2000

	CT[a] 2522.01		CT 2522.02		CT 2523.05		CT 2524.02			CT 2527.02		City of Fairfield-Suisun City	Solano County	Total of All CT/BG's
	BG[b] 1	BG 4	BG 1	BG 2	BG 1	BG 2	BG 1	BG 2	BG 3	BG 1	BG 2			
Per Capita Income	$33,019	$34,762	$23,180	$20,380	$23,274	$24,754	$17,240	$19,176	$12,138	$18,224	$4,754	$21,001	$21,731	$20,991[e]
Median Household Income	$67,452	$89,093	$75,375	$70,982	$56,111	$65,208	$46,938	$57,384	$26,599	$34,417	$10,500	$53,646	$54,099	$54,551[e]
Population in Poverty[d]	32	259	61	69	46	17	96	138	449	82	137	10,488	31,344	1,386
Percentage in Poverty	3%	9%	1%	3%	9%	2%	8%	6%	30%	7%	56%	9%	8%	12%[e]

Source: U.S. Census Bureau 2000.
Note: Shading indicates blocks that meet Environmental Justice criteria.
[a] CT=Census Tract.
[b] BG=Block Group.
[c] Represents average household size.
[d] Below poverty level.
[e] Average.

Environmental Consequences

Although Environmental Justice communities exist in the project area, most of the displacements of businesses and expansion of road facilities would take place in the non–Environmental Justice communities in the Cordelia area (Census Tract 2522.01 Block Groups 1 and 4 and Census Tract 2522.02 Block Groups 1 and 2). The effects of the proposed project as a whole are spread over both Environmental Justice and non–Environmental Justice communities, with most of the displacements in non–Environmental Justice block groups.

The greatest number of displacements would occur as a result of Alternative B. Of the 34 total displacements (one residential, 33 businesses) under Alternative B, nine would be in the Environmental Justice block groups. The residence is not within any Environmental Justice block group. Under Alternative B, Phase 1 fewer displacements would result (12 businesses, no residences). Displacements in the Environmental Justice Block Groups are among industrial and commercial businesses, as is the case in the non–Environmental Justice Block Groups.

Of the 26 total displacements (one residential, 25 businesses) under Alternative C, ten would be in the Environmental Justice Block Groups (the residence is not in any of those Block Groups). Alternative C, Phase 1 would result in fewer displacements in Environmental Justice Block Groups (nine businesses; no residences). Displacements in the Environmental Justice Block Groups are among industrial and commercial businesses; as is the case in the non–Environmental Justice Block Groups.

The project alternatives would not result in the displacement of any residences within any Block Groups meeting the Environmental Justice criteria. Furthermore, the displacement of businesses would be spread across a large area including both Environmental Justice and non–Environmental Justice Block Groups, and would include primarily industrial and commercial uses. Therefore, the proposed project would not impose a disproportionate impact on a low-income or minority community.

The No-Build Alternative would not change the existing environment and so would have no effect on Environmental Justice communities.

Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the four build alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding Environmental Justice. Therefore, no avoidance, minimization, and/or mitigation measures would be required.

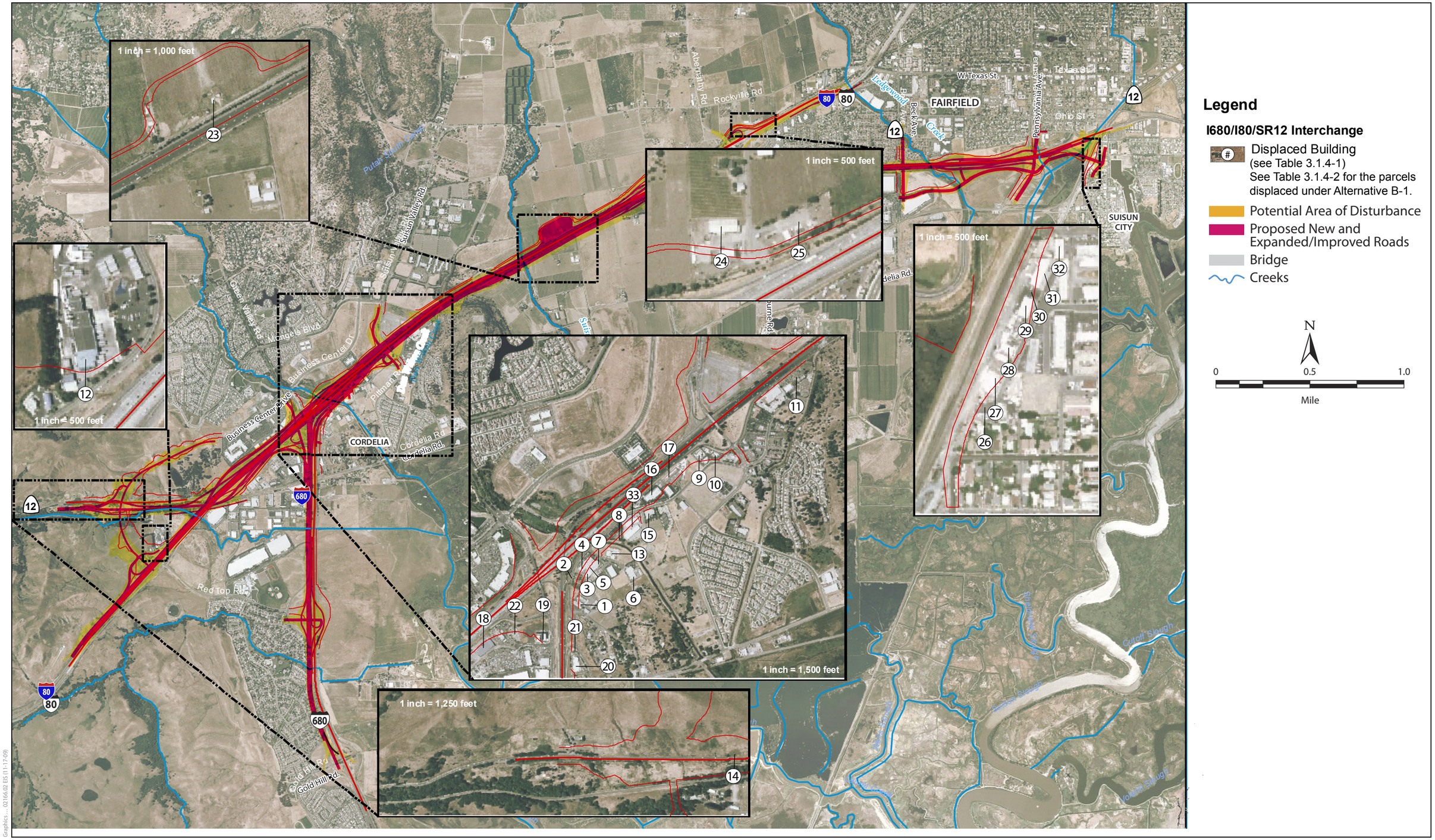
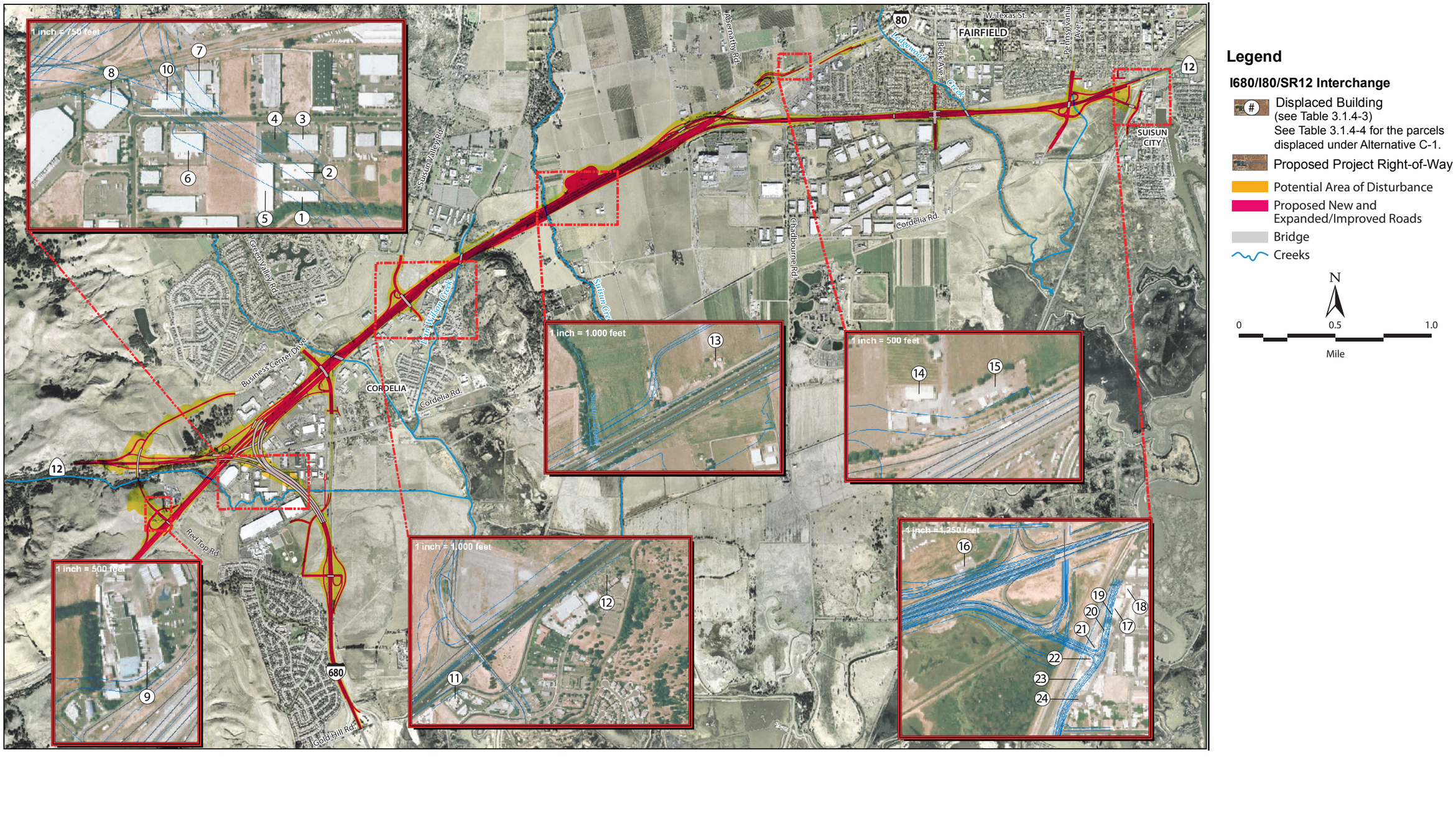
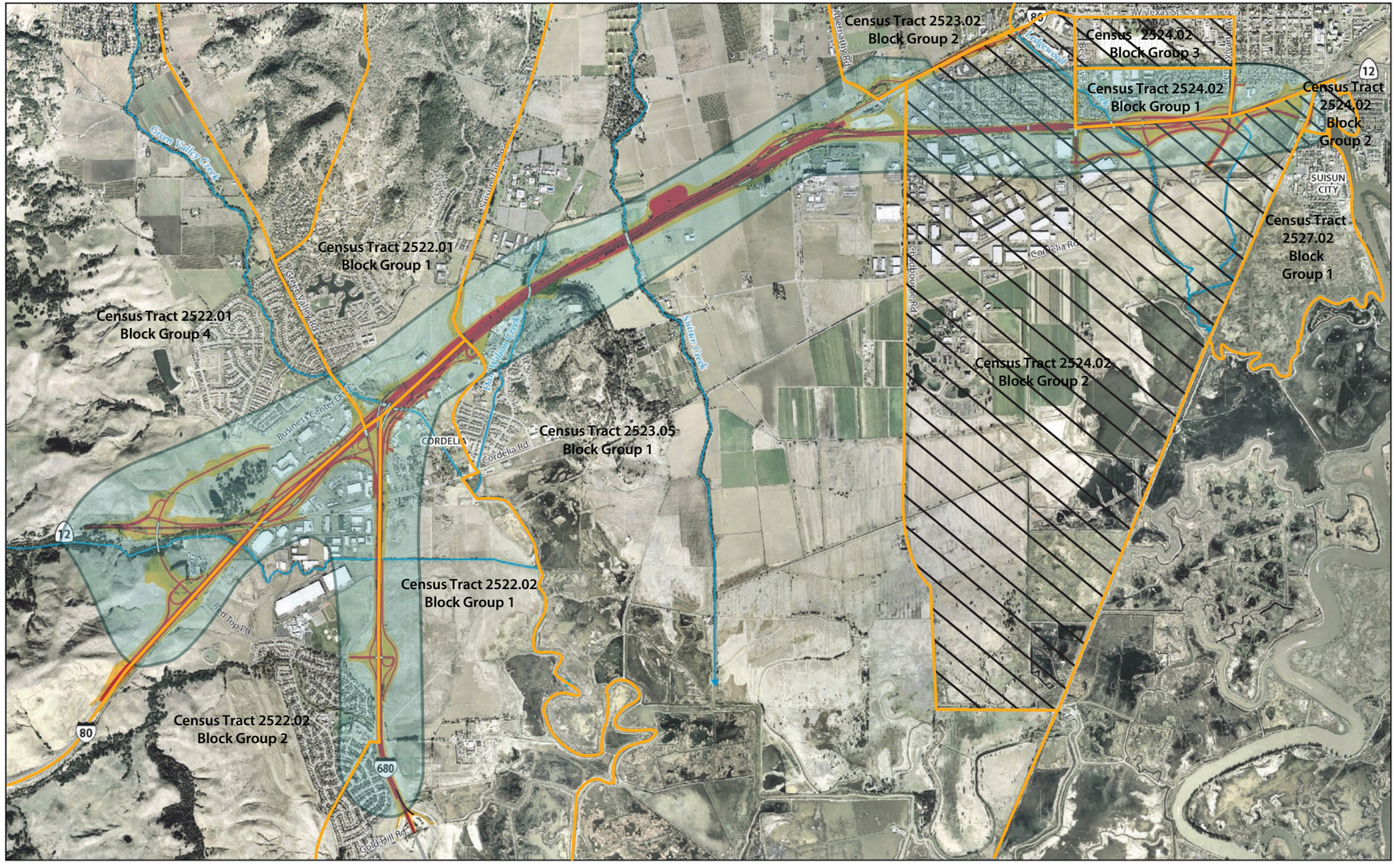


Figure 3.1.4-1
Alternative B Building Displacements



Graphics ... 02166.02 EIS (07/10) SS

Figure 3.1.4-2
Alternative C Building Displacements



Legend

I680/I80/SR12 Interchange

- Proposed Study Area
- Census Block Group
- Meets Environmental Justice Community Criteria
- Proposed New and Expanded/Improved Roads
- Bridge
- Creeks

1234.01 Census Tract Number

N

0 0.5 1.0

Mile

Graphics... 02166.02 EIS (11-17-09)

Figure 3.1.4-3
Census Tract Block Groups

3.1.5 Utilities and Emergency Services

Affected Environment

This section describes the existing utilities and emergency services within the proposed project right-of-way and that cross the project area. The information below is summarized from the CIA prepared for the proposed project.

Water Service

Water service within the project area is provided by the Solano County Water Agency (SCWA). The county has four main sources of water: the Solano Project, the North Bay Aqueduct (NBA), groundwater reservoirs, and Sacramento River entitlements. The SCWA stores and distributes water to 29 urban and agricultural water suppliers in northern California, the San Francisco Bay Area, the San Joaquin Valley, the central coast, and southern California.

The project area is also located within the service area of the Solano Irrigation District (SID). The SID delivers recycled water from the SCWA treatment plant to a small number of agricultural customers within Solano County for crop irrigation. The SID also provides water to Fairfield for street landscaping and commercial property landscape irrigation.

Within the city of Fairfield, water is treated at two water treatment plants and distributed by a municipal water distribution system to more than 20,000 service connections via more than 270 miles of water mains.

The most significant utility infrastructure in the project area is the State Department of Water Resources (DWR) water pipeline, the NBA. The NBA runs underground from Barker Slough in the Sacramento–San Joaquin River Delta to Cordelia Forebay, just outside of the city of Vallejo. The pipeline varies in diameter, ranging from 72 inches at Barker Slough to 54 inches at Cordelia Forebay. A portion of the NBA runs just north of and parallel to I-80 between Abernathy Road and Suisun Creek.

Wastewater Service

A portion of the project area is located within the Fairfield-Suisun Sewer District (FSSD) service area. The FSSD performs wastewater collection, treatment, and water recycling services for all areas within the boundaries of the cities of Fairfield and Suisun City. FSSD facilities include a wastewater treatment plant, 12 wastewater pump stations, force mains, trunk main collection facilities, and 70 miles of sewer networked throughout Fairfield and Suisun City.

The FSSD wastewater treatment plant occupies a 150-acre parcel off Chadbourne Road, southwest of the I-80/SR 12 interchange in Fairfield. The wastewater treatment plant currently has a capacity of 17.5 million gallons per day (mgd) of average dry weather wastewater flow and a capacity of 34.8 mgd during wet weather. On average, the wastewater plant treats 16 mgd. Plans are currently under development to expand the wastewater treatment plant, which would result in an ultimate capacity of 25 mgd under dry weather conditions.

The majority of treated effluent produced by the wastewater treatment plant is discharged to the Boynton Slough. Approximately 10% of the treated effluent is recycled and used for agricultural irrigation or distributed in the city of Fairfield for street landscaping and commercial property landscape irrigation.

The portions of the project area located in unincorporated Solano County and outside the boundaries of the FSSD service area generally contain no wastewater infrastructure. Wastewater needs in these locations are met by septic systems installed by individual land owners.

Electricity and Natural Gas

Solano County is provided with electric and natural gas service by PG&E. PG&E's service area covers most of central and northern California, and the company maintains 123,054 circuit miles of electrical distribution lines, 18,610 circuit miles of interconnected transmission lines, 40,123 miles of natural gas distribution pipelines, and 6,136 miles of natural gas transportation pipelines. PG&E currently maintains natural gas pipelines and electrical transmission lines throughout Solano County, adjacent to the I-80 corridor.

PG&E facilities in the area include a number of natural gas and power lines. Four 115 kV power lines cross the project area, the Vaca-Dixon-Ignacio Line 1 and Line 2 , the Suisun Tap 115–kV line and the Vaca-Suisun-Jameson tower line. PG&E natural gas lines are located within the project area, primarily in the vicinity of the I-80/Green Valley Road and SR 12E/Pennsylvania Avenue interchanges.

Telecommunications Systems

Telephone communication service for Solano County is provided by AT&T, one of the country's largest telecommunications providers. AT&T offers local phone service, long-distance phone service, and high-speed internet service. Major telephone transmission lines traverse Solano County, primarily following road rights-of-way and rail lines. Both overhead and underground lines and conduit carrying telecommunications lines are located within the project area.

Schools

There is one elementary school and one high school located near the project area. Nelda Mundy Elementary School is located at 570 Vintage Valley Drive, north of I-80 and the project area. Rodriguez High School is located at 5000 Red Top Road, just west of I-680 within the project area. The former Green Valley Middle School is located at 3630 Ritchie Road in Fairfield, south of the I-80 and the project area. The school was relocated in 2004 to an area north of I-80 and the former school site is currently vacant.

Solano Community College is located just north of the project area at 4000 Suisun Valley Road. In addition to Solano Community College, other institutions of higher learning in the project area are the University of Phoenix at 5253 Business Center Drive and Chapman University at 4820 Business Center Drive.

Police and Fire

The California Highway Patrol (CHP) has jurisdiction over I-80, I-680, and SR 12 for matters involving both traffic and emergency services. The Solano County CHP office is located at 3050 Travis Boulevard in Fairfield.

Those portions of the project area located in unincorporated Solano County are under the jurisdiction of the Solano County Sheriff. The Solano County Sheriff's Department office is located at 530 Union Avenue in Fairfield.

Those portions of the project area within Fairfield city limits are under the jurisdiction of the Fairfield Police Department. The Fairfield Police Department is located at 1000 Webster Street in Fairfield City Hall. The Suisun City Police Department provides service to those areas located within Suisun City. The police department is located at 701 Civic Center Boulevard in downtown Suisun City.

The portion of the project area located in unincorporated Solano County is served by the Suisun Fire Protection District (SFPD). SFPD headquarters are located at 445 Jackson Street in Fairfield and serves 1,136 properties within a 136-square-mile area. The SFPD currently employs one fire chief, two fire captains, and 45 volunteer firefighters.

Those portions of the project area located within the city of Fairfield fall under the jurisdiction of the Fairfield Fire Department. The Fairfield Fire Department serves approximately 105,000 citizens with six fire stations and 68 firefighters.

In the western portion of the project area, the Cordelia Fire Protection District (CFPD) provides fire and emergency medical services to areas of unincorporated Solano County, including the communities of Green Valley, Rockville, Cordelia, and the Lower Suisun Valley. The CFPD provides service to approximately 5,000 residents within a service area of 56 square miles and currently employs four full-time employees, 12 extra-help firefighters, 13 volunteer firefighters, and between 21 and 26 resident firefighters.

Within Suisun City, fire and emergency services are provided by the Suisun City Fire Department, located at 621 Pintail Drive. The department employs a full-time fire chief and two full-time fire captains. The remainder of the department's staff is volunteer and includes a deputy fire chief, two battalion chiefs, six fire captains, three lieutenants, and approximately 22 volunteer firefighters.

Environmental Consequences

Potential Effect to Utilities

As part of both alternatives, utilities within the project area will be relocated, realigned, or extended as necessary to accommodate project construction and operation. Utilities that will be affected include water, electrical, gas, cable/fiber, and telephone lines. Water lines include those owned by the cities of Fairfield, Vallejo, and Benicia; the California Department of Water Resources; and the Suisun-Solano Water Authority. Irrigation and non-potable water and agricultural drains owned by the Solano Irrigation District are located within the project area. These water facilities, as well as sewer facilities owned by the cities of Fairfield and Suisun City and by the Fairfield-Suisun Sewer District, would be realigned or extended, as necessary.

Locations of PG&E–owned electrical and gas lines within the project area for each alternative are addressed specifically in the project description in Chapter 2. The precise field location of

high risk utilities will be identified during final design in accordance with the Department's procedures.

The relocation, extension, or realignment of utilities under all build alternatives would result in temporary construction impacts and may result in minor interruption of service. To minimize this potential, the Department will enter into agreements with the utility providers, including PG&E, AT&T, and the cities of Fairfield, Benicia, and Vallejo.

Under the No-Build Alternative, no construction would take place and no utilities would be relocated. Therefore, there would be no potential to affect utilities.

Potential Effects on Police, Fire, and Emergency Service Providers during Construction

Potential short-term impacts on police, fire, and emergency service providers may result from construction-related activities under all build alternatives. Potential impacts include increased emergency response times within the project area caused by congestion during project construction and temporary lane closures. Lane closures are expected to be of short duration and to occur in off-peak hours. The effect is expected to be minimal. In addition, as part of its standard procedure, the Department will prepare a Transportation Management Plan, discussed below.

Alternative C and Alternative C, Phase 1 would displace the Fairfield Fire Department station located at 473 Edison Court in the west end of the project area. This fire station is located in an industrial building and serves the Cordelia area. The fire station at Edison Court was opened as a temporary fire station in a warehouse building. The Fairfield Fire Department Strategic Plan (2007) calls for the construction of two permanent fire stations in the Cordelia area to replace the temporary station located on Edison Court.[1] As discussed in Chapter 3.1.4, page 3.1.4-11, there is sufficient commercial and industrial land available to accommodate the displaced uses including the fire station and the avoidance, minimization and mitigation measures described therein would also apply to the Fairfield Fire Department fire station.

Under the No-Build Alternative, no construction would occur and therefore no effect to emergency services would occur as a result of construction.

Avoidance, Minimization, and/or Mitigation Measures

Minimize Disruption of Utilities Services

The Department will enter into agreements with providers of utilities located within the project area that would be relocated, realigned, or extended as part of project construction or operation. The construction efforts will be coordinated to minimize interruption of service and to continue operation after the proposed project is complete.

[1] Fairfield Fire Department Strategic Plan, 2007; http://www.ci.fairfield.ca.us/civica/filebank/blobdload.asp?BlobID=3820

Prepare Transportation Management Plan (TMP)

Before initiating construction, a TMP will be prepared and provided to all emergency service providers in the area. The TMP will serve to notify all emergency service providers in the project area of the project construction schedule and the time and location of lane closures. The TMP will identify anticipated dates and hours of construction, as well as anticipated limits on access. Notice will be provided at least one week before construction begins. To the extent possible, emergency vehicles will be allowed through roadway segments temporarily closed for construction purposes.

3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting

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

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

Affected Environment

The information presented here has been summarized from technical reports prepared for the proposed project. These reports, listed below, are available for review at the Department District 4 office and are hereby incorporated by reference.

- *I-80/I-680/SR 12 Interchange PR/ED: A.M. Peak Hour VISSIM Model Calibration/Validation Technical Memorandum* (October 8, 2003).
- *I-80/I-680/SR 12 Interchange PR/ED: P.M. Peak Hour VISSIM Model Calibration/Validation Technical Memorandum* (October 8, 2003).
- *I-80/I-680/SR 12 Interchange PR/ED: VISSIM Model Calibration/Validation for the Project Expansion Area Technical Memorandum* (February 14, 2005).
- *I-80/I-680/SR 12 Interchange PR/ED: Existing Weekday (Tuesday through Thursday) Traffic Operating Conditions for the Expanded Project Area—Technical Memorandum* (February 2005).
- *I-80/I-680/SR 12 Interchange PR/ED: Design Year 2035 Demand Forecasts at Project Gateways Technical Memorandum* (July 14, 2006).
- *I-80/I-680/SR 12 Interchange PR/ED: Updated Validation of the VISSIM Traffic Operations Model to 2007—2008 Conditions Technical Memorandum* (October 30, 2008).
- *I-80/I-680/SR 12 Interchange PR/ED: Final Traffic Operations Report* (June 2009) (referred to below as the Final Traffic Operations Report or FTOR).

The traffic study area includes components of the regional freeway system and ramp terminal intersections, as well as key parallel and connecting arterials within the I-80/I-680/SR 12 project area, as shown in Figure 2-1. Specifically, the analysis of potential project impacts focused on freeway auxiliary lanes, and connecting ramps and collector distributor roadways on Interstate 80 (I-80) between Red Top Road and Abernathy Road, Interstate 680 (I-680) between Gold Hill Road and I-80, State Route 12 West (SR 12) from Red Top Road and I-80, and State Route 12 East from I-80 and Pennsylvania Avenue.

The project study corridor exhibits a directional commute pattern from Solano County, Yolo County, and Sacramento County to the Bay Area employment centers of Contra Costa County, Alameda County, Santa Clara County, the City and County of San Francisco, and San Mateo County. This corridor also serves as a major gateway for goods movement, which accounts for a high percentage of truck traffic. In addition, truck scales are located in both the eastbound (EB) and westbound (WB) directions of I-80 between I-680 and SR 12E. Lastly, this corridor is a major recreational route for activities in the Sacramento Valley, Sierra Nevada, and Nevada.

The Solano Comprehensive Transportation Plan (Solano Transportation Authority 2005) calls for maintenance of level of service (LOS) E on roadways of regional significance, including freeways. LOS E represents at-capacity operation. When traffic volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F.

For freeway mainline segments, weave segments, and ramp merge and diverge areas, the LOS is related to the vehicle density in vehicle miles per lane and is calculated for the a.m. and p.m. commute peak hours. For intersection operations, the LOS is related to the average control delay per vehicle during the a.m. and p.m. commute peak hours. Tables 3.1.6-1 and 3.1.6-2 provide the LOS thresholds for freeway and intersection analysis, respectively.

Other *measures of effectiveness* (MOEs) used in the traffic analysis include vehicle hours of travel (VHT), defined as the total number of vehicle hours traveled per hour within the study area; vehicle hours of delay (VHD), defined as the number of vehicle hours of delay per hour resulting from congestion within the study area; vehicle miles traveled (VMT), defined as the total number of vehicle miles traveled during the peak hours in the study area; and the average travel times for trips within the study area.

Table 3.1.6-1. Freeway Mainline, Weaving, and Ramp Junction LOS Criteria

Level of Service[a]	Maximum Density (passenger cars per mile per lane)	
	Basic Freeway Sections	Freeway Weaving Segments and Ramp Junctions
A	11	10
B	18	20
C	26	28
D	35	35
E	45	>35
F	45	Demand exceeds capacity

Source: Transportation Research Board 2000.

[a] Freeway mainline LOS based on a 65 mph free-flow speed.

Table 3.1.6-2. Intersection LOS Definitions for Highway Capacity Manual Methodology

Level of Service	Description of Traffic Conditions	Average Control Delay per Vehicle (seconds)
Signalized (Signal-Controlled) Intersections		
A	Insignificant delays: No approach phase is fully used, and no vehicle waits longer than one red indication	≤10
B	Minimal delays: An occasional approach phase is fully used, and drivers begin to feel restricted	>10–20
C	Acceptable delays: Major approach phase may become fully used, and most drivers feel somewhat restricted	>20–35
D	Tolerable delays: Drivers may wait through more than one red indication; queues may develop but dissipate rapidly, without excessive delays	>35–55
E	Significant delays: Volumes are approaching capacity, vehicles may wait through several signal cycles, and long vehicle queues form upstream	>55–80
F	Excessive delays: Conditions are at capacity, with extremely long delays; queues may block upstream intersections	>80
Unsignalized Intersections		
A	No delay for stop-controlled approaches	≤10
B	Operations with minor delay	>10–15
C	Operations with moderate delays	>15–25
D	Operations with some delays	>25–35
E	Operations with high delays and long queues	>35–50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers	>50

Source: Transportation Research Board 2000.

Pedestrians and Bicyclists

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

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

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

Economic and Societal Trends

The I-80/I-680/SR 12 interchange is a point at which two major interstate freeways and one state highway converge. When it was constructed in the 1960s, the interchange location was in a

relatively rural setting immediately surrounded by agricultural lands with mountains to the north and the vast Suisun Marsh to the south.

Since the 1960s the Bay Area and Northern California region experienced rapid population growth. The Bay Area's population has grown by more than 86% during this time and Solano County's population has more than tripled. This tremendous amount of growth has resulted in substantial increases in regional traffic passing through the interchange area as well as substantial changes in the land uses immediately surrounding the interchange.

Regional truck scales facilities are also located within the I-80/I-680/SR 12 interchange. The location of the truck scales is ideal for monitoring and enforcing truck weight and safety requirements because it provides one location that can monitor truck traffic on I-80, I-680, and SR 12. However, the volume of trucks that need to be weighed and inspected has increased dramatically since the 1960s. Trucks must exit, then re-enter the freeway within the I-80/I-680/SR 12 interchange area after inspection at the truck scales facility. The exiting and entering of a large volume of trucks creates a severe weaving problem, which is made worse by the size, limited maneuverability, and lower speeds of large trucks. Improvement of the EB truck scales have been addressed in a separate project.

The I-80/I-680/SR 12 interchange is vital to the mobility of both the local area and the entire northern California region because it serves a multitude of destinations. It is a critical corridor for local and regional commute travel. Over the past ten years, commute travel through the area has increased substantially in response to the growing Bay Area economy and expansion of employment centers, which has pushed commuters further east as they search for affordable housing. By 2030, commute traffic is projected to constitute between 40% and 75% of the total number of vehicles traveling through the project area.

Existing (2004) Traffic Operations

The extent of facilities studied in the traffic operations analyses are listed below:

- I-80 between Red Top Road and Air Base Parkway.
- I-680 between Gold Hill Road and I-80.
- SR 12W (Jameson Canyon Road) between Red Top Road and I-80.
- SR 12E between I-80 and Civic Center Drive.
- Arterial and local roadways including Abernathy Road, Beck Avenue, Business Center Drive, Central Way, Cordelia Road, Green Valley Road, Lopes Road, Mangels Boulevard, Pennsylvania Avenue, Red Top Road, Ramsey Road, Rockville Road, Suisun Valley Road, West Texas Street, and other connecting roadways.

The existing conditions analysis presents the physical and operational characteristics of the roadway system in the vicinity of the proposed project in fall 2004. This information provides context for the purpose and need to construct improvements. It should be noted that when the existing conditions traffic counts were taken a fifth auxiliary lane had opened to traffic on WB I-80 between the SR 12E connector and the I-680 southbound connector. However, the fifth EB lane had not yet opened and therefore is not included in the existing conditions analysis. Also not

included is the WB Jameson Canyon Road (SR 12W) truck climbing lane that had not yet been completed. Both improvements have improved traffic operations, and while they are not included in the 2004 existing conditions analysis, they are included in 2015 and 2035 No-Build analyses.

Note that while this report refers to existing conditions in the original 2004 baseline, updated 2007/2008 a.m. and p.m. peak hour volumes were collected from the Department PEMS system and were used to re-validate the existing conditions VISSIM traffic operations model to account for changes in traffic volumes and freeway design (i.e., the EB I-80 auxiliary lane and the opening of the new Benicia-Martinez Bridge south on I-680). A description of the re-validation effort is included in the FTOR.

System-Wide Measures of Effectiveness

With a large, complex freeway improvement project such as this, system-wide MOEs—such as VMT, VHD, and average travel speed—are particularly useful for comparison of existing conditions with future no-build and project alternatives. The system-wide MOEs under existing conditions are summarized in Table 3.1.6-3 for the a.m. and p.m. peak hours.

The p.m. peak hour represents the heaviest congestion period within the project study area. For example, the p.m. peak hour has 10% higher VMT, 20% higher VHT, and 72% more VHD. These ratios are even higher when comparing the 3-hour peak periods with the p.m. MOEs exceeding the a.m. MOEs by 17%, 27%, and 73%, respectively. The average travel speed is 46 mph during the a.m. peak hour on WB I-80 (from Waterman/Air Base Parkway to Red Top Road), and 33 mph during the p.m. peak hour on EB I-80 (from Red Top Road to Waterman/Air Base Parkway).

Table 3.1.6-3. Existing (Year 2004) System-Wide Measures of Effectiveness[a]

MOE	A.M. Peak Hour	P.M. Peak Hour
Vehicle Miles of Travel (Vehicle Miles/Hour)	316,220	334,755
Vehicle Hours of Delay (Hours of Delay/Hour)	1,140	1,885
Estimated Duration of Congestion (Hours) [b]	1–2 hours	1.5–2.5 hours
Average Freeway Travel Speed	46 mph (WB Peak Direction)	33 mph (EB Peak Direction)

Source: Final Traffic Operations Report.

[a] The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

[b] Duration of congestion is estimated based on field conditions.

System Operations, Travel Speeds, and Bottlenecks

The existing operating conditions within the project study area were analyzed using 13 model runs of the calibrated peak period VISSIM models and existing a.m. and p.m. peak hour traffic volumes. The volumes are shown in Appendix A of the FTOR. The peak hours in the project study area are generally from 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m.

The FTOR includes the existing (2004) travel speeds on the freeway system for the a.m. and p.m. peak hours, respectively. Travel times for key gateway-to-gateway pairs are also shown on the figures. Table 3-2 in the FTOR shows the service levels, based on vehicle density, for all freeway segments (mainline, weave, on-ramp merge, and off-ramp diverge areas).

A.M. Peak Hour Operations (2004)

During the a.m. peak hour, a queue typically develops on WB I-80 at the SR 12W connector, primarily due to the grade on SR 12W as it traverses the hill toward Napa. The overall I-80 freeway section operates at LOS B at this location; however, the queue results in LOS F operations in the shoulder lane.

The bottleneck that used to exist at the WB I-80 to southbound (SB) I-680 connector ramp was eliminated with the completion of the two-lane connector (2004). On WB I-80 during the a.m. peak hour, the grade on SR 12W exiting I-80 and heading toward Napa causes a slowdown on WB I-80. Heavy trucks are not able to keep up speeds on SR 12W, causing queuing onto I-80. The slowdown is generally in lanes 4 and 5 (the outside lanes closest to the shoulder),[1] but the effect of this, plus the combined effect of trucks entering from the truck scales and weaving vehicles headed to the Suisun Valley Road off-ramp or southbound I-680 connector, results in slow-moving queues in lanes 4 and 5, while traffic operations are generally better in lanes 1, 2, and 3. The slow-moving queue in lanes 4 and 5 typically extends from the SR 12W WB off-ramp to SR 12E.

P.M. Peak Hour Operations (2004)

During the p.m. peak hour, a bottleneck develops on EB I-80 at the truck scales on-ramp where slow-moving trucks attempt to accelerate to freeway travel speeds. Vehicle speeds generally begin to increase beyond the truck scales toward the I-80/SR 12E interchange. The bottleneck constrains the amount of traffic that can be delivered downstream, thereby resulting in improved LOS operations immediately downstream of the bottleneck. Vehicle queues resulting from the EB bottleneck at the truck scales on-ramp typically extends as far west as SR 12W and 800 feet south of the Central Way off-ramp on northbound (NB) I-680.

Another bottleneck that develops during the p.m. peak hour is EB I-80 between the Travis Boulevard on-ramp and the Air Base Parkway off-ramp. This bottleneck results in vehicle queues that extend back to the West Texas interchange, resulting in LOS F operations between the Beck Avenue EB on-ramp and the Travis Boulevard EB on-ramp.

The signalized intersections on SR 12E at Beck Avenue and Pennsylvania Avenue also cause some queuing on EB SR 12E, but the queues do not generally extend back onto EB I-80.

A.M. Peak Hour Operations (2007)

As described above, the existing conditions baseline for this study is 2004, but the existing conditions traffic operations model was re-validated to 2007 conditions to supplement the 2004 information and provide assurance that the model still validated more recent conditions. This process is described in Appendix D of the FTOR. The re-validation process for the a.m. peak hour showed that gateway and internal traffic volumes had not changed significantly between 2004 and 2007; therefore, a complete revised simulation was not prepared. Accordingly, the 2004 a.m. peak hour conditions described above are similar to the a.m. conditions in 2007.

[1] Lane numbering starts with the leftmost lane as lane 1.

P.M. Peak Hour Operations (2007)

Because volumes had changed significantly in the p.m. peak hour between 2004 and 2007, a new simulation was prepared as part of the re-validation effort for the p.m. peak hour. (Refer to Appendix D of the FTOR for more information). p.m. peak hour conditions in 2007 did not change significantly in the non-peak direction (westbound/southbound), and improved somewhat in the peak direction (northbound/eastbound) due to the provision of the fifth lane on EB I-80 between I-680 and SR 12E (which was not included in the 2004 analysis). Even with the opening of the new Benicia-Martinez Bridge to the south on I-680, which added about 500 vehicles at the southern gateway to the project limits on northbound I-680, conditions were better on the I-680/I-80 connector and downstream on I-80, due to the two-lane connector and the fifth lane between I-680 and SR 12E.

Intersection Operations—A.M. Peak Hour

The intersection lane configuration, control type, and peak hour volumes for existing conditions are described in Appendix B of the FTOR.

The operations of all study intersections are summarized in Table 3-3 of the FTOR. For all intersections, the average control delay and LOS for the entire intersection are reported. As shown in the table, 22 of the 24 ramp terminal study intersections operate at LOS E conditions or better during the a.m. peak hour. Only the Red Top Road/EB I-80 ramps (all-way stop-controlled) and Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) intersections operate at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the a.m. peak hour.

Intersection Operations—P.M. Peak Hour

During the p.m. peak hour, only the Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp (all-way stop-controlled) ramp terminal intersection operates at unacceptable LOS F conditions. All other study intersections operate at LOS D or better during the p.m. peak hour, except the Ramsey Road/Bridgeport Avenue intersection, which operates at unacceptable LOS E. Due to the heavy congestion on the NB I-680 to EB I-80 ramp, it is estimated that approximately 75% of the Gold Hill Road off-ramp traffic volume is associated with vehicles diverting from I-680 and I-80 to Lopes Road/Ramsey Road/Cordelia Road to bypass the heavy congestion on the freeway mainline.

The intersection of Central Way/I-680 NB off-ramp operates at acceptable LOS C conditions, but the stop-controlled off-ramp operates at marginal LOS D/E. It is estimated that approximately 90% of the off-ramp traffic volume, like that on the Gold Hill Road off-ramp, is associated with vehicles diverting from NB I-680 to Central Way/Pittman Road. However, because the volumes on Central Way are fairly low, this intersection would not meet the Departments' peak hour volume signal warrant.

At the all-way stop-controlled intersection of Lopes Road/SB I-680 on-ramp/EB I-80 off-ramp, the heavy traffic volume on NB Lopes Road (more than 600 vehicles) and a total intersection volume exceeding 1,780 vehicles results in long delays and poor operating conditions for NB Lopes Road. As a result of the heavy traffic volumes on all three approaches, this intersection meets the Department's peak hour signal warrant criteria during both a.m. and p.m. peak hour

conditions. Subsequent to completion of the existing conditions analysis, a signal was installed at this location.

Traffic Safety

The Department maintains statistics for all State highway facilities for three types of accident rates: the total accident rate, accidents involving fatalities and accidents involving fatalities or injuries. Within the project limits most freeway segments of I-80 experience a higher total accident rate and higher fatal or injury accident rate compared to the average statewide rate for similar types of facilities (Table 3.1.6.4). Half of the segments experience a higher than average fatal accident rate than the average statewide rate. Within the project limits of SR-12 East half of the sections experience higher than average total and fatal accident rates compared to the average statewide rate for similar types of facilities and most sections experience a higher than average accident rate for fatal plus injury accidents compared to the average statewide rate for similar facilities.

In reviewing the accident summary records 65% of the accidents occurred on I-80 during commute periods, with over 50% of the accidents being rear-end collisions. On SR 12 East over 50% of the accidents occurred during the commute periods, with over 60% of the accidents being rear-end collisions. On SR 12 West 70% of the accidents occurred during the commute periods, with 48% of the accidents being rear-end collisions. This combination of high accident rates during commute periods and a high percentage of rear-end type collisions is likely related to the congestion observed in these sections.

The effect of slow moving trucks decelerating into, or accelerating out of, the westbound truck scales combined with already congested lanes is described in the 2009 FTOR. Increased vehicle traffic, and in particular increased truck volumes, will exacerbate the accident rate based on the general correlation between increased volumes and congestion and increased accident rates.

Table 3.1.6-4. Accident History, January 1, 2006 to December 31, 2008

Location	Post Mile	Number of Accidents			Actual Accident Rate (Accidents per Million Vehicle Miles)			Average Accident Rate (Accidents per Million Vehicle Miles)		
		Total	Fatal	F+I	Total	Fatal	F+I	Total	Fatal	F+I
Western Segment										
I-80—westerly project limit to Red Top Road undercrossing	10.89 to 11.39	88	1	30	1.36	0.015	0.46	0.81	0.008	0.25
I-80—Red Top Road undercrossing to SR 12W/I-80 connector structure	11.39 to 11.98	69	0	22	0.90	0.000	0.29	0.81	0.008	0.25
I-80—SR 12W/I-80 undercrossing to Green Valley Road overcrossing	11.98 to 12.74	155	0	41	1.20	0.000	0.32	0.93	0.009	0.29
I-80—Green Valley Road overcrossing to I-680/I-80 connector structure	12.74 to 13.09	121	1	30	1.73	0.014	0.43	1.04	0.010	0.32
I-680—0.5 mile south of Gold Hill Road overcrossing to I-80/I-680 connector	9.5 to 13.1	94	0	29	0.48	0.000	0.15	0.97	0.010	0.31
SR 12W—0.5 mile west of Red Top Road to SR 12W/I-80 connector	1.75 to 2.76	42	0	16	1.19	0.000	0.45	1.28	0.030	0.58
I-80—I-680/I-80 connector structure to Suisun Valley Road overcrossing	13.09 to 13.49	141	1	31	1.65	0.012	0.36	1.08	0.011	0.33
Central Segment										
I-80—Suisun Valley Road overcrossing to SR 12E/I-80 connector structure	13.49 to 15.81	472	0	137	0.89	0.000	0.26	1.05	0.011	0.33
I-80—SR 12E/I-80 connector structure to Abernathy Road overcrossing	15.81 to 16.17	62	1	23	0.86	0.014	0.32	1.04	0.010	0.32
Eastern Segment										
I-80—Abernathy Road overcrossing to West Texas Street undercrossing	16.17 to 17.20	173	2	39	0.84	0.010	0.19	1.03	0.010	0.32
SR 12E—SR 12E/I-80 connector to Chadbourne Road undercrossing	1.85 to 2.22	8	0	1	0.55	0.000	0.07	0.71	0.007	0.23
SR 12E—Chadbourne Road undercrossing to Beck Avenue	2.22 to 3.20	63	1	31	1.23	0.019	0.60	1.13	0.011	0.42
SR 12E—Beck Avenue to Pennsylvania Avenue	3.20 to 4.07	64	1	32	1.51	0.024	0.75	1.55	0.018	0.63
SR 12E—Pennsylvania Avenue to Civic Center Boulevard	4.07 to 4.74	70	0	33	1.99	0.000	0.94	1.11	0.011	0.39

Source: California Department of Transportation 2006–2008.

Notes: Shading denotes locations that exceed the statewide average accident rate.
F+I = fatal plus injury.

Source: California Department of Transportation 2004–2006.

Notes: Shading denotes locations that exceed the statewide average accident rate.
F+I = fatal plus injury.

Bicycle Circulation System

Existing and planned bicycle facilities are provided throughout the study area. Below is a description of the three types of bicycle facilities, based on the Fairfield General Plan.

- Class I Bikeway (Bicycle Path)—Separate off-street bike paths or trails for bicycles only. Multi-use trails are off-street paths that are shared by pedestrians.
- Class II Bikeway (Bicycle Lane)—Provides a restricted right-of-way and is designated for the use of bicycles with a striped lane on a street or highway. Vehicle parking and vehicle/pedestrian cross-flow is permitted.
- Class III (Bicycle Route)—Provides for a right-of-way designated by signs and/or pavement markings for shared use with motor vehicles.

The Fairfield General Plan (2004) contains a map of existing and planned bikeways throughout the City. In the interchange vicinity, the North Connector Corridor Transportation for Livable Communities Concept Plan (August 2007) provides a more recent and updated plan for bicycle and pedestrian connections within the North Connector Corridor, between Jameson Canyon Road at Red Top Road and Abernathy Road. Figure 3.1.6-1 illustrates the components of the Concept Plan.

Existing bicycle facilities within the project limits include:

- The Fairfield Linear Park Pathway (multi-use, no horses) adjacent to and immediately north of I-80 between immediately east of the WB I-80 truck scales and Travis Boulevard; also between West Texas Street and Travis Boulevard on the south side of I-80 (northeast/southwest orientation).
- Class II Bicycle Lanes on SR 12 West between Red Top Road and points west.
- Bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection.
- Class II Bicycle Lanes on Lopes Road between Cordelia Road and Red Top Road.
- Class I Multi-Use Path (no horses) along creek between Lopes Road and Watt Drive (north of Fermi Drive and south of Fulton Drive), and between Red Top and Gold Hill Road just west of the residential neighborhoods.
- Red Top Road—Planned Class II Bicycle Lanes.

Pedestrian Circulation System

The pedestrian network in the study area consists primarily of sidewalks along streets as well as crosswalks at the major intersections. ADA–compliant sidewalks are generally not provided at the grade-separated crossings of the study freeways and highways (I-80, SR 12, and I-680) in the project study area. Pedestrian overpasses are also not provided in the project study area. At-grade intersections are provided along SR 12; these are discussed below.

SR 12W

No crosswalk is provided at the unsignalized, side-street stop-controlled Red Top Road/SR 12W intersection. An existing multi-use trail terminates immediately east of this intersection north of SR 12W.

SR 12E

Crosswalks are provided across SR 12E at the Beck Avenue and Pennsylvania Avenue signalized intersections. The SR 12E/Beck Avenue intersection does not provide a marked crosswalk or pedestrian signal across Beck Avenue, resulting in no marked crossing or pedestrian signal at the northwest or southwest corner. The SR 12E/Pennsylvania Avenue intersection does not provide a marked crosswalk or pedestrian signal from the northeast corner across either Pennsylvania Avenue or SR 12E.

Transit System

A variety of transit services are provided in the project study area, including bus and passenger rail service.

Bus service to the project study area is provided by Fairfield and Suisun Transit, operated by the Cities of Fairfield and Suisun City; NorthBay Transit Group (unincorporated Solano County Paratransit service provider); the Rio Vista Delta Breeze operated by the City of Rio Vista; and BayLink, operated by the City of Vallejo. Figure 3.1.6-2 depicts the passenger bus services in the area.

Fairfield and Suisun Transit

Fairfield and Suisun Transit (FAST) is run by the Cities of Fairfield and Suisun City, which operate intra-city and inter-city fixed-route bus services Monday through Saturday. FAST provides service to Sacramento, Davis, Dixon, Vacaville, Benicia, Vallejo, and Bay Area Rapid Transit (BART). The fare system is based on the number of zones that are crossed, with a local fare of $1.50 and a maximum fare of $6.75 ($0.75 to $3.25 for seniors and the disabled). The existing FAST fixed transit route in the study area is summarized in Table 3.1.6-5, and illustrated in Figure 3.1.6-2. Besides fixed-route transit services, FAST also offers Flex buses, Paratransit, and a reduced-fare taxi program for seniors.

NorthBay Transit Group (Solano Paratransit)

The Solano Transportation Authority conducted a transit consolidation study, which resulted in the dissolution of the Solano Paratransit effective July 1, 2009. The agency had previously operated paratransit services within the unincorporated areas of Solano County. Paratransit services are now operated by the NorthBay Transit Group.

Rio Vista Delta Breeze

The Rio Vista Delta Breeze is run by the City of Rio Vista. The Delta Breeze operates inter-city service between Fairfield, Suisun City, the Suisun-Fairfield Amtrak Station, and Rio Vista on Route 50. Route 50 will deviate anywhere within the city limits of Fairfield and Suisun City. Inter-city fare is $5.00, including seniors. Route deviations cost an extra $0.50. Route 50 is summarized in Table 3.1.6-5.

Table 3.1.6-5. Existing Bus Routes in Project Study Area

Route	Service Area	Approximate Frequency		
		Peak Period	Off-Peak	Saturday
Fairfield and Suisun Transit (FAST)—Local Routes				
1A/1B	Central Fairfield Loop Route—North Texas St., Travis Blvd., Pennsylvania Ave, Fairfield Civic Center, Westfield Mall	45 min	45 min.	45 min.
2	Westfield Mall, Travis Blvd., Texas St., Tabor Ave., Sunset Ave., Pintail Dr.	30 min.	30 min.	30 min.
3A/3B	Outer Fairfield Loop—Westfield Mall, Travis Blvd., Oliver Rd., Waterman Blvd., Atlantic St., Texas St., Fairfield Transportation Center	60 min.	60 min.	60 min.
4	FLEX Bus Service—North Texas St., Dickson Hill Rd., Cement Hill Rd., Clay Bank Rd., Tabor Ave.	30 min.	60 min.	30 min. peak, 60 min. off-peak
5	Westfield Mall, Pennsylvania Ave., Suisun City Hall, Amtrak, Buena Vista Ave, SR 12E	30 min.	30 min.	60 min.
6	Westfield Mall, Travis Blvd., Sunset Ave., Pintail Dr., Walters Rd., Emperor Dr.	30 min.	30 min.	60 min.
7	Westfield Mall, Pennsylvania Ave., West Texas St., Beck Ave., Courage Dr., Chadbourne Rd., Rockville Rd., Suisun Valley Rd., Central Rd., Lopes Rd., Cordelia Villages	60 min.	60 min.	120 min.
Fairfield and Suisun Transit (FAST)—Regional Routes				
20	Fairfield Transportation Center, Westfield Mall, I-80, Vacaville Davis Street Park and Ride, Ulatis Cultural Center in Vacaville	60 min.	60 min.	60 min.
30	Fairfield Transportation Center, Westfield Mall, I-80, Vacaville Davis Street Park and Ride, Dixon Market Lane Park and Ride, UC Davis, Downtown Sacramento (Sacramento served Mon–Fri only).	3 a.m.peak,1 midday, 3 p.m. peak buses		3 hrs. (3 buses total)
40	Vacaville Davis Street Park and Ride, I-80, Fairfield Transportation Center, I-680, Benicia, Pleasant Hill BART, Walnut Creek BART	4 a.m. peak, 5 p.m. peak buses		N/A
90	Amtrak, SR 12W, Fairfield Transportation Center, I-80, El Cerrito BART	15 min.	60 min.	N/A
Rio Vista Delta Breeze				
50	Fairfield Transportation Center, Westfield Mall, Amtrak, SR 12E, Rio Vista, Lodi	2 hrs. (6 total buses)		N/A
BayLink				
85	Westfield Mall, Solano Community College, Mangels Blvd, I-80, Vallejo, Vallejo Ferry Terminal	30 min.[a]	60 min.	2 hrs.[b]

Source: Based on information presented in operator's Web site.

[a] 30 minute headway only during the a.m. peak period, 60 minute headways during the p.m. peak period.

[b] Operates on Saturdays, Sundays, and holidays.

BayLink

BayLink buses are operated by Vallejo Transit. Vallejo Transit operates inter-city service between Fairfield and Vallejo on Route 85. Inter-city fare is $5.00 ($2.50 for seniors and the disabled). Route 85 is summarized in Table 3.1.6-5. BayLink also provides ferry service between Vallejo and San Francisco.

Passenger Rail Service

Amtrak provides passenger rail service and the Capitol Corridor provides commuter rail service in the study area. The rail line runs southeast-northwest in the study area.

Amtrak currently provides daily service along the California Zephyr route between Emeryville and Chicago, and daily service along the Coast Starlight route between Los Angeles and Seattle. The Capitol Corridor operates between San Jose, Oakland, Martinez, Fairfield/Suisun City, Davis, Sacramento, and Auburn. The Capitol Corridor serves the Suisun-Fairfield Station with 20 trains per weekday and 15 trains per day on weekends and holidays in each direction. The

Suisun-Fairfield Amtrak Station is located in Suisun City on Main Street under the SR 12E overcrossing. Transit access to and from the station is provided by FAST and the Rio Vista Delta Breeze.

Environmental Consequences

This section describes the impacts of the project on traffic operations, pedestrian and bicycle facilities, and transit service in the construction year (2015) and the design year (2035). The scenarios considered in this analysis are listed below.

- Alternative B (2035).
- Alternative C (2035).
- Alternative B, Phase 1 (2015, 2035).
- Alternative C, Phase 1 (2015, 2035).
- No-Build Alternative (2015, 2035).

The alternatives are described in the Chapter 2, "Project Alternatives;" the analyzed scenarios are described in Chapter 4 of the FTOR.

Methods—Future Conditions Analysis

Traffic Forecasts

The 2035 travel demand forecasts were developed using the STA's Solano-Napa Travel Demand Model. The travel demand forecasts were documented in a Technical Memorandum dated July 14, 2006, which was reviewed and approved by the Department District 4 Office of Advanced Planning. The Technical Memorandum is included in Appendix C of the FTOR. The construction-year (2015) forecasts were developed by estimating the gateway demand at each of the five entrances to the system, using a straight-line interpolation between the existing (2004) volumes and future (2035) demand volumes; checking to ensure that the resulting gateway volumes were not constrained by gateway capacity; and interpolating the 2015 volumes for each origin zone within the VISUM model and determining the appropriate routes for the trips using the VISUM model with some manual adjustments.

Traffic Operations Analysis

The constrained traffic forecasts and freeway system traffic operations analysis were performed with the VISUM/VISSIM forecasting and traffic operations tools. The VISUM/VISSIM tools and the validation of the original models are described in the Final Technical Memorandum, *I-80/I-680/SR 12 Interchange Project PR/ED: VISSIM Model Calibration and Validation for the Project Expansion Area, February 14, 2005.* The intersection operations analysis utilizes the 2000 HCM operations methodology, and was performed with VISSIM for the ramp terminal intersections, and with Synchro for the non–ramp-terminal intersections.

Evaluation Criteria for Environmental Consequences

The criteria presented below were used in the determination of environmental consequences.

Traffic Operations

Environmental consequences are identified related to the proposed project's effect on bottlenecks within the project study area; the proposed project's effect on system-wide delay, average travel speed, VMT, and duration of congestion; and the proposed project's effect on intersection LOS at the ramp terminal intersections and non-ramp terminal intersections in the study area.

Pedestrian and Bicycle Circulation

An environmental consequence is identified if the proposed project's implementation would disrupt or interfere with existing or planned bicycle or pedestrian facilities.

Transit Service

An environmental consequence is identified if implementation of the proposed project would disrupt or interfere with existing or planned transit operations or facilities of Sacramento Regional Transit.

Summary of Environmental Consequences

Four summary tables, Tables 3.1.6-6 through 3.1.6-9, and two summary bar charts, Figures 3.1.6-3 and 3.1.6-4, are provided to support the traffic impact discussions below. Additional supporting tables and figures provided in the FTOR are referenced as needed below. They include detailed freeway LOS tables, intersection LOS tables, travel speed and travel time graphics, and bar chart travel time comparisons between conditions in 2015 and 2035.

Table 3.1.6-6. Construction-Year 2015—A.M. Peak Hour Conditions System Wide Measures of Effectiveness[a]

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1
Bottlenecks and Queues			
I-80 WB	None	None	None
I-80 EB	None	None	None
SR 12W WB	None	None	None
SR 12W EB	None	None	None
SR 12E WB	At Beck; queue extends east of Civic Center	At Pennsylvania; queue extends to Jackson Street	Same as No-Build
SR 12E EB	None	None	None
I-680 NB	None	None	None
I-680 SB	None	None	None
Duration of Congestion			
System-wide	Congestion would remain near existing conditions, lasting approximately 1.5 hours.	Congestion would remain near existing conditions, lasting approximately 1 hour.	Congestion would remain near existing conditions, lasting approximately 1.5 hours.
Travel Times			
WB I-80 to SB I-680[b]	9:40	9:10	9:55
WB I-80[b]	8:30	8:25	8:25
SR 12E to WB I-80[b]	15:35	9:45	14:25
Maximum Individual Delay			
WB I-80 to SB I-680[c]	25 seconds	None	40 seconds
WB I-80[c]	30 seconds	25 seconds	25 seconds
SR 12E to WB I-80[c]	7 minutes	1 minute	6 minutes
Speed			
WB I-80 to SB I-680[b]	62 mph	64 mph	63 mph
WB I-80[b]	63 mph	64 mph	64 mph
SR 12E to WB I-80[b]	33 mph	61 mph	34 mph
Flows (volume)			
SB I-680[d]	3,305	3,272	3,378
WB I-80[d]	5,466	5,511	5,227
WB SR 12E[d]	2,202	2,393	2,532

Source: Final Traffic Operations Report.

[a] The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

[b] Travel Time and travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

[c] Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

[d] Flow is on SB I-680 between I-80 and Gold Hill Road; on WB I-80 between SR 12W and Red Top Road; and on SR 12E between Chadbourne Road and I-80.

Table 3.1.6-7. Construction-Year 2015—P.M. Peak Hour Conditions System Wide Measures of Effectiveness[a]

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1
Bottlenecks and Queues			
I-80 WB	None	None	None
I-80 EB	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to Green Valley Road	None	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends to Suisun Valley Road
SR 12W WB	None	None	None
SR 12W EB	None	None	None
SR 12E WB	At Pennsylvania; queue extends to Jackson Street	None	Same as No-Build
SR 12E EB	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB	At Pennsylvania; queue extends to I-80 Connector	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB
I-680 NB	At I-80 connector (due to queue from 12 East EB bottleneck); queue extends beyond Gold Hill Road	None	None
I-680 SB	None	None	None
Duration of Congestion			
System-wide	Congestion would significantly increase compared to existing conditions, lasting beyond 3 hours	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 2 hours.
Travel Times			
NB I-680 to EB I-80[b]	34:00	9:10	13:05
EB I-80[b]	11:45	8:10	10:40
SR-12 West to EB I-80[b]	11:55	8:15	11:00
Maximum Individual Delay			
NB I-680 to EB I-80[c]	26 minutes	1 minute	5 minutes
EB I-80[c]	4 minutes	None	3 minutes
SR-12 West to EB I-80[c]	4 minutes	None	3 minutes
Speed			
NB I-680 to EB I-80[b]	17 mph	63 mph	49 mph
EB I-80[b]	45 mph	65 mph	50 mph
SR-12 West to EB I-80[b]	43 mph	62 mph	48 mph
Flows (volume)			
NB I-680[d]	2,168	4,037	4,327
EB I-80[d]	7,272	8,679	7,937
SR 12W[d]	1,548	1,385	1,334

Source: Final Traffic Operations Report.

[a] The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

[b] Travel Time and travel speed from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

[c] Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

[d] Flow is on NB I-680 between Gold Hill Road and I-80; on EB I-80 between Travis Boulevard and Air Base Parkway; and on EB SR 12W between Red Top Road and I-80.

Table 3.1.6-8. Design-Year 2035—A.M. Peak Hour Conditions System Wide Measures of Effectiveness[a]

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
Bottlenecks and Queues					
I-80 WB	Between Suisun Valley Road and Truck Scales; queue extends to SR 12E connector	None	None	None	None
I-80 EB	None	None	None	None	None
SR 12W WB	At Red Top Road; queue extends to I-80 connector	Same as No-Build	None	None	None
SR 12W EB	None	None	None	None	None
SR 12E WB	At Beck; queue extends beyond Civic Center Drive	At Pennsylvania; queue extends beyond Civic Center Drive	Same as No-Build	None	None
SR 12E EB	At Pennsylvania; queue extends to Chadbourne	None	Same as No-Build	None	None
I-680 NB	None	None	None	None	None
I-680 SB	None	None	None	None	None
Duration of Congestion					
System-wide	Congestion would significantly increase compared to existing conditions, lasting approximately 3 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, lasting approximately 2.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours.	Congestion would decrease, relative to No-Build conditions, to near existing conditions, lasting approximately 1.5 hours
Travel Times					
WB I-80 to SB I-680[b]	11:15	9:55	10:25	9:20	9:35
WB I-80[b]	10:00	9:00	8:45	7:05	8:10
SR-12 East to WB I-80[b]	19:50	9:50	17:05	6:30	7:40
Maximum Individual Delay					
WB I-80 to SB I-680[c]	2 minutes	1 minute	2 minutes	5 seconds	20 seconds
WB I-80[c]	2 minutes	1 minute	1 minute	None	None
SR-12 East to WB I-80[c]	12 minutes	2 minutes	9 minutes	None	None
Speed					
WB I-80 to SB I-680[b]	53 mph	58 mph	60 mph	58 mph	59 mph
WB I-80[b]	54 mph	60 mph	62 mph	60 mph	61 mph
SR-12 East to WB I-80[b]	26 mph	51 mph	28 mph	61 mph	62 mph
Flows (volume)					
SB I-680[d]	3,699	3,816	3,929	4,618	4,372
WB I-80[d]	6,121	6,558	6,074	6,462	6,602
WB SR-12 East[d]	2,139	3,064	2,466	4,115	3,909

Source: Final Traffic Operations Report.

[a] The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

[b] Travel Time and travel speed from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

[c] Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from east of Air Base Parkway on I-80 to south of Gold Hill Road on I-680; from east of Air Base Parkway on I-80 to west of Red Top Road on I-80; and from east of Main Street on SR 12E to west of Red Top Road on I-80.

[d] Flow is on SB I-680 between I-80 and Gold Hill Road; on WB I-80 between SR 12W and Red Top Road; and on SR 12E between Chadbourne Road and I-80.

Table 3.1.6-9. Design-Year 2035—P.M. Peak Hour Conditions System Wide Measures of Effectiveness[a]

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
Bottlenecks and Queues					
I-80 WB	At Suisun Valley Road; queue extends beyond Air Base Parkway	At Suisun Valley Road; queue extends to east of WB truck scales	At Suisun Valley Road; queue extends to Abernathy	None	None
I-80 EB	At 12 East Connector (due to queue from 12 East EB bottleneck); queue extends beyond Red Top Road	Same as No-Build	Same as No-Build	At Air Base Parkway (outside project limits); queue extends to just east of SR 12W connector	At Air Base Parkway (outside project limits); queue extends to Red Top Road
SR 12W WB	None	None	None	None	None
SR 12W EB	At I-80 Connector (due to queue from 12 East EB bottleneck); queue extends beyond Red Top Road	Same as No-Build	Same as No-Build	At I-80 Connector (due to I-80 EB bottleneck at Air Base Parkway); queue extends west of Red Top Road	At I-80 Connector (due to I-80 EB bottleneck at Air Base Parkway); queue extends west of Red Top Road
SR 12E WB	At I-80 connector (due to I-80 congestion); queue extends beyond Civic Center Drive	At Pennsylvania queue extends to Webster/Jackson	At Pennsylvania queue extends to Webster/Jackson	None	None
SR 12E EB	At Pennsylvania; queue extends beyond I-80 Connector and onto I-80 EB	Not designed to serve 2035 demands; queuing similar to No-Build conditions, but congestion improves	Not designed to serve 2035 demands; queuing similar to No-Build conditions, but congestion improves	None	None
I-680 NB	At I-80 connector (due to queue from 12 East EB bottleneck); queue extends beyond Gold Hill Road	Bottleneck limited to Gold Hill Road interchange; duration of congestion improves relative to No-Build conditions	Queue on I-80 EB spills back; duration of congestion improves relative to No-Build conditions	At I-80 connector (due to the I-80 EB bottleneck at Air Base Parkway); queue extends beyond Gold Hill Road	At Gold Hill on-ramp, queue extends to Gold Hill off-ramp
I-680 SB	None	None	None	None	
Duration of Congestion					
System-wide	Congestion would significantly increase compared to existing conditions, lasting beyond 6 hours	Congestion would decrease relative to No-Build conditions, lasting approximately 4.5 hours	Congestion would decrease relative to No-Build conditions, lasting beyond 5 hours	Congestion would significantly decrease relative to No-Build conditions, lasting approximately 3 hours	Congestion would significantly decrease relative to No-Build conditions, lasting approximately 3 hours

Route	No-Build	Alternative B, Phase 1	Alternative C, Phase 1	Alternative B	Alternative C
Travel Times					
NB I-680 to EB I-80[b]	48:15	13:10	Greater than 60:00	17:45	20:00
EB I-80[b]	16:50	13:40	21:30	18:35	17:15
SR-12W to EB I-80[b]	22:05	17:15	Greater than 60:00	19:45	18:30
Maximum Individual Delay					
NB I-680 to EB I-80[c]	40 minutes	5 minutes	More than 52 minutes	10 minutes	12 minutes
EB I-80[c]	9 minutes	5 minutes	13 minutes	10 minutes	9 minutes
SR-12W to EB I-80[c]	14 minutes	9 minutes	More than 52 minutes	12 minutes	10 minutes
Speed					
NB I-680 to EB I-80[b]	12 mph	35 mph	8 mph	32 mph	26 mph
EB I-80[b]	31 mph	39 mph	25 mph	28 mph	27 mph
SR-12W to EB I-80[b]	19 mph	28 mph	8 mph	25 mph	25 mph
Flows (volume)					
NB I-680[d]	1,223	4,189	1,549	4,565	4,063
EB I-80[d]	6,974	8,531	6,422	9,705	10,141
SR-12W[d]	234	858	342	2,163	2,908

Source: Final Traffic Operations Report.

[a] The study area extends on I-80 from west of Red Top Road to east of Air Base Parkway/Waterman and on I-680 south of Gold Hill Road to I-80. The study area also includes SR 12 east of Pennsylvania Road and west of Red Top Road and all local arterials within the project study area.

[b] Travel Time and travel speed from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

[c] Maximum Individual Delay (when compared to a free-flow speed of 65 mph) from south of Gold Hill Road on I-680 to east of Air Base Parkway on I-80; from west of Red Top Road on I-80 to east of Air Base Parkway on I-80; and from west of Red Top Road on SR 12W to east of Air Base Parkway on I-80.

[d] Flow is on NB I-680 between Gold Hill Road and I-80; on EB I-80 between Travis Boulevard and Air Base Parkway; and on EB SR 12W between Red Top Road and I-80.

Effects on System-Wide MOEs

Alternative B (2035)

Alternative B would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph with Alternative B (Figure 3.1.6-3).

Alternative B would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140% from 16 mph to approximately 40 mph (Figure 3.1.6-4).

Alternative B would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the morning peak hour and substantially reducing queues in the evening peak hour. Alternative B would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of 30%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear all

mainline sections of deficiencies experienced in the No-Build condition in the a.m. peak, although some deficiencies would remain in the p.m. peak hour. These deficiencies, however, are mainly due to the downstream bottleneck at Air Base Parkway, which is outside the project area.

Alternative B, Phase 1 (2015)

In the a.m. peak hour, Alternative B, Phase 1 would have very little effect on mobility, with an increase in VMT of less than 2,000 vehicle-miles (less than 0.5%), compared to No-Build conditions. However, Alternative B, Phase 1 would improve system-wide operations, resulting in a decrease in VHD of nearly 22% and an increase in average network travel speed of about 3% (from 51 mph under No-Build conditions to approximately 53 mph with Alternative B, Phase 1). (Figure 3.1.6-3).

In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility, increasing VMT by 11% while decreasing VHD by approximately 58%. Average network travel speed would increase by 32% (from 36 mph under No-Build conditions to approximately 48 mph with Alternative B, Phase 1) (Figure 3.1.6-4).

Alternative B, Phase 1 would provide an improvement over the No-Build condition, reducing the extent of queue from the bottleneck on SR 12E during the morning and evening peak hours. Alternative B would provide an approximately 20% reduction in VHD during the a.m. peak hour and a 60% reduction in VHD during the p.m. peak hour. This alternative would provide travel time savings of 10%, on average, for the major travel routes through the project area during the a.m. peak hour, and 35% savings during the p.m. peak hour. Only the WB SR 12E on-ramp from Jackson Street would continue to operate unacceptably during the a.m. peak hour, but this is due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, only EB SR 12E between the truck scales and Beck Avenue would continue to operate unacceptably. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

Alternative B, Phase 1 (2035)

In the a.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 5%, while decreasing VHD by nearly 100%. Average network travel speeds would increase 17% (from 42 mph under No-Build conditions to approximately 49 mph) (Figure 3.1.6-3).

In the p.m. peak hour, relative to the 2035 No-Build scenario, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82% (from 16 mph to 29 mph) (Figure 3.1.6-4).

Alternative B, Phase 1 would improve corridor-wide mobility in the a.m. peak hour by increasing VMT approximately 5%, while decreasing VHD by nearly 100%, relative to the 2035 No-Build condition. Average network travel speeds would increase 17%. In the p.m. peak hour, Alternative B, Phase 1 would improve corridor-wide mobility by increasing VMT by 39%, while decreasing VHD by 47%. Average network travel speed would increase by 82%. This would be a beneficial effect.

Alternative C (2035)

Alternative C would result in significant benefits to all three MOEs in the a.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by approximately 7%, while VHD would decrease by nearly 70%. Average network travel speeds would increase more than 25%, from 42 mph under the 2035 No-Build scenario to approximately 53 mph under Alternative C (Figure 3.1.6-3).

Alternative C would provide even greater benefits to all three MOEs in the p.m. peak hour. Corridor-wide mobility would improve, with VMT increasing by 60%, while VHD would decrease by approximately 70%. Average network travel speed would increase more than 140%, from 16 mph to approximately 40 mph (Figure 3.1.6-4).

Alternative C would provide a substantial improvement over the No-Build condition, clearing bottlenecks within the I-80 portion of the project corridor during the a.m. peak hour and substantially reducing queues in the p.m. peak hour. Alternative C would provide nearly a 70% reduction in VHD during the a.m. and p.m. peak hours. This alternative would provide travel time savings of almost 25%, on average, for the major travel routes through the project area in the a.m. peak hour, and 65% savings in the p.m. peak hour. The proposed project would clear the mainline sections of all deficiencies experienced under the No-Build condition during the a.m. peak hour, although some deficiencies would remain in the p.m. peak hour due to the downstream bottleneck at Air Base Parkway, which is outside the project area. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

Alternative C, Phase 1 (2015)

In the a.m. peak hour, Alternative C, Phase 1 would have little effect on mobility relative to the 2015 No-Build condition. VMT would decrease slightly (approximately 1,000 vehicle miles or less than 0.5%) compared to No-Build conditions. Alternative C, Phase 1 would result in a minimal improvement to system-wide operations over No-Build conditions, resulting in an increase in VHD of only 3% and no change in average network travel speed (Figure 3.1.6-3).

In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility relative to the 2015 No-Build condition, increasing VMT by 7% while decreasing VHD by approximately 39%. Average network travel speed would increase by 20% (from 36 mph to approximately 43 mph) (Figure 3.1.6-4).

Alternative C, Phase 1 would provide an improvement over the 2015 No-Build conditions, reducing the extent of queue from the bottleneck on SR 12E during the a.m. and p.m. peak hours. Alternative C, Phase 1 would provide no reduction to VHD during the a.m. peak hour, but would provide a 40% reduction during the p.m. peak hour. This alternative would provide negligible travel time savings during the a.m. peak hour, but would provide a 5% savings during the p.m. peak hour. Only WB SR 12E from east of Main Street to Pennsylvania Avenue would continue to operate unacceptably during the a.m. peak hour, due to the queue spillback from the SR 12E/Pennsylvania Avenue intersection. During p.m. peak hour EB, queue spillback from the Beck Avenue and Pennsylvania Avenue intersections on SR 12E would still extend back to I-680, but the extent of queue would be less than under No-Build conditions. Overall, this would be a beneficial effect. No minimization or mitigation measures are required.

Alternative C, Phase 1 (2035)

Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph) (Figure 3.1.6-3).

Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph) (Figure 3.1.6-4).

In the a.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT approximately 1%, while decreasing VHD by 18%. Average network travel speeds would increase 6% (from 42 mph to approximately 44 mph). In the p.m. peak hour, Alternative C, Phase 1 would improve corridor-wide mobility by increasing VMT by 16%, while decreasing VHD by 16%. Average network travel speed would increase 25% (from 16 mph to 20 mph). This would be a beneficial effect.

No-Build (2015)

In the a.m. peak hour, the level of congestion and delays that occurs under existing conditions would continue to occur under No-Build conditions in 2015. The projected increase in vehicular traffic is offset by the programmed and funded projects for the study area, except on WB SR 12E where severe congestion at the Beck Avenue and Pennsylvania Avenue intersections would continue to meter the amount of traffic that can access WB I-80. Despite increase in traffic during the a.m. peak hour, VHD would decrease slightly, and the average network travel speed would increase by 11% relative to existing conditions (Figure 3.1.6-3).

In the p.m. peak hour, congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a bottleneck that would constrain the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 5,000 VHD (Figure 3.1.6-4).

In the a.m. peak hour, conditions would not worsen substantially relative to the existing (2004) condition. However, in the p.m. peak hour, VHD would increase by more than 100%; the duration of congestion would increase from 1.5–2 hours to more than 3 hours; many EB travel times would more than double, and the bottlenecks on SR 12E at Pennsylvania Avenue and at the SR 12E/EB I-80 connector would result in queues backing up onto I-80 as far as Green Valley Road.

No-Build (2035)

In the a.m. peak hour, significant congestion and delays would occur within the project study area, affecting accessibility and mobility throughout Solano County. Because the I-80/I-680/SR 12 interchange serves as a major freeway connector from the San Francisco Bay Area and Sacramento, the No-Build conditions would significantly affect the entire region. Severe congestion on WB SR 12E at the Beck Avenue and Pennsylvania Avenue intersections would meter the amount of traffic that can access WB I-80. Nevertheless, severe congestion at the I-80/I-680 interchange would result in nearly 3,700 VHD and average travel speeds of 40 mph. Relative to existing conditions, VHD would increase by 224% (Table 3.1.6-5).

In the p.m. peak hour, severe congestion on EB SR 12E between the Pennsylvania Avenue and Beck Avenue intersections would result in a major bottleneck constraining the amount of traffic that can exit the project study area on SR 12E east of Main Street and on I-80 east of Air Base Parkway. In addition, heavy traffic volumes on EB I-80 and NB I-680 would result in approximately 19,000 VHD. The average travel speed would drop to 16 mph (Table 3.1.6-6).

Traffic congestion and delays would increase significantly by 2035 without the proposed project, increasing VHD more than 200% during the a.m. peak hour and 900% during the p.m. peak hour. The I-80/I-680/SR 12 interchange would not provide sufficient capacity to serve the projected 2035 traffic volumes, resulting in severe congestion and oversaturated stop-and-go operations during both the a.m. and p.m. peak hours. Queues would extend through much or all of the project area, and the average travel speed would drop to 42 (mph) during the a.m. peak hour and 16 mph during the p.m. peak hour. Without the improvements, the peak period would last 3–4 hours during the a.m. and 6–7 hours during the p.m.

Effect on Travel Times

Alternative B (2035)

The benefits of Alternative B during the a.m. peak hour include WB travel time savings of 20%–40%. EB travel time savings would be in the 5%–20% range.

The benefits of Alternative B during the p.m. peak hour include EB travel time savings of 10%–85%. It should be noted that one travel route would actually experience an increase in travel time of about 10% (EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway). The reason for this increase is the increased number of vehicles served by the proposed project coupled with the removal of the bottleneck on SR 12E. With more vehicles arriving at the downstream bottleneck at Air Base Parkway outside the project area, the travel routes east of SR 12E would experience an increase in travel time due to the additional delay. In the WB direction, Alternative B would result in travel time savings of 60%–70%.

Alternative B, Phase 1 (2015)

The benefits of Alternative B, Phase 1 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of more than 35%. WB I-80 to SB I-680 travel time would improve slightly, with a travel time savings of 5%. All other travel time routes would remain consistent with No-Build conditions, increasing or decreasing by less than 30 seconds.

The benefits of Alternative B, Phase 1 (2015) during the p.m. peak hour include EB travel time savings of 30%–75%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include EB I-80 from Red Top Road to Air Base Parkway and all routes beginning on NB I-680, EB SR 12W, and WB SR 12E. Alternative B, Phase 1 would result in WB travel time savings of 4%–20%. The improved travel times on WB SR 12E are due to the replacement of the Beck Avenue at-grade intersection on SR 12E with a grade-separated interchange, and improvements to the Pennsylvania Avenue intersection.

Alternative B, Phase 1 (2035)

The benefits of Alternative B, Phase 1 in 2035 during the a.m. peak hour include substantial WB travel time savings for trips originating from WB SR 12E, with travel time savings of 45%–50%. WB I-80 travel time would improve by approximately 10% compared to No-Build conditions. All other travel routes would remain consistent with No-Build conditions.

The benefits of Alternative B, Phase 1 during the p.m. peak hour would include EB travel time savings of up to 70%. All WB travel time routes would improve by more than 50%.

Alternative C (2035)

The benefits of Alternative C during the a.m. peak hour include WB travel time savings of 20–25%. EB travel time savings would be 10%–15%.

The benefits of Alternative C during the p.m. peak hour include EB travel time savings of 15–80%. One travel route—EB I-80 west of Red Top Road to EB I-80 east of Air Base Parkway—would experience an increase in travel time of approximately 2%, for similar reasons as the increase under Alternative B. WB travel time savings would be 50%–60%.

Alternative C, Phase 1 (2015)

During the a.m. peak hour, Alternative C, Phase 1 (2015) would result in minimal improvement to WB travel, with increases or decreases of less than 30 seconds compared to No-Build conditions. It should be noted that one travel time route (WB I-80 to WB SR 12W) would increase by more than 10%. This is due to the relocation of Red Top Road 1,500 feet west of the current intersection location, creating a slightly longer travel path. Travel times from WB SR 12E to WB I-80 and SB I-680 would decrease slightly by 7% and 5%, respectively, because of the improvements to freeway flows in the right two lanes on WB I-80 west of the SR 12E connector.

The benefits of Alternative C, Phase 1 during the p.m. peak hour include EB travel time savings of 0%–60%. The travel time savings would result in travel times comparable to, or even better than, existing travel times. Those travel time routes that would be better than existing conditions include those starting on NB I-680. Alternative C, Phase 1 would result in reductions for most WB travel times; however, travel times for the two routes that end on WB SR 12 would increase slightly. The increased travel time would be due to the relocation of interchanges (the current at-grade intersection at Red Top Road on SR 12W would be replaced with a grade-separated interchange located approximately 1,500 feet west of the existing intersection location), resulting in longer travel distances.

Alternative C, Phase 1 (2035)

During the a.m. peak hour, Alternative C, Phase 1 would result in WB travel time savings of 5% to 20% compared to 2035 No-Build conditions. EB travel times would be similar to No-Build conditions, increasing by 30 seconds or less. The increase in travel time on EB SR 12E is due to an increase in demand served, and therefore more vehicles arriving at the bottleneck, while the increase in travel times on EB I-80 is due to the lengthening of some travel time paths due to the location of new interchanges.

During the p.m. peak hour, Alternative C, Phase 1 would result in an increase in EB travel times. Some of this increase is due to an increase in travel distances because of new ramp locations. However, most of the increase is due to the two lane drops between I-680 and the Suisun Valley Road overcrossing, the short distance between the SR 12W and I-680 on-ramps, and the heavy demand for the rightmost lanes on I-80. WB travel time savings would approach 70% compared to No-Build conditions.

No-Build (2015)
Under the No-Build alternative, congestion and delays on SR 12E and SR 12W would result in long travel times and low travel speeds on those facilities in the a.m. peak hour. Moderate amounts of congestion and delay on the other facilities would result in somewhat slower than free-flow travel times and speeds on those facilities.

In the p.m. peak hour, EB congestion under No-Build conditions would result in oversaturated stop-and-go conditions. This would cause several major eastbound travel routes to exceed 30 minutes, including one route exceeding 60 minutes.

No-Build (2035)
Under 2035 No-Build conditions, significant congestion and delays would result in long travel times and low travel speeds on all major facilities through the project study area in the a.m. and p.m. peak hours. Severe EB congestion in the p.m. peak hour would result in seven major travel routes exceeding 45 minutes (including five exceeding 60 minutes) as a result of oversaturated stop-and-go conditions.

Effects on Freeway Operations

A.M. Peak Hour

Alternative B (2035)
During the a.m. peak hour, all freeway segments within the project study area would operate at LOS E or better under Alternative B. Only seven locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12E off-ramp to Main Street.
- WB SR 12E on-ramp from Jackson Street.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speed. The HOV lane on WB I-80 would

approach capacity near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the slight congestion in the adjacent mixed-flow lanes.

Alternative B, Phase 1 (2015)

In the a.m. peak hour, with construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved due to the replacement of the at-grade intersection at Beck Avenue with grade-separated interchange and improvements at the Pennsylvania Avenue intersection. The additional vehicles on WB SR 12E would reduce speeds and increase congestion, but SR 12E would still operate acceptably. The signalized intersection on SR 12E at Pennsylvania Avenue would continue to meter the amount of WB traffic on SR 12E, but to a lesser extent than under No-Build conditions. Without the bottleneck on SR 12E at Beck Avenue, WB SR 12E and WB I-80 would serve higher demand in 2015.

Alternative B, Phase 1 would improve WB I-80 by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. All freeway segments within the project study area would operate at LOS D conditions or better during the a.m. peak hour, except EB SR 12E approaching the Pennsylvania Avenue intersection. Only one location, the WB SR 12E on-ramp from Jackson Street, would operate over capacity (LOS F) as a result of the Pennsylvania Avenue intersection bottleneck on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between SR 12E and SR 12W would approach capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

Alternative B, Phase 1 (2035)

With construction of Alternative B, Phase 1, the bottleneck on SR 12E would be partially relieved by the replacement of the at-grade intersection at Beck Avenue with a grade-separated interchange and improvements at the Pennsylvania Avenue intersection. Alternative B, Phase 1 improvements would also improve WB I-80 operations by increasing its capacity approaching the I-680 and SR 12W connectors. These improvements would reduce the congestion between the truck scales and Suisun Valley Road and would serve the additional traffic released from WB SR 12E. The Red Top Road/North Connector/SR 12W intersection would continue to back up onto WB I-80 and cause slowing on the connector and slowing in the right two lanes of I-80 approaching the connector; average speeds on this section of I-80 would remain in the 50–59 mph range. All freeway segments within the project study area would operate at LOS E conditions or better during the a.m. peak hour, except on WB SR 12E approaching the Pennsylvania Avenue intersection.

With construction of Alternative B, Phase 1, 12 freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations:

- WB I-80 on-ramp from Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.

- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
- WB I-80 weave between Green Valley Road and SR 12W.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- NB I-680 mainline between Gold Hill Road and Central Way.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12E off-ramp to Main Street.
- WB SR 12E weave between Beck Avenue and Abernathy Road.

During the a.m. peak hour, the HOV lanes on EB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on WB I-80 would operate at free-flow speeds, except between SR 12E and the I-680/SR 12W interchange, which would operate near capacity due to HOVs accessing the direct HOV connector to I-680 and due to HOVs bypassing the high traffic volume in the adjacent mixed-flow lanes.

Alternative C (2035)

During the a.m. peak hour, all freeway mainline and weaving sections within the project study area would operate at LOS E conditions or better under Alternative C. Only eight locations would operate at capacity (LOS E), and none of those locations would cause queue spillback into adjacent locations. These locations are:

- WB I-80 east of Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 off-ramp to Abernathy Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.
- SB I-680 on-ramp from Gold Hill Road.
- WB SR 12 E off-ramp to Main Street.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

Alternative C, Phase 1 (2015)

Alternative C, Phase 1 would improve a.m. peak hour operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks

on WB SR 12E in 2015. The combination of added capacity on WB I-80 and continuation of the bottleneck on WB SR 12E would result in a reduction in congestion on WB I-80.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study area, except for those on WB SR 12E, would operate at LOS D conditions or better during the a.m. peak hour. Locations east of Beck Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

Alternative C, Phase 1 (2035)

Alternative C, Phase 1 would improve operations by adding capacity to WB I-80, but would not alleviate either the Beck Avenue or Pennsylvania Avenue intersection bottlenecks on WB SR 12E. The improvements, however, would reduce congestion and queuing on WB I-80 on several segments, including between the SR 12E connector and the I-680 and SR 12W connectors.

Alternative C, Phase 1 would also improve SR 12W, including replacing the at-grade intersection at Red Top Road/North Connector with a grade-separated interchange approximately 1,500 feet west of the current location. This would reduce congestion and queuing on SR 12W and reduce the queue spillback to I-80, improving operations on WB I-80 approaching the SR 12W connector.

All the freeway mainline and weaving sections within the project study, except for those on WB SR 12E, would operate at LOS E conditions or better during the a.m. peak hour. Locations east of Pennsylvania Avenue on WB SR 12E would continue to experience LOS F conditions. Only three locations would operate over capacity (LOS F) as a result of the Beck Avenue and Pennsylvania Avenue intersection bottlenecks on WB SR 12E.

With construction of Alternative C, Phase 1, eight freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are listed below.

- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- WB I-80 mainline between SR 12E connector and truck scales.
- WB I-80 weave between truck scales and Suisun Valley Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

- NB I-680 off-ramp to Red Top Road.
- SB I-680 on-ramp from Gold Hill Road.

During the AM peak hour, the HOV lanes on EB and WB I-80 and on the direction connectors between I-80 and I-680 would operate at free-flow speeds.

No-Build (2015)
During the a.m. peak hour, under No-Build 2015 conditions, WB I-80 would experience heavy traffic flows, but would not reach capacity until the weave between the truck scales on-ramp and the Suisun Valley Road off-ramp. The congestion is mostly due to motorists positioning themselves for the upcoming SB I-680 and WB SR 12W connectors conflicting with trucks merging onto the freeway from the truck scales. However, the average speed over all lanes in this location would be in the 60+ mph range. In addition, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of SB traffic entering I-80. Without the additional bottlenecks on SR 12E, WB I-80 would experience more congestion in 2015.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

No-Build (2035)
During the a.m. peak hour, under 2035 No-Build conditions, slow-moving traffic in the rightmost lanes would occur on WB I-80 at the SR 12W connector due to the Red Top Road/SR 12W intersection backing up onto WB I-80 and due to WB SR 12W operating at saturated conditions. The resulting queue would extend back to east of the I-680 NB connector. A bottleneck would also develop between the truck scales and Suisun Valley Road, resulting in speeds of less than 30 mph across all lanes at this location. This bottleneck is due to traffic from SR 12E and the truck scales weaving with traffic headed to Suisun Valley Road, I-680, and SR 12W. The resulting queue would extend to the SR 12E connector on WB I-80. In addition to the queuing on I-80, the existing signalized intersections on SR 12E at Pennsylvania Avenue and Beck Avenue would meter the amount of WB traffic entering I-80. Without the additional bottlenecks on SR 12E, the congestion on WB I-80 would be more severe.

Under the No-Build Alternative, nine freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- WB I-80 on-ramp from Waterman Boulevard/Air Base Parkway.
- WB I-80 mainline between Waterman Boulevard/Air Base Parkway and Travis Boulevard.
- WB I-80 on-ramp from Travis Boulevard.
- WB I-80 weave between Travis Boulevard Loop and Oliver Road.
- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

- NB I-680 mainline between Gold Hill Road and Central Way.
- NB I-680 off-ramp to Central Way.
- SB I-680 on-ramp from Gold Hill Road.

During the a.m. peak hour, the HOV lanes on EB and WB I-80 would operate at free-flow speeds.

P.M. Peak Hour

Alternative B (2035)
During the p.m. peak hour, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds under Alternative B. The bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which is at capacity for a four-lane freeway. The extent of the queuing would be considerably less than under the No-Build scenario, only extending back to the SR 12W merge onto I-80, and not extending onto NB I-680. Another bottleneck would occur northbound on I-680 at the Gold Hill Road on-ramp, where the demand at this location would exceed the capacity.

Only two freeway segments within the project study area would operate at capacity (LOS E), with neither of these locations causing queue spillback into adjacent locations. Those locations are:

- NB I-680 off-ramp to Gold Hill Road.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV Lane on WB I-80 would operate near free-flow speed. The HOV lane would approach capacity on WB I-80 near the I-680/SR 12W interchange due to the HOVs accessing the direct HOV connector to I-680 and due to the HOVs bypassing the high traffic volumes in the adjacent mixed-flow lanes. The HOV lane on EB I-80 would operate just below free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E and would operate near capacity east of SR 12E due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.

Alternative B, Phase 1 (2015)
During the p.m. peak hour, with construction of Alternative B, Phase 1, the queuing on WB I-80 would be eliminated, and vehicles would travel at free-flow speeds in 2015. The bottleneck on EB SR 12E would be partially relieved with the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and improvements to the Pennsylvania Avenue intersection. The extent of queuing due to the bottleneck on EB SR 12E would be substantially reduced, but not entirely eliminated. The EB queue from Pennsylvania Avenue would extend to the EB I-80 connector, but would not spill back onto EB I-80. All other queues on EB I-80 would be eliminated and vehicles would travel at free-flow speeds.

With construction of Alternative B, Phase 1, one freeway segment within the project study area, NB I-680 off-ramp to Gold Hill Road, would operate at capacity (LOS E) but would not cause queue spillback into adjacent locations.

During the p.m. peak hour, the HOV lanes on EB and WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds.

Alternative B, Phase 1 (2035)

With construction of Alternative B, Phase 1, the length of the queue on WB I-80 between the truck scales and Suisun Valley Road would be significantly reduced (from beyond the project study area east of Air Base Parkway to Travis Boulevard), resulting in an increase in volume served from 48% under No-Build conditions to 79% (a 65% increase). The queue spillback from I-80 to WB SR 12E would also be reduced significantly.

The bottleneck on EB SR 12E would be slightly reduced by the replacement of the Beck Avenue at-grade intersection with a grade-separated interchange and with improvements to the Pennsylvania Avenue intersection. However, the at-grade intersection at Pennsylvania Avenue would still result in long queues on SR 12E.

The queue from Pennsylvania Avenue on EB SR 12E would also continue to spill back to EB I-80 and still extend beyond the project study area on EB I-80 west of Red Top Road. However, the severity of the congestion on EB I-80 would be significantly reduced so that twice as many vehicles would be served as under No-Build conditions. The demand served on I-80 between Suisun Valley Road and the truck scales would double from 35% to 70% served compared to the No-Build condition. The queue would also continue to spill back onto WB SR 12W beyond the project study area. However, with the Alternative B, Phase 1 improvements, the queue would no longer spill back onto NB I-680 because that connector would merge from the left side instead of the more heavily queued right side of EB I-80.

Because of the increased traffic flow on EB I-80, freeway segments downstream of the SR 12E connector would operate near or over capacity. EB I-80 would develop a new bottleneck at the weave between Abernathy Road and West Texas Street, where the demand at this location exceeds the capacity. The queue from this bottleneck would spill back to the SR 12E connector on EB I-80 and contribute to the queuing from SR 12E.

NB I-680 would develop a new bottleneck at the Gold Hill Road on-ramp that would spill back to the Gold Hill Road off-ramp because of over-capacity operations.

With construction of Alternative B, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- EB I-80 on-ramp from Air Base Parkway/Waterman Boulevard.
- EB SR 12E on-ramp from Civic Center Boulevard.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The WB HOV lane would be affected by the

queues in the adjacent mixed-flow lanes, prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 would operate at a speed 40% higher than the average speed on the adjacent mixed-flow lanes. The EB HOV lane would operate near capacity near the SR 12E off-ramp due to HOVs bypassing the congestion in the adjacent mixed-flow lanes.

Alternative C (2035)

During the p.m. peak hour, the queuing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. However, as with Alternative B, the bottleneck on EB I-80 would move from the present location at the SR 12E connector to the lane drop east of Air Base Parkway, which would be at capacity for a four-lane freeway. The extent of the queuing, however, would be considerably less than under No-Build conditions, extending to just west of Red Top Road on I-80, just west of Red Top Road on SR 12W, and south of Gold Hill Road on I-680. (By comparison, the No-Build extent of queue would be far outside the study area).

Even though several freeway sections under both Alternatives B and C would continue to operate at LOS F within the project study area, this condition would not be attributable to deficiencies of the proposed project. This condition would be attributable to the bottleneck at Air Base Parkway that backs up into the project study area. With the proposed project, the demand served is much greater than under the No-Build condition (i.e., 80%–100% of the demand is served). Overall, relieving the major bottlenecks during the evening peak hour would provide major system-wide benefits, as well as improve freeway mainline operations.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and Abernathy Road and near capacity east of Abernathy Road due to HOVs bypassing the congestion in the adjacent mixed-flow lanes and due to HOVs directly accessing the HOV lane from the I-680 HOV connector.

Alternative C, Phase 1 (2015)

With construction of Alternative C, Phase 1, the queuing on WB I-80 would be eliminated and vehicles would travel at free-flow speeds. The bottleneck on EB SR 12E, however, would continue to result in congestion spilling back onto EB I-80. The addition of the third lane on EB SR 12E would increase the queuing capacity and throughput on SR 12E, but would only slightly improve the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. The queue from SR 12E would continue to spill back to the connector ramp from NB I-680, a spillback comparable to the extent of the queue under No-Build conditions. This queue would also cause congestion along Abernathy Road and other local streets because vehicles would not be able to enter I-80 and SR 12E heading east.

The bottleneck on SR 12E would constrain the amount of traffic exiting the project area on EB I-80 and thus the freeway downstream of SR 12E would operate at LOS D or better, similar to No-Build conditions. The number of vehicles served would improve slightly under Alternative C, Phase 1 (55%–70% of the demand), compared to No-Build conditions.

Under Alternative C, Phase 1, WB SR 12E would continue to experience congestion and queuing as far back as Jackson Street, similar to No-Build conditions, due to the at-grade intersections.

With construction of Alternative C, Phase 1, two freeway segments within the project study area would operate at capacity (LOS E), but would not cause queue spillback into adjacent locations. Those locations are:

- NB I-680 off-ramp to Gold Hill Road.
- NB I-680 on-ramp from Gold Hill Road.

During the p.m. peak hour, the HOV lanes on WB I-80 and on the direct connectors between I-80 and I-680 would operate at free-flow speeds. The HOV lane on EB I-80 would operate just under free-flow speeds due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane.

Alternative C, Phase 1 (2035)

With construction of Alternative C, Phase 1, the length of the queue on WB I-80 that starts at the weave between the truck scales and Suisun Valley Road would significantly reduce from beyond the project study area east of Air Base Parkway to Abernathy Road. The severity of the congestion on WB I-80 would also reduce significantly, and the volume served would increase from 48% to 82% (a 70% increase) over the No-Build condition. The queue spillback from I-80 to WB SR 12E queue would also be reduced significantly.

The bottleneck on EB SR 12E would continue to result in severe congestion spilling back to EB I-80. The addition of the third lane on EB SR 12E would increase the queuing capacity of SR 12E and would slightly increase the amount of traffic served at the Beck Avenue and Pennsylvania Avenue intersections. However, the queue from SR 12E would still spill as far back as under the No-Build scenario, to beyond the project study area on EB I-80, NB I-680 and EB SR 12W. This queue would also cause congestion to spill back to adjacent ramp terminal intersections, as vehicles would not be able to enter I-80 and SR 12E. Most local streets would also become congested due to queue spillback from the freeway and motorists diverting to alternative routes.

The bottlenecks on EB SR 12E would continue to constrain the amount of traffic exiting the project area on EB I-80; consequently, the freeway downstream of SR 12E would operate at LOS D or better, as it would under No-Build conditions.

During the p.m. peak hour, the direct HOV connector from WB I-80 to SB I-680 would operate at free-flow speeds. The HOV lane on WB I-80 between Abernathy Road and Suisun Valley Road would operate just below free-flow speed due to the queues in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The HOV lane on EB I-80 west of SR 12E and the direct HOV connector from NB I-680 to EB I-80 would experience intermittent congestion due to the queue in the adjacent mixed-flow lanes prohibiting vehicles from exiting the HOV lanes. Despite these slowdowns, the speed of the EB I-80 HOV lane would be more than double the speed of the adjacent mixed-flow lanes.

No-Build (2015)

During the p.m. peak hour, under No-Build conditions, a bottleneck would occur on EB SR 12E at the Beck Avenue and Pennsylvania Avenue at-grade intersections. The demand exceeding the capacity of these two intersections would constrain the amount of traffic that can exit the project

study area (EB SR 12E east of Main Street and I-80 east of Air Base Parkway), resulting in congestion queuing back onto EB I-80 as far as the Green Valley Road on-ramp, on NB I-680 beyond Gold Hill Road, and on WB SR 12E to Jackson Street. This queue would also cause congestion along Abernathy Road and other local streets because vehicles are unable to enter EB SR 12E. This bottleneck would constrain the amount of traffic exiting the project area on EB I-80; consequently, the freeway downstream of SR 12E would operate at LOS D or better. However, the number of vehicles served would be considerably less than the demand (only 55%–65% of the demand would be served).

On WB I-80 a bottleneck would develop between the truck scales and Suisun Valley Road under. This would cause some local slowing across all lanes, but would not result in queue spillback.

During the p.m. peak hour, the HOV lane on WB I-80 would operate at free-flow speeds. The HOV lane on EB I-80 would operate at a speed nearly 40% higher than the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity between I-680 and SR 12E due to HOVs bypassing the severe congestion in the adjacent mixed-flow lanes.

No-Build (2035)

During the p.m. peak hour, under 2035 No-Build conditions, a bottleneck would occur on WB I-80 between the truck scales and Suisun Valley Road. As a result, a queue would extend east of Waterman Boulevard/Air Base Parkway on I-80 and east of Main Street on SR 12E.

More importantly, a bottleneck would develop on EB SR 12E at the Beck Avenue and Pennsylvania intersections, extending from these intersections back onto I-80 and outside the study area on I-80, I-680, and SR 12W. The bottleneck would constrain the amount of traffic that can exit SR 12E east of Main Street, and the queue behind it would constrain the amount of traffic that can exit I-80 east of Air Base Parkway. Because the bottleneck on EB SR 12E would constrain the amount of traffic that can travel beyond the SR 12E connector, the number of vehicles served on EB I-80, east of the connector, would be considerably less than the demand (only 40%–60% of the demand). The result of this bottleneck is that freeway operations downstream of this location on I-80 would be LOS D or better. This queue would also cause congestion along Chadbourne Road/Abernathy Road because vehicles would not be able to enter EB SR 12E.

During the p.m. peak hour, the HOV lane on WB I-80 would operate just under free-flow speed, but at more than double the average speed of the adjacent mixed-flow lanes. The WB HOV lane would not approach capacity, but would be affected by the queues in the mixed-flow lanes prohibiting vehicles from exiting the HOV lane. The speeds on the EB I-80 HOV lane would be nearly double the average speed of the adjacent mixed-flow lanes. The EB HOV lane would operate at capacity near the SR 12E off-ramp due to HOVs bypassing the severe congestion in the mixed-flow lanes.

Effects on Intersection Operations

Alternative B (2035)

With construction of Alternative B, all ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions, except the Lopes Road/Gold Hill Road intersection,

which would operate at unacceptable LOS E conditions. In the p.m. peak hour, only four non-ramp terminal intersections would continue to operate unacceptably, compared to 14 ramp terminal intersections and eight non-ramp terminal intersections operating unacceptably in the 2035 No-Build p.m. peak hour. Implementation of avoidance and minimization measures to design and construct intersection improvement would result in improved conditions.

Alternative B, Phase 1 (2015)

Construction of Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange and would include improvements to the Pennsylvania Avenue intersection, but LOS F conditions would continue at the Pennsylvania Avenue intersection in the a.m. peak hour. Despite the worsening in LOS at Pennsylvania Avenue, the WB SR 12E volume leaving the Pennsylvania Avenue intersection would increase from 84% of demand served under No-Build conditions to 94% of demand served under Alternative B, Phase 1 in 2015.

Two non-ramp terminal intersections would continue to operate unacceptably under the Alternative B, Phase 1 a.m. peak hour conditions, as under the 2015 No-Build condition.

In the p.m. peak hour, all ramp terminal intersections would operate at LOS E or better, except the Beck Avenue/I-80 EB on-ramp/West Texas Street intersection. Operations at the Central Way/Cordelia Road intersection would improve to LOS A (relative to the unacceptable 2015 No-Build LOS), but three other non-ramp terminal intersections would continue to operate unacceptably, as under the 2015 No-Build p.m. peak hour condition.

Improvements to the SR 12E/Beck Avenue interchange would shift congestion to SR 12E/Pennsylvania Avenue, which would operate at LOS F in the a.m. peak hour. In the p.m. peak hour, five intersections would improve from LOS F under the 2015 No-Build conditions to LOS E or better under Alternative B, Phase 1. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

Alternative B, Phase 1 (2035)

Alternative B, Phase 1 would replace the Beck Avenue intersection with a grade-separated interchange, resulting in LOS D conditions in the a.m. peak hour at the Pennsylvania Avenue/SR 12E intersection. The Red Top Road/Jameson Canyon Road (SR 12W) would improve to LOS E conditions in the a.m. peak hour, relative to the 2035 No-Build scenario. LOS F conditions would continue at the Red Top Road/I-80 EB ramps intersection. The Central Way/Cordelia Road intersection would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of the traffic patterns in the area. Unacceptable conditions would continue at the three other non-ramp terminal intersections.

With the construction of Alternative B, Phase 1, eight of the 14 deficient ramp terminal intersections under No-Build conditions would improve to acceptable LOS E or better conditions or, in the case of the Central Way/I-680 NB off-ramp, the intersection would be removed. Operations at the Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp ramp terminal intersections would degrade to unacceptable LOS F conditions due to changes in traffic patterns.

In the a.m. peak hour, four intersections (three ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E or better with Alternative B, Phase 1. In the p.m. peak hour, seven intersections (all ramp terminal intersections) would improve from LOS F under the 2035 No-Build scenario to LOS E or better with Alternative B, Phase 1. Two intersections—Abernathy/I-80 EB ramps and West Texas Street/I-80 EB off-ramp—are projected to worsen from LOS E to LOS F as the result of trip pattern changes. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

Alternative C (2035)

With construction of Alternative C, all ramp terminal and non-ramp terminal intersections would operate acceptably under 2035 a.m. peak hour conditions. In the p.m. peak hour, only three non-ramp terminal intersections would continue to operate unacceptably. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

Alternative C, Phase 1 (2015)

During the a.m. peak hour, the SR 12E/Beck Avenue intersection would continue to operate at LOS F, as it would under 2015 No-Build conditions. The two non-ramp terminal intersections that operate unacceptably under the 2015 No-Build scenario would operate acceptably, at LOS D, under Alternative C, Phase 1.

During the p.m. peak hour, two of the five ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C or better; the other three would continue to operate at unacceptable LOS F conditions. In addition, two of the four non-ramp terminal intersections that operate unacceptably under the 2015 No-Build condition would improve to LOS C, and the other two would remain at unacceptable LOS F.

In the a.m. peak hour, two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS D under Alternative C, Phase 1; in the p.m. peak hour, two ramp terminal intersections and two non-ramp terminal intersections would improve from LOS F under the 2015 No-Build condition to LOS C or better under Alternative C, Phase 1. This would be a beneficial effect.

Alternative C, Phase 1 (2035)

Alternative C, Phase 1 would improve operations at the Red Top Road/I-80 EB ramps to acceptable LOS C conditions. Also, this alternative would replace the Red Top Road/Jameson Canyon Road (SR 12W) intersection with a grade-separated interchange that would operate acceptably. LOS F conditions would continue at two other ramp terminal intersections, as under the 2035 No-Build scenario. Operations at the Lopes Road/Gold Hill Road and the Central Way/Cordelia Road intersections would improve to acceptable conditions; however, Green Valley Road/Business Center Drive would degrade to LOS E conditions due to a change of traffic patterns in the area. Unacceptable conditions would continue at two other non-ramp terminal intersections, as under the 2035 No-Build scenario.

In the a.m. peak hour, three intersections (two ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F to LOS E or better under Alternative C, Phase

1. In the p.m. peak hour, five intersections (four ramp terminal intersections and one non-ramp terminal intersection) would improve from LOS F under the 2035 No-Build scenario to LOS E or better under Alternative C, Phase 1. One intersection (Oliver Road/I-80 WB on-ramp/Rockville Road) would worsen to LOS F under Alternative C, Phase 1, and one new intersection (Red Top Road/SR 12W EB ramps) is projected to operate at LOS F. Overall, with implementation of avoidance and minimization measures to design and construct intersection improvements, there would be no adverse effect.

No-Build (2015)

Table 6-7 in the FTOR shows that during the a.m. peak hour, the WB I-80 congestion would result in one ramp terminal intersection and two non-ramp terminal intersections operating at unacceptable LOS F conditions under No-Build conditions.

Table 6-8 in the FTOR shows that with the bottleneck locations discussed in the previous section, five of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions in the p.m. peak hour under 2015 No-Build conditions. Additionally, four other study intersections would operate unacceptably in the p.m. peak hour.

Under the No-Build Alternative, in the a.m. peak hour, one intersection is projected to operate at LOS E, and two are projected to operate at LOS F. In the p.m. peak hour, one intersection is projected to operate at LOS E, and eight are projected to operate at LOS F.

No-Build (2035)

During the a.m. peak hour condition, the WB I-80 congestion would result in four ramp terminal intersections operating at unacceptable LOS F conditions. Additionally, four non-ramp terminal intersections would operate unacceptably under No-Build conditions.

During the p.m. peak hour, 14 of the 24 ramp terminal intersections would operate at unacceptable LOS F conditions. Additionally, eight non-ramp terminal intersections would operate unacceptably under No-Build conditions.

A total of eight study intersections (four ramp terminal intersections and four non-ramp terminal intersections) would operate unacceptably in the a.m. peak hour, and 22 study intersections (14 ramp terminal intersections and eight non-ramp terminal intersections) would operate unacceptably in the p.m. peak hour. This compares to only two of the study intersections operating unacceptably under existing conditions.

Effects on Safety

Both project alternatives will improve safety by reducing congestion and by braiding on- and off-ramps and reducing weaving. Additionally, the relocation of the I-80/I-680 interchange under Alternative C and Alternative C, Phase 1 would further improve safety by increasing the distance between interchanges allowing more room for traffic to weave. Both alternatives will further improve safety because the westbound truck scales would be relocated and braided ramps would reduce the effects of slow moving trucks and truck weaving on congestion and safety.

Under the No-Build Alternative congestion would continue to increase and no changes would be made to on- and off-ramps to reduce weaving.

Effects on Pedestrian and Bicycle Facilities

Both project alternatives may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-1) can be provided as envisioned. Compliance with Department policy and implementation of avoidance and minimization measures to accommodate existing and planned bicycle and pedestrian facilities will ensure that there is no adverse effect.

The No-Build Alternative includes certain improvement projects that are expected to be constructed prior to the proposed project. These projects are described in Chapter 4 of the FTOR. Certain of these projects may require special design or construction measures to ensure that the existing facilities can be maintained, and that planned new pedestrian and bicycle facilities (Figure 3.1.6-1) can be provided as envisioned.

Effects on Transit Routes and Service

The improved traffic operations under both project alternatives, relative to No-Build conditions in the same year, would reduce delays for buses and paratransit vehicles. Implementation of avoidance and minimization measures to adjust transit routes and stops as needed, will ensure that there is no adverse effect.

The substantially worsened traffic congestion in the p.m. peak hour under 2015 and 2035 No-Build conditions will incur delays to buses and paratransit vehicles, potentially resulting in additional operating costs to transit agencies to provide more service vehicles, drivers, and support functions.

Construction Period Disruption of Vehicle, Pedestrian, and Bicycle Circulation

Construction of either project alternatives would entail additional truck and construction worker traffic, temporary lane closures and detours, and various construction-related activities that would increase congestion to varying degrees throughout the construction period. Implementation of avoidance and minimization measures to develop and implement the TMP will ensure that there is no adverse effect.

Alternative B, Alternative C, and Alternative C, Phase 1 may require closing the existing bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection during construction.

Under the No-Build Alternative, no construction would take place and therefore there would be no disruption of vehicle, pedestrian or bicycle circulation due to construction.

Avoidance, Minimization, and/or Mitigation Measures

Design and Construct Intersection Improvements

To minimize the impact of traffic pattern changes associated with the proposed project's on-ramp terminal and non-ramp terminal intersections, the Department, in cooperation with the City of Fairfield, Suisun City, and Solano County, will design and construct intersection improvements (including signalization, lane configuration changes, approach widening, and operational improvements) as part of each project phase. The specific intersections projected to

operate at LOS F for each project alternative are listed in the FTOR and referenced in the section titled "Intersection Operations," above. The improvements should be designed to provide LOS E or better under either project alternative. Intersection improvements would be designed in accordance with Highway Design Manual (HDM) sections 405.2 and 405.3, and would include adequate turn lane storage, including multiple turn lanes where needed.

Maintain Existing or Accommodate Planned Bicycle and Pedestrian Facilities

The Department, in cooperation with STA, will ensure that the design of each project phase accommodates existing and planned bicycle and pedestrian facilities within the project area, including providing for alternative connecting routes if and where needed. In particular, the planned improvements in the Fairfield General Plan Bicycle Network and the North Connector Corridor Transportation for Livable Communities Concept Plan will be incorporated into the project design at each project phase.

To minimize potential impacts to bicycle and pedestrian users of the bicycle path from Green Valley Road to the vicinity of the SR 12 West/Red Top Road intersection, the project shall implement a bike and pedestrian bridge (i.e. van service) during construction to transport bicyclists and pedestrians traveling between Green Valley Road at I-80 and Red Top Road at McGary Road. After construction is complete, bicyclists and pedestrians would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR12W, the UPRR tracks and connect with Red Top and McGary Road.

Adjust Transit Routes and Stops as Needed

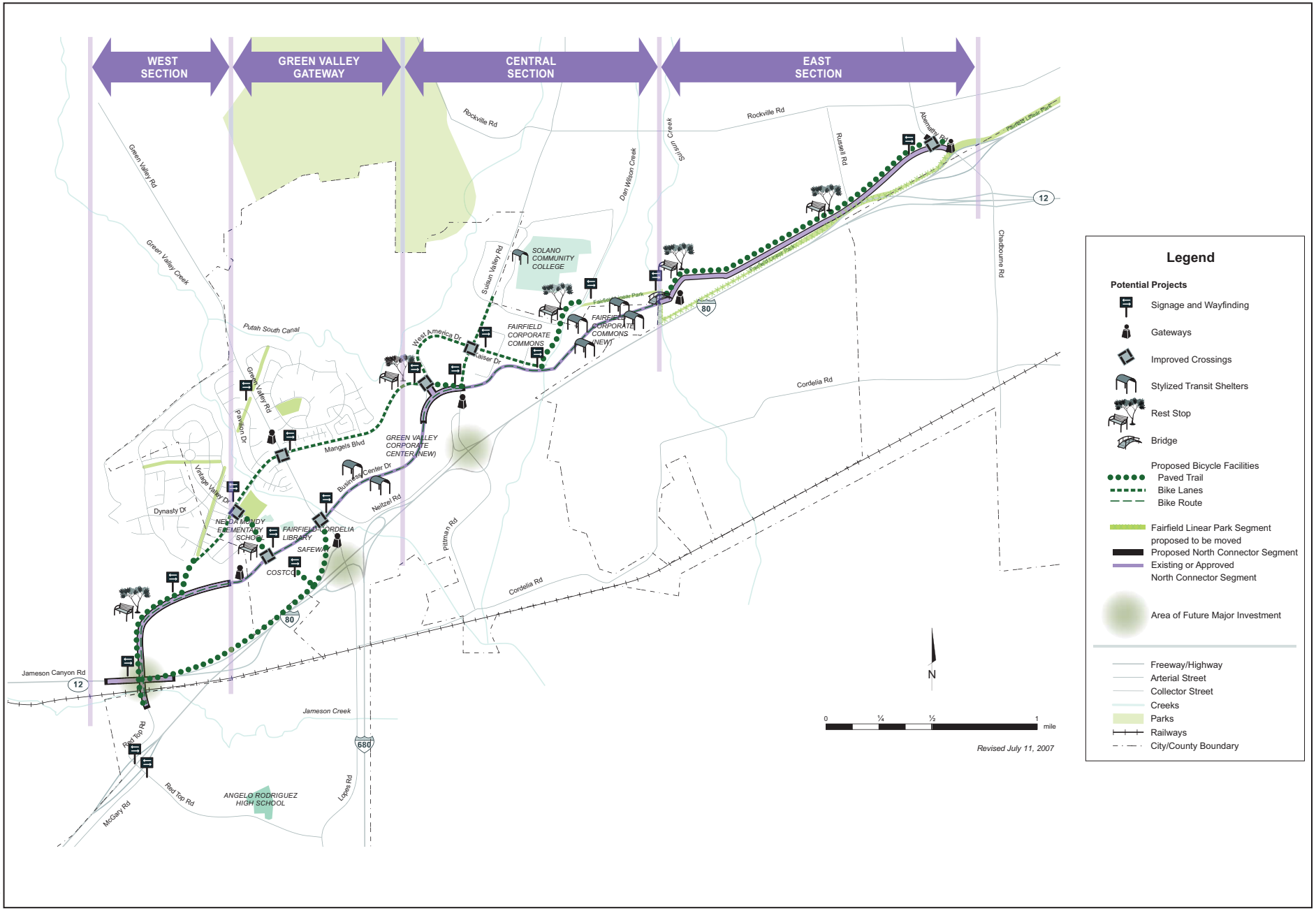
The Department, in cooperation with STA, local transit agencies, the City of Fairfield, Suisun City, and Solano County, will ensure that transit routes and stops are adjusted as needed, concurrent with each project phase, preserving service levels to be consistent with current and planned levels.

Develop and Implement a Transportation Management Plan and Construction Scheduling to Minimize Adverse Effects

The Department, in cooperation with STA and the affected local jurisdictions, will require the following measures to be implemented as part of project construction.

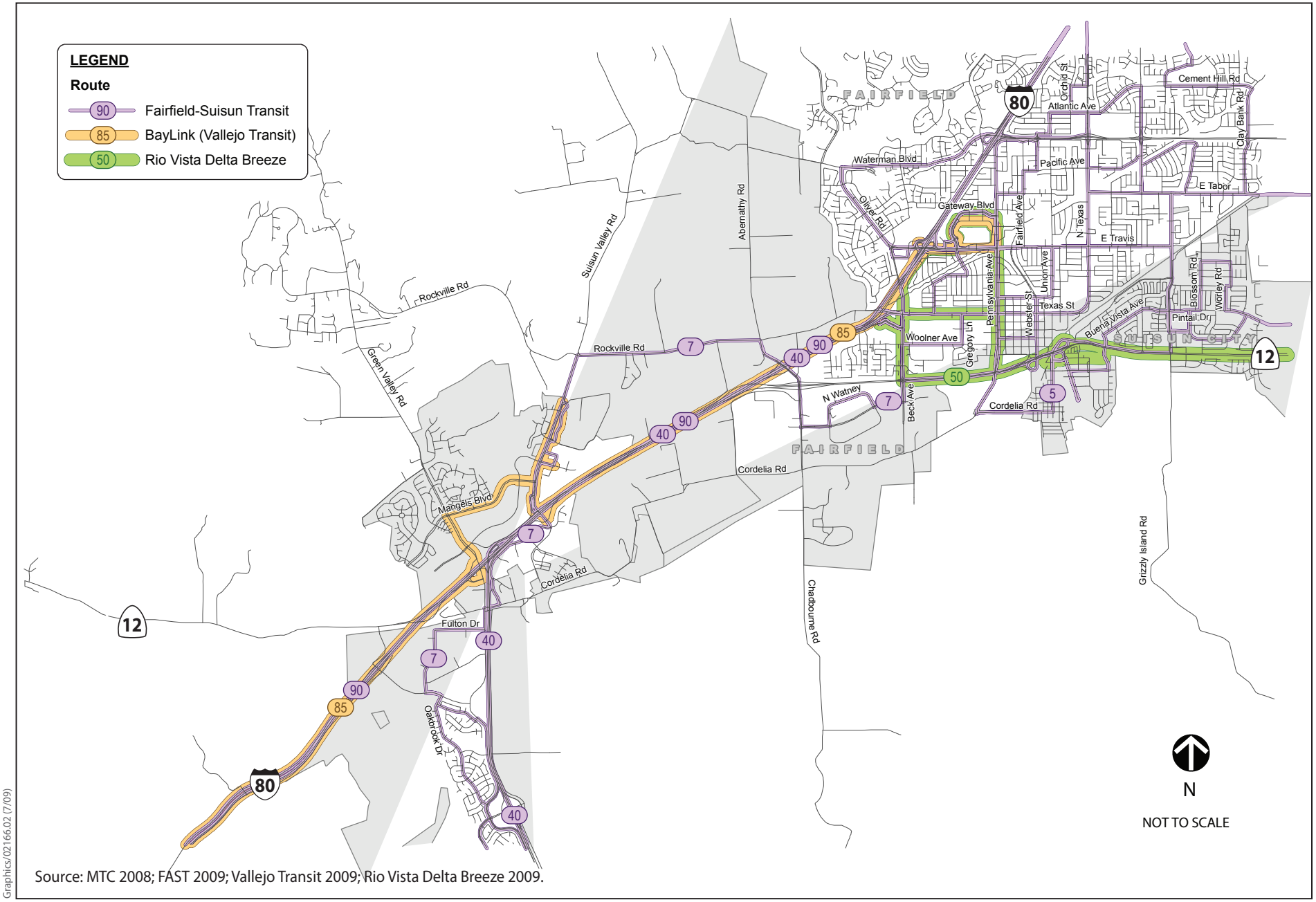
- The contractor will be required to prepare and implement a TMP that identifies the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.
- The Project Special Provisions of the highway contract will require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate notice of any street closures during the construction phases of the proposed project.
- Construction activities will be coordinated to avoid blocking or limiting access to homes and businesses to the extent possible. Residents will be notified in advance about potential access or parking effects before construction activities begin.

- Any interchange, ramp, or road closures required during construction will, to the extent possible, be limited to nighttime hours to reduce effects on businesses in or adjacent to the project limits.
- Construction activities will be coordinated to avoid blocking or limiting access to businesses in or adjacent to the project area during business hours. Businesses will be notified in advance concerning construction activities before construction begins near businesses.
- The TMP will be prepared to address short-term disruptions in existing circulation patterns during construction. For example, the TMP will identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.



Graphics/02166.02 (10/09)

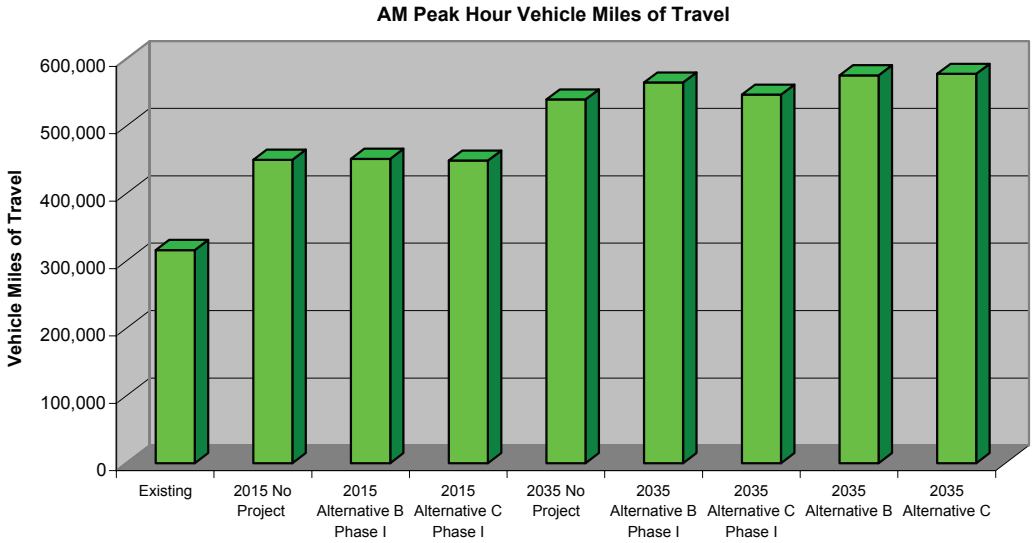
Figure 3.1.6-1
Existing and Planned Bicycle/Trails System

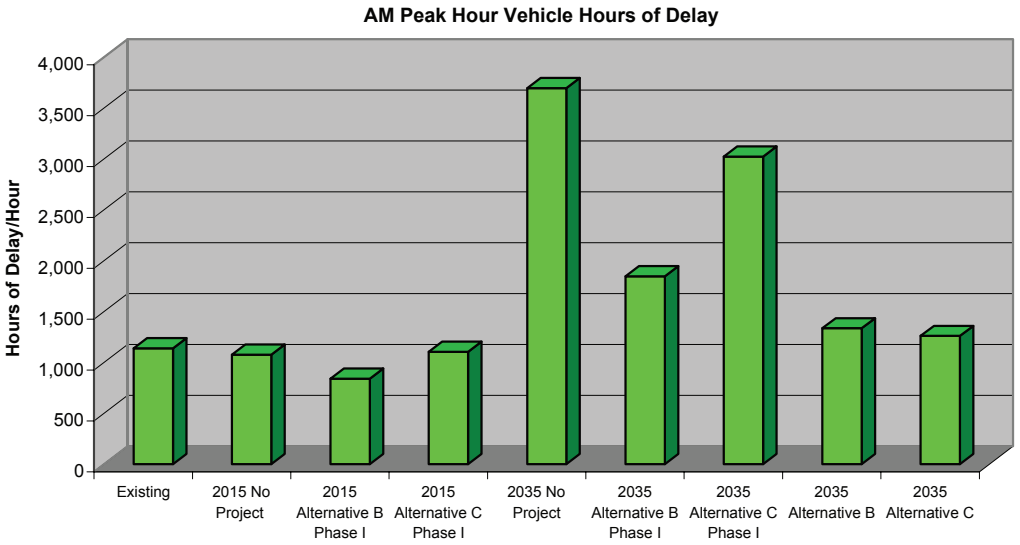


Source: MTC 2008; FAST 2009; Vallejo Transit 2009; Rio Vista Delta Breeze 2009.

Graphics/02166.02 (7/09)

Figure 3.1.6-2
Existing Transit System





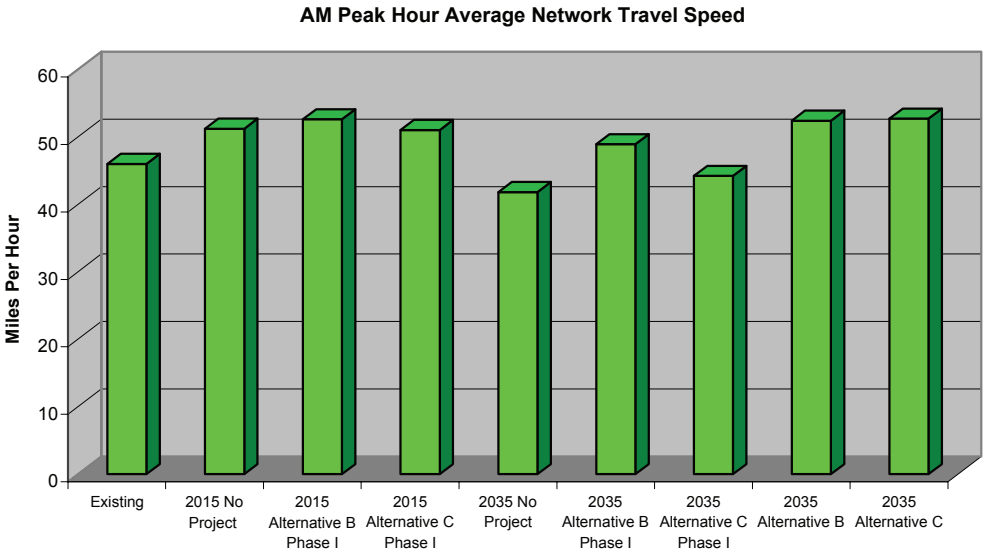


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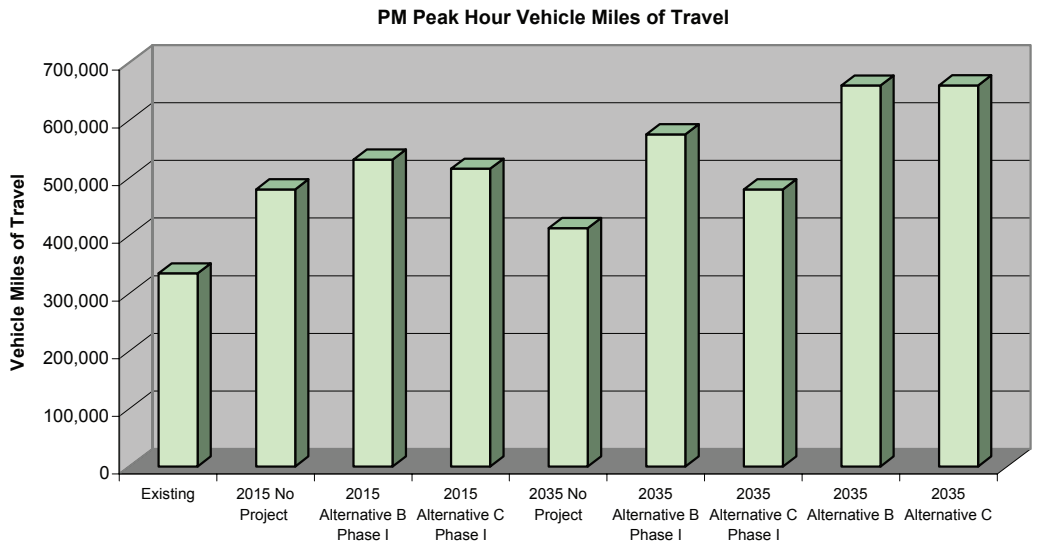
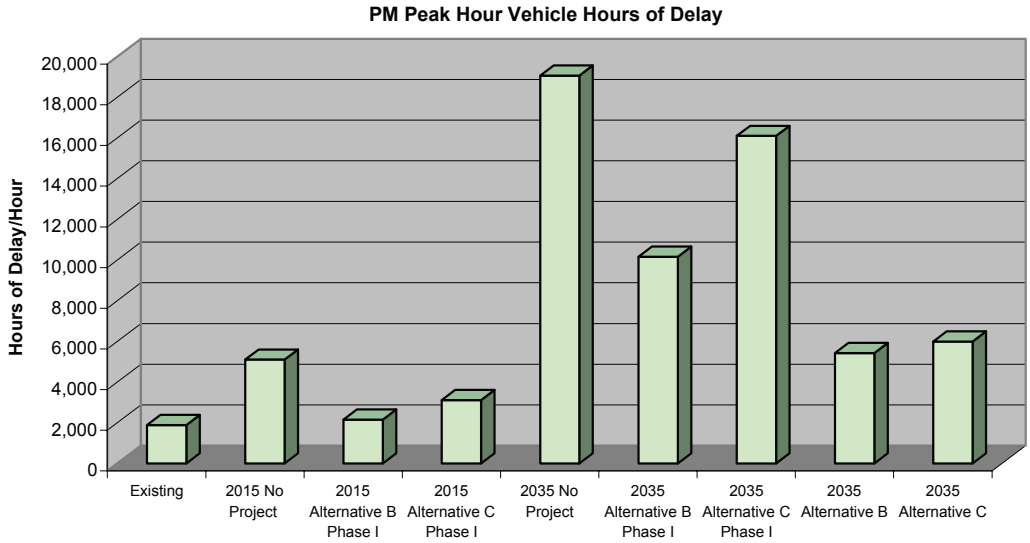
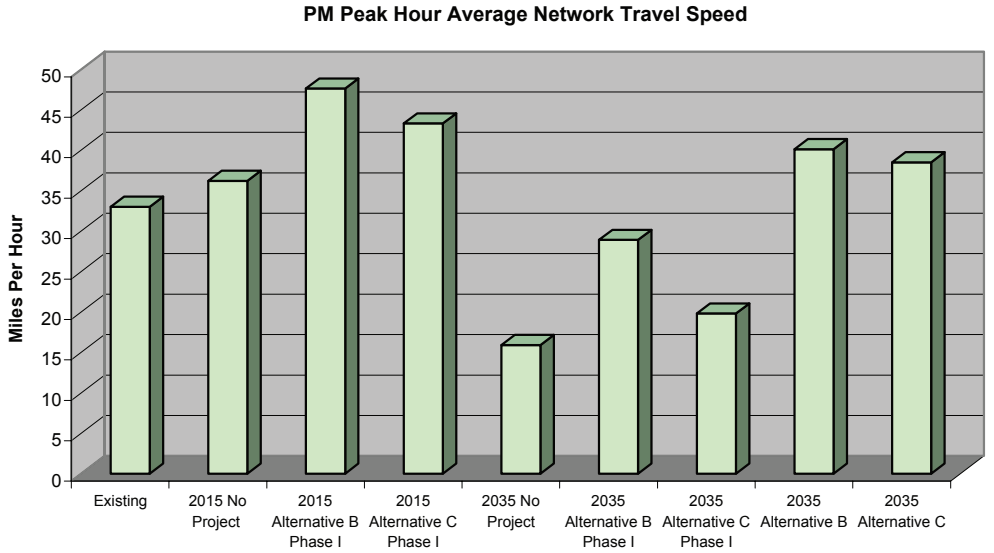
Figure 3.1.6-3
System-Wide AM Measures of Effectiveness







Graphics/02166.02 (7/09)

Figure 3.1.6-4
System-Wide PM Measures of Effectiveness

3.1.7 Visual and Aesthetic Resources

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). To further emphasize this point, the Federal Highway administration in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

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

Local Regulations

Local publication and planning documents can be indicators of viewer sensitivity to visual change. The applicable locally and regionally designated scenic roadways are listed below to provide insight into viewer sensitivity.

Solano County General Plan Resources Element

The Solano County General Plan's Resources Element identifies the County's scenic roadways and adopts policies for their preservation. The following roadways within or near the project area are identified on Figure RS-5 of the General Plan as being scenic roadways in the Solano County General Plan Resources Element (Solano Transportation Authority 2008).

- I-80 from Carquinez Strait at Vallejo to Solano-Yolo County line at Davis.
- I-680 from Carquinez Strait at Benicia to I-80 at Cordelia.
- SR 12 from the Solano-Napa County line to I-80 and from Union Pacific Railroad at Fairfield to Solano-Sacramento County line at Rio Vista.
- Green Valley Road from I-80 at Cordelia to Rockville Road.
- Oliver Road from I-80 at Fairfield to Mankas Corner Road and Waterman Boulevard.

City of Fairfield Scenic Vistas and Roadways Plan

The project includes changes to I-680 within the Fairfield Urban Limit Line. This area of I-680 is considered a scenic roadway by the City of Fairfield Scenic Vistas and Roadways Plan (Solano Transportation Authority 2008).

Methods

Landscape Units are described using the Federal Highway Administration (FHWA) Method of Visual Resource Analysis as described below.

Visual Character

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad in themselves. Visual character is described in terms of its pattern elements such as form, line, color, and texture, and in terms of pattern character such as dominance, scale, diversity, and continuity.

A change in visual character cannot be described as having good or bad attributes until it is compared with the viewer response to that change. If there is public preference for the established visual character of a regional landscape, and resistance to a project that would contrast that character, then changes in the visual character can be evaluated.

Visual Quality

Visual quality is evaluated by identifying the vividness, intactness, and unity present in the viewshed. The FHWA states that this method should correlate with public judgments of visual quality well enough to predict those judgments. This approach is particularly useful in highway planning because it does not presume that a highway project is necessarily an eyesore. This approach to evaluating visual quality can also help identify specific methods for mitigating each adverse impact that may occur as a result of a project. The three criteria for evaluating visual quality are defined here.

Vividness is the visual power or memorability of landscape components as they combine in distinctive visual patterns.

Intactness is the visual integrity of the natural and man-made landscape and its freedom from encroaching elements. It 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 man made components in the landscape.

Vividness, intactness, and unity of a landscape unit were each rated on a scale from 1 to 7 using the scale provided in Table 3.1.7-1. These scores were averaged and rounded to the nearest whole number to determine an overall visual quality score for the landscape unit.

Table 3.1.7-1. Vividness, Intactness, and Unity Scoring System

Score	Definition
1	Very Low
2	Low
3	Moderately Low
4	Moderate
5	Moderately High
6	High
7	Very High

Affected Environment

This discussion is taken primarily from the *I-80/I-680/SR 12 Interchange Project Visual Impact Assessment* (VIA), prepared in 2009.

Regional Landscape

Solano County has retained much of its agricultural character; however, the cities of Fairfield and Suisun City have experienced rapid growth of new residential and commercial development over the past several decades, resulting in a regional landscape characterized by a patchwork of rural, suburban, and urban landforms and aesthetics. This regional landscape is visually striking at times when abrupt changes between aesthetics occur, such as broad expanses of agricultural land being interrupted by dense residential subdivisions or large industrial parks. With the regional backdrop of the coastal mountains (locally, the Twin Sisters peak) and with Suisun Marsh providing a distinctive and vivid natural backdrop, this patchwork of rural, suburban, and urban aesthetics is even more vivid.

This patchwork of aesthetics is quite evident in the immediate project area and viewshed. For example, the western portion of the project area is surrounded by rolling hills used for grazing cattle; but at the junction with SR 12W, the land uses change abruptly to a large industrial park to the south and a large commercial center to the north. Similarly, dense residential subdivisions line the west side of I-680 while the east side is mostly undeveloped open space associated with the Suisun Marsh. Through the central portion of the study area, this patchwork continues with commercial retail uses lining both sides of the I-80 corridor through Cordelia, and then abruptly changing to an agricultural aesthetic east of Suisun Creek. Along the SR 12E corridor, striking differences can also be seen. The south side of the roadway is lined by a large industrial park, which abruptly turns to undeveloped lands east of Ledgewood Creek, while the north side is lined by the dense residential neighborhoods of downtown Fairfield.

Landform

The majority of the landform is flat, consisting of the valley. A large portion of the project area is located in Green and Suisun Valleys. Suisun Valley is a highly scenic agricultural area, extending north and south from Twin Sisters peak to south of I-80.

A portion of the project area along Jameson Canyon Road and I-80 at the west end consists of rolling hills. Rolling hills are generally visible to the west and north. Twin Sisters peak, a double-peaked 2,200-foot mountain, is north of the existing I-80/I-680/SR 12 interchange.

Land Cover

Land cover in the project area consists of man-made components (e.g., roadways, buildings, signs, and utility lines), vegetation, and water. Land cover elements include the existing roads, single-family homes, commercial development, farmland, trees, shrubs, marshland, grazing land, industrial development, a school, utility lines, creeks, and railroad tracks.

Because the region is largely agricultural, vegetation (crops and grazing land) make up a large part of the region's visual character. Regional vegetative land cover also includes scattered trees and shrubs in farmland, grazing land, land adjacent to the roadways, the median of I-80 and I-680, and residential developments. Crops and grassland along the existing highways are coarse,

dense, low to the ground and, in some areas, adjacent to the existing roadway. Suisun Marsh, grazing land, trees, and farmland provide a brown/green element to the regional landscape that changes color depending on the time of year.

Suisun Marsh is a vegetated water feature that contributes to the regional character. Marshland adjacent to I-680, I-80, and SR 12E appears covered by coarse, low-lying marsh plants. Water is not immediately visible most of the year. In addition to the marshland, creeks are a visible water feature in the project area. Six creeks (American Canyon, Jameson, Green Valley, Dan Wilson, Suisun Creek, and Ledgewood Creeks) run through the project area.

Man made land cover in the region is diverse in age and scale. To the west of I-680, in Fairfield, manmade development includes new single-family residential neighborhoods, several dominant large white warehouses, and commercial buildings of various sizes and colors. Residential neighborhoods are visually separated from the highways by walls. These dense neighborhoods mostly consist of new two-story single-family homes. Man made development in Old Town Cordelia, a distinct community in Solano County, is comprised of less-dense neighborhoods of older one- or two-story single-family homes.

Man made land cover also includes train tracks that run perpendicular to SR 12E on the western border of Suisun City. Train cars and containers are visible on or adjacent to the tracks south of SR 12E. Industrial and commercial buildings, several of which appear older, are one or two stories high, of various browns and grays, and are located in Suisun City, east of the railroad tracks and south of SR 12E. Apartment buildings and single-family homes lie to the north. Tall walls in earth-toned colors block views of the majority of homes from SR 12E. Apartment buildings visible from the roadway include a light-pink three-story apartment building and a gray two-story building near the intersection with Pennsylvania Avenue. A black iron fence is located between the apartment buildings and SR 12E.

Utility poles line many of the local roadways and are visible from the freeway. In addition, several large electrical transmission lines and towers are visible in the area, including one large transmission line that crosses I-80 in the vicinity of the I-80/SR 12E interchange. Rural agricultural areas located at the far west end of the project area, along the east side of I-680, and in the central section between Suisun Creek and SR 12E include farm buildings, occasional residences, fencing, farm equipment, cattle, and other agricultural uses and facilities.

Project Viewshed

A viewshed is comprised of broad-range views from a specific viewing location. Viewsheds are generally quite large. The limits of a viewshed are defined as the visual limits of the views from the proposed project. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by project features.

For the purpose of this analysis, the viewshed is determined by the height of the landforms and the presence or absence of buildings along the roadway. These factors vary over the length of the project area and, as shown in Figure 3.1.7-1, create a viewshed that varies in width.

Landscape Units

To provide a framework for understanding the visual effects of a proposed highway project, the regional landscape can be divided into distinct landscape units. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit often corresponds to a place or district that is commonly known among local viewers. The landscape units for the proposed project are shown in Figure 3.1.7-2.

Landscape Unit 1

Landscape Unit 1 is the westernmost portion of the project area. It runs from west of Red Top Road along Jameson Canyon Road/SR 12W until it joins with I-80 to the east. This landscape unit also includes the hills south of SR 12W in the project area and I-80 west of the I-80/SR 12 interchange. This landscape unit is dominated by agricultural uses—primarily grazing land, much of it on rolling hills. Jameson Creek is south of SR 12W in this landscape unit. Wire cattle fencing supported on metal stakes and wooden poles, follows SR 12W. The vegetation in this landscape unit is mostly grassland with trees along Jameson Creek, shrubs, and an olive orchard. A rural building is adjacent to the olive orchard. Overhead utility lines cross the landscape unit. A gas station and a fast food restaurant building are located along I-80 in Landscape Unit 1.

Existing Visual Character

Landscape Unit 1 exhibits a rural character defined by the dominant rolling hills covered in grassland. Although Jameson Canyon Road cuts through this landscape unit, its path is curved and follows the rolling hills, maintaining the continuity of the landscape. The rural character of this landscape unit gets its texture from the grass, shrubs, and trees; the dominant brown/green color varies with the season.

Existing Visual Quality

The rural character, rolling hills, and vegetation create a moderately high level of vividness. A gas station and small fast food restaurant along I-80, SR 12 with its steady flow of traffic, and a power line traversing the hills interrupt the visual experience. As a result, the intactness and unity of the landscape unit are considered moderate (Table 3.1.7-2).

Table 3.1.7-2. Visual Quality in Landscape Unit 1

Visual Quality Criteria	Vividness		Intactness		Unity		Visual Quality (Average Scores for Vividness, Intactness, and Unity)	
	Score	Description	Score	Description	Score	Description	Score	Description
Existing Conditions	4	Moderate	4	Moderate	4	Moderate	4	Moderate

Landscape Unit 2

This landscape unit is the developed valley floor where Green Valley and Suisun Valley come together along I-80. The landscape unit stretches along I-80 from the I-80/SR 12W interchange in the west to Dan Wilson Creek in the east. Commercial buildings are located north of I-80 and warehouses are located south of I-80/west of I-680. Old Town Cordelia and commercial buildings are located south of I-80/east of I-680.

Existing Visual Character

This landscape unit is characterized by suburban development. In Landscape Unit 2, north of I-80, the visual character is defined by relatively new commercial buildings of various sizes and colors along the flat valley floor. A similar character informs the area west of I-680 and south of I-80. There are a variety of forms and colors in these areas, created by the different sizes and colors of the commercial buildings and warehouses.

In Landscape Unit 2, Old Town Cordelia has a distinct visual character. Old Town Cordelia consists of one- or two-story single-family homes that are generally older and less densely spaced than other homes in the project area. Grass and scattered trees are visible between these homes, adding height and texture to the landscape. Commercial development of various ages, mostly earth-toned in color, is located near the intersection of I-680 and I-80. Flat open space (pavement or grass) lies between the commercial buildings in this area. Old Town Cordelia contains a diverse array of pattern elements, although a distinct boundary between the single-family homes and commercial development detracts from the diversity of this area. The visually distinct area of Old Town Cordelia is visually separated by I-80 and I-680 from the other portions of this landscape unit.

Existing Visual Quality

Old Town Cordelia and views of the hills contribute to a moderate level of vividness in this landscape unit. The random pattern of commercial and residential development along the highway in this landscape unit creates a low level of intactness and unity (Table 3.1.7-3).

Table 3.1.7-3. Visual Quality in Landscape Unit 2

Visual Quality Criteria	Vividness		Intactness		Unity		Visual Quality (Average Scores for Vividness, Intactness, and Unity)	
	Score	Description	Score	Description	Score	Description	Score	Description
Existing Conditions	4	Moderately	2	Low	2	Low	3	Moderately Low

Landscape Unit 3

Landscape Unit 3 is a flat area of the valley floor that is bisected by I-680. This landscape unit is characterized by commercial uses and single-family development to the west and marshland to the east of I-680. The marshland to the east is Suisun Marsh.

Existing Visual Character

This landscape unit exhibits a natural visual character east of I-680 characterized by flat brown marshland, and man-made suburban visual character to the west that includes a variety of building types and sizes.

The area to the west of I-680 includes man made elements such as two-story single-family developments, Rodriguez High School and its playing fields, large rectangular white warehouses, and other commercial development of varying sizes. The warehouses are dominant elements in the landscape due to their scale and their white color. Development in this landscape unit is varied in scale and function. Despite this, it does not appear continuous or diverse because it is

clustered by type and size, rather than intermixed. Farther north along I-680, the buildings become larger and more commercial.

The flat marshland east of I-680 contains little diversity but has a distinct texture and brown/green color created by the marsh plants.

Existing Visual Quality

Suisun Marsh, to the east of I-680, is fairly visually intact and unified since there are few man made elements visible in the marshland. However, the landscape west of I-680 is not visually unified and detracts from the visual quality of this landscape unit. Views of Suisun Marsh in the foreground and distant views to the hills to the north contribute to a moderate vividness and intactness in this landscape unit (Table 3.1.7-4).

Table 3.1.7-4. Visual Quality in Landscape Unit 3

Visual Quality Criteria	Vividness		Intactness		Unity		Visual Quality (Average Scores for Vividness, Intactness, and Unity)	
	Score	Description	Score	Description	Score	Description	Score	Description
Existing Conditions	4	Moderate	4	Moderate	2	Low	3	Moderately Low

Landscape Unit 4

Landscape Unit 4 consists of flat agricultural fields in Suisun Valley on either side of I-80 between developed areas of Fairfield. This landscape unit includes the existing I-80/SR 12E interchange.

Farmhouses, outbuildings, and commercial farm businesses are scattered throughout the area. Solano Community College and the new Fairfield Corporate Commons business park are also in this landscape unit. Agricultural lands consist of row crops, orchards, and vineyards. Dan Wilson Creek and Suisun Creek flow from north to south.

Existing Visual Character

East of Dan Wilson Creek (the western boundary of Landscape Unit 4), the project area becomes rural in character. I-80 constitutes a line of man-made development through flat farmland on the valley floor. Several rural homes and farm buildings are scattered throughout the landscape unit on the agricultural land. The presence of agriculture creates a texture and a brown/green color. Due to its scale relative to other elements in this landscape unit, one building, a Budweiser brewery, dominates the southeastern portion of the landscape. The rural character of this landscape unit is continuous with the exception of the Budweiser brewery.

Existing Visual Quality

The rural character of this landscape unit creates a moderate level of vividness (Table 3.1.7-5). Although the majority of the landscape unit appears intact and unified in its agricultural character, encroachment of industrial uses (e.g., the brewery) in the eastern portion of the unit detracts from the overall intactness and unity.

Table 3.1.7-5. Visual Quality in Landscape Unit 4

Visual Quality Criteria	Vividness		Intactness		Unity		Visual Quality (Average Scores for Vividness, Intactness, and Unity)	
	Score	Description	Score	Description	Score	Description	Score	Description
Existing Conditions	4	Moderate	4	Moderate	4	Moderate	4	Moderate

Landscape Unit 5

This landscape unit is generally flat. It encompasses SR 12E and the man-made development on either side of the highway. Single-family residential development is north of SR 12E, while commercial and industrial structures with grass and parking lots between them are south of SR 12E. This landscape unit also includes train tracks and a portion of downtown Suisun City at its eastern end. Commercial/industrial buildings, including an Amtrak station, are present in this portion of downtown Suisun City.

Existing Visual Character

Landscape Unit 5 is characterized by buildings along SR 12E. Large retail and industrial buildings generally characterize the area south of SR 12E. Although an undeveloped area of Suisun Marsh lies between the existing commercial development south of SR 12E and downtown Suisun City, a mixed-use development project planned for this area by Suisun City will extend the existing commercial/industrial character on the south side of SR 12E in this landscape unit. Structures north of SR 12E are mostly single-family homes separated from SR 12E by a wall. The buildings north of SR 12E are smaller than those to the south. SR 12E divides the visual character in this landscape unit.

In addition to SR 12E, the train tracks form a line through this landscape unit west of downtown Suisun City. The area of downtown Suisun City in this landscape unit consists of commercial/industrial buildings, mostly gray and earth toned in color, that are smaller and older than those west of the train tracks.

Existing Visual Quality

The mix of commercial and residential development in this landscape unit is not vivid (Table 3.1.7-6). Because the pattern of development switches from clusters of large commercial/industrial buildings to single-family residential to smaller, older commercial/industrial buildings, this landscape unit is not intact or unified. The walls around the majority of residential development also detract from the unity of this landscape unit.

Table 3.1.7-6. Visual Quality in Landscape Unit 5

Visual Quality Criteria	Vividness		Intactness		Unity		Visual Quality (Average Scores for Vividness, Intactness, and Unity)	
	Score	Description	Score	Description	Score	Description	Score	Description
Existing Conditions	2	Low	2	Low	2	Low	2	Low

Viewer Sensitivity and Response

Viewer sensitivity is defined both as the viewers' concern for scenic quality and the viewers' response to change in the visual resources that make up the view. Local values and goals may confer visual significance on landscape components and areas that would otherwise appear unexceptional in a visual analysis. Community aspirations for visual quality can be expressed in local publications and planning documents.

Viewer response is typically assessed by measuring the number of viewers exposed to the resource change, type of viewer activity, duration of views, speed at which the viewer moves, and position of the viewer.

Three different sets of viewer groups were identified for this analysis as discussed below. These groups represent people with views from the project and people with views of the project.

Motorists

Motorists comprise both drivers and passengers traveling on I-80 in the project area. Motorists in approximately 160,000 vehicles drive through the project area during each weekday. These viewers experience a constantly changing sequence of views as they travel along I-80 in the project area.

Motorist sensitivity to visual change would vary depending on the individual's role as passenger or driver and the level of traffic congestion experienced. Drivers traveling at normal speeds usually need to focus their attention on long-range, non-peripheral views (Federal Highway Administration 1981). However, passengers likely have a more heightened awareness of a wide range of views because they are not concentrating on the task of driving and can look out the side window toward their side of the highway. Motorists traveling at normal highway speeds would have a much shorter duration of view than motorists driving slowly due to congested traffic (which is common in the project area during peak periods). For safety reasons, motorists experiencing congested traffic conditions are likely to focus on views of the existing highway and the traffic in front of them.

Residents

Thousands of residents live near the project area. The greatest number of homes are west of I-680 in the Gold Hill area of Fairfield and on the north side of SR 12E in Fairfield. Other residential areas are Cordelia, Green Valley, and scattered rural residences. Some residents have distant views of the I-80/I-680/SR 12 interchange from their homes in the hills northeast of the I-80/SR 12W interchange. Others have middle ground views of the existing highways from their homes. Community residents are likely to experience views of long duration. Most residential views of the existing highways are screened by walls, landscaping, or both.

Residents are likely to have a higher concern about the project than motorists. It is expected that residents would be concerned with effects on views from their homes and neighborhoods.

Commercial Area Employees and Customers

A variety of commercial uses, ranging from shopping centers to hotels, line portions of the roadways that constitute the project area. Commercial uses are concentrated along I-80, east of its intersection with SR 12W and west of Dan Wilson Creek; east of the I-80/SR 12E

interchange; and on the west side of I-680, north of Red Top Road. Consequently, hundreds of viewers per day would have short duration, middle ground-to-distant views of the project. Viewer awareness would be low and sensitivity medium-to-low, because these viewers would generally be concentrating on specific indoor tasks, not looking at the highway.

Environmental Consequences

Because it is not feasible to analyze all the views in which the project alternatives would be seen, it is necessary to select a number of viewpoints that most clearly reflect the visual effects of the project. Viewpoints also represent the primary viewer groups that would potentially be affected by the project. The locations of the viewpoints selected for this analysis are shown in Figure 3.1.7-3. The viewpoints and visual simulations are presented in Figures 3.1.7-4 through 3.1.7-27.

The most substantial visual effects would be associated with Alternatives B and C. The visual effects of the fundable first phases of the project alternatives (Phase 1s) would be similar but reduced. Accordingly, there is no separate discussion for the fundable first phases in this analysis.

The 14 viewpoints used in this analysis were selected in consultation with the Department's Office of Landscape Architecture to represent views of Alternatives B and C. Viewpoint 1 was adjusted to a slightly different position for Alternative C to better represent the alternative's features. Viewpoint 14 was selected as a point of interest for Alternative B to depict the central interchange configuration. Alternative C does not include this interchange; accordingly, a simulation of Alternative C at Viewpoint 14 is not included in this analysis.

At several viewpoint locations, the future view of project components is the same or nearly the same for both alternatives. The simulations for the two alternatives are essentially the same at viewpoints 5, 12, and 13. The simulations at viewpoints 2, 3, 9, and 11 reflect minor variations between the two alternatives, such as a slight difference in a sign or a sidewalk; both simulations are shown even though the resulting visual impact is the same.

The visual impacts of project alternatives are determined by assessing the visual resource change caused by the project and predicting viewer response to that change.

Visual resource change is the sum of the change in visual character and the change in visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The FHWA's Method of Visual Resource Analysis, discussed above in the section titled "Affected Environment," is used to determine visual character and visual quality. As part of this process, vividness, intactness, and unity of the viewpoint were each rated on a scale from 1 to 7 (Table 3.1.7-1). These scores were averaged and rounded to the nearest whole number to determine an overall visual quality score for each viewpoint. The scores for all viewpoints within each landscape unit were added together to determine and average score for each landscape unit.

The second step is to compare the visual quality of the existing resources with the projected visual quality after the project is constructed. For this analysis, simulations of the build alternatives were prepared for each viewpoint (Figures 3.1.7-4 through 3.1.7-27) and the "future" condition visual quality was calculated (Table 3.1.7-1). Visual impact was determined by

subtracting the "future" visual quality score from the existing visual quality score. An effect is considered adverse if the visual quality score would decrease by two points or more. Beneficial effects to visual quality would occur if there would be an increase in the visual quality score.

The viewer response to project changes is the sum of viewer exposure and viewer sensitivity to the project as determined in the preceding section. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.

Temporary Visual Impacts Caused by Construction Activities

During construction, small trees and shrubs adjacent to the freeway would be removed. Crops in areas immediately adjacent to construction areas may also be removed during grading, exposing the soils underneath. Construction equipment would be visible along the highway. Disturbed earth and construction equipment would introduce an encroaching element into an otherwise agricultural setting. However, ongoing and recently completed major construction activities are widespread throughout most of the project area. Projects currently under construction include the Fairfield Corporate Commons, along the north side of I-80 in the central section, and the North Connector Project, which will be a local frontage road along the north side of I-80 in the central section. Because of the considerable extent of recent development activity in the I-80/I-680/SR 12 interchange area, construction sites would not be out of character with the existing visual environment. The construction process would decrease visual quality by interrupting and decreasing the vividness of views, and create encroaching elements, reducing the intactness and unity of views. In addition, construction sites may include lighting, introducing new sources of light and glare. Although adverse visual impacts would occur during construction, these impacts would be temporary and would not contrast with the existing visual character of the area.

There would be no effect under the No-Build Alternative because no construction would take place.

Long-Term Changes in Visual Quality and Character

The project area is already developed with the major highway interchange of I-80, I-680, and SR 12. The surrounding visual environment includes a diverse array of industrial, commercial, and residential development as well as farmland and grazing land. The buildings around the existing interchange vary in height, color, size, and age. In general, the built elements around the existing interchange appear randomly placed and do not appear unified. Farmland and grazing land is dispersed between these man-made elements. The existing visual quality in the project area is generally low to moderate.

All build alternatives would result in several adverse and beneficial localized changes to visual character. The extent of paved surface would increase and in the area of new overpasses, on- and off-ramps, utility towers, and interchange components, could obstruct specific long-distance views. The visual changes in Landscape Unit 3 would be the most dramatic and result in an adverse visual impact. However, because the project involves improvement of existing freeways and interchanges, as a whole it would not be out of character. Other landscape units would experience a less dramatic change and would not be considered adverse.

Avoidance, Minimization, and/or Mitigation Measures, will be incorporated into interchange improvements to minimize adverse visual effects of the alternatives.

Alternative B

The changes in visual quality scores for each landscape unit are shown in Table 3.1.7-7 and discussed in the subsequent paragraphs.

Table 3.1.7-7. Summary of Change to Visual Quality Scores, Alternative B

Landscape Unit	Existing Conditions	Future Conditions	Change in Score
1	4	3	-1
2	2	3	+1
3	5	3	-2
4	4	3	-1
5	3	3	0
Average for Alternative B	**4**	**3**	**-1**

Landscape Unit 1

Under Alternative B, the changes reflected in visual simulations for viewpoints 7 and 8 (Figures 3.1.7-10 and 3.1.7-11) would be the most substantial in this unit, converting a rural character into a more developed one. The visual change occurring at viewpoint 8 would be substantial and result in an adverse visual impact. At viewpoints 5 and 6 the landscape would become slightly more developed, but the overall visual quality would not substantially change (Figures 3.1.7-8 and 3.1.7-9). While the visual change at several viewpoints (viewpoints 7 and 8) would be substantial and the visual change specifically at viewpoint 8 would be adverse, as a whole, the visual quality within this landscape unit would slightly decrease.

Landscape Unit 2

At viewpoint 1 (Figure 3.1.7-4), visual clutter would be reduced, increasing visual quality and resulting in a beneficial visual change. At viewpoint 4 (Figure 3.1.7-7), vegetation would be removed and pavement would be widened, altering the visual character. As a whole the visual quality within this landscape unit would slightly improve.

Landscape Unit 3

At viewpoint 2 (Figure 3.1.7-5), the new I-680/Red Top Road interchange would obstruct views of the Suisun Marsh, substantially decreasing visual quality and resulting is an adverse visual impact. At viewpoint 3 (Figure 3.1.7-6), removal of roadside and median vegetation, road widening, a new overpass, and addition of an off-ramp and signage would change the views from a rural to a developed character. As a whole the visual effect within this landscape unit would be substantial and considered adverse.

Landscape Unit 4

At viewpoint 9 (Figure 3.1.7-12), the removal of roadside vegetation, the addition of the new westbound truck scales, and the increased extent of paved surface would decrease visual quality. However at viewpoint 1, the removal of man-made elements and utility lines would result in a beneficial change in the visual quality. At viewpoint 4 there would be very little perceptible

change in the view. As a whole the visual quality within the landscape unit would slightly decrease.

Landscape Unit 5

In this unit (Figures 3.1.7-13 through 3.1.7-17), most of the changes would increase the developed character of views through vegetation removal and roadway improvements. However, existing visual quality is moderate throughout the landscape unit, and overall the project would not result in a change to the visual quality score of this landscape unit.

Alternative C

The changes in visual quality scores for each landscape unit are shown in Table 3.1.7-8 and discussed in the subsequent paragraphs.

Table 3.1.7-8. Summary of Change to Visual Quality Scores, Alternative C

Landscape Unit	Existing Conditions	Future Conditions	Change in Score
1	4	3	-1
2	3	3	0
3	5	3	-2
4	4	3	-1
5	3	3	0
Average for Alternative C	**4**	**3**	**-1**

Landscape Unit 1

The changes to views in this landscape unit would be substantial, owing to the construction of a large and complex highway interchange as depicted in viewpoints 6, 7, and 8 (Figures 3.1.7-22 through 3.1.7-24). The visual change occurring at viewpoints 6 and 8 would be substantial and considered adverse. Visual change at viewpoints 5 and 7 would be less substantial to negligible. The visual character of a large portion of this landscape unit would be transformed from a rural/suburban highway character to a highly developed highway character.

Landscape Unit 2

The changes to views in this landscape unit would be substantial, owing to the construction of a large and complex highway interchange as depicted in viewpoints 1 and 4 (Figures 3.1.7-18 and 3.1.7-21). However, because this landscape unit is already dominated by I-80 and the existing I-680/80 interchange, the overall visual change would negligible.

Landscape Unit 3

The changes to views in this landscape unit would be similar to those under Alternative B resulting in an adverse visual impact.

Landscape Unit 4

The changes to views in this landscape unit would be similar to those under Alternative B.

Landscape Unit 5

The most substantial change would be the addition of the Pennsylvania Avenue overcrossing of SR 12E as shown in viewpoint 10 (Figure 3.1.7-26). However this addition would result in

improved visual quality by removing existing visual clutter (power lines, stop lights, signs) from the view. At other viewpoints, the visual changes would be minimal. Overall the visual quality of this landscape unit would not change.

Effect on Officially Designated Scenic Highways

There are no officially designated state scenic highways or highways eligible for such designation within the project limits.

The following roadways within or in close proximity to the project area are identified as being scenic roadways in the Solano County General Plan Scenic Roadway Element (1977):

- I-80 from Carquinez Strait at Vallejo to Solano-Yolo County line at Davis.
- I-680 from Carquinez Strait at Benicia to I-80 at Cordelia.
- SR12 from the Solano-Napa County line to I-80 and from Union Pacific Railroad at Fairfield to Solano-Sacramento County line at Rio Vista.
- Green Valley Road from I-80 at Cordelia to Rockville Road.
- Oliver Road from I-80 at Fairfield to Mankas Corner Road and Waterman Boulevard.

The project includes changes to I-680 within the Fairfield Urban Limit Line. This area of I-680 is considered a scenic roadway by the City of Fairfield Scenic Vistas and Roadways Plan (1999).

All build alternatives would result in several adverse and beneficial localized changes to visual character. The visual changes in Landscape Unit 3 which includes changes along State Route 12 West and I-80 would be the most dramatic and result in an adverse visual impact. However, because the alternatives involve improvement of existing freeways and interchanges, as a whole the alternatives would not be out of character and would not be expected to result in changes to local scenic roadway designations and therefore would not result in an adverse visual impact.

No-Build Alternative

There would be no changes to the visual quality and character of the project area under the No-Build Alternative.

Light and Glare

Under all build alternatives, new lighting would be incorporated into portions of the proposed project which would affect the surrounding neighborhoods. Under Alternative C, tall utility towers would cross over the proposed I-80/I-680 freeway-to-freeway ramps. These towers would have blinking red lights at their tops that would create a new source of light during the night. However, because such lighting would be consistent with existing freeway lighting and because adjoining land uses in areas where new lighting would be installed currently include lighting fixtures such as street lights, this effect would not be severe. Moreover, as discussed below in the section titled “Avoidance, Minimization, and/or Mitigation Measures,” incorporation of appropriate light and glare screening measures would ensure this effect is not adverse.

Under the No-Build Alternative there would be no changes to lighting and therefore no effects from light and glare.

Avoidance, Minimization, and/or Mitigation Measures

The Department mandates that a qualitative/aesthetic approach should be taken to minimize visual quality loss in the project area. This approach addresses the actual cumulative loss of visual quality that will occur in the project viewshed when the project is implemented. It also constitutes minimization measures that can more readily generate public acceptance of the project.

Visual minimization measures will consist of adhering to the following design requirements in cooperation with the Department's District Landscape Architect. While these measures will not fully reduce or avoid effects such as view blockage that will occur at several viewpoints, the measures will help to reduce the overall visual effects of the project and project elements.

All visual minimization measures will be designed and implemented with the concurrence of the Department's District Landscape Architect.

Replace Landscaping as Appropriate

Landscaping removed by the project will be replaced along I-680, I-80, and SR 12 within the project limits. Landscape plans will be developed during final design. .

Light and Glare Screening Measures

Light and glare screening measures shall be incorporated into project plans during final design, including the use of downward-cast lighting.

Building Materials and Forms for the Westbound Truck Scales

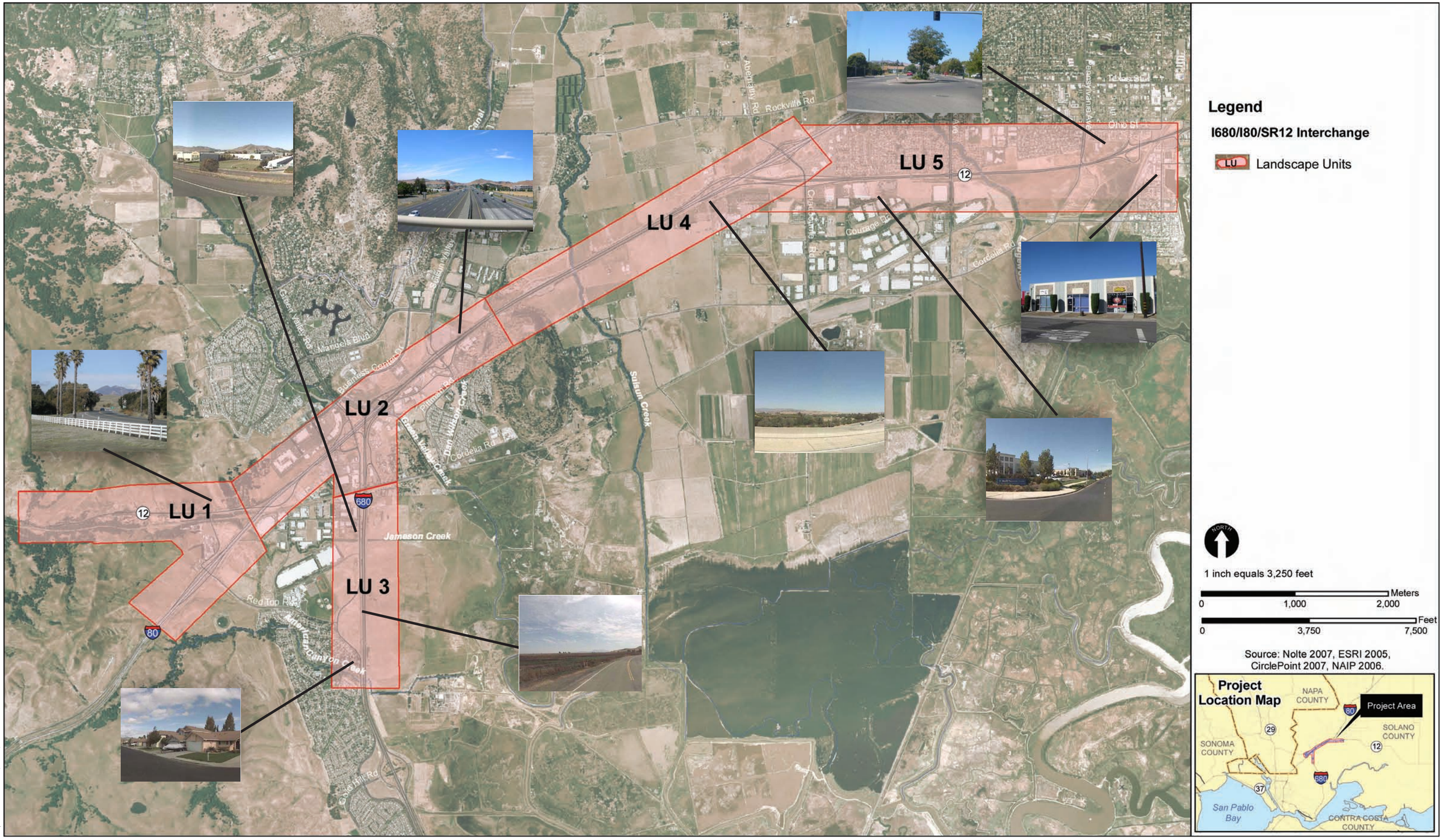
The I-80 westbound truck scales building materials and forms are to blend with local architectural features of the surrounding community, consistent with the architecture and landscaping of the I-80 Eastbound Truck Scales Relocation Project.

Incorporate Aesthetic Recommendations in Design of Freeway-Related Structures

Sound walls, overpass structures, landscaping, and other freeway-related structures and features will be consistent with the corridor aesthetic recommendations for the I-80 corridor being prepared by the STA.

Source: CirclePoint 2009.

Figure 3.1.7-1
Project Viewshed



Source: CirclePoint 2009.

Figure 3.1.7-2
Landscape Units

Source: CirclePoint 2009.

Figure 3.1.7-3
Project Viewpoints

Existing view from Central Way south of Ritchie Road looking north

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-4
Viewpoint 1, Alternative B

Existing view from Red Top Road at Lopes Road looking east

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-5
Viewpoint 2, Alternative B

Existing view from Interstate 680 northbound near Red Top Road looking north (VP 3)

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-6
Viewpoint 3, Alternative B

Existing view from I-80 westbound near Green Valley Road overhead looking southwest

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-7
Viewpoint 4, Alternative B

Existing view from I-80 westbound near Red Top Road looking west

Visual simulation of Alternatives B & C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-8
Viewpoint 5, Alternatives B and C

Existing view from I-80 eastbound near Red Top Road looking northeast

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-9
Viewpoint 6, Alternative B

Existing view from State Route 12 eastbound near Red Top Road (VP 7)

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-10
Viewpoint 7, Alternative B

Existing view from State Route 12 westbound near Red Top Road (VP 8)

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-11
Viewpoint 8, Alternative B

Existing view from I-80 westbound near SR12E

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-12
Viewpoint 9, Alternative B

Existing view from State Route 12 eastbound near Pennsylvania Avenue (VP 10)

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-13
Viewpoint 10, Alternative B

Existing view from Pennsylvania Avenue near Illinois Street

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-14
Viewpoint 11, Alternative B

Existing view from Beck Avenue at Diamond Way

Visual simulation of Alternatives B and C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-15
Viewpoint 12, Alternatives B and C

Existing view from Main Street at Common Street

Visual simulation of Alternatives B & C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-16
Viewpoint 13, Alternatives B and C

Existing view from State Route 12 eastbound near Ledgewood Creek (VP 14)

Visual simulation of Alternative B

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-17
Viewpoint 14, Alternative B

Existing view from Central Way between Ritchie Road and Cordelia Road looking north

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-18
Viewpoint 1, Alternative C

Existing view from Red Top Road at Lopes Road looking east

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-19
Viewpoint 2, Alternative C

Existing view from Interstate 680 Northbound looking north

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-20
Viewpoint 3, Alternative C

Existing view from Interstate 80 westbound near Green Valley overcrossing looking southwest (VP 4)

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-21
Viewpoint 4, Alternative C

Existing view from Interstate 80 eastbound near Red Top Road looking northeast (VP 6)

Visual simulation Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-22
Viewpoint 6, Alternative C

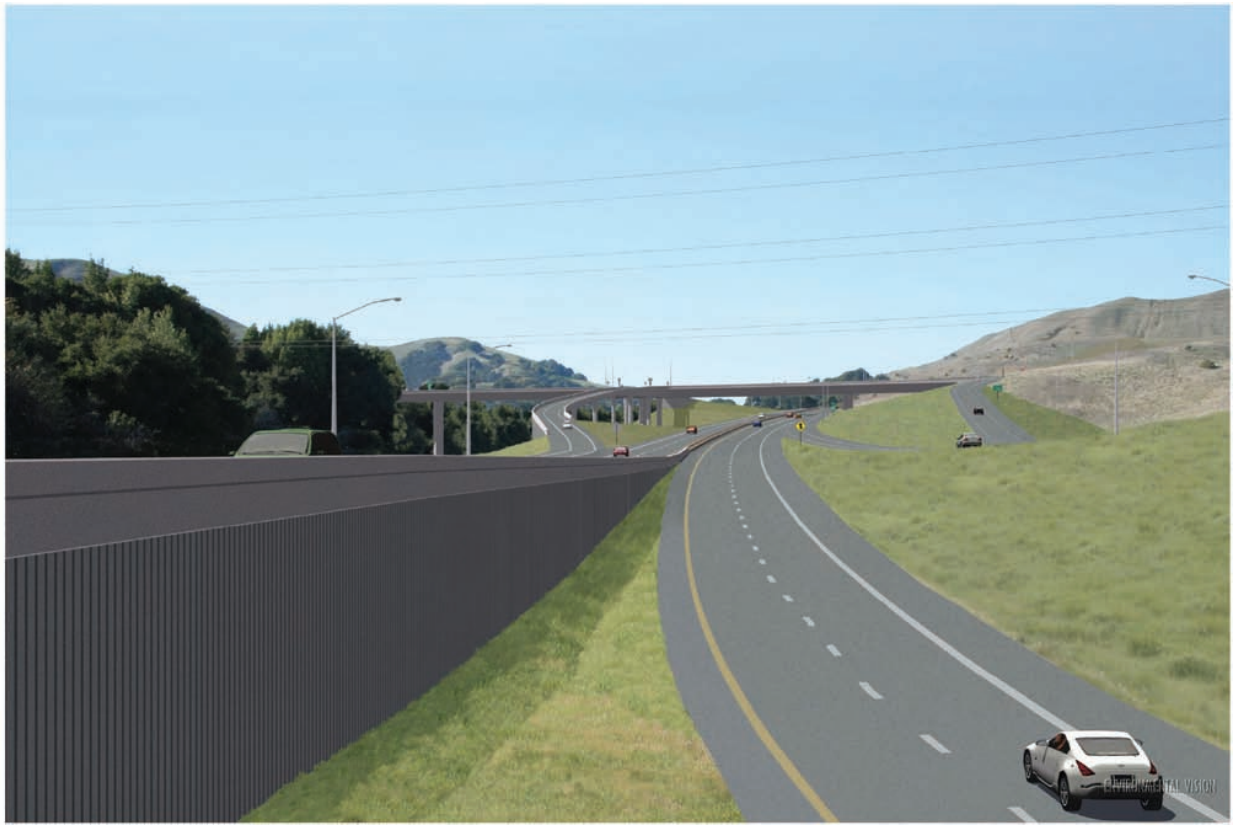
Existing view from SR12W eastbound near Red Top Road

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-23
Viewpoint 7, Alternative C

Existing view from SR12W westbound near Red Top Road



Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-24
Viewpoint 8, Alternative C

Existing view from I-80 westbound near SR12E

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-25
Viewpoint 9, Alternative C

Existing view from State Route 12 eastbound near Pennsylvania Avenue (VP 10)

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-26
Viewpoint 10, Alternative C

Existing view from Pennsylvania Avenue near Illinois Street

Visual simulation of Alternative C

Graphics ... 02166.02 EIS (9-24-09)

Figure 3.1.7-27
Viewpoint 11, Alternative C

3.1.8 Cultural Resources

Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (Section 106 PA) between the Advisory Council, the FHWA, the State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The Section 106 PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the Section 106 PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. Section 4(f) applies to lands of a historic site of national, state, or local significance. Significance for historic sites under Section 4(f) means that the site is listed in or eligible for listing in the National Register of Historic Places (NRHP) and is a *historic property* as defined by Section 106 of the NHPA, as amended. The criteria for evaluating the significance of cultural resources are set forth in 36 Code of Federal Regulations (CFR) 60.4. If the historic site is not listed in or eligible for listing in the NRHP, the provisions of Section 4(f) do not apply (23 CFR 774.11[e]). For historic sites, the land would not need to be publicly owned for Section 4(f) to be triggered.

With regard to archaeological sites, Section 4(f) would not apply to such resources, even if they are eligible for the NRHP, if the Department concludes that "the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place" (23 CFR 774.13[b]).Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

Section 4(f) De Minimis Use

The requirements of Section 4(f) will be considered satisfied with respect to a Section 4(f) resource if it is determined that a transportation project will have only a "*de minimis* impact" on the 4(f) resource. Specifically for historic sites, *de minimis* impact means that the Department has

determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project, or the project will have "no adverse effect" on the property in question.

Local

Solano County General Plan

The Solano County Board of Supervisors conditionally adopted the new 2008 General Plan in August 2008. County voters approved Measure T on the November 4, 2008, ballot and confirmed the Board of Supervisors approval of the General Plan. Chapter 4 of the new General Plan addresses resources, including "substantial historic and prehistoric sites." Its purpose is to identify the goals and policies Solano County will implement in its daily decision-making process to protect resources. The following goals and policies, as stated in Solano County's General Plan, pertain to cultural resources.

> **RS.G-1:** Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations.
>
> **RS.G-4:** Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.
>
> **RS.P-38:** Identify and preserve important prehistoric and historic structures, features, and communities.
>
> **RS.P-39:** Tie historic preservation efforts to the County's economic development pursuits, particularly those relating to tourism.
>
> **RS.P-40:** Consult with Native American governments to identify and consider Native American cultural places in land use planning.

Additionally, the new General Plan provides implementation programs that identify specific action plans to achieve the goals and policies discussed above.

> **RS.I-25:** Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation may include:
>
> - having a qualified archaeologist present during initial grading or trenching (monitoring);
> - redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources);
> - capping the site with a layer of fill; and/or
> - excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.
> - alert applicants for permits within early settlement areas to the potential sensitivity if significant archaeological resources are discovered during construction or grading activities,

such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation.

RS.1-26: Work with federal and state agencies to identify, evaluate and protect the county's important historic and prehistoric resources. Programs administered by such agencies may include:

- California Historical Landmarks
- California Points of Historical Interest
- California Register of Historic Resources
- National Register of Historic Places
- State Historic Building Code

RS.1-27: Refer to the state Senate Bill 18 guidelines and requirements regarding cultural resources. Programs the County will engage in may include:

- ensuring local and Native American governments are provided with information early in the planning process,
- working with Native American governments to preserve and protect Native American cultural sites by designating them as open space where possible,
- providing management and treatment plans to preserve cultural places, and working with Native American groups to manage their cultural places.

RS.1-38: Protect and promote the county's historic and prehistoric resources by:

- providing educational programs to the public, staff, and commissions that promote awareness of the county's history and the value in preserving historic or prehistoric resources; and
- exploring and developing historic or prehistoric sites that can be used appropriately as visitor-oriented destinations.

RS.1-29: Develop historic preservation programs and development guidelines to prevent the loss of significant historic buildings and structures. This should be done in conjunction with Program SS.I-16 (Solano County General Plan 2008).

Affected Environment

Information presented in this section is derived from technical studies conducted for the proposed project. These studies include:

- *Historic Property Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation District 4, Solano County, California* (2009) (HPSR).
- *Historic Resource Evaluation Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation District 4, Solano County, California* (2009) (HRER).
- *Archaeological Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation District 4, Solano County, California* (2009) (ASR).

- *Archaeological Extended Phase I and Geoarchaeological Assessment, I-80/I-680/SR 12 Interchange Project, California Department of Transportation District 4, Solano County, California* (2009) (XPI).

Area of Potential Effects

The westernmost extent of the Area of Potential Effects (APE) is approximately 0.5 mile west of I-80 at the Red Top Road exit extending east along I-80 to Ledgewood Creek. The APE also encompasses I-680 from Gold Hill Road north to the I-80 interchange; SR 12E from the I-80 interchange (west of Abernathy Road) to Suisun City and SR 12W.

The APE map included in this report (Figure 3.1.8-1) is an overview depiction; the entire 15-page APE map sets for archaeological and architectural resources are available in the HPSR. The APE for this undertaking was established by the Department in accordance with Stipulations VI.B.7 and VIII.A of the PA. Most relevant to this report, the APE follows the area of impact resulting from all activities associated with both alternatives, including all construction activities, easements, and staging areas. The architectural history APE includes parcels immediately adjacent to the existing right-of-way from which new rights-of-way would be acquired through project activities.

Methodology

An investigation for the cultural resources located in the project APE was conducted beginning in 2007. The investigation included a records search, Native American consultation, archaeological and architectural field surveys, archaeological investigations, and additional research.

Records Search

A background literature review for the area of potential effect (APE) and a 2-mile radius around the APE (the study area) was conducted on May 14, 2008, at the California Historical Resources Information System's Northwest Information Center (NWIC), located at Sonoma State University. The purpose of this review was to determine the geographic boundaries of previous surveys, the location of potential significant historical resources, and the number of documented sites near the APE. Sources reviewed include archaeological site maps and records, archaeological study maps and reports, historic maps, and local reference books. The data were used to assess the likelihood of unrecorded resources based on historical references and the distribution and environmental setting of nearby sites. Subsequent records searches were conducted (October 2008, February 2009) to gather additional information for sites pertinent to this study but outside the 1-mile radius.

The records search identified 30 previous studies within or abutting portions of the APE.

Two archeological sites are recorded within the APE; however, neither has been located again since being recorded in the 1970s. One archaeological site was mapped in two separate locations (as CA-SOL-242 and CA-SOL-242S) within the project APE in the vicinity of Green Valley Creek. No site records exist for this site at either location, and it has long been assumed that this site was mislocated or was a duplicate of CA-SOL-18—a nearby site. Several studies (including this study) have tried to locate this site again, and examinations of areas near the mapped locations (both surface and creek banks) have failed to identify prehistoric deposits of any kind.

Additional Research

Background research was conducted to arrive at a general understanding of the history of Cordelia, Fairfield, and Suisun City with a general focus on the history of the settlement and development of the project area. Research was undertaken at the California State Library, Sacramento; the Office of the Solano County Assessor/Recorder, Planning Department and Resource Management Building and Safety Services Division; the Fairfield Civic Center Library; the Solano County Archives; the Solano County Library; and the Transportation Library History Center, Sacramento.

Consultation

On October 15, 2008, a letter providing a brief project description, a map of the project area, and a summary of the background research was sent to all Native American representatives identified by the Native American Heritage Commission. The letter also requested that the recipient respond with any concerns or information. Follow-up phone calls were made on March 2, 2009; there was no response as of June 22, 2010. However, Caltrans was contacted directly by Mr. Reno Franklin of the Yocha Dehe Wintun Nation in late June 2010. Mr. Franklin wishes to be involved in additional studies, and the Yocha Dehe Wintun would like to be consulted in the development of the PA. No formal recordation of these comments exists. In November 2008, letters describing the proposed project and requesting information on cultural resources in the project area were sent to the Solano County Historical Society, Solano County Genealogical Society, and the Solano County Archives. As of July 2010, no responses were received.

Field Methods

The project area was surveyed between 2004 and 2008. No new archaeological resources were encountered during these surveys.

The areas near the recorded locations of CA-SOL-242 and CA-SOL-262 were inspected for any evidence of cultural material. Because the mapping for these sites is suspect, a large area near the mapped locations was observed. No evidence of cultural material or archaeological deposits was observed at CA-SOL-242.

A sensitivity analysis was conducted as part of the ASR to assess the potential for buried resources. Sediment and soils research suggests that portions of the APE may have the potential for buried resources and paleosols based on the age of the deposits. Several factors potentially altering the likelihood for buried archaeological sites were taken into account, such as distance to water, soil classification, and landform stability. As an initial program of archaeological assessment, twelve subsurface mechanical test trenches were excavated within the project area. Locations were chosen to sample different zones of the proposed project—primarily highly sensitive areas.

One possible isolated prehistoric feature was encountered (near Suisun Creek). This feature consisted of a discrete area of concentrations of carbon at approximately 40 inches below the ground surface, with one piece of faunal bone recovered. No indications of culturally modified rock, shell, or bone were observed in other trenches, and no other cultural resources were identified during testing. However, geoarchaeological research, as well as archival research, strongly suggests that areas within 100 meters of creeks have the greatest potential to contain buried archaeological deposits.

Qualified architectural historians surveyed and recorded built-environment cultural resources in the architectural APE on November 1, 2007, November 19, 2007, December 13, 2007, March 13, 2008, April 18, 2008, April 25, 2008, June 4, 2008, January 30, 2009, and March 9, 2009. The surveys were conducted according to guidelines established in The Department's 2004 draft *Environmental Handbook, Volume 2*: *Cultural Resources* (California Department of Transportation 2004 [as amended]). Madeline Bowen, Kathryn Haley, Patricia Ambacher, Tim Yates, and Maya Beneli conducted the surveys. Ms. Bowen, Ms. Haley, Ms. Ambacher, and Mr. Yates all meet the qualifications of an Architectural Historian per Attachment 1 of the Programmatic Agreement. The survey effort included the formal recordation of properties with digital photographs and handwritten notes.

Significant Cultural Resources

This section summarizes the significant or potentially significant archaeological sites and architectural resources identified through the background research and as part of the field survey efforts. More detailed information on the architectural resources can be found in the DPR 523 forms in Appendix E of the HRER. Concurrence of eligibility of districts, buildings, and structures, and of the development of a PA and HPTP was received from SHPO on March 20, 2010 (Appendix H).

Archaeological Resources

No new archaeological resources were observed during the survey or subsurface investigation completed to date for the proposed project. Additional identification and evaluation of archaeological properties, and any adverse effects, will be provided for in a PA. An attachment to the PA will include an HPTP that will detail protocols for treatment and evaluation of resources.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission, which will then notify the most likely descendent (MLD). At this time, the person who discovered the remains will contact The Office of Cultural Resource Studies Office Chief so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Architectural Resources

Architectural historians identified 209 properties that contained buildings or structures and one irrigation feature within the project area that predated 1965. Of the 209 properties, 122 are recommended as eligible for the NRHP (26 as contributors to the Village of Cordelia Historic District, 95 as contributors to the Suisun Historic District, and the Suisun City Train Depot). Properties within the Village of Cordelia Historic District were determined eligible by SHPO in 1989 and the Suisun City Train Depot was determined eligible in 1981. Concurrence from the SHPO regarding eligibility of the properties within the Suisun Historic District was received on

March 20, 2010. Properties within the APE that are listed in, or eligible for listing in, state and federal registers are summarized below.

177 Main Street (APN 0032-020-240): This property features a train station (Suisun City Train Depot) with a medium-pitched, hipped roof, with wide open eaves, exposed rafters, and dormers. The building is clad in beveled horizontal wood siding and includes original wood frame windows.

The Suisun City Train Depot building was determined eligible for the NRHP in 1981. ICF Jones & Stokes revisited the property as part of this study to assess its integrity and found the 1981 finding remains valid. The building meets the criteria for inclusion on the California Register of Historic Resources (CRHR).

Village of Cordelia Historic District, Cordelia: This district contains 26 contributing buildings consisting primarily of residential buildings; however, civic, institutional, and agricultural-related buildings are included in the boundary. Most of the buildings were constructed between 1890 and 1915 and represent a variety of architectural styles, from foursquare to Greek revival. The agricultural-related buildings are largely vernacular.

The Village of Cordelia Historic District was determined eligible for the NRHP in 1989 under Criteria A, in the areas of commerce and social history, and C in the area of architecture, with 33 contributing buildings and six non-contributing buildings. Since that determination of eligibility, five buildings no longer contribute to the district because of a lack of integrity, and because they were constructed outside the district's period of significance (1870–1934). The original six non-contributing buildings remain non-contributors. One property, 2172 Bridgeport (APN 0045-132-080) was not evaluated as part of the district in 1989, but is within the district's boundaries. It was constructed outside the district's period of significance and is counted as a non-contributor. To date, the district has 26 contributing buildings, and 14 non-contributing buildings. The district is eligible for the NRHP and therefore is also considered a historical resource for the purposes of CEQA.

Suisun City Historic District, Suisun City: This district is comprised of 95 contributing buildings and an additional 34 non-contributing buildings. It is a mixture of one- and two-story residential buildings, commercial buildings, churches, and social halls constructed between 1880 and 1934. Architecturally, the buildings represent a variety of styles, including colonial revival, shingle, Queen Anne, and craftsman bungalows. The commercial buildings are largely single-story commercial buildings.

The district features one building, 623 Main Street (Masonic Lodge #55), that is listed in the NRHP. Concurrence from the SHPO regarding eligibility of the properties within the Suisun Historic District was received on March 20, 2010. The district is eligible for listing in the NRHP at the local level of significance under Criterion A in the area of community development, and Criterion C as significant and distinguishable, reflecting the architectural evolution of Suisun City. The district's period of significance is 1880–1934. The district meets the criteria for eligibility for listing in the CRHR.

Environmental Consequences

Based on the above-mentioned technical studies, two historic districts and one historic property within the APE for the proposed project are listed in or are eligible for listing in the NRHP and therefore eligible for protection under Section 4(f). The locations of these historic properties are shown in Figure 3.1.1-1.

Effects on Unknown or Known Resources from Construction

Research indicates that previously unidentified buried archaeological resources, both prehistoric and historic, could be present in the project area. Such resources could be discovered through subsurface construction activities such as grading and excavations at the work areas. If buried cultural resources are inadvertently encountered during construction, disturbance could result in the loss of integrity of cultural deposits, loss of information, and the alteration of an archaeological site setting. Inadvertent exposure of prehistoric or historic-era archaeological resources could make the resources susceptible to vandalism. Inadvertent discovery of prehistoric or historic-era archaeological resources during construction would have a potentially adverse effect.

Conducting further research as guided by a Programmatic Agreement (PA) for this project will ensure that additional identification efforts are completed prior to construction and any historic properties identified are treated appropriately. The execution of the project PA will signify completed compliance with Section 106 of the NHPA. Under the No-Build Alternative there would be no construction and therefore, no potential to disturb or destroy buried resources as a result of construction.

Potential to Affect Historic Properties at APN 0032-020-240 (Suisun City Train Depot)

Under both alternatives, construction would occur in the southern portion of this parcel and the building (Suisun City Train Depot) is located in the northern section of the parcel, which is partially sheltered by SR 12E that runs above the building's northwest corner. The proposed project would not constitute an adverse effect because it would take place some distance (approximately 300 feet) from the building and would not lead to the physical destruction, alteration or relocation of the historic resource. The proposed construction would occur in the southern section of the parcel, near Spring Street, where there is a median strip with modern covered benches used by waiting passengers. The proposed project would create a visual impact, but the effect is not considered adverse because it would not substantially alter the existing setting of the parcel. The building's overall setting was compromised by the construction of SR 12E in the mid-twentieth century as well as by the modern development that has occurred in close proximity to the parcel. Furthermore, the railroad tracks located near the parcel's west side are not being altered or realigned, so the depot would continue to retain its relationship with the tracks, which would help the depot retain its feeling, association, and immediate setting.

No construction would occur in the vicinity of the Suisun City Train Depot under the fundable first phase of either alternative or under the No-Build Alternative.

Potential to Affect Village of Cordelia Historic District

Under Alternative B and Alternative B, Phase 1, construction would occur in the vicinity of the Village of Cordelia Historic District. However, this effect would not be adverse because the proposed improvements are occurring in the existing right-of-way and on a parcel that no longer

contains a building. None of the contributing properties within the district would be demolished, altered, or relocated. Under Alternative B project improvements would occur on a parcel located on Cordelia Road at the district's western boundary. When this district was originally evaluated, a contributing building was located on that parcel. Since the time of the determination of eligibility that building has been demolished or removed. Therefore, no building, contributing or non-contributing, would be affected by project construction. Proposed project improvements would not alter the overall integrity of the district as the parcel is located at the edge of the district boundary and the number of contributing resources within the district would be retained. Overall, the district would retain a high concentration of contributing properties and would continue to convey a sense of place and time. The character-defining features of the district would remain intact.

The proposed improvements under Alternative B and Alternative B, Phase 1 would have a visual impact on the district's setting because there would be elevated construction where none has previously existed. This visual impact would not be considered an adverse effect because the setting of the district was already compromised when the existing interstate was built in the mid-to-late twentieth century. The Village of Cordelia Historic District as a whole would continue to convey its significance and maintain its integrity of location, design, workmanship, materials, setting, feeling and association.

Under Alternative C and Alternative C, Phase 1, the I-80/I-680 interchange would be relocated to the vicinity of the existing I-80/SR 12W interchange. The elevated ramps would be removed. The ramps are located far enough from the district (approximately 0.25 mile) that no direct effects would occur with their removal. The visual effect may be beneficial because the existing ramps would no longer be within the viewshed of the district.

Under the No-Build Alternative, there would be no construction and no changes to the project area and therefore no potential to affect the Village of Cordelia Historic District.

Potential to Affect Suisun City Historic District

Under both alternatives improvements would occur near and within the boundary of the Suisun City Historic District, but would not constitute an adverse effect on the district. Although the proposed improvements would not lead to the physical destruction, alteration or relocation of historic properties, it would result in a visual impact because there would be elevated construction where none historically existed. This visual impact would not be an adverse effect to the district because while elevated, the construction would not be directly over the district. Rather, it would be to the northwest of the district's north boundary and would not alter the district's overall sense of place and time. Therefore, it would not have an adverse effect on the district's overall integrity.

Additionally, both alternatives would disrupt a portion of the northwest district boundary because the design of an original street in the district (Sacramento Street) would be altered. Sacramento Street has historically been a through street between Main Street to the east and West Street to the west. The proposed project would convert Sacramento Street into a cul-de-sac. This impact would not be considered adverse because the core of the district, including the highest concentration of contributing properties, sits to the south and east of the proposed improvements. Those areas south and east of the proposed improvement would still provide a

strong sense of place and time for the district's period of significance (1880–1927). Only eight contributing properties front the proposed improvements, and these resources are not individually eligible.

The district would retain its high number of contributors and it would continue to be geographically united. The district's overall integrity of location would remain intact because the proposed improvements do not necessitate the removal of properties. Integrity of workmanship and materials can be seen throughout the district's contributing buildings in their architectural styles. The district's overall integrity of feeling and association would also remain intact.

The district's setting and design would be altered on the northwest border. The design of the remaining streets within the district would not be altered and would continue to allow the district to convey its significance. Integrity of setting would also be altered along Sacramento Street, but it would not have significant impact on the district as a whole. Overall, the historic character of the Suisun City Historic District would remain intact and the district would continue to possess the essential physical features that allow it to convey its significance.

No construction would occur in the vicinity of the Suisun City Historic District under the fundable first phase of either alternative or under the No-Build Alternative and, therefore, there would be no potential to affect it.

Historic Resources Protected Under Section 4(f)

APN 0032-020-240 (Suisun City Train Depot)

As noted above, this property was evaluated in 1981 and determined eligible for the NRHP. Per the recent HRER for the proposed project, the building continues to retain its historic integrity and therefore continues to be eligible for the NRHP. The SHPO concurred that this property is eligible under Criterion C in the area of architecture at the local level of significance. Its period of significance is 1906, the estimated year of its construction. As such, the property is an eligible historical resource on the NRHP, and is therefore considered a Section 4(f) resource.

Potential to Affect the Suisun City Train Depot

In the vicinity of the Suisun City Train Depot, both alternatives include improvements occurring within the boundaries of the parcel on which the eligible property is located. The construction activities occurring within the property under the two alternatives would involve identical features.

The Suisun City Train Depot is located directly south of SR 12E and adjacent to the UPRR tracks on the east. Proposed project improvements under Alternative B and Alternative C would involve the extension of West Street northward from Solano Street to Spring Street in Suisun City. It would be on an embankment supported by retaining walls to intersect the roadway crossing over the existing UPRR tracks. Approximately 0.27 acre located within the southern section of the parcel would be acquired by these improvements. The proposed improvements would occur within the southern section of the parcel, approximately 250 feet south of the train depot. The eligible building would not be demolished or moved. The building's overall setting was compromised by the construction of SR 12E in the mid-twentieth century as well as by the modern development that has occurred in close proximity to the parcel. Furthermore, the railroad

tracks located near the parcel's west side are not being altered or realigned, so the depot would continue to retain its relationship with the tracks, which would help the depot retain its feeling, association, and immediate setting.

Based on traffic noise modeling results, noise levels taken from one prediction site northwest of the property were calculated for existing and future conditions with and without the project alternatives. The existing traffic noise level at the loudest hour was estimated to be 61 dBA. The future levels (2035) at this site were predicted to be between 64–65 dBA with Alternative B and Alternative C and 63 dBA under the No-Build Alternative. Although both alternatives would increase noise levels 1 to 2 dBA higher than under the No-Build Alternative, the noise level does not approach or exceed the NAC for the land use (67–72 dBA) under 23 CFR 772. Therefore, there would be no impacts due to noise.

Access to the train depot would not permanently change. During construction, access to the property would be maintained because the main entrance is located adjacent to the train depot and north of the proposed project improvements. Proposed project improvements would occur along Spring Street, the train depot's southern parking lot entrance, and short-term disruptions in access could occur at this location. However, implementation of the TMP would ensure that nearby businesses and residents are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

The Suisun City Train Depot would be able to maintain its integrity of location, design, workmanship, materials, setting, feeling, and association under Alternative B and Alternative C. Consequently, the proposed project would not have an adverse affect on this property. Furthermore, as the proposed project does not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection, the work occurring within this eligible NRHP property appears to meet the qualifications for a *de minimis* impact finding. . Thus, per Section 6009(a) of SAFETEA-LU, no discussion of avoidance alternatives is listed for this resource.

Measures to Minimize Harm to the Suisun City Train Depot

Measures to minimize harm to this Section 4(f) resource would include maintaining property access and communicating the proposed construction activities with the nearby businesses and property residents. Implementation of the TMP would ensure that nearby businesses and residents are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

Coordination for the Suisun City Train Depot

During preparation of the HRER and the evaluation of the Suisun City Train Depot, project historians coordinated with the Department's Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian. Coordination efforts between the Department and the SHPO are also currently underway regarding the SHPO's concurrence on the finding of no adverse effect for this resource.

Concluding Statement for the Suisun City Train Depot

The project alternatives would not affect the significance and character-defining features of the Suisun City Train Depot that contribute to its eligibility for listing in the NRHP. Accordingly, pending the SHPO concurrence on the determination of no adverse effect on historic properties, the effects of the project on this Section 4(f) resource appear to meet the requirements for a *de minimis* impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

Village of Cordelia Historic District

As noted above, the Village of Cordelia Historic District was determined eligible for the NRHP in 1989 under Criteria A, in the areas of commerce and social history, and C in the area of architecture, with 33 contributing buildings and six non-contributing buildings. Since that determination of eligibility, five buildings no longer contribute to the district because of a lack of integrity, and because they were constructed outside the district's period of significance (1870–1934). The original six non-contributing buildings remain non-contributors. One property, 2172 Bridgeport (APN 0045-132-080) was not evaluated as part of the district in 1989, but is within the district's boundaries. It was constructed outside the district's period of significance and is counted as a non-contributor.

With the re-evaluation of the district, the HRER determined the district is now comprised of 26 contributing buildings and 14 non-contributing buildings (see Table 3.1.8-1 for a complete listing of the NRHP eligible and non-eligible properties within this district). The district is eligible for the NRHP; thus, this district is considered a protected resource under Section 4(f).

Table 3.1.8-1. Cordelia District Properties

APN	Address	Year Built
Eligible for the NRHP		
45300060	No Address, Cordelia	ca 1915
45081020	3599 Ritchie Rd, Cordelia	1890
45090110	2097 Cordelia Road	ca 1900
45090100	2101 Cordelia Road, Cordelia	ca 1900
45090180	2105 Cordelia Road, Cordelia	ca 1900
45090070	2121/2117 Cordelia Road, Cordelia	ca 1890 and ca 1895
45090010	3577 Ritchie Road, Cordelia	1890
45090030	2147 Cordelia Road, Cordelia	ca 1902
45100380	2161 Cordelia Road, Cordelia	ca 1890
45100290	No Address, Cordelia	ca 1880
45131060	2137 Cordelia Road, Cordelia	1895
45131030	2151 and 2159 Bridgeport	1890/1941
45140160	2092 Cordelia Road, Cordelia	ca 1910
45140050	2102 and 2104 Bridgeport Avenue, Cordelia	ca 1905
45140060	2110 Bridgeport, Cordelia	1901
45140170	2116 Bridgeport Ave, Cordelia	1905
45140180	2120 Bridgeport, Cordelia	ca 1930
45132020	2138 Bridgeport, Cordelia	1887
45132030	2146 Bridgeport, Cordelia	1890
45132040	No Address, Cordelia/2151/2159 Bridgeport Avenue, Cordelia	1897 and 1890/1941
45132120	2178 Bridgeport Avenue, Cordelia	1905
45110100	No Address, Cordelia	ca 1900
45120030	No Address, Cordelia	ca 1915

APN	Address	Year Built
45120020	No Address, Cordelia	ca 1906
Not Eligible for the NRHP		
45082010	No address, Cordelia	ca.1870/2007
45081010	3603 Ritchie Road, Cordelia	ca.1910/2005
45081030	3585/3589/3593 Ritchie Road, Cordelia	1890/ca 1915
45090120	2091 Cordelia Road, Cordelia	ca 1908
45100130	No Address, Cordelia	1980
45131070	2145 Bridgeport, Cordelia	1961
45131040	2165 Bridgeport Avenue, Cordelia	1925/ca.1949
45140040	2100 Bridgeport Avenue, Cordelia	ca 1915
45140190	2124 Bridgeport Avenue, Cordelia	ca 1930
45132010	2132 Bridgeport Avenue, Cordelia	1964
45132070	2166 Bridgeport, Cordelia	1949
45132080	2172 Bridgeport Avenue, Cordelia	1955
45132060	2164 Bridgeport Avenue, Cordelia	2006

Potential to Affect the Village of Cordelia Historic District

Construction is proposed in the vicinity of the Village of Cordelia Historic District under all build alternatives. However, only Alternative B and Alternative B, Phase 1 have improvements occurring within the boundaries of this district (see Figure 3.1.8-2).

The Village of Cordelia Historic District is located just south of the I-80/I-680 interchange and directly east of northbound I-680. Under Alternative B and Alternative B, Phase 1, a third mixed-flow lane would be constructed to northbound I-680 beginning 1,000 feet south of the Cordelia overhead within this portion of the proposed project area. With this proposed lane addition, approximately 0.47 acre of a non-contributing parcel, located on Cordelia Road at the district's western boundary, would be acquired by these improvements. This acquisition would not alter the overall integrity of the district. Because the building on this parcel no longer exists, it cannot be eligible individually or as a contributor to the district. This, combined with the property's location at the edge of the district's boundary, lessens the effect to the district as a whole. Cordelia Road would still retain a high number of contributing resources at its west end. Overall, the district would retain a high concentration of contributing properties and would continue to convey a sense of place and time. The character-defining features of this district would remain intact.

The improvements under Alternative B and Alternative B, Phase 1would affect the district's visual setting because there would be elevated construction where none has previously existed. However, this visual affect would not be considered adverse under Section 106 because the setting of the district was already compromised when the interstate was created. The elevated construction would not alter the setting of the overall district enough that the district would lose the ability to convey significance in the areas of commerce, social history, and architecture.

Based on traffic noise modeling results, noise levels at two monitoring sites and one prediction site within the district were applied for existing and future conditions with and without the Alternative B. The existing traffic noise levels at the loudest hour were predicted to be between 63–68 A-weighted decibels (dBA). The future noise levels (2035) at these three sites were predicted to be between 63–71 dBA with Alternative B and Alternative B, Phase 1 alignments and between 63–71 dBA under the No-Build Alternative. The noise levels with Alternative B

would be the same or one dBA less than the future design-year (2035) noise levels under the No-Build Alternative. As such, while the projected noise levels under Alternative B would exceed the noise abatement criteria (NAC) under 23 CFR 772 for the land use (67 dBA), they would not exceed the future design-year (2035) No-Build noise levels and no impacts attributable to noise would occur.

No improvements under Alternative B or Alternative B, Phase 1 would occur on the roadways s within the district boundaries, and access within the district would be maintained during construction. Improvements under Alternative B would only occur on a vacant parcel on the western edge of the district. However, approximately 250 feet north of the district, project improvements on the local roadways are proposed. These improvements could result in short delays in access to the district. However, with implementation of a transportation management plan (TMP), overall access to the district would be maintained.

The Village of Cordelia Historic District as a whole would be able to maintain integrity of location, design, workmanship, materials, setting, feeling, and association under Alternative B and Alternative B, Phase 1. Consequently, the project alternatives would not have an adverse affect on this District. Furthermore, as the project alternatives do not appear to adversely affect the activities, features, or attributes that make the District eligible for Section 4(f) protection, the work occurring within this eligible NRHP resource appears to meet the qualifications for a *de minimis* impact finding. Thus, per Section 6009(a) of SAFETEA-LU, no discussion of avoidance alternatives is listed for this resource.

Measures to Minimize Harm to the Village of Cordelia Historic District

Measures to minimize harm to this potential Section 4(f) resource would include maintaining access and existing circulation patterns within this district. The non-contributing building that was located on the parcel that is being affected by the proposed project has been demolished and no longer exists. This vacant parcel does not have any driveway or access points onto the surrounding roadways. Because it is on the district's western boundary, the proposed project improvements would not affect overall access to this district. Furthermore, a TMP would be implemented to ensure that property owners within and nearby the district are notified of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements.

Coordination for the Village of Cordelia Historic District

During preparation of the HRER and the evaluation of the Village of Cordelia Historic District, project historians coordinated with the Department's Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian. Coordination efforts between the Department and the SHPO are also currently underway regarding the SHPO's concurrence on the finding of no adverse effect for this resource.

Concluding Statement for the Village of Cordelia Historic District

The project alternatives would not affect the significance and character-defining features of the Village of Cordelia Historic District, which make it eligible in the NRHP. Accordingly, pending the SHPO concurrence on the determination of no adverse effect on historic properties, the effects of the project on this Section 4(f) resource appear to meet the requirements for a *de*

minimis impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

Suisun City Historic District

As discussed above, the Suisun City Historic District is comprised of 95 contributing buildings and 34 non-contributing buildings (see Table 3.1.8-2 for a complete listing of the NRHP eligible and non-eligible properties within this district), and has a period of significance between 1880 and1934. The district is eligible for the NRHP under Criterion A at the local level of significance in the area of community development, and Criterion C as a collection of late nineteenth- and early twentieth-century architecture. The district features one building, 623 Main Street (Masonic Lodge #55) that was listed on the NRHP in 1978. The district is an eligible historical resource listed on the NRHP, and therefore is considered a protected resource under Section 4(f).

Table 3.1.8-2. Suisun District Properties

APN	Address	Year Built
Eligible for the NRHP		
32081210	200, 204 Sacramento Street, Suisun City	ca. 1921
32081200	208 Sacramento Street, Suisun City	1916
32081140	310 Sacramento Street, Suisun City	1910
32084050	400 Sacramento Street, Suisun City	1930
32084040	406 Sacramento Street, Suisun City	1930
32113130	200 Solano Street, Suisun City	1914
32113120	204 & 206 Solano Street, Suisun City	ca 1920
32113110	210 Solano Street, Suisun City	ca 1905
32113040	215 Sacramento Street, Suisun City	1900
32113050	225 Sacramento Street, Suisun City	1925
32113090	216 Solano Street, Suisun City	ca 1905
32113080	220 Solano Street, Suisun City	1910
32113060	611 School Street, Suisun City	1910
32113070	224 Solano Street, Suisun City	1920
32121100	301/303 Sacramento, Suisun City	ca 1915
32121090	610 School Street, Suisun City	1915
32121080	612 School Street, Suisun City	1915
32121070	300/302 Solano Street, Suisun City	ca 1920
32121120	308 Solano Street, Suisun City	ca 1905
32121010	601 Suisun Street, Suisun City	1920
32121020	607 Suisun Street, Suisun City	1911
32121040	615 Suisun Street, Suisun City	1900
32121050	621 Suisun Street, Suisun City	1927
32122110	401 Sacramento Street, Suisun City	1934
32122120	407 Sacramento Street, Suisun City	ca 1890
32122130	601 Main Street/409 Sacramento Street, Suisun City	ca 1927
32122030	607 Main Street, Suisun City	ca 1876
32122050	613 Main Street, Suisun City	ca 1906
32122070	623 Main Street, Suisun City	1888
32122080	627 Main Street, Suisun City	ca 1906
32114010	201 Solano Street, Suisun City	ca 1910
32114020	205 Solano Street, Suisun City	1899
32114130	200/204 California Street, Suisun City	ca 1920
32114040	215 Solano Street, Suisun City	1920

APN	Address	Year Built
32114110	212 California Street, Suisun City	ca. 1907
32114060	221 Solano Street, Suisun City	ca. 1888
32115090	301 Solano Street, Suisun City	1889
32115050	300 California Street, Suisun City	1905
32115080	309 Solano Street, Suisun City	1890
32115040	304 California Street, Suisun City	1901
32115010	701 Suisun Street, Suisun City	1919
32115030	308 California Street, Suisun City	1895
32130140	706 Suisun Street, Suisun City	1920
32130080	406 California Street, Suisun City	ca 1907
32130010	701 Main Street, Suisun City	ca 1925
32130020	707 Main Street, Suisun City	ca 1906
32130050	715 Main Street, Suisun City	ca 1910
32151030	211 California Street, Suisun City	1910
32151120	210 Morgan Street, Suisun City	1920
32151170	215 California Street, Suisun City	1915
32151160	219 California Street, Suisun City	1900
32151100	216 Morgan Street, Suisun City	ca. 1888
32151060	223 California Street, Suisun City	ca. 1920
32151090	220 Morgan Street, Suisun City	ca. 1888
32151070	227 California Street, Suisun City	1895
32151080	224 Morgan Street, Suisun City	1900
32153060	300 Morgan Street, Suisun City	1920
32153050	304 Morgan Street, Suisun City	1920
32156080	400 Morgan Street, Suisun City	1886
32156020	407 California Street, Suisun City	ca. 1888
32156070	406 Morgan Street, Suisun City	1885
32156030	801-805 Main Street, Suisun City	ca 1900
32156040	807 Main Street, Suisun City	ca 1900
32154010	301 Morgan Street, Suisun City	1880
32154020	307 Morgan Street, Suisun City	1906
32154050	911 Suisun Street, Suisun City	1890
32154030	311 Morgan Street, Suisun City	1900
32154040	907 Suisun Street, Suisun City	1900
32157010	401 Morgan Street, Suisun City	1905
32157070	400 Line Street, Suisun City	1886
32157020	405 Morgan Street, Suisun City	1900
32157060	404 Line Street, Suisun City	1886
32157030	901 Main Street, Suisun City	ca1889/ca1907
32157040	907 Main Street, Suisun City	1890
32157050	420 Line Street, Suisun City	1910
32143140	501 Morgan Street, Suisun City	ca 1885
32143150	507 Morgan Street, Suisun City	ca1900
32143130	908 Main Street, Suisun City	1906
32143120	500 Line Street, Suisun City	1896
32143110	504 Line Street, Suisun City	1880
32143100	508 Line Street, Suisun City	1900
32143090	512 Line Street, Suisun City	1913
32155050	1010 School Street, Suisun City	1920
32155040	1012 School Street, Suisun City	1890
32155030	306/308 Cordelia Street, Suisun City	1900
32155070	315 Line Street, Suisun City	ca. 1880
32158120	401 Line Street, Suisun City	1931

APN	Address	Year Built
32158020	1001 Main Street, Suisun City	ca. 1920
32158130	1005 Main Street, Suisun City	1900
32171010	1000 Main Street, Suisun City	1900
32171140	1004 Main Street, Suisun City	1910
32171120	1008 Main Street, Suisun City	1905
32171090	1012 Main Street, Suisun City	1910
32171030	511 Line Street, Suisun City	1905
32171040	515 Line Street, Suisun City	1921
Not Eligible for the NRHP		
32113010	204 West Street (attached to 200 Solano Street), Suisun City	ca 1960
32113020	205 Sacramento Street, Suisun City	ca 1950
32113030	209 Sacramento Street, Suisun City	ca 1910
32113100	214 Solano Street, Suisun City	1911
32121130	305 Sacramento Street, Suisun City	ca 1960
32121110	309 Sacramento Street, Suisun City	1910
32121030	611 Suisun Street, Suisun City	ca 1935
32122100	610 Suisun Street, Suisun City	1953
32122090	620 Suisun Street, Suisun City	1949
32122140	603 Main Street, Suisun City	ca 1906
32122020	605 Main Street, Suisun City	ca 1906
32122040	609 Main Street, Suisun City	ca 1906
32114030	209 Solano Street, Suisun City	1961
32114120	208 California Street, Suisun City	1960
32114100	216 California Street, Suisun City	ca 1950
32114090	220 California Street, Suisun City	ca 1920
32114070	223 Solano Street, Suisun City	1949
32114080	224 California Street/709 School Street Suisun City	1951
32115020	707 Suisun Street, Suisun City	ca. 1905
32130110	403 Solano Street, Suisun City	ca 1950
32130090	400 California Street, Suisun City	1901
32130030	711 Main Street, Suisun City	ca 1906
32130040	713 Main Street, Suisun City	ca1906
32151110	212/214 Morgan Street, Suisun City	1925
32153010	800 School Street, Suisun City	ca 1940
32153020	307 California Street, Suisun City	ca 1950
32153080	817 Suisun Street, Suisun City	ca. 1960
32153040	819/821 Suisun Street, Suisun City	ca 1950
32156050	815 Main Street, Suisun City	ca. 1910
32154060	912 School Street, Suisun City	1945
32155010	301 Line Street, Suisun City	1900
32155060	305 Line Street, Suisun City	1946
32155080	310 Cordelia Street, Suisun City	1946
32171020	509 Line Street, Suisun City	1930

Potential to Affect the Suisun City Historic District

In the vicinity of the Suisun City Historic District, both Alternative B and Alternative C would have project improvements occurring directly adjacent to the district boundaries (see Figure 3.1.8-3). The construction activities occurring adjacent to the district under both alternatives involve identical features. The Suisun City Historic District is located south of SR 12E and adjacent to the UPRR tracks on the west. Proposed project improvements under Alternative B and Alternative C would involve the extension of West Street northward from Solano Street to Spring Street in Suisun City. The West Street extension would be on an embankment supported

by retaining walls to intersect the roadway crossing over the existing UPRR tracks. Additionally, under both alternatives, the proposed project would convert Sacramento Street into a cul-de-sac. Under this alternative, proposed project improvements would occupy approximately 0.38 acre of Sacramento Street.

Although the proposed improvements would occur near and within the boundary of the proposed Suisun City Historic District, the physical destruction, alteration, or relocation of historic properties would not occur. The proposed improvements would affect the district's visual setting because there would be elevated construction where none has previously existed. This elevated construction would involve extending West Street along an embankment supported by retaining walls that would run from road stationing 10+50 to 25+00 (North of Solano Street to South of Spring Street). The eastern portion of this retaining wall would be adjacent to the Suisun City Historic District, and located near two contributing properties (properties 63 and 75 on Figure 3.1.8-3) within the District. The retaining wall would be located approximately 25 feet away from the building located on contributing property 63 and approximately five feet away from the building located on contributing property 75. The elevated roadway would begin along the curb line of West Street, abutting contributing property 75. At this location the retaining wall and concrete barrier would be approximately six feet in height. At its peak, the retaining wall would be approximately 34 feet above ground surface. However, this elevated construction would not be directly over the district, but rather to the northwest of the district's north boundary and would not alter the district's overall sense of place and time. Therefore, it would not affect this district's overall integrity.

Additionally, the proposed improvements would disrupt a portion of the northwest district boundary because the design of an original street in the district, Sacramento Street, would be altered. Sacramento Street has historically been a through street between Main Street to the east and West Street to its west. However, because the core of the district sits to the south and east of the proposed improvements, the district would have the ability to convey its significance for its association with community development and for its many distinctive nineteenth-century and early twentieth-century architectural styles. Those areas south and east of the proposed improvements would still provide a strong sense of place and time for the district's period of significance (1880–1934).

The highest concentration of contributing properties is located within the core area of the district, away from the proposed improvements. Only six contributing properties front the proposed improvements, and these resources are not individually eligible. This district would retain its high number of contributors and it would continue to be geographically united. The district's overall integrity of location would remain intact because the proposed improvements do not necessitate the removal of properties. The district's overall integrity of feeling and association would also remain intact. Although the district's setting and design would be altered on the northwest border, the design of the remaining streets within the district would not be altered and would continue to allow the district to convey its significance. The Suisun City Historic District would continue to possess the essential physical features that would allow people to understand its importance to the development of the city.

Taken from one noise prediction site within the district, noise modeling results were forecast for existing and future conditions with and without the project alternatives. The existing traffic noise

levels at the loudest hour were predicted to be 51 dBA. With Alternative B and C future levels (2035) were estimated to be between 54–59 dBA, and 53 dBA under the No-Build Alternative. Although noise levels with the project alternatives would be up to six dBA higher compared to the No-Build conditions, noise levels would still not approach or exceed the NAC under 23 CFR 772 for the land use (67 dBA). Therefore, there would be no impacts due to noise.

Although project alternatives would occur adjacent to and within the boundary of the district (along Sacramento Street), access to and from the district would be maintained. Neither alternative would involve improvements along Main Street, which serves as the main entrance to the district. Construction along Sacramento Street would result in short delays in access to the residences along the roadway. However, with implementation of the TMP (see Chapter 3, Section 3.1.5, "Utilities and Emergency Services") residents would be notified of any delays so that property access during construction would be coordinated with the timing of construction activities.

The Suisun City Historic District would continue to share its historic associations and the majority of the district's historic character would remain intact under Alternative B and Alternative C. As such, the project alternatives would not have an adverse affect on this District. Furthermore, as the project alternative do not appear to adversely affect the activities, features, or attributes that make the District eligible for Section 4(f) protection, the work occurring within this eligible NRHP resource appears to meet the qualifications for a *de minimis* impact finding.

Thus, per Section 6009(a) of SAFETEA-LU, no discussion of avoidance alternatives is listed for this resource.

Measures to Minimize Harm to the Suisun City Historic District

Measures to minimize harm to this potential Section 4(f) resource would include maintaining access and existing circulation patterns within the district. As noted above, proposed project improvements would occur adjacent to and within the boundary (along Sacramento Street) of the Suisun City Historic District. However, the physical destruction, alteration, or relocation of historic properties would not occur. Access into the district would be preserved along Main Street. Implementation of the TMP would require that the contractor notify property owners within and nearby the district of the locations of temporary detours to facilitate local traffic patterns and through-traffic requirements. Residents would also be notified in advance about potential access or parking effects before construction activities begin.

Coordination for the Suisun City Historic District

During preparation of the HRER and the evaluation of the Suisun City Historic District, project historians coordinated with the Department's Architectural Historian, Andrew Hope, who meets the Professionally Qualified Staff Standards in Section 106 PA Attachment 1 as an Architectural Historian. Coordination efforts between the Department and the SHPO are also currently underway regarding the SHPO's concurrence on the finding of no adverse effect for this resource.

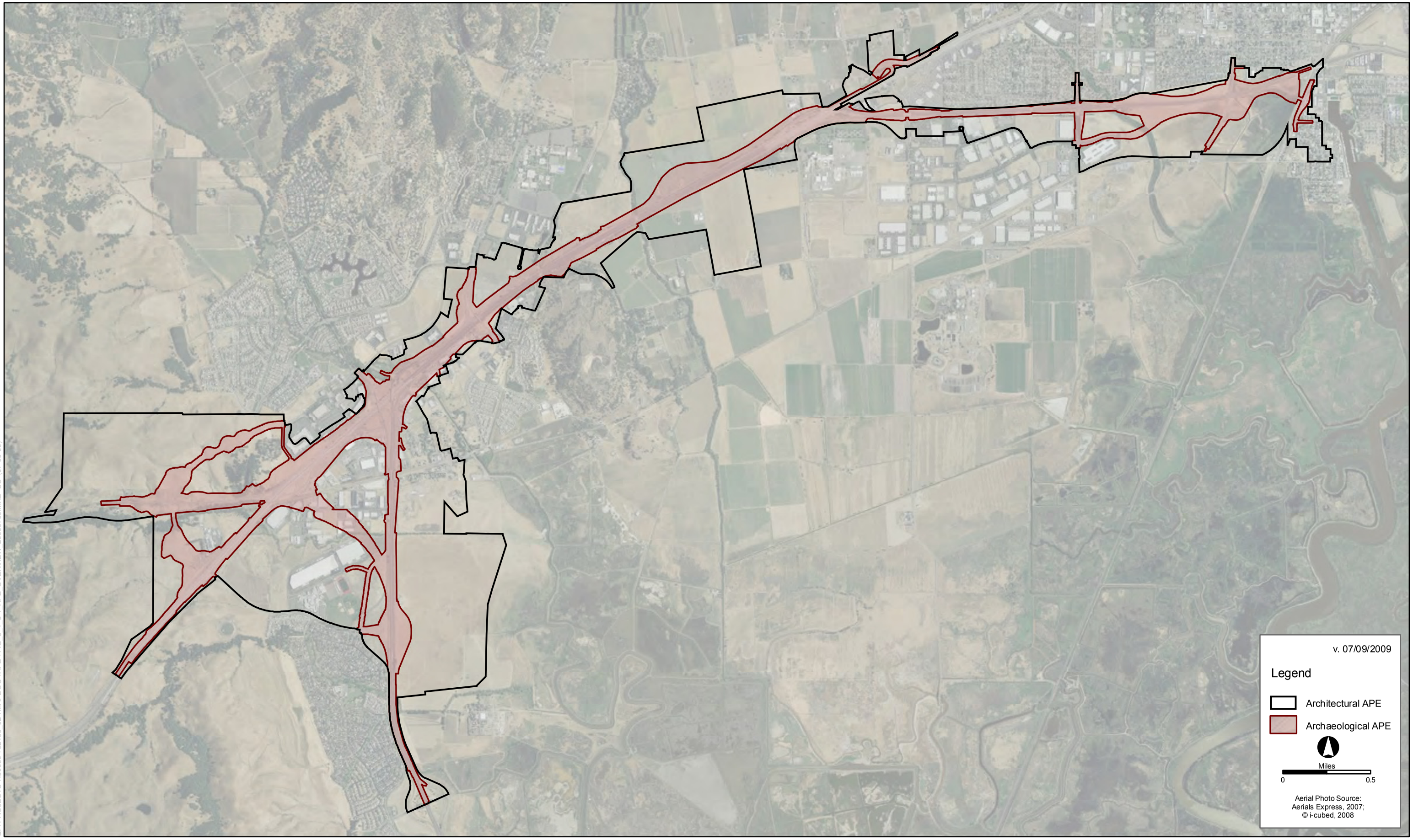
Concluding Statement for the Suisun City Historic District

The project alternatives would retain the significance and character-defining features of the Suisun City Historic District, which contribute to its eligibility in the NRHP. Accordingly,

pending the SHPO concurrence on the determination of no adverse effect on historic properties, the effects of the project on this Section 4(f) resource appear to meet the requirements for a *de minimis* impact finding as they do not appear to adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection.

Avoidance, Minimization, and/or Mitigation Measures

Because the potential remains for archaeological resources to be discovered in the project area, a PA between Caltrans and the SHPO and other stakeholders will include a Historic Properties Treatment Plan (HPTP) to be developed that will include a detailed protocol for identification, evaluation and treatment of any affected historic properties. The HPTP will also include protocols for archeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking.



Q:\PROJECTS\180680\02166_02\MAPDOC\APE\FIG_3_1_8-1_APE_OVERVIEW_20090709.MXD SS (07-09-09)

Figure 3.1.8-1
Area of Potential Effect Overview

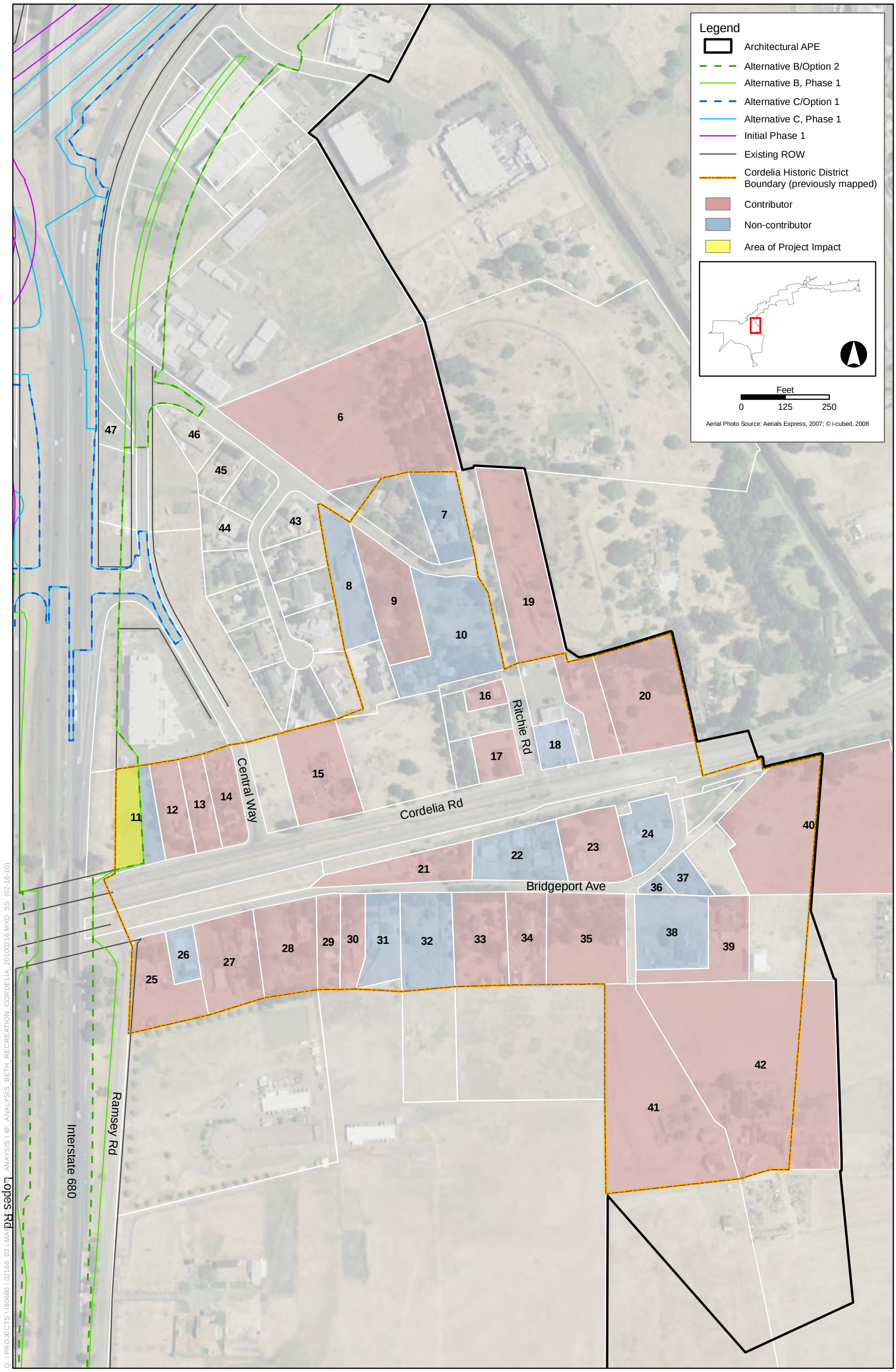


Figure 3.1.8-2
Cordelia Historic District

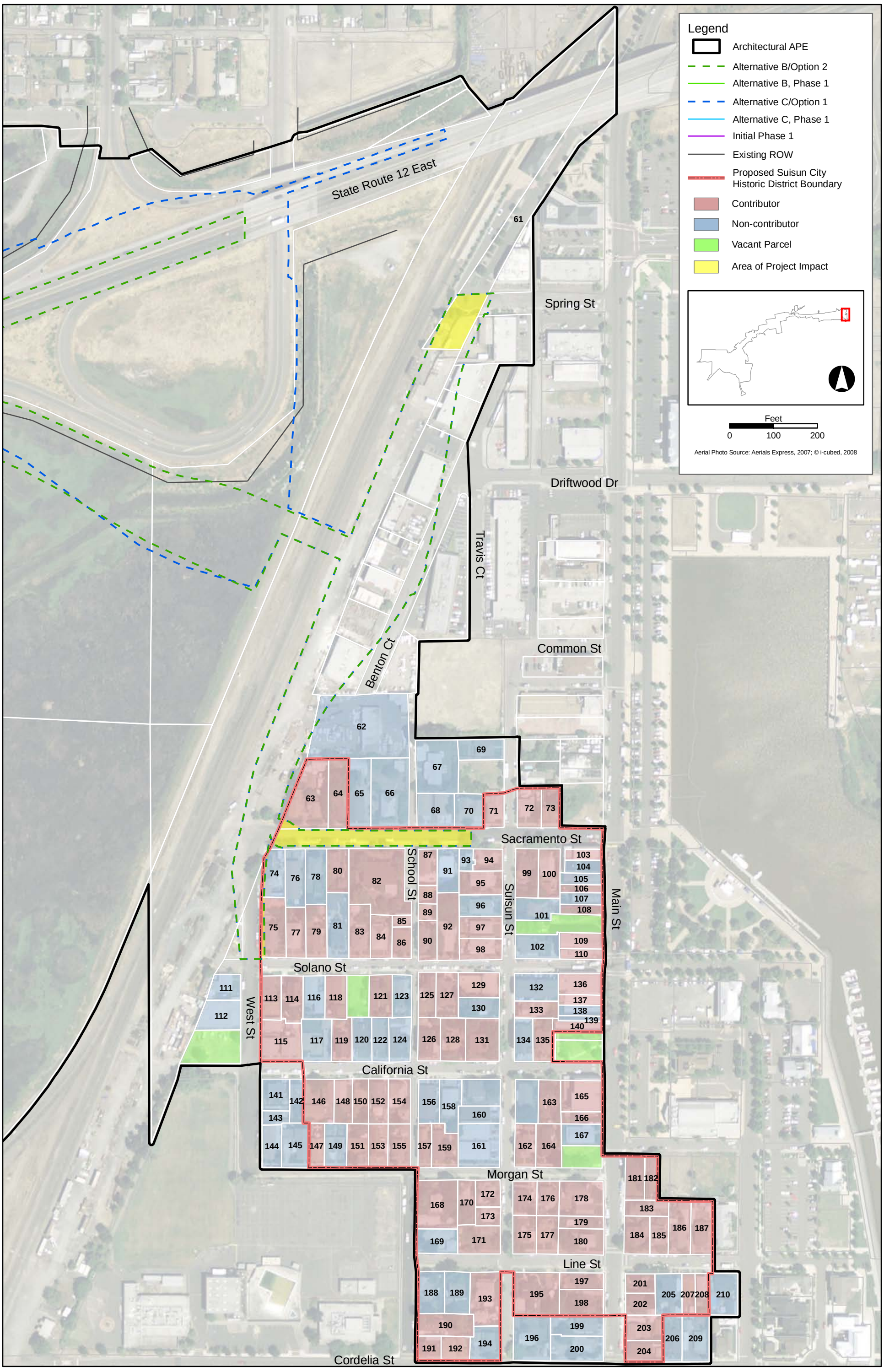


Figure 3.1.8-3
Suisun City Historic District

3.2 Physical Environment

3.2.1 Hydrology and Floodplain

Regulatory Setting

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

In order to comply, the following must be analyzed:

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

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

Affected Environment

The following text is based on the *I-80/I-680/SR-12 Interchange Project, Location Hydraulic Study & Summary Floodplain Encroachment Report* (LHS) and the *I-80/I-680/SR-12 Interchange Project, Stormwater Data Report* (SWDR) prepared in 2009.

The project area is comprised of relatively flat grazing plains and rural open space with gently sloping hills adjacent to the I-80/I-680/SR-12 interchange. The Vaca Mountains lie to the north of Suisun Valley and Fairfield. Along the reach of the project, nine named creeks convey runoff to Suisun Bay to the South: American Canyon Creek, Jameson Creek, Green Valley Creek, Dan Wilson Creek, Suisun Creek, Raines Drain, Alonzo Drain, Ledgewood Creek, and Pennsylvania Avenue Creek.

Solano County, a central region of California, is characterized by a Mediterranean climate. Summer is dominated by subtropical high pressure cells, with dry sinking air capping a surface marine layer of varying humidity, making rainfall impossible or unlikely but for the odd thunderstorm. During winter, the polar jet stream and associated periodic storms reach into the lower latitudes of the Mediterranean zones, bringing approximately 95% of the total precipitation for the region.

The San Francisco Bay Regional Water Quality Control Board (RWQCB) lists this region as Area 2 of its domain. The San Francisco Bay RWQCB further notes that its rainy season is from October 15 to April 15. The California Irrigation Management System (CIMIS) station collects meteorological data and is located in Suisun Valley (Station Number 123). Minimum, mean and maximum monthly precipitation values from August 1994 through February 2010 are included in Table 3.2.1-1. Note that the minimum precipitation values are only the minimum value recorded on a single day within that month. Thus each month since 1994 had a least one day where no precipitation was recorded.

Table 3.2.1-1. Minimum, Mean and Maximum Monthly Precipitation from August 1994 to February 2010 in Suisun Valley (Station No. 123)

Month	Minimum	Mean	Maximum
January	0	0.17	2.46
February	0	0.16	3.66
March	0	0.08	1.78
April	0	0.08	1.83
May	0	0.06	2.12
June	0	0.00	0
July	0	0.00	0
August	0	0.00	0.34
September	0	0.00	0.36
October	0	0.03	4.03
November	0	0.07	2.45
December	0	0.16	5.34

Source: http://wwwcimis.water.ca.gov/cimis/welcome.jsp. Accessed: 3/8/2010.

The land gradually slopes south toward Suisun Bay and all drainages within the project limits drain to Suisun Bay. The area is composed of relatively flat grazing plains and rural open space with gently sloping hills adjacent to the I-80/I-680 interchange. The Vaca Mountains lie to the north of Suisun Valley and Fairfield. Along the reach of the project area, two named creeks convey runoff to Suisun Bay to the south: Suisun Creek and Raines Drain. Historically, agriculture has affected runoff patterns in the areas adjacent to the proposed project. There is extensive urban development in areas to the west and east of the project but not in the immediate project area.

The Federal Emergency Management Agency (FEMA) delineates flood zones on Flood Insurance Rate Maps (FIRMs) and each FIRM depicts specific flood zones based primarily on topography and the areas likelihood of flooding. A 100-year flood has a 1% chance of being exceeded in any given year. Zone X flooding are areas determined to be outside the 0.2% annual chance floodplain. “Patterned” Zone X flooding are areas protected from by levees from the 1% annual chance flooding; or areas subject to 1% annual chance flooding with average depths less than 1-foot, or with drainage areas less than one square mile; or Areas of 0.2% annual chance flooding. Zone A is an area subject to 1% annual flooding that does not have flood elevations or depths defined. Zone AE is defined as areas subject to 1% annual flooding with base flood elevations determined. Figures 3.2.1-1 through 3.2.1-7 are each individual maps of the multiple flood zones along the project alignment.

American Canyon Creek

The American Canyon Creek drainage area is approximately 6.8 square miles at I-680, flowing east. The 100-year flow rate at the I-680 crossing is approximately 1,250 cubic feet per second (cfs). At I-680, American Canyon Creek passes under the freeway in a double box culvert; each cell is 12 feet wide. The 100-year flood is conveyed through the highway bridge without flooding the highway, as shown on the FEMA FIRMs. The most recent modifications to the FEMA-defined floodplain for American Canyon Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-680 was studied with approximate methods, and shows the 100-year floodplain as Zone A contained within the waterway upstream of the freeway and crossing under the freeway completely contained in the bridge crossing through the double 12-foot-wide reinforced concrete box (Figure 3.2.1-1).

Jameson Canyon Creek

The Jameson Canyon Creek drainage area is approximately 4.2 square miles at I-680, flowing east. The 100-year flow rate at the I-680 crossing is approximately 750 cfs. At I-680, Jameson Canyon Creek passes under the freeway in a double box culvert. The 100-year flood is conveyed through the highway bridge without flooding the highway, as shown on the FEMA FIRMs. The most recent modifications to the FEMA-defined floodplain for Jameson Canyon Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek between I-680 and I-80 was studied with approximate methods, and shows the 100-year floodplain as Zone A contained within the waterway and crossing under each freeway completely contained in the bridge crossings at I80 and I-680 (Figure 3.2.1-2). The culverts at I-80 and I-680 will be extended to accommodate the widened freeways.

Green Valley Creek

The Green Valley Creek drainage area is approximately 17.8 square miles at I-80, flowing south. The 100-year flow rate at I-80 crossing is 3300 cfs. Near I-80, Green Valley Creek passes under a series of bridges: the Green Valley Road crossing just north of I-80, four bridges that are part of the freeway crossing, and the Central Way Bridge immediately south of the freeway. The most recent modifications to the FEMA-defined floodplain for Green Valley Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-80 was studied with detailed methods, and shows the 100-year floodplain as Zone AE contained within the waterway upstream of the freeway and crossing under the freeway completely contained within the multiple multi-span bridge crossings (Figure 3.2.1-3). Farther downstream of I-80, the 100-year floodplain exceeds the channel banks. For this reach, including a portion of I-80, FEMA has also identified a “patterned” Zone X to indicate an area protected by levees from 1% annual chance flooding (Figure 3.2.1-3).

Dan Wilson Creek

Dan Wilson Creek flows south with a drainage area at I-80 that is approximately 4.6 square miles. Upstream of I-80, flows in Dan Wilson Creek can be diverted to two detention basins located just west of the creek. These detention basins release back into the creek. Levees line the creek and approximately 190 meters of I-80 just to the west of the creek. The floodplain also receives overflows from Suisun Creek located east of Dan Wilson Creek. Dan Wilson Creek floods when the water surface elevation of the creek reaches an elevation of approximately 29.5 feet. The most recent modifications to the FEMA-defined floodplain for Dan Wilson Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-80 was

studied with detailed methods, and shows the 100-year floodplain as Zone AE (Figure 3.2.1-1). Both upstream and downstream of I-80, portions of the 100-year floodplain exceed the channel banks. At the freeway, the 100-year runoff is completely contained within the multiple multi-span bridge crossings. Since the most recent levee improvements were made along the west bank north of I-80, FEMA has revised the flooding maps to show the 100-year runoff in Dan Wilson as contained by the existing highway bridge with no flooding onto the highway traveled way. A small area north of I-80 and west of the creek is identified as patterned Zone X, an area protected by levees (Figure 3.2.1-4).

Suisun Creek and Raines Drain

Beginning at Lake Curry to the north, the Suisun Creek watershed area is approximately 48.8 square miles. During historic flooding, water from Suisun Creek has overflowed to Ledgewood Creek near the most northern crossing of Suisun Valley Road. One-hundred-year overtopping occurs near the most southern crossing with Suisun Valley Road and flows to Dan Wilson Creek to the west and Raines Drain to the east.

During a 100-year runoff event, Suisun Creek exceeds its bank capacity farther upstream from the highway. Overtopping flows go to Raines Drain to the east and to Dan Wilson Creek to the west. At the highway, the flow that still remains within the banks of Suisun Creek passes through the highway bridge without additional flooding. Flood flows do not encroach on the highway traveled way at Suisun Creek Bridge. However, those 100-year flows that leave Suisun Creek and flow to Raines Drain, combine with runoff from the Raines Drain Watershed and overtopping flows from the upper reaches of Ledgewood Creek, and overtop the I-80 Freeway. FEMA has designated this area as a “Patterned” Zone X, indicating there is flooding up to a depth of one foot during the 100-year event (Figure 3.2.1-5).

The Raines Drain watershed has a watershed size of 2.3 square miles at I-80. The watershed, located just east of Suisun Creek and south of Ledgewood Creek, collects runoff from local agricultural lands and from over-bank flows from Suisun Creek and Ledgewood Creek during extreme events.

Raines Drain refers to a trapezoidal, concrete-lined ditch that begins at Rockville Road and extends southward across the agricultural floodplain to I-80. At I-80 the ditch transitions to a 66-inch-diameter reinforced concrete pipe (RCP) and then to a 60-inch-diameter RCP under the freeway. In addition to the main culvert at I-80, there is a 42-inch culvert constructed in 1986, and two more 42-inch culverts installed in the 1960s. However, one of the 42-inch culverts is currently closed off on both ends. On the southern side of I-80, all the pipes transition back to a trapezoidal concrete-lined channel.

The 100-year flow in Suisun Creek passes under the I-80 bridge without flooding the highway. The 100-year flood elevation is 36 feet just upstream of the bridge and the low point roadway elevation is 39 feet. However, at several locations within two miles upstream of I-80, 100-year flows escape from the banks of Suisun Creek, flowing away from the creek toward Raines Drain. Some of these flood flows encounter the I-80 embankment at Raines Drain. The capacity of the Raines Drain cross culverts is not sufficient to carry the 100-year flood flows (including those escaping Suisun Creek) beneath the highway, causing flood flows to overtop the highway at Raines Drain, as defined on the FEMA FIRMs. The freeway low point elevation at Raines Drain

is 34.4 feet. The FEMA maps do not indicate a floodplain elevation at this location, but indicate that the flooding is less than one foot deep (Figure 3.2.1-5).

Alonzo Drain

The Alonzo Drain watershed upstream from I-80 and SR 12E is bounded by Raines Drain to the west and Ledgewood Creek to the north and east. The watershed collects runoff from local agricultural lands and from over-bank flows from Ledgewood Creek and Suisun Creek during extreme events.

The existing waterway crossing under I-80 consists of a single 48-inch RCP with collector ditches north of the highway leading to the culvert. South of the highway is a series of storm drains owned by the City of Fairfield that connects the 48-inch RCP to a large trapezoidal channel with a 100-year capacity. The trapezoidal channel was constructed in the 1980s to convey the 100-year flow in Alonzo Drain, including overflows from Ledgewood Creek. Approximately one mile farther downstream, the improved Alonzo Drain crosses SR 12E in a six-cell 60-foot-wide RCB and joins Ledgewood Creek just east of Beck Avenue. The City of Fairfield indicated that the trapezoidal channel was designed for a 100-year flow of 2500 cubic feet per second.

The existing 48-inch culvert under the I-80 does not have the hydraulic capacity to convey the 100-year runoff from the direct watershed and the overflows from Ledgewood Creek. FEMA identifies this area of 100-year flooding as Zone AO, with 1-foot-deep flooding (deeper flooding may exist in local low-lying areas) (Figure 3.2.1-6).

FEMA has not performed hydraulic calculations or prepared flood profiles for Alonzo Drain. West Yost & Associates has prepared a separate report for the Solano County Water Agency that includes hydrologic and hydraulic calculations for Alonzo Drain, identifying the manner and frequency of overtopping of I-80 (West Yost & Associates 1999).

I-80 flooding in the area of Alonzo Drain and Ledgewood Creek has occurred as recently as December 31, 2005, closing westbound I-80 traffic for several hours. This highway flooding is attributable to the deficiencies at the Alonzo Drain I-80 crossing and to overtopping of Ledgewood Creek upstream of I-80. The FEMA maps indicate flood flows overtopping the highway, but the presence of a 3-foot-high concrete median barrier inhibits overtopping flows, causing ponded upstream flows to seek relief toward the Ledgewood Creek Bridge to the east.

The most recent modifications to the FEMA defined floodplain for Alonzo Drain are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses SR 12 was studied with approximate methods, and shows the 100-year floodplain as Zone AO (depth one foot) flowing across the location of SR 12E (Figure 3.2.1-6). This analysis of the Alonzo floodplain was performed before this reach of SR 12E was improved to current conditions and before the Alonzo Drain was improved between I-80 on the upstream end to downstream of SR 12E and Beck Avenue to the confluence with Ledgewood Creek. It is understood by Solano County and the Solano County Water District that the current improvements to Alonzo Drain between I-80 and SR 12E and downstream of SR12E are sufficient to convey the peak 100-year flow.

Ledgewood Creek

The Ledgewood Creek drainage area at I-80 is approximately 16.8 square miles (Figure 3.2.1-6). At SR 12, the Ledgewood Creek drainage area is about 0.5 square miles greater. Far upstream of I-80, Ledgewood Creek receives overflows from Suisun Creek during a 100-year runoff event. South of where overflows are received from Suisun Creek (and still upstream from I-80), overflows escape from Ledgewood Creek, flowing to the west and south to join with the Alonzo Drain and Raines Drain at the highway crossing.

At I-80, the flow that still remains within the banks of Ledgewood Creek passes through the highway bridge without additional flooding. Flood flows do not encroach on the I-80 traveled way at Ledgewood Creek Bridge. While there has been flooding of the highway in the area of Ledgewood Creek as recently as December 31, 2005, this flooding is attributable to the deficiencies at the Alonzo Drain highway crossing and the fact that Ledgewood Creek overtopped upstream of I-80. At SR 12E, Ledgewood Creek crosses the highway in a five-cell 75-foot-wide RCB.

The most recent modifications to the FEMA-defined floodplain for Ledgewood Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses SR 12E was studied with detailed methods, and shows the 100-year floodplain as Zone AE contained within the waterway upstream of the freeway and crossing under the freeway completely contained within the existing bridge crossings (Figure 3.2.1-1). Farther downstream of SR 12E, the 100-year floodplain is shown within the stream banks. However, the FEMA maps show a Zone AO (depth one foot) flooding beyond the Ledgewood stream banks beginning just upstream of SR 12E and extending far downstream of the highway. The *Summary Floodplain Encroachment Report* does not state if this flood depth is from overflows or mixing of Alonzo Drain, Ledgewood Creek, and/or Pennsylvania Avenue Creek. Flooding of Ledgewood Creek has occurred as recently as December 31, 2005 at I-80 and reaches both upstream and downstream of I-80, but no flooding was observed at the SR 12E crossing of Ledgewood Creek.

Pennsylvania Avenue Creek

The Pennsylvania Creek watershed area at SR 12E is approximately 3.2 square miles. Pennsylvania Avenue Creek crosses under SR 12E in a triple cell box culvert. The FEMA FIRMs indicate that the 100-year flow is contained in the culverts located in Pennsylvania Avenue upstream of SR-12, however the same flood maps indicate that the 100-year flooding inundates SR 12E.

The most recent modifications to the FEMA-defined floodplain for Pennsylvania Avenue Creek are shown on FEMA mapping dated May 4, 2009. The reach of the creek that crosses I-80 was studied with detailed methods, and shows the 100-year floodplain as Zone AE to a point just upstream of SR 12E (Figure 3.2.1-7). At this point, the 100-year flood is completely contained in the existing culvert upstream of the highway. However, downstream of SR 12E and immediately upstream, the FEMA maps show a Zone AO (1-foot depth) flooding to the west of Pennsylvania Avenue Creek and Zone AE (elevation ten feet) to the east of the creek. It is not known if these flood depths and elevations are from overflows or mixing of Alonzo Drain, Ledgewood Creek, and/or Pennsylvania Avenue Creek.

Finally, The FEMA profile gives a roadway elevation of 10.1 feet. Current topographic mapping (using the same datum) indicates the roadway is just below elevation 13.0 feet. The current understanding is that the existing triple box culvert is sufficient to carry the 100-year flow. The existing box culvert will be extended as appropriate for the project improvements.

Environmental Consequences

The project alternatives would not involve construction of housing in the local 100-year floodplain. The truck scale facility structures would be elevated above the floodplain. The project alternatives would not result in a significant encroachment on the floodplains, except in the vicinity of Raines Drain (discussed below). The project alternatives are not downstream of any dams or large bodies of water (as it is located approximately 15 miles north of Suisun Bay) and would not pose any risk of flooding hazards as a result of dam failure. Although levees line some of the creeks that cross under the highway, the risk of a levee failure significantly affecting people or structures would be low. The project area is located in an area of relatively flat topography that is not near any large bodies of water. The potential for a seiche, tsunami, or mudflow is low.

The LHS concluded that the project alternatives would not affect the hydraulic capacity or floodplain of American Canyon Creek and Jameson Creek, the existing culvert waterway crossings are intended to be extended in-kind, not replaced. Therefore, these creeks are not discussed further. Table 3.2.1-2 summarizes floodplain impacts by creek.

Table 3.2.1-2. Floodplain Summary Table

Waterway	Within Alternative Limits	Affected by the Project
American Canyon Creek	All	
Jameson Canyon Creek	All	
Green Valley Creek	All	✓
Dan Wilson Creek	B, C, B1	✓
Suisun Creek	B, C	✓
Raines Drain	B, C	✓
Alonzo Drain	All	✓
Ledgewood Creek	All	✓
Pennsylvania Avenue Creek	B, C	✓

Coordination on the existing conditions and the potential project impacts on the existing waterways and floodplains of Suisun Creek and Raines Drain has included specific discussions with Caltrans District 4 Hydraulics office, the County of Solano, the Solano County Water District and the Solano Irrigation District.

Hydraulic Capacity and Floodplain of Green Valley Creek

With the use of levees, the 100-year flow is currently contained within Green Valley Creek. Major reconstruction of this waterway crossing would occur under both alternatives. However, as discussed below, the reconstruction would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The five existing waterway bridges would be removed, including the numerous columns and pier walls in the active waterway.

- The new low-elevation bridges (four under Alternative B and three under Alternative C) would be longer than the existing bridges, and would clear-span the waterway above the 100-year water surface elevation.
- The four high-elevation bridges proposed in Alternative B would be constructed with no columns in the active waterway.
- The side slopes and bottom of the existing Green Valley Creek would be restored to a more natural condition than that of the existing waterway.
- There are no planned longitudinal encroachments to the Green Valley Creek floodplain.
- Currently, the 100-year flow is contained within Green Valley Creek and the proposed project would not change these conditions.
- The project will not increase the base floodplain elevation.

Under the No-Build Alternative, no changes would be made to Green Valley Creek or the bridges that cross it, and therefore there would be no change in the hydraulic capacity and floodplain of Green Valley Creek

Hydraulic Capacity and Floodplain of Dan Wilson Creek

Reconstruction of the Dan Wilson Creek waterway crossing would occur under Alternative B, Alternative C, and Alternative B, Phase 1. However, as discussed below, the planned improvements would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The existing waterway bridge would be removed, including the numerous columns and pier walls in the active waterway.
- The new bridge would clear-span the waterway, be longer than the existing bridge, and be placed above the 100-year water surface elevation.
- The side slopes and bottom of the existing Dan Wilson Creek would be restored to a more natural condition than the existing waterway.
- There are no planned longitudinal encroachments to the Dan Wilson Creek floodplain.
- The project will not increase the base floodplain elevation.

There would be no changes to the Dan Wilson Creek Crossing under Alternative C, Phase 1 and under the No-Build Alternative and therefore there would be no potential to change the hydraulic capacity or floodplain.

Hydraulic Capacity and Floodplain of Suisun Creek

The 50-year design flood and the 100-year base flood are both contained within Suisun Creek. Reconstruction of the Suisun Creek waterway crossing would occur under both alternatives. However, as discussed below, the planned improvements would improve flow characteristics in such a manner that there would be no adverse effect to the 50-year or 100-year hydraulic conditions:

- The existing highway bridge is three spans wide and 72 feet long (in the direction of traffic). The new Suisun Creek bridge would be significantly longer at 110 feet and would clear-span the creek.
- Additionally, both alternatives include an adjacent bridge that would carry the westbound truck scales on-ramp to I-80.
- The Suisun Creek side slopes and bottom would not be affected by the new Suisun Creek bridges, and there are no planned modifications to Suisun Creek.
- Soffit elevations for all bridges would be placed above the existing FEMA 100-year flow elevation.
- There are no planned longitudinal encroachments to the floodplain.
- The project will not increase the base floodplain elevation.

No changes to Suisun Creek or the creek crossing are proposed under the fundable first phase of either alternative or the No-Build Alternative, and therefore there would be no change in the hydraulic capacity at that location.

Hydraulic Capacity and Floodplain of Raines Drain

The location where Raines Drain crosses the highway is a low point in the highway's vertical profile. Originally constructed for irrigation purposes, Raines Drain also serves as a storm drain. The waterway crossing consists of four culverts ranging in size from 18 inches to 66 inches in diameter. One of the 42-inch culverts is blocked at both the upstream and downstream ends per agreement between the Department and the Solano Irrigation District. At I-80, the lined ditch enters a 66-inch diameter reinforced concrete pipe from the north highway right-of-way, connecting to a 60-inch diameter reinforced concrete pipe that crosses under the freeway mainline. In addition to the main culvert at I-80, there is also a 42-inch culvert constructed in 1986 (more recently blocked to flow), and two additional 42-inch culverts installed in the 1960s. On the southern side of I-80, all the pipes transition back to a trapezoidal concrete-lined channel.

This section of the I-80 has been evaluated for a 50-year event consistent with correspondence from FHWA (see Appendix H). WRECO has prepared a separate report for the Department, District 4, which includes detailed hydrologic and hydraulic calculations for Raines Drain, identifying the manner and frequency of highway overtopping under existing conditions (WRECO 2003). According to the LHS, water would encroach on the traveled way beginning at elevation 33.5 feet, and begin to overtop the highway at the low-point elevation of approximately 34.4 feet. According to the WRECO report, for the 50-year event depths of flow on the roadway were estimated to be a maximum of 1.5 feet in the westbound lanes and about 0.5 foot in the eastbound lanes. The capacity of the existing Raines Drain culverts is 355 cfs with surcharge elevation to the edge of existing pavement, and 470 cfs with surcharge elevation to the overtopping elevation; compared to the 50-year peak flow of 925 cfs. In other words, existing conditions can barely convey half of the 50-year peak flow of 925 cfs. This stated 50-year flood event for Raines Drain includes flood overflows from Suisun Creek in addition to the direct Raines Drain watershed. Even more flows (not identified here) could contribute from the upper Ledgewood Creek.

Under both alternatives, two features of the proposed project could result in impacts on the existing floodplain:

1. The centerline elevation of the reconstructed mainline roadway would be approximately three feet higher than the existing condition. If the freeway elevation were raised without increasing the capacity of the culverts or other mitigation, flood waters would rise to a higher elevation (up to three feet higher) upstream of the freeway before overtopping the roadway resulting in increased ponding elevation upstream. However, if additional culvert capacity were constructed without peak flow mitigation, more frequent and severe flooding might occur downstream because the reduction in peak flow attenuation from the existing upstream ponding.
2. The construction of the relocated westbound truck scales and associated on- and off-ramps will reduce the attenuation potential of the existing upstream condition by filling an area subject to shallow flooding, or ponding upstream of the freeway. Without the existing attenuation potential, peak runoff events may increase downstream of the freeway.

As part of the project, an upstream inlet and underground stable cavities (for stormwater storage) would be constructed beneath the new westbound truck scale facility. This would minimize changes in condition of floodplain of Suisun Creek and Raines Drain as a result of project operation. If possible, construction would occur during the dry season to minimize the effects to water quality and would be completed prior to operation of the proposed project. These structures would allow flooding up to the existing elevation of overtopping without increasing the flow passing under the freeway. Flows in excess of the overtopping event would be captured in a separate inlet structure upstream of the freeway. That inlet structure would mimic the manner and capacity of flows that overtop the existing freeway. These captured excess flows would be conveyed under the freeway and released on the downstream side of the freeway via a lateral structure to redistribute the flows across the existing floodplain. In addition, stable cavities would be created beneath the truck scale that would mitigate the reduction of floodplain storage from the placement of fill material in the floodplain.

Stable cavities are meant to be spaces, vaults or other below ground storage devices for storm runoff intended to mitigate for lost floodplain storage. The cavities will not impact the groundwater because they are intended to be placed at or above the existing ground elevation within the new fill for the westbound truck sales.

Additionally, over-excavation in open areas within the project limits would also create additional storage to offset the additional fill material, ultimately increasing the size of the floodplain and minimizing the effect of the proposed project on the floodplain.

Construction of upstream inlet structures, new highway cross culverts, an outlet structure, and stable cavities would ensure that this effect would not be adverse. Both alternatives would not increase the 50-year floodplain elevation.

No changes to Raines Drain are proposed under the fundable first phase of either alternative or the No-Build Alternative, and therefore, there would be no change in the hydraulic capacity at that location.

Hydraulic Capacity and Floodplain of Alonzo Drain and Ledgewood Creek

The LHS concluded that the project alternatives would not affect the Alonzo Drain or Ledgewood Creek floodplain for the following reasons:

- The improvements across SR 12E include minor widening.
- The multi-cell box culvert at Beck Avenue would be replaced with a significantly elevated clear span structure, improving the hydraulics at that crossing.
- The existing floodplain is completely contained in the existing RCB under SR 12E.
- The existing RCB at Alonzo Drain would be lengthened 30 feet in both the upstream and downstream directions under Alternative B, Alternative B, Phase 1, and Alternative C. Under Alternative C, Phase 1, the RCB would be lengthened 30 feet in the downstream direction only.
- Between the SR 12E crossing and the Beck Avenue Crossing there would be a slight encroachment to the left channel bank with the construction of the Beck Avenue off ramp. This is a man-made reach of Alonzo Drain that is sized to allow the existing earth-side slope to be modified to a vertical embankment or retaining wall. This would be an insignificant impact on the very wide trapezoidal channel.
- As with the removal of the RCB at Beck Avenue, the existing waterway would be returned to a more natural state.
- Improvements to the Ledgewood Creek crossing on SR 12E include minor widening on both the upstream and downstream ends for Alternative B, Alternative B, Phase 1, and Alternative C; and only downstream widening for Alternative C, Phase 1.
- The existing RCB on Ledgewood Creek would be lengthened 15 feet in both the upstream and downstream directions under Alternative B and 45 feet in both directions under Alternative C.
- Over Ledgewood Creek, Alternative B has two additional bridges for collector roads, one immediately upstream and one immediately downstream of the widened mainline. The upstream bridge would be a three-span bridge 244 feet long, significantly longer than the existing 85-foot bridge. The downstream bridge would be two-span bridge 164 feet long, also significantly longer than the existing 85-foot bridge.
- There are no planned modifications to Ledgewood Creek except for the RCB extension.
- The project will not increase the base floodplain elevation to either Alonzo or Ledgewood creeks.

No changes to Alonzo Drain and Ledgewood Creek are proposed under the No-Build Alternative, and therefore, there would be no change in the hydraulic capacity and floodplain at that location.

Hydraulic Capacity and Floodplain of Pennsylvania Avenue Creek

The LHS concluded that the project alternatives would not affect the Pennsylvania Avenue Creek hydraulic capacity and floodplain under either Alternative B or Alternative C for the following reasons:

- The 100-year floodplain AE Zone is completely contained in the existing triple cell box culverts located in Pennsylvania Avenue just upstream of SR 12E. The 100-year elevation at the upstream side of SR 12 is 11 feet, and ten feet at downstream side. Though the FEMA maps indicate overtopping flooding of the culverts crossing SR-12, it is understood that the current condition of this crossing is that the existing triple box culvert is sufficient to convey the 100-year flood under the freeway.
- Immediately east of the Pennsylvania Avenue Creek crossing of SR-12 are ten small diameter culverts that drain a small isolated area across the freeway. These several culverts will be extended to match the highway improvements.
- For Alternative B, the cross culvert under SR 12E would be extended. A new culvert would be added under the proposed Meyer Way Extension.
- For Alternative C, the cross culvert under SR 12E would be extended upstream (with a possible gap within the loop ramp), connecting to the existing culvert in Pennsylvania Avenue, and extended downstream to clear the mainline widening. A new culvert would be added under the proposed connector street.
- There are no planned modifications to the natural portions of Pennsylvania Avenue Creek except for the new and extended culvert.
- There are no planned longitudinal encroachments to the floodplain.
- The project will not increase the base floodplain elevation.

No construction is proposed in this area under the fundable first phase of either alternative or under the No-Build Alternative and therefore, there would be no change in the hydraulic capacity at this location.

Avoidance, Minimization, and/or Mitigation Measures

The project will not result in adverse effects to hydrology or floodplain and therefore, no avoidance, minimization, or mitigation measures are necessary.

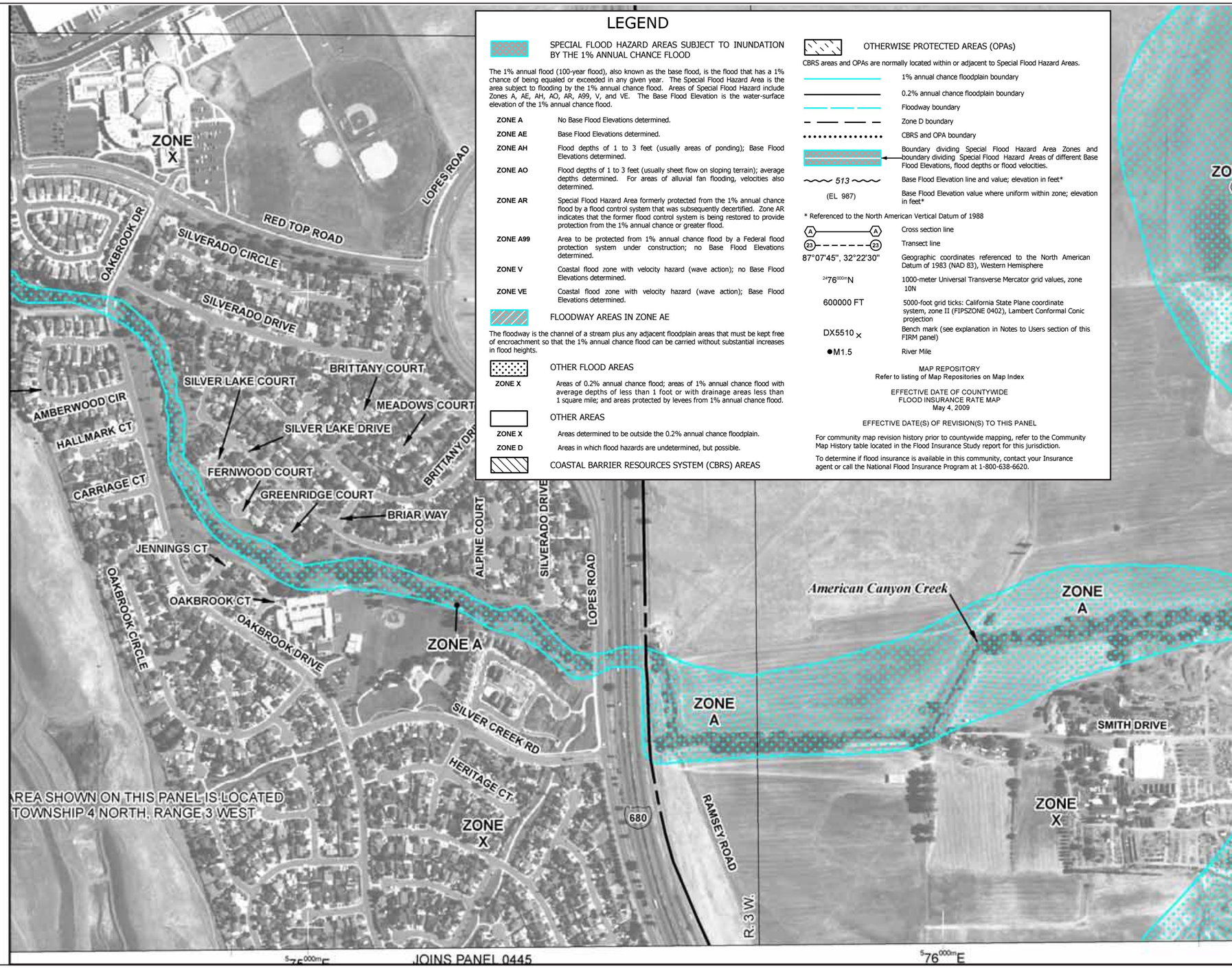


Figure 3.2.1-1
100-Year Floodplains

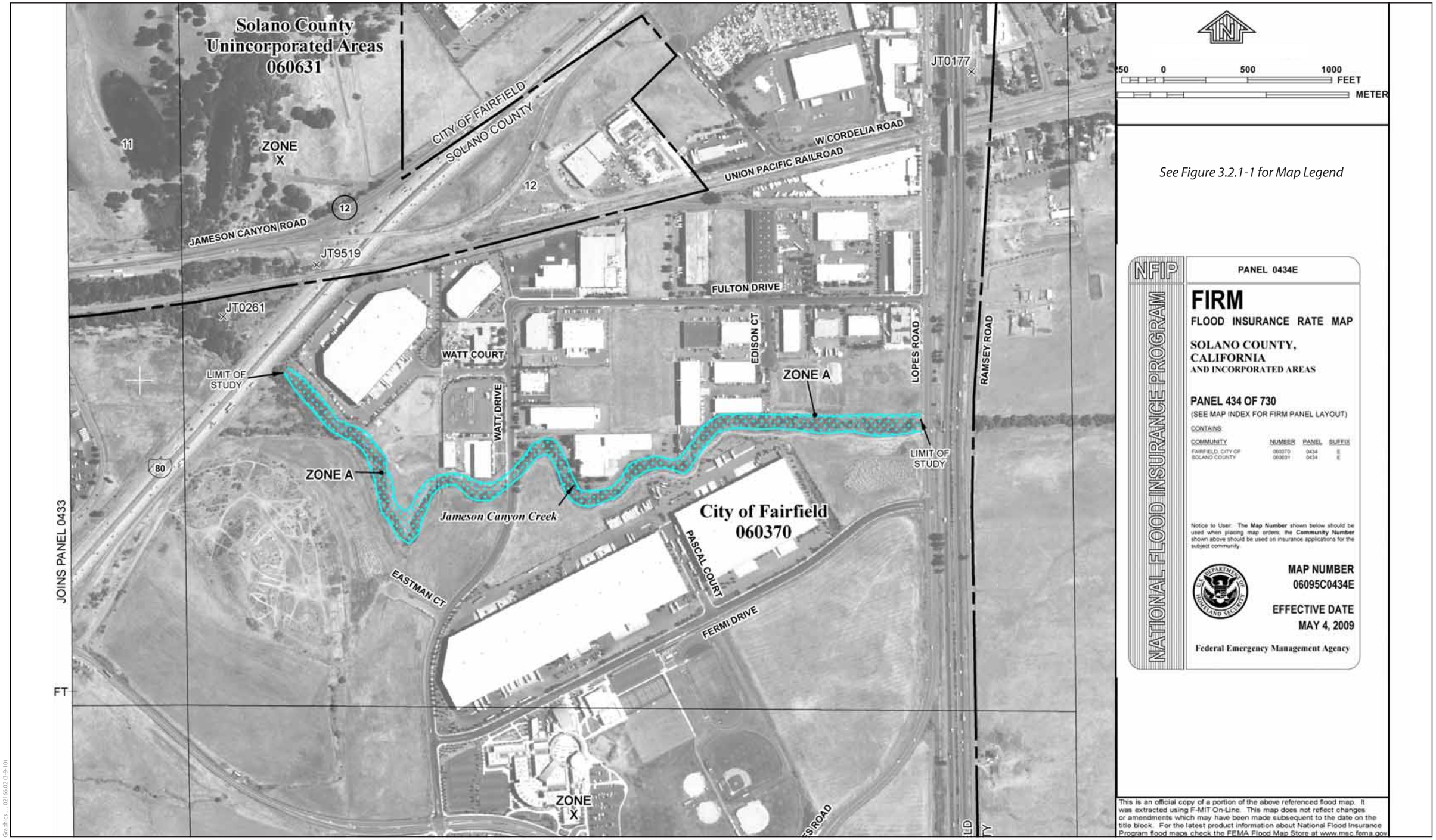
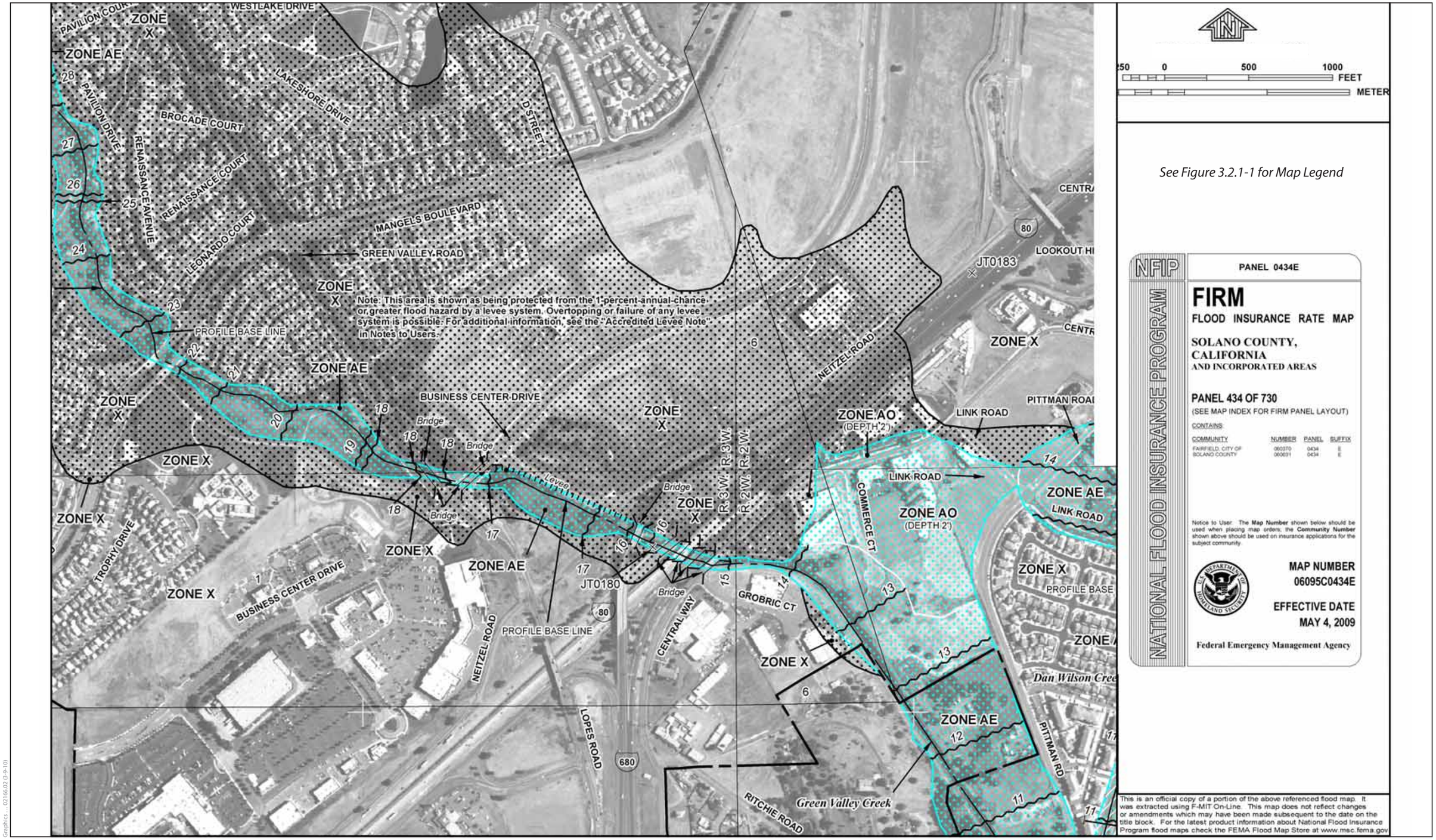


Figure 3.2.1-2
100-Year Floodplains



See Figure 3.2.1-1 for Map Legend

Figure 3.2.1-3
100-Year Floodplains

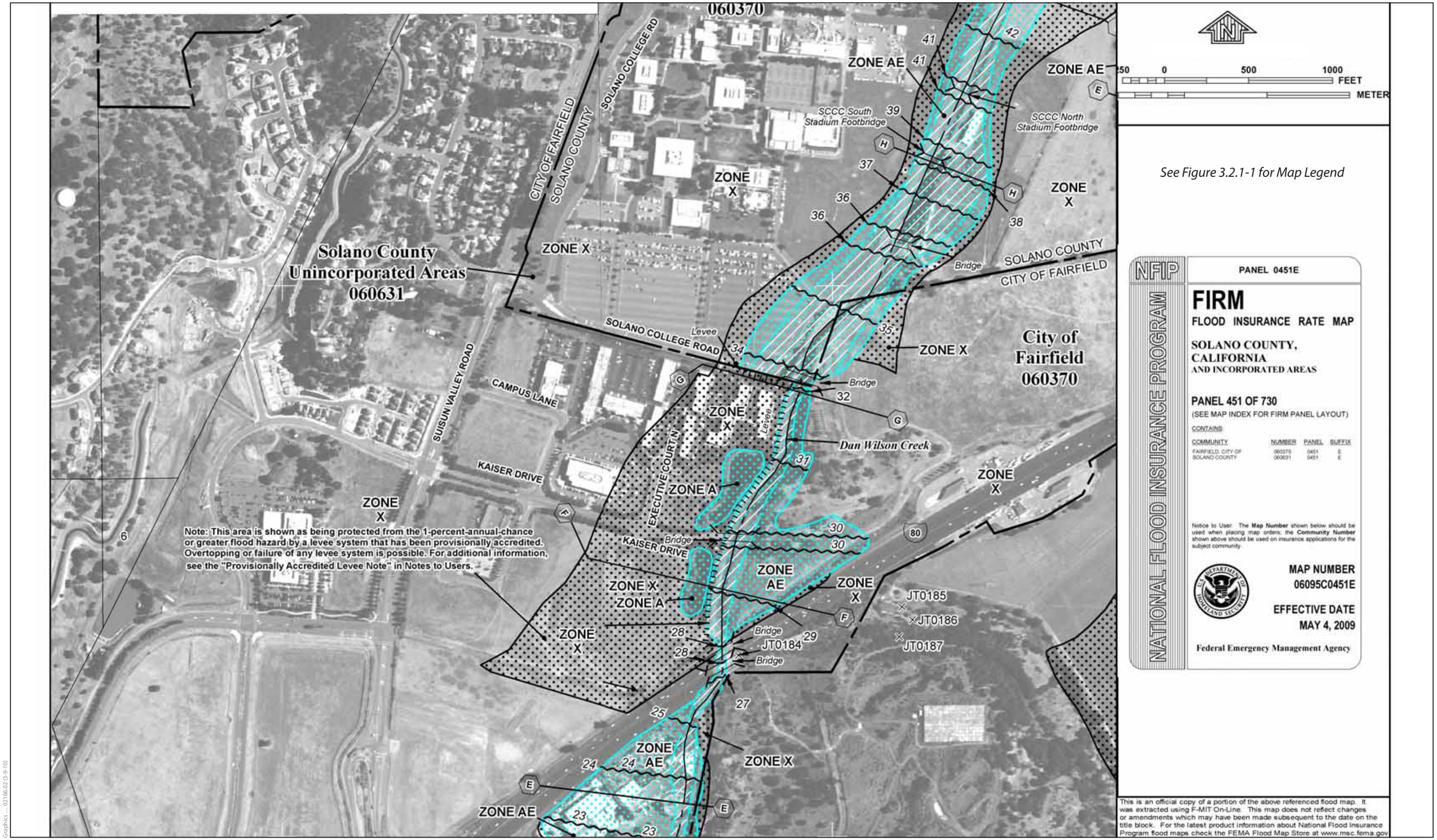


Figure 3.2.1-4
100-Year Floodplains

Figure 3.2.1-5
100-Year Floodplains

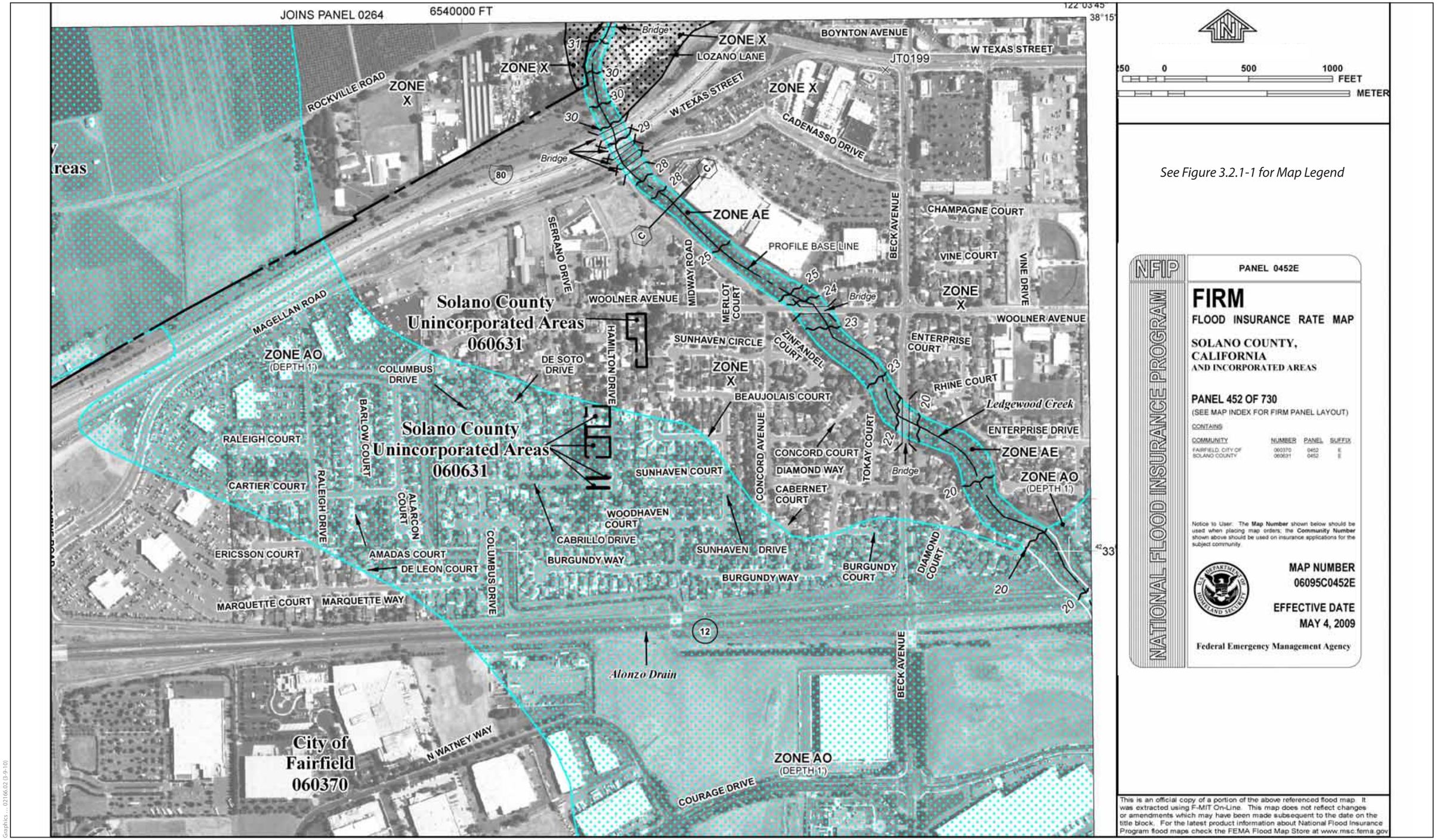


Figure 3.2.1-6
100-Year Floodplains

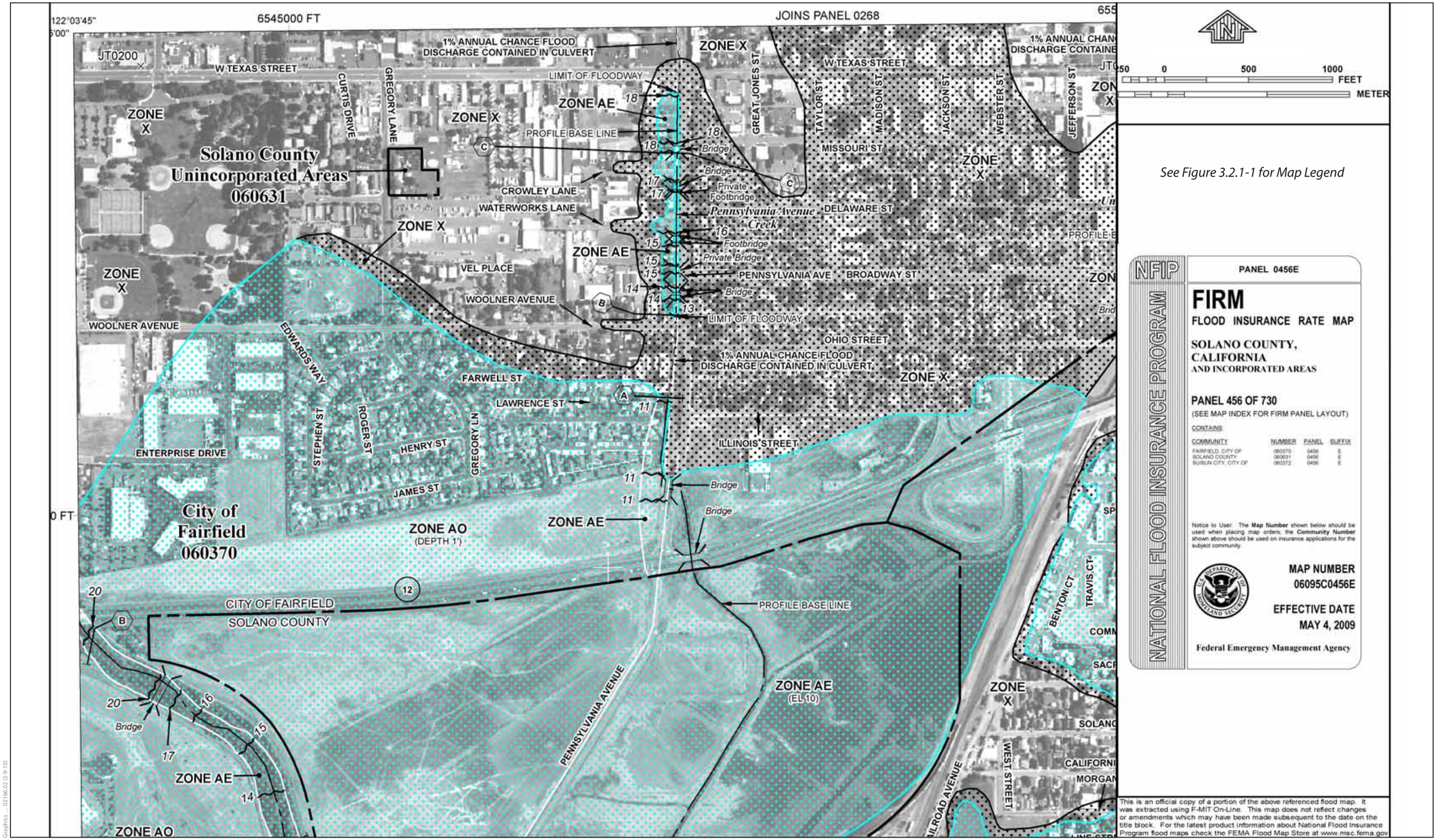


Figure 3.2.1-7
100-Year Floodplains

3.2.2 Water Quality and Stormwater Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, the Federal Water Pollution Control Act was amended, making the discharge of pollutants to the waters of the United States from any point source unlawful, unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The Federal Water Pollution Control Act was subsequently amended in 1977, and was renamed the Clean Water Act (CWA). The CWA, as amended in 1987, directed that storm water discharges are point source discharges. The 1987 CWA amendment established a framework for regulating municipal and industrial storm water discharges under the NDPES program. Important CWA sections are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal project that proposes an activity, which may result in a discharge to waters of the United States to obtain certification from the State that the discharge will comply with other provisions of the act.
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) into waters of the United States. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) establishes addresses storm water and non-storm water discharges.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (ACOE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

State Requirements: Porter-Cologne Water Quality Control Act (California Water Code)

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives) required by the CWA, and regulating discharges to ensure that the objectives are met. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards

cannot be met through point source controls, the CWA requires establishing Total Maximum Daily Loads (TMDLs). TMDLs establish allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

NPDES Program

The SWRCB adopted Caltrans Statewide NPDES Permit (Order No. 99-06-DWQ) on July 15, 1999. This permit covers all Department rights-of-way, properties, facilities, and activities in the State. NPDES permits establish a 5-year permitting time frame. NPDES permit requirements remain active until a new permit has been adopted.

In compliance with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices (BMPs). The proposed Project will be programmed to follow the guidelines and procedures outlined in the 2003 SWMP to address storm water runoff or any subsequent SWMP version draft and approved.

Municipal Separate Storm Sewer System Program

The U.S. EPA defines a Municipal Separate Storm Sewer System (MS4) as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, country, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water. As part of the NPDES program, U.S. EPA initiated a program requiring that entities having MS4s apply to their local RWQCBs for storm water discharge permits. The program proceeded through two phases. Under Phase I, the program initiated permit requirements for designated municipalities with populations of 100,000 or greater. Phase II expanded the program to municipalities with populations less than 100,000.

Construction Activity Permitting

Section H.2, Construction Program Management of the Department's NPDES permit states: "The Construction Management Program shall be in compliance with requirement of the NPDES General Permit for Construction Activities (Construction General Permit)." Construction General Permit (Order No. 2009-009-DWQ, adopted on September 2, 2009, will become effective on July 1, 2010. The permit will regulate storm water discharges from construction sites that result in a DSA of 1 acre or greater, and/or are part of a common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit.

The newly adopted permit separates projects into Risk Levels 1–3. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring. Risk levels are determined during the design phase and are based on potential erosion and transport to receiving waters. Applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP).

Caltrans Statewide NPDES Permit requires the Department to submit a Notice of Construction (NOC) to the RWCB to obtain coverage under the Construction General Permit. Upon project completion, a Notice of Completion of Construction (NOCC) is required to suspend coverage. This process will continue to apply to Department projects until a new Caltrans Statewide NPDES Permit is adopted by the SWRCB. An NOC or equivalent form will be submitted to the RWQCB at least 30 days prior to construction if the associated DSA is 1 acre or more. In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is used for projects with DSA less than 1 acre.

During the construction phase, compliance with the permit and the Department's Standard Special Conditions requires appropriate selection and deployment of both structural and non-structural BMPs. These BMPs must achieve performance standards of Best Available Technology economically achievable/Best Conventional Pollutant Control Technology (BAT/BCT) to reduce or eliminate storm water pollution.

Affected Environment

The following discussion is based on information taken from the *I-80/I-680/SR-12 Interchange Project, Stormwater Data Report (*SWDR) and *I-80/I-680/SR-12 Interchange Project, Water Quality Report* prepared for the proposed project in 2010.

The project area is within the watersheds of Jameson Creek, Green Valley Creek, Dan Wilson Creek, Suisun Creek, American Canyon Creek, Pennsylvania Avenue Creek, Raines Drain, Alonzo Drain, and Ledgewood Creek. The general topography of the land is gradually sloping to the south towards Suisun Bay, 15 miles downstream. These creeks and drainages cross the project area and discharge to the Suisun Marsh wetlands, which are between 1 and 2 miles downstream. The proposed project is located in the Suisun-Fairfield Valley groundwater basin (basin 2-3). The depth to groundwater ranges from three to 20 feet as reported in the as-built Log of Test Borings from 1950, 1960, and 1970.

The *Water Quality Control Plan for the San Francisco Bay Basin* (basin plan) establishes beneficial uses for waterways and water bodies within the region. Existing beneficial uses for Suisun Creek include freshwater supply, areas of special biological significance, cold freshwater habitat, fish migration, water contact recreation (potential), noncontact water recreation (potential), fish spawning, warm freshwater habitat, and wildlife habitat (San Francisco Bay Regional Water Quality Control Board 2007). Ledgewood Creek is the only other water body with defined beneficial uses in the basin plan. The beneficial uses for Ledgewood Creek are the same as Suisun Creek, with the exception that both contact and noncontact water recreation beneficial uses are existing as opposed to potential (San Francisco Bay Regional Water Quality Control Board 2007).

Section 303(d) of the 1972 CWA states that territories and authorized tribes are required to develop a list of water quality–limited segments that do not meet water quality standards, even after point sources of pollution have the minimum required levels of pollution control technology. The water bodies to which the proposed project discharges are not listed on the EPA's 303(d) List of Water Quality Limited Segments.

Of the named water bodies within the project vicinity, the San Francisco Bay RWQCB lists only the Suisun Marsh wetlands as impaired. Specifically, metal concentrations such as arsenic, cadmium, chromium, copper, lead, nickel, and zinc from urban runoff and storm sewers exceed the targeted design total maximum daily loads (TMDLs). However, the proposed project will not directly drain into the Suisun Marsh and these constituents have low TMDL priority. Farther downstream, the Suisun Bay and Carquinez Strait also contain several CWA Section 303(d)–listed pollutants (organic compounds, polychlorinated biphenyls [PCBs], mercury, selenium, general particulates, dissolved metals, nutrients, and salinity). A 2008 Draft List for TMDLs was adopted by the San Francisco Bay RWCQB in February 2009. When finalized these TMDLs will be required control targets for the project. As construction phases occur, the current TMDL requirements should be identified and met, in addition to consultation with the San Francisco Bay RWCQB.

Based on the highway stormwater runoff data collected by the Department's Storm Water Research and Monitoring Program, pollutants that are expected to be found in runoff from the proposed action include conventional constituents (biochemical oxygen demand [BOD], calcium carbonate [$CaCO_3$], chemical oxygen demand [COD], total dissolved solids [TDS], total organic carbon [TOC], total suspended solids [TSS] and total volatile suspended solids [TVSS], etc.) hydrocarbons, metals, microbial agents, nutrients, volatile organics, semi-volatile organics, pesticides, and herbicides. Pollutants are usually deposited on the roadway as a result of fuel combustion processes, lubrication system losses, tire and brake wear, transportation load losses, paint from infrastructure, and atmospheric fallout. Constituent testing for another project in the area (the I-80 HOV widening project) revealed ADL soils are present within the project's limits. Sources of specific pollutants are outlined in Table 3.2.2-1 below.

Table 3.2.2-1. Known Roadway Pollutants

Constituents	Primary Sources
Particulates	Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application, sediments
Lead	Auto exhaust, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout
Zinc	Tire wear, motor oil, grease
Iron	Auto body rust, steel highway structures, moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicide and insecticide application
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Bromide	Exhaust
Cyanide	Anticake compound used to keep deicing salt granular

Constituents	Primary Sources
Sodium, Calcium	Deicing salts, grease
Chloride	Deicing salts
Sulphate	Roadway bed, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt leachate
PCBs, Pesticides	Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires
Pathogenic bacteria	Soil litter, bird droppings, trucks hauling livestock/stockyard waste
Rubber	Tire wear
Asbestos[a]	Clutch and brake lining wear

Source: Federal Highway Administration 1996.
[a] No mineral asbestos has been identified in runoff; however some breakdown products of asbestos have been measured.

Soils information for the project area has been obtained from the related project geotechnical reports and the U.S. Department of Agriculture, National Resource Conservation Service. The soils within the project limits are as described in Table 3.2.2-2 below.

Table 3.2.2-2. Soils in the Project Area

Map Unit Name	Map Unit Symbol	Hydrological Soil Group
Sycamore silty clay loam	(Sr)	D
Yolo Silty clay loam	(Ys)	D
Sycamore silty clay loam	(Sr)	D
Sycamore silty clay loam drained	(Ss)	D
Sycamore silty clay loam	(Sr)	D
Antioch-San Ysidro Complex, 0-2 percent slopes	(AoA)	
Brentwood clay loam, 0-2 percent slopes	(BrA)	D
Antioch-San Ysidro Complex, thick surface, 0-2 percent slopes	(AsA)	
Pescadero clay	(Pe)	D
Clear Lake clay, 0-2 percent slopes	(CeA)	D

Hydrological Group D soils have the highest runoff potential, very low infiltration rates when thoroughly wetted, and may be subject to erosion by water.

Environmental Consequences

Increased Runoff and Associated Operational Water Quality Issues

Implementation of both alternatives would involve significant mainline and interchange improvements. The general drainage design is to collect and convey pavement runoff while not conveying runoff within the travelled way. Once collected from the pavement or graded areas, runoff will be conveyed in non-erosive culverts, ditches, or swales to an existing waterway that currently receives highway runoff. The project alternatives would increase the amount of stormwater runoff within the state right-of-way by increasing the total impervious surface. The approximate acreage of impervious surface for each of the project alternatives is summarized in Table 3.2.2-3 below.

Table 3.2.2-3. Acreage of Impervious Surfaces

Alternative	New Impervious	Reworked
B	128.2 acres	251.7 acres
C	123.2 acres	219.9 acres
B-1	27.8 acres	71.4 acres
C-1	51.9 acres	90.1 acres

Increased runoff and operation water quality issues are integral to projects with new or reconstructed impervious surfaces. Increased impervious surfaces result in increased stormwater runoff which could lead to additional pollutants entering waterways. The project alternatives will incorporate approved permanent stormwater treatment BMPs to minimize potential water quality impacts. The exact amount of new or reconstructed pavement tributary to each waterway for each project alternative has not been determined at this phase of the project.

Effects on the receiving water bodies would be the result of capacity changes to the hydraulic features of the drainage system. To manage the stormwater runoff the on-site drainage facilities would be reconfigured within the proposed right-of-way as part of the project design. Additionally, stable cavities discussed in Section 3.2.1 would reduce the potential of flooding and, therefore, the potential for resulting water quality issues. Therefore, the associated watersheds would be only minimally affected from the additional stormwater runoff from the increase in impervious surface.

Stable cavities are meant to be spaces, vaults, or other below ground storage devices, for storm runoff intended to mitigate for lost floodplain storage. The cavities will not impact the groundwater because they are intended to be placed at or above the existing ground elevation within the new fill for the westbound truck sales.

Both project alternatives have very similar water quality issues. The magnitude of the issues is very similar with both alternatives covering an area of approximately 350 acres of new or reworked pavement plus over 100 acres of graded surfaces. The footprint for both of these alternatives is substantially the same with no conditions or issues unique to either alternative.

Likewise, under the fundable first phase of either alternative, there would also be increased runoff and associated water quality issues. However the magnitude of runoff impacts for the fundable first phases of both alternatives are significantly reduced due to the smaller project footprints (100 acres of total new or reworked pavement for Alternative B, Phase 1, and 140 acres of total new or reworked pavement for Alternative C, Phase 1) compared to the full build alternatives.

All of the waterways in the project area are included in three hydrologic sub-areas 207.21, 207.22 and 207.23 as defined by the State Water Board. None of these hydrologic sub-areas currently have defined TMDL listings. (A draft TMDL listing dated 2008, not yet approved, lists Suisun Creek with dissolved oxygen and temperature, and Ledgewood Creek with diazinon.) At the downstream end of these three watersheds is the Suisun Marsh Wetlands for which there are Targeted Design Constituents of metals and nutrients. The proposed permanent treatment BMPs such as bioswales, biostrips, and infiltration devices will be effective for metals and nutrient uptake, minimizing the project impacts of these constituents (and others) to the receiving waters

and the Suisun Marsh Wetlands. Treatment BMPs are included in all alternative layouts to manage all possible pavement runoff.

Discussions of other water quality issues are included in Section 3.2.1 (Hydrology and Floodplain), Section 3.2.5 (Hazardous Waste/Material), Section 3.3.2 (Wetlands and other Waters), the discussions of fish species in Section 3.3.4 (Animal Species) and Section 3.3.5 (Threatened and Endangered Species) and other sections within this document. Refer to Chapter 4, CEQA Evaluation, for discussion of non-jurisdictional perennial marsh, and non-jurisdictional seasonal wetland.

There would be no increase in pavement under the No-Build Alternative and therefore no potential to increase runoff and associated water quality issues.

According to the Department's NPDES permit and the Construction General Permit, best management practices (BMPs) will be incorporated into the proposed project to reduce the discharge of pollutants during construction and operation to the maximum extent practicable. These BMPs fall into three categories: temporary construction site BMPs, design pollution prevention BMPs, and permanent treatment BMPs. Temporary construction site BMPs are discussed below under construction impacts.

Permanent Design Pollution Prevention BMPs

Slope/Surface Protection Systems
To minimize erosion from any of the new slopes, mitigating design features have been considered, including minimizing cut-and-fill slopes, shaping slopes to reduce concentrated flow, and collecting concentrated flows in stabilized channels. All graded slopes, either cut or fill, will be constructed with proper erosion control and permanent plantings. Except at bridges, no retaining walls are anticipated.

Certain areas of the project alternatives would be hardscaped as required for safety (ramp gores), maintenance (pullout areas), and slope stability (under bridges).

Construction of the project alternatives would remove moderate amounts of vegetation within the project right-of-way. In many locations, the project alternatives would replace existing unpaved areas with pavement or impervious structures. At all areas where new slopes are constructed, proper vegetation will be planted, monitored, and maintained to establish permanent cover. Approval of the erosion control plan by the Department's Division of Design, Landscape Architecture will occur during final design.

To minimize erosion potential, slopes will be rounded and or shaped to reduce concentrated flows, concentrated flows will be collected in stabilized drains or channels, slopes will be 1:4 or flatter and those greater than 1:2 will have an erosion control plan approved by the district landscape architect according to the project Geotechnical Design Report.

Given the characteristics of the in-situ soils, there are some slope stability concerns on this site. Slope and surface protection systems will be incorporated per Checklist DPP-1, Part 3. To minimize erosion from any of the slopes the methods being considered include:

- Minimizing cut and fill slopes,
- Shaping slopes to reduce concentrated flow, and
- Collecting concentrated flows in stabilized channels.

Concentrated Flow Conveyance Systems

Concentrated flow conveyance systems are used to collect, transport, convey, and/or dissipate stormwater flows. A variety of concentrated flow conveyance devices exist along the length of the proposed project. Along most of the existing reach of the highway, runoff sheet-flows off of the pavement, crossing several feet of vegetated strips before entering a swale oriented longitudinally to the right-of-way. The existing concentrated flow conveyance devices include lined and unlined ditches and swales, drainage inlets and culverts, asphalt concrete (AC) dikes and overside drains, flared end sections, rock slope protection (RSP) pads, flow energy dissipation devices, and other approved drainage design devices. For the proposed project, the planned drainage pattern will replicate as much as possible the existing runoff pattern. The drainage improvements will direct pavement runoff to sheet flow to the outside edge of the new pavement where improved drainage devices will collect and convey the project runoff.

Preservation of Existing Vegetation

One goal of the project alternatives and construction activities is to preserve areas of existing vegetation wherever possible. Preserving existing vegetation is essential in the protection of water quality due to the elevated chances of cleared areas increasing erosion and sedimentation to waterways. At all areas where existing vegetation (on land to remain) is affected, or where new slopes are constructed, proper vegetation will be placed, monitored, and maintained to establish permanent cover. For those areas on the outside of the highway, pavement will be minimized in favor of retaining existing vegetative cover. In many locations the proposed project will replace existing unpaved areas with impervious surface. Approval of the erosion control plan by a landscape architecture and maintenance plan will occur in final design.

Bridge construction will take place at all seven water crossings that are ESAs. ESAs exist at other project locations as well and are potentially affected by the proposed project.

Permanent Treatment BMPs

Because the project alternatives are considered a major reconstruction project, they are not exempt from incorporating treatment BMPs. Treatment BMPs are permanent devices and facilities that will store and treat increased stormwater runoff expected with operation of the project alternatives in an effort to preserve water quality and reduce the potential for flooding. The Department's approved treatment BMPs are biofiltration swales, infiltration basins, detention basins, traction sand traps, dry weather flow diversions, media filters, gross solids removal devices (GSRDs), multi-chamber treatment trains, and wet basins. Those most feasible in the Bay Area are biofiltration swales, infiltration basins, detention basins, media filters, multi-chamber treatment trains, and wet basins.

Because of potential high groundwater within the project area, infiltration and detention basins would not be feasible. As such, biofiltration swales and biostrips have been investigated as possible alternatives. Both treatment BMPs treat the same types of constituents: TSS, particulate metals, and litter. Both biofiltration swales and strips are viable cost-effective treatment BMPs.

Because of the limited permeability of the soils and potentially high groundwater, infiltration devices and other filters allowing percolation of stormwater back into the ground are not a consideration. However, engineered biofiltration strips and swales are proposed. Biofiltration strips and swales are effective at trapping litter, TSS, and particulate metals. Where possible, it is recommended that the existing vegetation be evaluated for use as effective biostrip cover, or the proposed project should establish the proper vegetative cover and/or swale dimensions at each treatment location.

Locations within the project limits (primarily in the area between the toe of fill slopes and the right-of-way) are available to be used for permanent treatment BMPs. Plans developed at a later stage in design will be more specific in their location, size, vegetative characteristics, and performance measures.

Biofiltration Swales/Strips

Due to the flat topography of the project area, biofiltration would be the primary treatment option for stormwater runoff. Preliminary plans provided in the SWDR identify all potential BMP locations. Exact locations will be determined during final project design. Biostrips would be designed to provide the maximum water quality treatment time of stormwater. The tributary area to the biostrips is the length of pavement from the highway median to the outside edge of pavement. Bioswales would be designed according to the Department's guidance documents, to ensure maximum treatment of water. Additional right-of-way for the project improvements and treatment BMPs has been identified and is included on the project layout sheets included in the SWDR.

Dry Weather Diversion

Dry weather flow diversion BMPs were dropped from further considered for the proposed project because there is no dry weather flow.

Infiltration Devices

Infiltration device BMPs are not feasible for the project alternatives for the following reasons:

- Through much of the project area, the groundwater is too high.
- Most of the soils are Hydraulic Soil Group C or D, limiting the usefulness of infiltration.
- A gravity outlet cannot be created because of the flat terrain.
- There is no room within the right-of-way along most of the project area.
- Areas beyond the right-of-way are mostly prime farmland under cultivation.

Detention Devices

Detention basin BMPs are not feasible for the project alternatives for the following three reasons:

- There is not enough hydraulic head available for proper design.
- There are several locations where the groundwater is high.
- Along most of the project area, there are significant constraints on acquiring new right-of-way, with areas beyond the existing right-of-way consisting mostly of prime farmland under cultivation.

Detention as a treatment device may have negative hydraulic impacts because the project alternatives are located far downstream in the watershed, and detaining the peak runoff from the tributary shed may increase the peak runoff from the entire shed. If hydromodification control is a requirement of the approved project alternative, then detention facilities can be designed for that mitigation, but they would not specifically function as treatment for the reasons stated.

Gross Solids Removal Devices

Litter is not on the 303(d) list or identified as a TMDL for the water bodies near the project area; therefore, GSRDs are not incorporated.

Traction Sand Traps

Traction sand trap BMPs are not appropriate for the project alternatives because traction sand is not applied within the project limits.

Media Filters

Media filter BMPs are not feasible for the project alternatives for the primary reason that the seasonally high groundwater table is likely to be too close to the invert of the filter. Depending on the specific location within the project limits, there are two other reasons that media filters are not an appropriate consideration: 1) there is not enough hydraulic head available for proper design, and 2) along most of the project area, there is no room within the right-of-way, and areas beyond the right-of-way are completely developed.

Multi-Chambered Treatment Trains

Multi-chambered treatment train BMPs are used to treat stormwater in critical source areas. Critical source areas are more common in urbanized environments and are established to facilitate the treatment stormwater runoff in particularly vulnerable or polluted areas. The project alternatives are not considered to be located in a critical source area.

Wet Basins

Wet basin BMPs are not feasible for the project alternatives for the following reasons:

- There is not enough hydraulic head available for proper design.
- There are several locations where the groundwater is high along much of the project area.
- There is limited ability to purchase additional right-of-way, and areas beyond the right-of-way are largely developed.

- Along most of the project area, there is no permanent source of water available to maintain a permanent wet pool.

Maintenance BMPs (Drain Inlet Stenciling)
Nearly all the improvements under both alternatives are located within the highway right-of-way. However, no drain inlet stenciling is necessary for these inlets. At locations where ramp termini meet local streets where pedestrian access is possible, inlet stenciling will be placed on inlets. This stenciling will inform the public that no dumping is allowed and will help protect water quality.

Hydromodification Control
All state or local transportation projects and some non-transportation projects must incorporate hydromodification measures to ensure that hydraulics and flooding are not affected by the new construction.

Potential Water Quality, Erosion and Sediment Control Issues during Construction

Disturbed soil could cause potential erosion and sediment control issues during the construction of all build alternatives. During the storm season, disturbed soil is exposed and can erode into rills and transport sediment to waterways.

Construction of the project alternatives would involve the use of construction equipment and associated fuels, solvents, lubricants, and other pollutants. These substances may be released into the environment during construction and could result in adverse effects to water quality.

Proper erosion and sediment control measures would be effective because of the relatively flat terrain and low grading heights. Preparing and implementing a SWPPP and implementing best management practices would reduce the severity of this effect.

Under the fundable first phases, there would also be potential water quality, erosion, and sediment control issues, however, to a lesser extent because the project footprints are not as large.

The follow construction site BMPs will be in place during construction.

Construction Site BMPs
Construction site BMPs would be applied during construction activities to reduce the pollutants in the stormwater discharges throughout construction. Temporary construction BMPs included in the Department's *Storm Water Quality Handbook* will be included in the SWPPP. Such BMPs may include the following:

- Hydraulic mulch.
- Hydroseeding.
- Soil binders.
- Silt fence.

- Sediment traps.
- Sand bags.
- Fiber rolls.
- Straw bale barrier.

One critical construction activity, dewatering, may be necessary for the proposed project because of the high groundwater levels. Early discussion will be initiated regarding the handling and disposal of this water during the design phase. A project-specific Low Threat Discharge and Dewatering NPDES permit that would contain Waste Discharge Requirements to ensure that the groundwater meets or exceeds water quality standards prior to discharge may be required from the RWQCB if substantial dewatering is to be done.

It is anticipated that dewatering will need to occur at all bridge locations involved in the chosen project alternative. A Notice of Intent shall be submitted and a NPDES Low Threat Discharge and Dewatering Permit obtained from the San Francisco Bay RWQCB prior to any dewatering.

At this phase of the project development process, no specific coordination with the Department's Division of Construction has occurred for the stormwater management issues.

Potential to Require Dewatering during Construction

According to the SWDR for the project, groundwater levels in the project area range from three feet to 18 feet below ground surface. As such, groundwater may be encountered during structure excavations. Proper handling, treatment, and discharge of groundwater would be performed as necessary. It is anticipated that dewatering of groundwater would need to be done at all bridge locations involved in the chosen project alternative. Groundwater in the general area is used for local domestic and agricultural use. Quality is generally good with typically minimal treatment.

There would be no construction under the No-Build Alternative and therefore no potential to require dewatering.

Avoidance, Minimization, and/or Mitigation Measures

With implementation of BMPs no avoidance, minimization or mitigation measures would be necessary.

3.2.3 Geology/Soils/Seismic/Topography

Regulatory Setting

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

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

State Standards

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Act (PRC 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are *sufficiently active* and *well-defined*. A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for the purposes of the act as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the State is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in Seismic Hazard Zones until appropriate site-specific geologic or geotechnical investigations have been carried out, and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

The State of California's minimum standards for structural design and construction are given in the California Building Standards Code (CBSC) (24 CCR). The CBSC is based on the Uniform Building Code (UBC) (International Code Council 1997), which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC requires that "classification of the soil at each building site will be determined when required by the building official" and that "the classification will be based on observation and any necessary test of the materials disclosed by borings or excavations." In addition, the CBSC states that "the soil classification and design-bearing capacity will be shown on the (building) plans, unless the foundation conforms to specified requirements." The CBSC provides standards for various aspects of construction, including (i.e., not limited to) excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. New structures constructed as part of the project would be required to comply with all applicable provisions of the CBSC.

California Department of Transportation Standards

In addition to the CBSC, the Department's highway and bridge facilities are subject to numerous standards, including *Caltrans Guidelines for Structures Foundations Report, Version 2* (California Department of Transportation 2006a); *Caltrans Seismic Design Criteria* (California Department of Transportation 2006b); *Caltrans Highway Design Manual (Topic 829)* (California Department of Transportation 2008); *Caltrans Bridge Design Specifications (Section 8)*(California Department of Transportation 2004); and *Caltrans Standard Specifications* (California Department of Transportation 2006c). These standards were developed to ensure that all Department facilities are constructed and maintained to the highest safety standards.

Landslide Hazard Identification Program

The Landslide Hazard Identification Program requires the State Geologist to prepare maps of landslide hazards within urbanizing areas. According to Public Resources Code Section 2687(a), public agencies are encouraged to use these maps for land use planning and for decisions regarding building, grading, and development permits.

Local Standards

Geotechnical Investigations

Local jurisdictions typically regulate construction activities through a multistage permitting process that may require the preparation of a site-specific geotechnical investigation. The purpose of a site-specific geotechnical investigation is to provide a geologic basis for the development of appropriate construction design. Geotechnical investigations typically assess bedrock and Quaternary geology, geologic structure, soils, and the previous history of excavation and fill placement.

Regulation HS.I-22 of the Public Health and Safety Element of the Solano County General Plan (Solano County 2008) requires geotechnical evaluations and recommendations before new development occurs in areas with geologic, soils, or seismic hazards (see the section titled "Solano County General Plan").

Solano County General Plan

Goals, policies, and implementation programs contained in the Public Health and Safety Element of the Solano County General Plan (Solano County 2008) that are applicable to the proposed project are as follows:

> **HS.G-1:** Minimize the potential for loss of life and property resulting from natural or human-caused hazards.
>
> **SEISMIC SAFETY AND LAND STABILITY**
>
> **Policies**
>
> **HS.P-12:** Require new development proposals in moderate or high seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.
>
> **HS.P-13:** Review and limit the location and intensity of development and placement of infrastructure in identified earthquake fault zones.
>
> **HS.P-14:** Identify and minimize potential hazards to life and property caused by fault displacement and its impact on facilities that attract large numbers of people, are open to the general public, or provide essential community services and that are located within identified earthquake fault zones.
>
> **HS.P-15:** Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.
>
> **HS.P-16:** Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.
>
> **HS.P-17:** Restrict the crossing of ground failure areas by new public and private transmission facilities, including power and water distribution lines, sewer lines, and gas and oil transmission lines.
>
> **HS.P-18:** Make information about soils with a high shrink-swell potential readily available. Require proper foundation designs in these areas.
>
> **HS.P-19:** Minimize development in areas with high landslide susceptibility.

Implementation Programs

Regulations

HS.I-19: Adopt and enforce the most current versions of the International Building Codes, as modified by the California Building Standards Commission.

HS.I-21: Require geotechnical investigation and recommendations for buildings meant for public occupancy within geologic hazard areas. A state certified Engineering Geologist shall produce a report examining development issues that considers:

- soil, slope, or other geologic hazard conditions found on site;
- potential off-site development impacts, such as increased runoff and/or slope instability; and
- requirements of any regulations concerning the hazard area.

HS.I-22: Require geotechnical evaluation and recommendations before new development in moderate or higher-hazard areas. Such geotechnical evaluation shall analyze the potential hazards from:

- landslides
- liquefaction
- expansive soils
- steep slopes
- erosion
- subsidence
- Alquist-Priolo Earthquake Fault Zones or other identified fault zones
- tsunamis
- seiches

Require new development to incorporate project features that avoid or minimize the identified hazards. Costs related to providing or confirming required geotechnical reports will be borne by the applicant.

Affected Environment

The *Assessment of Fault Rupture and Analysis of Displacement Hazard, Solano Transportation Authority Interchange Project, Cordelia, California (I-80/I-680/SR 12 Interchange)* (Fault Rupture Assessment) and the *Environmental Geotechnical Memorandum, I-80/I-680/SR 12 Interchange Project, Solano County, California, 04-Sol-12, 680, 80 PM Var.* (Environmental Geotechnical Memorandum) were prepared for the project alternatives in 2009. All suggested and applicable measures have been incorporated into the section below. However, as mentioned in both of these studies, additional site-specific study will be required during latter phases of project development. These future studies are also mentioned in the section below.

The project area is located in the Coast Ranges geomorphic province (California Geological Survey 2002). The analysis presented herein focuses on the Quaternary sediments and geologic

hazards pertaining to the project area, except for the ground shaking analysis. This analysis requires a broader view of the region due to the potential for other primary impacts should fault rupture or displacement occur in outlying areas.

Geology and Topography of the Project Area

Surface Geology

Because of the geographical extent of the project alternatives, the project area is divided into three segments: western, central, and eastern. The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/Suisun Valley Road interchange. The central segment begins at the I-80/Suisun Valley Road interchange and ends at the SR 12E/Chadbourne Road interchange. The eastern segment begins at the SR 12E/Chadbourne Road interchange and ends at the Fairfield Overhead where SR 12E crosses over the UPRR tracks west of Suisun City.

The Environmental Geotechnical Memorandum indicates that the project area is underlain by alluvial and bedrock units. Bedrock consists of sedimentary rock formations, metamorphic rocks, and volcanic rock units that extend across Solano County from the marshlands on the east to the foothills on the west. Geologic units and structures in the vicinity of the project area have been mapped by several geologists, including Wagner and Bortugno (1982), Manson (1998), Bezore et al. (1988), and Graymer et al. (2002).[1] Based on the published geologic maps, the central and eastern portions of the project area are underlain by late Pleistocene to Holocene age alluvial fan deposits (Qf) and Holocene fan deposits (Qhf), which are the most extensive Quaternary age units in the project area. The alluvial fan deposits consist of sediments deposited by streams that originate from mountain canyons and flow onto alluvial valley floors or alluvial plains in the form of debris flows, hyperconcentrated mudflows, or stream flows. The particle size of these deposits typically decreases downslope from the fan apex. In some places, Holocene fan deposits (Qhf) may be only a thin veneer over late Pleistocene to Holocene fan deposits (Qf). Holocene-age natural levee deposits (Qhl) were formed by streams that overtopped their banks and deposited sediment adjacent to their channels.

The southwestern (western segment) portion of the project area is located on hillside terrain underlain by bedrock units that consist primarily of sedimentary and volcanic formations that have been folded and faulted as well as having been influenced by local landslides. The Eocene-age Markley Formation (Tmk) consists of micaceous marine sandstones. The overlying Pleistocene-age Sonoma volcanics contain extrusive basalt and ryholite flows, agglomerates and tuffs, ash-flow tuffs, and andesitic-flow breccias and agglomerates. Potassium/argon radiometric dating of the Sonoma volcanics exposed locally near St. Helena indicates an age of 2.9 million years.

Figure 3.2.3-1 depicts lithologic descriptions, as shown in the Environmental Geotechnical Memorandum for the project alternatives. The main geologic units, as described by Bezore et.al. (1998), mapped within the project area include:

[1] Relevant portions of these published maps are shown on Plates 4, 5, and 6 of the Environmental Geotechnical Memorandum.

- Qhf—Fan deposits (Holocene): Moderately sorted to poorly sorted and moderately bedded to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains.
- Qhl—Natural levee deposits (Holocene): Moderately sorted to well-sorted sand with some silt and clay deposited by streams that overtop their banks during flooding.
- Qf—Fan deposits (late Pleistocene to Holocene): Poorly sorted, moderately bedded to poorly bedded sand, gravel, silt, and clay deposited in gently sloping alluvial fans. These deposits are about 10% denser and have 50% greater penetration resistance than unit Qhf.
- Qls—Landslide deposits (Holocene and Pleistocene): Chaotic deposits of sand, silt, clay, angular boulders, and blocks of bedrock up to hundreds of feet long deposited by gravity-driven skidding and flow.
- Tsv—Sonoma volcanics, undivided (Pleistocene): Basalt to rhyolite flows, agglomerates, and tuffs.
- Tst—Ash-flow tuff (Pliocene): Pumicitic, locally welded, with agglomeritic tuff.
- Tsa—Andesites (Pliocene): Andesitic flows, breccias, and agglomerates.
- Tss—Sandstone and volcanic gravel (Pliocene): Poorly consolidated, tuffaceous sandstone with lenses of volcanic conglomerate.
- Tmk—Markley formation (Eocene): Gray to yellow-brown, micaceous marine arkosic sandstone. Massive to well-bedded; contains abundant muscovite.
- Ku—Undivided sandstone, siltstone, and shale of the Great Valley Complex (late Cretaceous): Interbedded carbonaceous−biotite wacke, white−mica−carbonaceous sandstone, greenish−gray mudstone and shale, laminated fine−grained sandstone and gray shale, carbonaceous siltstone, black shale, and fine−grained mica wacke.

Subsurface Geology

According to published geologic maps and as reported in the project's Environmental Geotechnical Memorandum, the geologic units beneath specific portions of the project area are those shown in Table 3.2.3-1.

Table 3.2.3-1. Subsurface Geologic Units for the Project Area[a]

Approximate Location and Segment	Geology
I-80/SR 12W interchange and its vicinity (eastern and central segments)	Fan deposits (Qf) (late Pleistocene to Holocene); alluvium, undivided (Qa) (late Pleistocene to Holocene); artificial fill (af); Markley formation (Tmk) (Eocene); andesites (Tsa) (Pliocene); Sonoma volcanics, undivided (Tsv) (Plioecene)
Future I-680/Red Top Road interchange and its vicinity (western segment)	Fan deposits (Qf) (late Pleistocene to Holocene); fan deposits (Qhf) (Holocene); some modern stream channel deposits (Qhc) (Holocene)
Green Valley Road and its vicinity (western segment)	Fan deposits (Qf) (late Pleistocene to Holocene); fan deposits (Qhf) (Holocene); ash-flow tuff (Tst) (Pliocene); some modern stream channel deposits (Qhc) (Holocene)
Suisun Valley Road and its vicinity (western and central segments)	Fan deposits (Qhf) (Holocene); ash-flow tuff (Tst) (Pliocene)
I-80/SR 12E interchange and SR 12E (eastern segment)	Mainly alluvial fan deposits (Qhf) (Holocene); natural levee deposits (Qhl) (Holocene)

[a] Adapted from the first table shown on page 4 of the project's Environmental Geotechnical Memorandum.

For more information on subsurface geology and structure, including a detailed explanation of bedding planes, folds, and faults, refer to the Environmental Geotechnical Memorandum prepared for the proposed project.

Topography

Review of the 1980 United States Geologic Survey (USGS) map for the Fairfield South and Cordelia, California quadrangles indicates that the project area is located at approximate elevations between more than ten and more than 250 feet above mean sea level. The project area generally slopes to the east, toward wetlands and sloughs associated with Suisun Bay. The general terrain of the project area consists of hills on the north and northwest sides near Red Top Road and relatively level areas (Suisun Valley and Green Valley) in the central and eastern segment of the project area.

Seismicity

The project area is located in a region of California characterized by locally high historical seismic activity and is within UBC Seismic Hazard Zone 4. A number of active faults and fault zones are present in and adjacent to the project area. Consequently, the project area is subject to surface fault rupture and ground shaking (primary hazards), and seismically induced ground failure (a secondary hazard).

Fault Rupture Hazard

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) is to regulate development near active faults to mitigate the hazard of surface rupture. Faults in an Alquist-Priolo Earthquake Fault Zone are active faults. As defined under the Alquist-Priolo Act, an active fault is one that has had surface displacement within Holocene time.

The dominant tectonic features in the project area are the Green Valley fault[2, 3] and the Cordelia fault zone, both of which are zoned by the State of California pursuant to the Alquist-Priolo Earthquake Fault Zoning Act (Hart and Bryant 1997), and are considered a Type A (highest risk) seismic source by the UBC and California Building Codes (International Conference of Building Officials 1998[4]).

The Green Valley fault extends from Suisun Bay northwest to Wooden Valley, traversing the rapidly developing I-680 corridor in central and eastern Solano County, near Fairfield. Along its length, the Green Valley fault intersects several major transportation routes, rail lines, power transmission lines, pipelines, and levees.

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[2] The Green Valley fault is often grouped together with the Concord fault and referred to as the Concord-Green Valley fault system. Part of the eastern San Andreas fault system, it is composed of at least two major fault segments, from south to north: the Concord fault (10–15 miles long) and the Green Valley fault (18–27 miles long).

[3] The Green Valley fault in the vicinity of the project area consists of four distinct fault strands (Fault Rupture Assessment; Environmental Geotechnical Memorandum).

[4] The 1998 International Conference of Building Officials maps have recently been superseded by an interactive U.S. Geological Survey website (http://gldims.cr.usgs.gov/webapps/cfusion/Sites/qfault/index.cfm) that plays the same role relative to the International Building Code (IBC) and the later (post-1997) versions of the CBSC, which are based on IBC instead of UBC. The older information and classification of these faults is provided herein to stress their high seismic potential.

The Cordelia fault zone, located approximately 5,800 feet east of the Green Valley fault, has a well-defined north-striking surface expression, and may represent a secondary trace of the Green Valley fault, according to the Fault Rupture Assessment. See Plate 7 of the Environmental Geotechnical Memorandum for images of these earthquake fault zones as they relate to the project area. Also see Plate 3 of the Environmental Geotechnical Memorandum for a map of the regional faults surrounding the project area.

Both of the faults are generally located in the western segment of the project area. The Green Valley fault and the Cordelia fault zone cross the project alignment of Alternative B. These faults are within State (Alquist-Priolo) Earthquake Fault Zones. No fault is directly beneath any proposed elevated structures that are proposed for Alternative B or Alternative B, Phase 1.[5,6] However, under Alternative C and Alternative C, Phase 1, several proposed structures are located in the vicinity of the Green Valley fault.

In summary, the potential for surface fault rupture in the vicinity of the project area is generally high.

Ground-Shaking Hazard

The project area is located within UBC Seismic Hazard Zone 4 and is located in a region of California characterized by locally high historical seismic activity. The State of California (Hart and Bryant 1997) and the U.S. Geological Survey (U.S. Geological Survey 2008) recognize various active seismic sources in the project area vicinity. As described above, the risk of surface rupture in the study area is generally high because of its proximity to active faults. Earthquake-induced ground shaking also poses a significant hazard.

The intensity of ground shaking that would occur in the project area as a result of an earthquake is partly related to the size of the earthquake, its distance from the project area, and the response of the geologic materials within the project area. As a rule, the greater the earthquake magnitude and the closer the fault rupture to the site, the greater the intensity of ground shaking. When various earthquake scenarios are considered, ground-shaking intensities will reflect both the effects of strong ground accelerations and the consequences of ground failure.

Estimates of Earthquake Shaking

Based on the seismic hazard map prepared by Mualchin (1996), the peak bedrock acceleration in the project area ranges from 0.5 *g* to 0.6 *g* (where one *g* equals the force of gravity). According to the *Caltrans Guidelines for Structures Foundation Report* (California Department of Transportation 2006a), the value of peak bedrock acceleration (for a specific project site or area) from the seismic hazard map should be verified using the attenuation relation by Sadigh et al.

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[5] The primary rupture zone for the Cordelia fault does not intersect the proposed elevated structure, and thus the risk for surface-fault rupture is considered low. However, to account for uncertainty in the borehole and geophysical data and the spacing between boreholes that led to these conclusions, the proposed structure should be designed to accommodate minor secondary displacement (e.g., tilting, shearing, and settlement) associated with an earthquake on the Cordelia fault, as recommended in the Fault Rupture Assessment. See the section titled "Avoidance, Minimization, and/or Mitigation Measures" for more information.

[6] Several primary active faults directly impact the proposed structures within the Green Valley fault, but Alternative C has more proposed structures in the vicinity of the Green Valley fault compared to Alternative B (Fault Rupture Assessment; Environmental Geotechnical Memorandum).

(1997). Based on the attenuation relation, the controlling fault is the Cordelia fault, and peak bedrock acceleration of 0.6 *g* is anticipated in the project area. Furthermore, based on a probabilistic seismic hazard map that depicts the peak horizontal ground acceleration values exceeded at a 10% probability in 50 years (Cao et al. 2003; California Geological Survey 2003), the probabilistic peak horizontal ground acceleration values in the project area range from 0.5 *g* to 0.6 *g*, thus confirming that the possibility of the project area experiencing strong ground shaking may be considered moderate to high.

Based on existing published data on officially recognized faults, the following faults are considered to have the greatest potential to affect the project area due to both fault rupture and ground shaking: the Cordelia fault, the Green Valley fault, and the Vaca-Kirby Hill–Montezuma Hills faults (these latter faults are considered early Quaternary and therefore "potentially active").[7] Maximum credible earthquake magnitudes for some of the major faults in the vicinity of the project area determined by Mualchin (1996) are summarized in Table 3.2.3-2. Based on the project's Environmental Geotechnical Memorandum, these maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure.

Table 3.2.3-2. Characteristics of Local Faults[a]

Fault/Faults	Maximum Credible Earthquake Magnitude[b]	Distance between Fault/ Faults and Project Area (miles)	Peak Bedrock Acceleration (*g*)[b]	Zoned by State of California
Cordelia	6.5	0	0.6	Yes
Green Valley	6.75	0	0.6	Yes
Vaca-Kirby Hill–Montezuma Hills	6.75	~7	0.6	Yes

[a] Adapted from Table 1 on page 11 of the Environmental Geotechnical Memorandum prepared for the proposed project.
[b] Mualchin 1996.

Accordingly, based on available geological and seismic data, the possibility of the project area experiencing strong ground shaking may be considered moderate to high.

Liquefaction Susceptibility

Liquefaction is a phenomenon in which the strength and stiffness of unconsolidated sediments are reduced by earthquake shaking or other rapid loading. Poorly consolidated, water-saturated fine sands and silts having low plasticity and within 50 feet of the ground surface are typically considered to be the most susceptible to liquefaction. Soils and sediments that are not water saturated and that consist of coarser or finer materials are generally less susceptible. Geologic age also influences the potential for liquefaction. Sediments deposited within the past few thousand years are generally much more susceptible than older Holocene sediments; Pleistocene sediments are even more resistant; and pre-Pleistocene sediments are generally immune (California Division of Mines and Geology 1997).

[7] Based on research conducted on the earthquake probabilities in the San Francisco Bay region, the Working Group on California Earthquake Probabilities (2003) suggests the Green Valley fault has a 4% probability of one or more major (i.e., magnitude greater than 6.7) earthquakes during the coming 30 years. According to the same study, there is a 62% probability of at least one earthquake of magnitude 6.7 or greater striking the San Francisco Bay region before 2031.

The potential for liquefaction in the project area was preliminarily evaluated by the project's Environmental Geotechnical Memorandum. Based on available boring information, the project area is generally underlain by stiff to very stiff clay with occasional pockets/lenses/layers of loose to medium dense sands. Also, based on the Liquefaction Susceptibility Map included as Plates No. 8-1 and 8-2 in the project's Environmental Geotechnical Memorandum, the liquefaction potential within the project area corridor is considered moderate, with the exception of areas along the eastern portion of Jameson Canyon Creek; at Suisun Creek, Green Valley Creek, and Ledgewood Creek; and in the eastern segment of the project area, where it is considered high. See Plate 8 of the project's Environmental Geotechnical Memorandum for the liquefaction susceptibility map for the project area.

Two potential ground failure types associated with liquefaction are lateral spreading and differential settlement (Association of Bay Area Governments 2001). Lateral spreading involves a layer of ground at the surface being carried on an underlying layer of liquefied material over a nearly level surface toward a river channel or other open face. Differential settlement occurs when the layers that liquefy are not of uniform thickness, a common problem when the liquefaction occurs in artificial fills. Settlement can range from 1% to 5%, depending on the cohesiveness of the sediments (Tokimatsu and Seed 1984). The moderate liquefaction susceptibility in the project area and the soil characteristics equate to a high risk of lateral spreading along the creek areas and a moderate risk of differential settlement elsewhere.

Seismically Induced Ground Failure and General Slope Stability

The project alternatives would extend across hillsides and slopes that may pose some risk from landslides or debris flows. According to the State's Landslide Hazard Report for the Cordelia Quadrangle (Manson 1998), there are landslide deposits, elevated landslide potential, and some debris-flow potential in the southwestern portion of the project area (see Parikh 2009, Plates 10-1 and 10-2 for Manson's [1998] Landslide Inventory Map; Plates 11-1 and 11-2 for the Landslide Susceptibility Map; and Plates 12-1 and 12-2 for the Debris-Flow Susceptibility Map).

Approximately 400 to 1,400 feet northwest of its intersection with I-80, the proposed extension of Red Top Road under both alternatives would cross a large mapped landslide which appears to have moved toward the east. Where the proposed extension of Red Top Road intersects SR 12W, it would cross onto a series of mapped landslides that, except for 450 feet of apparently intact bedrock ridgeline, extend approximately 1,400 feet to the northeast where the proposed road will curve around and reach the valley margin. Where the Red Top Road extension is planned, Manson (1998) categorized the hillsides as "Area 4—most susceptible to landsliding" and the eastern half of that area as "Area C—most susceptible to debris flows."

Soils

Surface Soil Conditions

According to the Soil Survey of Solano County, California (Bates 1977), the predominant surface soil materials within the project area are the Clear Lake clay (CeA), Conejo gravelly loam (Co), Sycamore silty clay loam (Sr), and Yolo silty clay loam (Ys)[8]. These soils are

[8] See Plate 9 of the Environmental Geotechnical Memorandum for a figure showing all surface soil map units in the project area.

generally fine-textured, poorly drained to well drained, have slopes between 0%–2%, very slow runoff to slow runoff; low to high shrink-swell potential; and generally a slight hazard of water erosion.

Based on Table 3.2.3-3 and on Plate 9 of the project's Environmental Geotechnical Memorandum, the soils in the project area are mainly silty clay loams and clay loams. Permeability or hydraulic connectivity is moderately low to high and runoff rate is very slow to rapid. Soils are poorly drained to well drained and erosion hazard is low to moderately high. Shrink-swell potential varies depending on texture, but is considered high for any soils with a high clay content.

Subsurface Soil Conditions

The underlying native soil map units and their characteristics are shown in Table 3.2.3-3. Additional subsurface soil conditions and groundwater conditions[9] within the project area limits are shown in the first table on page 7 of the project's Environmental Geotechnical Memorandum.

Table 3.2.3-3. Underlying Native Soil Map Unit Characteristics of the Project Area[a]

Soil Map Unit	Soil Map Unit Name	Surface Texture	Permeability	Slope (%)	Drainage	Available Water Holding Capacity	Erosion Hazard	Shrink-Swell Potential
Sr	Sycamore silty clay loam	Silty clay loam	Moderately high	0–2	Poorly drained	High	Low	Moderate
Ss	Sycamore silty clay loam, drained	Silty clay loam	Moderately high	0–2	Poorly drained	High	Low	Moderate
CeA	Clear Lake clay	Clay	Moderately low to high	0–2	Poorly drained	Moderate	Moderate	High
HaF	Hambright loam	Loam to cobbly loam	Moderately high to high	15–40	Well drained	Very low	Moderately high	Low to moderate
CiA	Clear Lake clay, saline	Clay	Moderately low to high	0–2	Poorly drained	Low	Moderate	High
BrA	Brentwood clay loam	Clay loam	Moderately high	0–2	Well drained	High	Low	High
AoA	Antioch–San Ysidro complex	Sandy loam to clay loam	Very low to moderately low	0–2	Moderately well drained	Very low	Moderately high	Low to high

[a] Adapted from the first table shown on page 13 of the project's Environmental Geotechnical Memorandum and Soil Survey of Solano County, California (Bates 1977).

Environmental Consequences

Risk of Fault Rupture during Operations

Based on available knowledge of fault locations and fault rupture hazard, the risk of surface fault rupture in the project area is generally high because of its proximity to active faults. Fault rupture has the potential to compromise the structural integrity of proposed new facilities and cause injury to construction workers. Effects of the project alternatives related to potential structural

[9] Groundwater depths in the project area typically range from 10–15 feet below ground surface.

damage and injury caused by fault rupture would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new structures in the project area. There would be no potential structural damage or resulting injury caused by fault rupture associated with the No-Build Alternative.

Risk from Ground Shaking during Operation

Based on available knowledge of fault locations and ground shaking potential, the possibility of the project area experiencing strong ground shaking may be considered moderate to high because of its proximity to active faults. Without proper seismic engineering, a large earthquake on a nearby fault could cause moderate ground shaking in the project area, potentially resulting in liquefaction and associated ground failure, such as lateral spreading or differential settlement, which in turn could increase the risk of structural loss, injury, or death. Effects of the project alternatives related to potential structural damage and injury caused by ground shaking would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new structures in the project area. There would be no potential structural damage or resulting injury caused by ground shaking associated with the No-Build Alternative.

Risks from Development on Unstable Materials

Liquefaction in the project area could increase the risk of structural loss, injury, or death. Effects of the project alternatives related to potential structural damage and injury caused by liquefaction would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The impact of the post-liquefaction settlement on the roadway portions of the project alternatives is relatively small because the potentially liquefiable soil layers are generally covered by cohesive soils, which tend to serve as a “soil mat” and should reduce the potential impact of liquefaction. Any potential post-liquefaction settlement at abutments, bents, or piers of proposed bridge structures may cause downdrag (due to the clay above the liquefiable sand layer) and reduce the load carrying capacity of the piles. Typical mitigation (described below) is to design the foundation for such conditions. Based on the Environmental Geotechnical Memorandum prepared for the project alternatives, liquefaction should not be a significant impact on pavement surfaces because the resulting settlements are generally aerial in type and localized.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from development on materials prone to ground failure, including materials subject to liquefaction associated with the No-Build Alternative.

Risk from Landslides or Other Slope Failure during Operation

The project alternatives would extend across hillsides and slopes that may pose some risk from landslides or debris flows. As such, new construction in the project area would be at risk for structural damage or personal injury resulting from landslides or other slope failure.

Effects of the project alternatives related to potential structural damage and injury caused by landslides or other slope failures would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from landslides or other slope failure associated with the No-Build Alternative.

Risk during Operation as a Result of Development on Expansive Soils

Various soil map units (both surface and subsurface) in the project area have been identified as having moderate to high shrink-swell potential and therefore have the potential to compromise the structural integrity of proposed new facilities (including roadways, bridges, and other associated features). Effects of the project alternatives related to potential structural damage caused by shrink-swell would be minimized with implementation of state and local requirements and recommendations from the draft geotechnical reports. Furthermore, project activities would cause no change in current conditions with respect to the current shrink-swell hazards.

The No-Build Alternative would not result in new construction in the project area. There would be no potential structural damage or resulting injury resulting from development on expansive soils associated with the No-Build Alternative.

Risk during Operation as a Result of Weak Foundation Materials and Postconstruction Settlement

In general, short-term and long-term consolidation settlements do not appear to be a reason for concern in the project area, except near Suisun Valley Road and Dan Wilson Creek where soft clays are indicated in test borings. In these areas, consolidation settlements may pose a significant hazard to the immediate structures. Conducting future geotechnical investigations and implementing recommendations from the draft geotechnical reports would lessen the severity of this potential hazard.

The No-Build Alternative would not result in new construction in the project area and therefore, there would be no potential structural damage or resulting injury resulting from weak foundation materials and postconstruction settlement associated with the No-Build Alternative.

Runoff, Erosion, and Sedimentation from Grading Activities Associated with Construction

Grading, excavation, removal of vegetation cover, and loading activities associated with construction activities could temporarily increase erosion and sedimentation. Construction

activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas.

A SWPPP will be developed by a qualified engineer or erosion control specialist and implemented before construction as described in Section 3.2.2, "Water Quality and Stormwater Runoff." Furthermore, compliance with the County's Grading Ordinance also would minimize any negative effects associated with erosion and sedimentation. A grading permit as required by Chapter 31 of the Solano County Code (Solano County 2009) will be required for this project. As part of this permit, the project applicant will be required to submit a grading and erosion control plan, vicinity and site maps, and other supplemental information. Additionally, standard conditions in the grading permit include an extensive list of BMPs similar to those described in a SWPPP above.

The No-Build Alternative would not result in new construction in the project area. There would be no effects from runoff, erosion, and sedimentation from grading activities associated with construction.

Avoidance, Minimization, and/or Mitigation Measures

Future measures need to be conducted/developed prior to/or during the plans, specification, and estimate phase for any build alternative.

Implement Requirements from State and Local Standards into Final Project Design

UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards are required to be implemented and incorporated into the project design for applicable features to minimize the potential fault rupture, ground shaking, liquefaction, and shrink-swell hazards on associated project features. Structures must and will be designed to meet the regulations and standards associated with UBC Seismic Hazard Zone 4 hazards.

Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities

Recommendations from both the Fault Rupture Assessment and the Environmental Geotechnical Memorandum for the proposed project will be incorporated in to the final project design.

The primary rupture zone for the Cordelia fault does not intersect proposed elevated structures, and thus the risk for surface-fault rupture is considered low. However, to account for uncertainty in the borehole and geophysical data that led to these conclusions, proposed structures should be designed to accommodate minor secondary displacement (e.g., tilting, shearing, and settlement) associated with an earthquake on the Cordelia fault.

The following recommendations from the Fault Rupture Assessment report and project's Environmental Geotechnical Memorandum will be incorporated in to the final project design to accommodate permanent fault-related ground deformation effects from surface fault rupture on project facilities.

- As described in the Fault Rupture Assessment, fault rupture hazard maps prepared for both the Cordelia and Green Valley Project sites should be considered during design of the proposed elevated structures for mitigation of surface-fault rupture. This could include avoidance where possible, or if not possible, special design to accommodate the estimated coseismic displacement yielded by the two approaches.[10]
- As described in the Environmental Geotechnical Memorandum, if avoidance is not possible, special design should be considered to accommodate the displacement estimated by the Department and based on scenario-based fault displacement hazard (FDHA) analysis approach.
- Department engineers responsible for the design of the elevated structures should evaluate the state's recommended criteria, Draft Memo to Designers 20-10 (California Department of Transportation 2007) for surface-fault rupture with regard to the results of the fault hazard displacement analysis. A geotechnical engineer and/or structural engineer should review the results of the two methods, consider an appropriate factor of safety and design the structures with respect to permanent ground deformation, as recommended in the Fault Rupture Assessment.
- On the basis of the Department's Draft Memo to Designers 20-10 (California Department of Transportation 2007), a fault displacement of 1.9 feet from the Green Valley fault should be considered in the design of elevated structures crossing the fault zone.

Based on the attenuation relation by Sadigh et al. (1997), the controlling fault is the Cordelia fault, and peak bedrock acceleration of 0.6 *g* is anticipated in the project area. The following recommendations from the Fault Rupture Assessment and the Environmental Geotechnical Memorandum will be incorporated in to the final project design to accommodate effects of ground shaking on project facilities:

- Structures should be designed based on the Acceleration Response Spectrum (ARS) Curve according to the *Caltrans Seismic Design Criteria Manual*.[11]
- Geologic conditions encountered at the Cordelia project site included lenses of saturated granular deposits. The Cordelia project site should be evaluated for liquefaction, lateral spreading and settlement associated with strong ground shaking.
- Geologic conditions encountered at the Green Valley project site included lenses of saturated fine- to coarse-grained deposits along the western and eastern margins of Quarry Hill. Portions of the Green Valley site should be evaluated for liquefaction, lateral spreading, and settlement associated with strong ground shaking.

[10] The fault displacement hazard analysis and the resulting displacement values for the multiple fault traces comprising the Green Valley fault depend on site information and results from previous studies. Future investigations (trenches and boreholes) may allow refinement of the calculations, an improved model of uncertainties, and revised fault rupture hazard maps.

[11] The criteria include, but are not limited to, designing infrastructure that can withstand an earthquake of magnitude 7.5 and a peak bedrock acceleration of 0.6 *g* with modifications. Other specific design criteria are further described in the *Caltrans Seismic Design Criteria Manual* (California Department of Transportation 2006b).

Conduct Future Geotechnical Investigations

In accordance with applicable state and local laws, a final geotechnical investigation (or investigations) will be conducted to evaluate the engineering properties of the subsurface soil materials for recommendation of geotechnical parameters, to address geotechnical hazards (e.g., slope stability, differential settlement) associated with different design elements , as well as hazards associated with potential fault rupture/creep or strong ground motion (e.g., shaking, liquefaction, earthquake-induced landslides).[12] The final geotechnical investigation will include recommendations for designing specific project elements to accommodate the effects of fault rupture and ground shaking.

Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction

The following recommendations from the project's Environmental Geotechnical Memorandum will be incorporated into the final project design.

- Design foundations to withstand the effects of liquefaction. Any downdrag load on the piles due to potential post-liquefaction settlement should be considered in the vertical pile capacity analyses.
- Shallow zones of liquefiable materials can be removed and replaced or treated with materials that can improve their properties (such as by grouting).
- Site-specific liquefaction potential in areas with moderate and/or high liquefaction susceptibility should be evaluated in the plans, specifications, and estimates phase.

If shallow zones of liquefiable soils or soils susceptible to seismically induced settlement are determined to be present at any location where project activities would occur, corrective actions shall be taken, including removal and replacement of soils; on-site densification; grouting; and design of special foundations or other similar measures, depending on the extent and depth of susceptible soils. All of these measures reduce pore water pressure during ground shaking by densifying the soil or improving its drainage capacity.

Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities

The following recommendations from the project's Environmental Geotechnical Memorandum will be incorporated into the final project design.

- Because significant grading can be expected for construction of the roadway, site-specific investigation of those mapped landslides will be needed to assess the potential impacts and formulate appropriate mitigation measures.

[12] The last section of the Environmental Geotechnical Memorandum provides a recommended scope of geotechnical investigation.

- Specific recommendations pertaining to cut slopes and fill slopes/embankments should be incorporated into the final project design. For cut slopes, recommendations pertaining to suggested slope gradients, rock bedding and joint evaluation, drilling and geophysical testing, and slope stabilization measures should be implemented. For fill slopes/embankments, recommendations pertaining to suggested slope gradients and slope stabilization measures should be implemented.

Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Consolidation Settlements on Project Facilities

The following recommendations from the project's Environmental Geotechnical Memorandum report will be incorporated into the final project design.

- Department embankment construction standards as outlined in Section 19 of the California Department of Transportation Standards Specifications (California Department of Transportation 2006c) should be followed.
- If further investigation shows that consolidation settlement may become critical to the other project improvements, mitigation measures such as phased construction, implementation of waiting periods, surcharge fill, wick drain installation, and monitoring may be required.

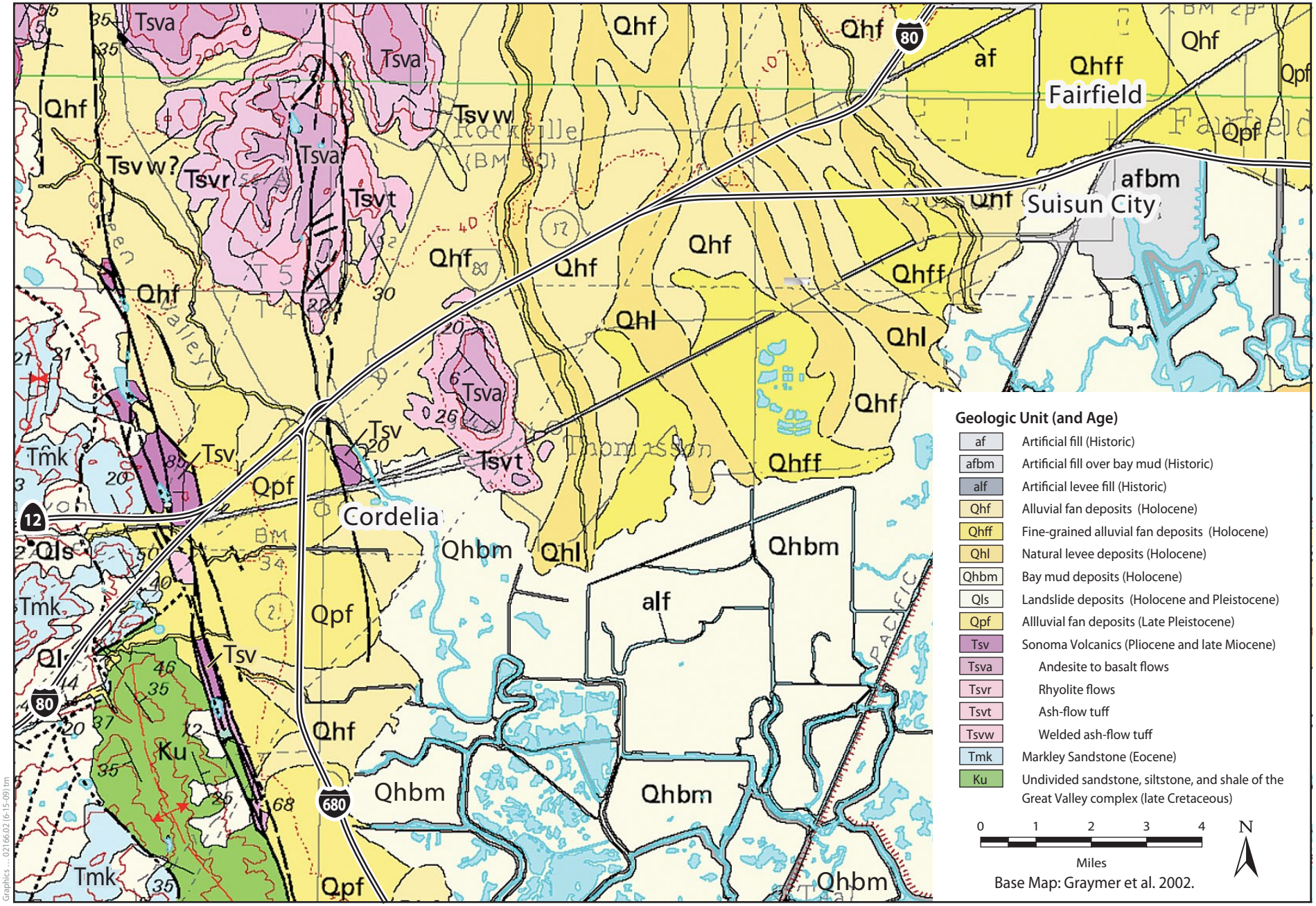

Figure 3.2.3-1
Geologic Map of the Project Vicinity

3.2.4 Paleontology

Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 USC 431-433], Federal-Aid Highway Act of 1960 [23 USC 305]). Under California law, paleontological resources are protected by the California Environmental Quality Act, the California Code of Regulations, Title 14, Division 3, Chapter 1, Sections 4307 and 4309, and Public Resources Code Section 5097.5.

Federal Regulations

Omnibus Public Lands Act of 2009

The Omnibus Public Lands Act of 2009 (H.R. 146 [2009], Pub. L. No. 111-11) includes provisions for the protection and preservation of paleontological resources. Under this law, the Secretaries of both the Department of the Interior and the Department of Agriculture are directed to inventory, manage, and protect paleontological resources on the public lands they administer. In addition, the Secretaries are directed to coordinate these efforts and to establish education programs to increase public awareness of the significance of paleontological resources. The law also prohibits the collection of paleontological resources from federal land without a permit, except in the case of noncommercial collecting that complies with other regulations for that federal land.

State Regulations

California Environmental Quality Act

CEQA encourages the protection of all aspects of the environment by requiring state and local agencies to prepare multidisciplinary analyses of the environmental impacts of a proposed project and to make decisions based on the findings of those analyses.

CEQA includes in its definition of *historical resources* “any object [or] site … that has yielded or may be likely to yield information important in prehistory” (State CEQA Guidelines 15064.5[3]), which typically is interpreted as including fossil materials and other paleontological resources. More specifically, destruction of a “unique paleontological resource or site or unique geologic feature” constitutes a significant impact under CEQA (State CEQA Guidelines, Appendix G). The treatment of paleontological resources under CEQA is generally similar to the treatment of cultural resources, requiring an evaluation of resources in a project’s area of potential effects; an assessment of potential impacts on significant or unique resources; and the development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery or avoidance.

California Public Resources Code

Several sections of the California Public Resources Code (PRC) protect paleontological resources. PRC 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury,

and defacement of any paleontologic feature on public lands (lands under the jurisdiction of a state, county, city, district, or public authority or under the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. PRC 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands. The sections of the California Administrative Code relating to the state Division of Beaches and Parks afford protection to geologic features and "paleontological materials" but grant the director of the state park system authority to issue permits for specific activities that may result in damage to such resources, if the activities are in the interest of the state park system and for state park purposes (California Administrative Code 4307–4309).

Local Regulations

The Solano County General Plan does not have policies related to paleontological resources. However, the background report prepared for the Solano County General Plan update (EDAW 2006:7-23–7-26) assigns a paleontological sensitivity to geologic units found in the county. The sensitivity evaluations are based on the Society of Vertebrate Paleontology (SVP) guidelines and record searches of the University of California Museum of Paleontology (UCMP) database (EDAW 2006:7-20 and 7-26). In addition, the EIR written for the general plan update provides mitigation measures to protect paleontological resources (EDAW 2008:4.10-39–4.10-40).

Professional Standards and Guidelines

In response to a recognized need for standard guidance, the SVP published *Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources*, a set of standard guidelines that are now widely followed (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995, updated 2007). These guidelines are generally consistent with Caltrans criteria and represent the accepted standard of care for paleontological resources. The SVP guidelines identify two key phases in the process for protecting paleontological resources from project impacts.

1. Assess the likelihood that the project's area of potential effect contains significant nonrenewable paleontological resources that could be directly or indirectly affected, damaged, or destroyed as a result of the project.
2. Formulate and implement measures to mitigate potential adverse impacts.

An important strength of the SVP's approach to assessing potential impacts on paleontological resources is that the SVP guidelines provide some standardization in evaluating a project area's paleontological sensitivity. Table 3.2.4-1 defines the SVP's sensitivity categories for paleontological resources and summarizes SVP's recommended treatments to avoid adverse impacts in each sensitivity category.

Table 3.2.4-1. Society of Vertebrate Paleontology's Definitions of Sensitivity Categories and Recommended Treatment for Paleontological Resources

Sensitivity Category	Definition	Recommended Mitigation Treatment
High	Areas underlain by geologic units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered	• Preliminary survey and surface salvage before construction begins • Monitoring and salvage during construction • Specimen preparation; identification, cataloging, curation, and storage of materials recovered • Preparation of final report describing finds and discussing their significance • All work should be supervised by a professional paleontologist who maintains the necessary collecting permits and repository agreements
Undetermined	Areas underlain by geologic units for which little information is available	• Preliminary field surveys by a qualified vertebrate paleontologist to assess the project area's sensitivity • Design and implementation of mitigation if needed, based on the results of field survey
Low	Areas underlain by geologic units that are not known to have produced a substantial body of significant paleontologic material	Protection and salvage generally are not required; however, a qualified paleontologist should be contacted if fossils are discovered during construction, in order to salvage finds and assess the need for further mitigation

Source: Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007.

SVP's guidelines also provide a working definition of *significance* as applied to paleontological resources. According to SVP, significant paleontological resources are those that fulfill one or more of the following criteria (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007).

- Provide important information shedding light on evolutionary trends and/or helping to relate living organisms to extinct organisms.
- Provide important information regarding the development of biological communities.
- Demonstrate unusual circumstances in the history of life.
- Represent a rare taxon or a rare or unique occurrence; are in short supply and in danger of being destroyed or depleted.
- Have a special and particular quality, such as being the oldest of their type or the best available example of their type.
- Provide important information used to correlate strata for which it may be difficult to obtain other types of age dates.

Significant paleontological resources may include vertebrate fossils and their associated taphonomic and environmental indicators; invertebrate fossils; and/or plant fossils.

Affected Environment

The information in this section is taken from the *I-80/I-680/SR 12 Interchange Project, Paleontological Sensitivity Analysis* conducted for the proposed project in 2009.

Site Geology

Site geology is provided in Section 3.2.3, "Geology/Soils/Seismic/Topography," Figure 3.2.3-1 is a generalized geologic map of the project site, based on the work of Graymer et al. (2002).

Paleontological Sensitivity

Most of the project alternatives would be located on Holocene alluvial fan deposits (Qhf or Qhff) or levee deposits (Qhl) (Graymer et al. 2002) (Figure 3.2.4-1). These deposits are young and have low potential to contain paleontological resources (in contrast to older sediments of Pleistocene age), and there are no known records of vertebrate fossils in these deposits in Solano County (University of California Museum of Paleontology 2007). Although the alluvial fan deposits (Qhf) are not considered highly sensitive, they may overlie relatively shallow Pleistocene sediments that could be sensitive. The depth of the Holocene alluvial fan deposits ranges from approximately 0 to 25 feet.

The results of database and literature searches indicate that units are highly sensitive for paleontological resources. Table 3.2.4-2 summarizes paleontological resources and sensitivity of geological units in the project area.

Some of the western and southern portion of the project area is located in Late Pleistocene alluvial fan deposits (Qpf). Although there are no known fossils records from this deposit within Solano County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils. In addition, Pleistocene units containing nonmarine fossil are considered highly sensitive.

Outcrops of the Sonoma Volcanics (Tsvt and Tsva) occur in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange. Of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007a), 29 are from the Sonoma Volcanics unit. These records include horse, deer, and unidentified mammals. The unit is sensitive for paleontological resources because it is known to contain vertebrate fossils.

The Markley Sandstone occurs on the western edge of the project area. This unit is a marine deposit containing bony fish (Osteichthyes) fossils, as well as gastropods and microfossils. The UCMP (2007a) database has no records of fossils from the Markley Formation in Solano County, but it does have four records of Osteichthyes in this unit in neighboring Contra Costa County. The unit is sensitive for paleontological resources because it contains vertebrate fossils (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995).

Table 3.2.4-2. Preliminary Summary of Paleontological Resource Sensitivity for Geologic Units in the I-80/I-680/SR 12 Interchange Project Area[a]

Geologic Unit	Age	Fossil Content and Fossils	Solano County General Plan Background Report Description of Sensitivity[b]	Potential to Contain Significant Fossils
Artificial fill (af)	Historic	Deposits are artificial and will not contain fossils	Holocene alluvium does not contain paleontologically sensitive resources	No potential for fossils
Artificial fill over bay mud (afbm)	Historic	Deposits are artificial and will not contain fossils		No potential for fossils
Alluvial fan deposits (Qhf)	Holocene	No record of fossils in the project area; in general, these younger alluvial units do not contain significant vertebrate fossils		Low; however, it may form only a thin veneer over sensitive Pleistocene sediments (Graymer et al. 2002)
Fine-grained alluvial fan deposits (Qhff)	Holocene	No record of fossils in the project area; in general, these younger alluvial units do not contain significant vertebrate fossils		Low
Natural levee deposits (Qhl)	Holocene	No record of fossils in the project area; most likely no significant fossils in this unit		Low
Landslide deposits (Qls)	Holocene and Pleistocene	No record of fossils in the project area; these deposits are shed from the hills to the northwest; it is possible that landslide units of Pleistocene age could contain significant vertebrate fossils	Not applicable	Unknown and monitoring or detailed geologic mapping of this unit should occur
Allluvial fan deposits (Qpf)	Late Pleistocene	No record of fossils in the project area; however, diverse vertebrate faunas have been collected from other similar Pleistocene alluvial units in northern California; Pleistocene alluvial units tend to contain vertebrate fossils	Pleistocene alluvium is highly sensitive for paleontological resources	High
Sonoma Volcanics (Tsv) and ash-flow tuff (Tsvt)—subdivision of Sonoma volcanics	Pliocene and late Miocene	This unit is well known for its fossils; the UCMP (2007a) database includes 29 records of vertebrate fossils in this unit in Solano County alone; records are of unidentified mammals, one horse (*Equus occidentalis*), and deer (Cervidae)	Sonoma Volcanics are highly sensitive for paleontological resources	High
Markley Sandstone (Tmk)	Eocene	This unit is a marine deposit and contains bony fish (Osteichthyes) fossils, as well as gastropods and microfossils; no records of fossils from the unit in Solano County, but the UCMP (2007a) database contains four records of Osteichthyes (bony fishes) in neighboring Contra Costa County	Fossils commonly found in the Markley Formation are not highly sensitive because of their abundance, but there is potential for significant resources	High
Undivided sandstone, siltstone, and shale of the Great Valley complex (Ku)	Late Cretaceous	The UCMP database contains no records of fossils from the Great Valley complex (or sequence), and there is only one record of a Cretaceous fossil not assigned to a unit; however, strata of Great Valley complex in other areas are known to contain Cretaceous marine fossils, including invertebrates and marine reptiles (University of California Museum of Paleontology 2007b)		High

[a] Information is based on geologic formations identified in the project area from the geologic map of Graymer et al. (2002), UCMP database searches (2007), and a review of the *Solano County General Plan* (EDAW 2006).
[b] EDAW 2006.

Environmental Consequences

Impacts on paleontological resources were analyzed qualitatively, based on professional judgment. This analysis focuses on (1) identifying activities with the potential to disturb, damage, or destroy paleontological resources if any are present on the work site and (2) developing a strategy to ensure that mitigation requiring paleontological sensitivity assessment and appropriate treatment developed on a site-specific basis is in place for those activities identified as likely to result in damage.

Two factors are considered when evaluating a proposed project's potential to disturb or damage significant paleontological resources. First, most vertebrate fossils are rare and are therefore considered important paleontological resources. Second, unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and stratigraphic) of a unit or formation. In other words, once a unit is identified as containing vertebrate fossils or other rare fossils, the entire unit is a paleontological site (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995 and 2007).

Because excavation can disturb or destroy paleontological resources, the potential for impacts on paleontological resources is based on the depth and extent of excavation and the paleontological sensitivity of the units. Figures 3.2.4-2, 3.2.4-3a and b, and 3.2.4-4a and b show areas where bridge work will occur and the area where excavation for the Red Top Road expansion will occur. These areas are overlain on the sensitivity of the geologic units for paleontological resources. Note that not all the ground in the bridge areas will be excavated (i.e., excavation for footings will occur in localized areas within the bridge areas), but the entire Red Top Road expansion area will be excavated. The figures evaluate the potential to encounter paleontological resources during excavation. Three designations are given to excavation:

- Excavation in areas with high potential for paleontological resources (i.e., areas of paleontologically sensitive high-potential units such as the Sonoma Volcanics and Late Pleistocene alluvial deposits, and areas with shallow low-potential units—Holocene deposits believed to be less than 15 feet thick—overlying high-potential units such as Late Pleistocene alluvial deposits).
- Excavation in areas with low potential for paleontological resources (i.e., Holocene deposits believed to be greater than 15 feet thick).
- Excavation in areas with unknown potential for paleontological resources (i.e., thickness of Holocene deposits is unknown).

Although Figures 3.2.4-2, 3.2.4-3a and b, and 3.2.4-4a and b provide more detailed information on the potential to encounter paleontological resources, the figures are approximate (i.e., they are not georectified and the exact boundaries and depths of geologic units is not known).

Destruction of Vertebrate or Otherwise Scientifically Significant Paleontological Resources as a Result of Construction Activities

Several units are sensitive for paleontological resources and fossils could be present in the project area. Figure 3.2.4-2, Figure 3.2.4-3a, and Figure 3.2.4-3b show the locations of the following sensitive units.

- Relatively shallow Pleistocene sediments that could be sensitive underlying Holocene alluvial fan deposits (Qhf), which range in depth from approximately 0 to 25 feet, in the central and eastern portion of the project area—the likelihood of encountering sensitive deposits increases with depth and with proximity to surficial exposures of sensitive deposits.
- Late Pleistocene alluvial fan (Qpf) deposits that are highly sensitive in the western portion of the project area—although there are no known fossils records from this deposit within Solano County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils.
- Outcrops of Sonoma Volcanics (Tsvt and Tsva) that are highly sensitive in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange—of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007), 29 of them are from the Sonoma Volcanics unit, including horse, deer, and unidentified mammals (Table 3.2.4-2).

If fossils are present in the project area, they could be damaged during project construction. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995and 2007) would represent an impact.

The effect under Alternative C would be the same as under Alternative B but to a greater extent (Figure 3.2.4-2, Figure 3.2.4-4a, and Figure 3.2.4-4b). Table 3.2.4-3 compares the impacts of major excavation areas for Alternatives B and C on paleontological resources based on depth and extent of excavation and the paleontological sensitivity of the unit. Only project components that differ between alternatives are included. It should be noted, however, that both alternatives involve extensive, deep grading associated with the Red Top Road expansion in the paleontologically sensitive Markley Sandstone (Eocene), Sonoma Volcanics (Pliocene and late Miocene), and alluvial fan deposits (Late Pleistocene). It would not be possible to avoid paleontologically sensitive units in the project area because they are widespread. Any improvements involving excavation for bridge or overcrossing footings in the vicinity of the I-80/I-680 or I-80/SR 12W interchanges would, therefore, have the potential to affect significant paleontological resources.

Table 3.2.4-3. Comparison of Paleontological Impacts by Alternative

Project Component	Alternative B		Alternative C		Comment
	Activity	Sensitivity of Work Area	Activity	Sensitivity of Work Area	
New Interchange at SR 12W and I-80	Excavation of bridge footings excavated for improvements	High	Excavation of numerous bridge footings for new interchange and expansion	High	Alternative C involves many more footings and greater excavation area
Realignment of I-680	None	None	Grading	High	Alternative C involves extensive ground-disturbing activities
Improvements of I-80 and I-680	Grading for expanded interchange and excavation of footings for new bridge over Green Valley Creek	High to low	Excavation of footings for new bridge over Green Valley Creek	Low	Alternative B involves more extensive excavation, including excavation in a sensitive unit
New Single-Span Bridges over Green Valley Creek	None	None	Excavation of bridge footings	Low at surface but unknown at depth	
New Bridge at Suisun Creek	Excavation of bridge footings	Low	None	None	Alternative B would involve more excavation but only in low-sensitivity units
Truck Scale On-Ramp to Eastbound I-80	Excavation of bridge footings	Low at surface but unknown at depth	None	None	All impacts are related to Alternative B; impacts will depend on depth of excavation relative to depth of Holocene deposits
New Central Interchange					
Widened Bridge at Myer Lane over Ledgewood Creek					
New Overcrossing at Beck Avenue	None	None	Excavation of bridge footings for new overcrossing	Low at surface but unknown at depth	All impacts are related to Alternative C; impacts will depend on depth of excavation relative to depth of Holocene deposits

Notes: Project components common to both alternatives are not included in this table.
Alternative with greater impact is shaded.

The effect under the fundable first phases of the alternatives would be the same as the full-build alternatives but to a lesser extent, given the smaller project footprint and the smaller amount of excavation. Implementation of avoidance and minimization measures listed below would result in no adverse effect relating to destruction of vertebrate or otherwise scientifically significant paleontological resources under all build alternatives.

There would be no excavation or other ground disturbance under the No-Build Alternative. Therefore, there would be no potential for adverse effect relating to paleontological resources under the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation

Avoidance or minimization would not be possible because paleontologically sensitive units in the project area are widespread. Any improvements involving excavation for bridge or

overcrossing footings in the vicinity of the I-80/I-680 or I-80/SR 12W interchanges would, therefore, have the potential to affect significant paleontological resources.

Mitigation measures that will be used to reduce project effects are described below. As part of the monitoring and mitigation strategy, further geotechnical data will be reviewed as they become available, and this information will be used to develop and refine an appropriate, effective, and feasible monitoring and mitigation strategy.

Conduct Preconstruction Surveys

The Department will conduct preconstruction studies to ensure that paleontological materials exposed at the surface are recovered and properly prepared and curated, or protected from damage using exclusion fencing or other appropriate means, and to further assess potential for impacts.

Educate Construction Personnel in Recognizing Fossil Material

The applicant will ensure that all construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists, to ensure that they can recognize fossil materials in the event any are discovered during construction.

Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities

In accordance with the Department's standard mitigation procedures for construction in units with the potential to contain fossils, the applicant will retain a qualified professional paleontologist as defined by the Department's Standard Environmental Reference and the Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee (1995 and 2007) to monitor activities with the potential to disturb units sensitive for paleontological resources. Data gathered during preconstruction surveys for paleontological resources, and detailed project design, will be used to determine the activities that will require the presence of a monitor. In general, these activities include any ground-disturbing activities involving excavation in areas with high potential to contain fossils or excavation deeper than three feet in areas with low or unknown potential to contain fossils. Recovered fossils will be prepared so that they can be properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about their provenance, and make the information available to the scientific community.

Stop Work and Conduct Appropriate Treatment if Substantial Fossil Remains Are Encountered During Construction

In accordance with the Department's standard mitigation procedures for construction in units with the potential to contain fossils, when requested by the paleontological monitor, earth-disturbing activities will be stopped in an area or diverted to allow for the safe recovery of fossil specimens. Additionally, if construction personnel observe fossils in an area where paleontological resources were not anticipated and paleontological monitors are therefore not present, earth-disturbing activities will be stopped until the material can be evaluated by a monitor and appropriate treatment taken. Recovered fossils will be prepared so that they can be

properly documented. Recovered fossils will then be curated at a facility that will properly house and label them, maintain the association between the fossils and field data about their provenance, and make the information available to the scientific community. The applicant will be responsible for ensuring that monitor's recommendations regarding treatment and reporting are implemented.

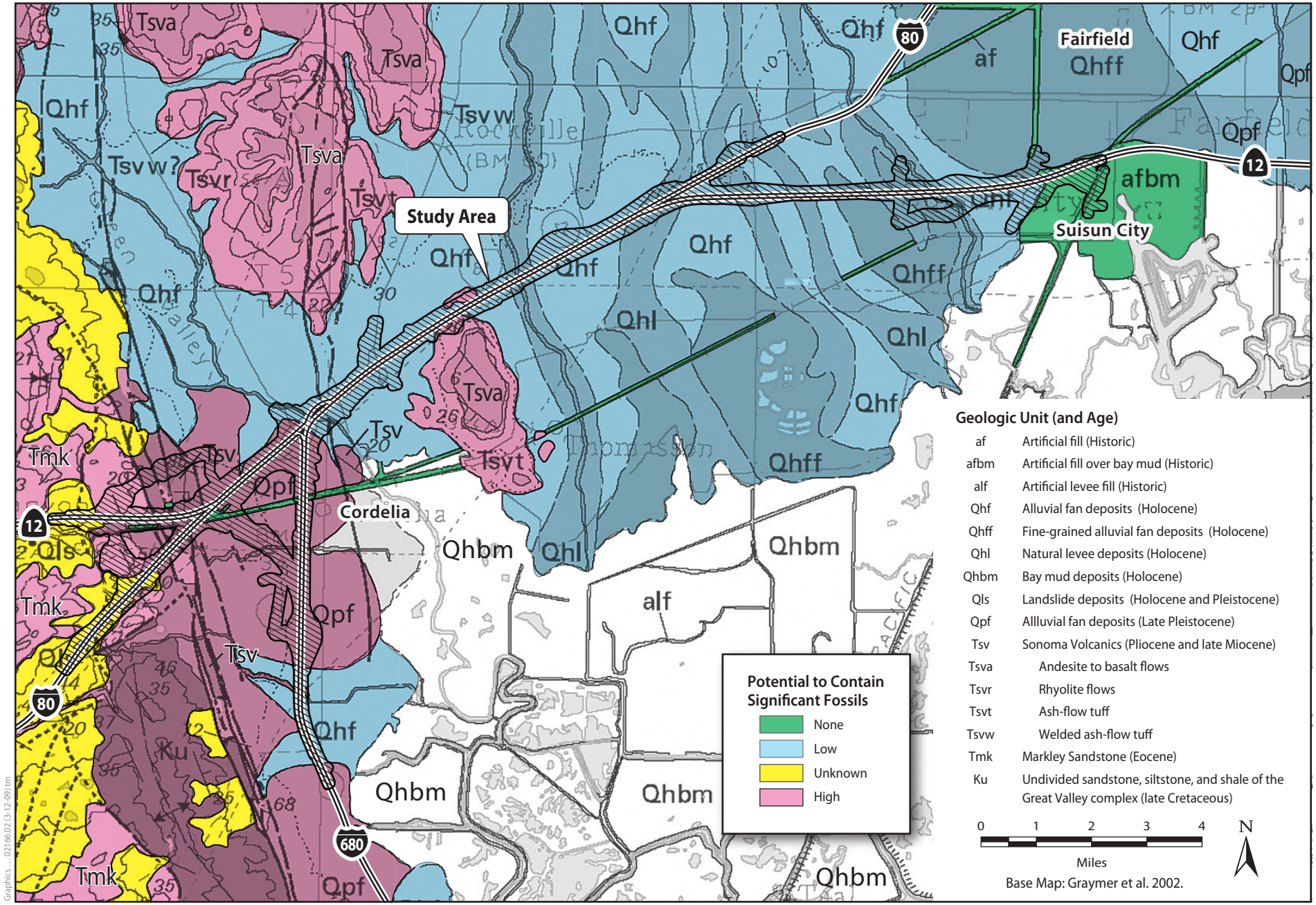

Figure 3.2.4-1
Paleontological Sensitivity Map of the Project Area

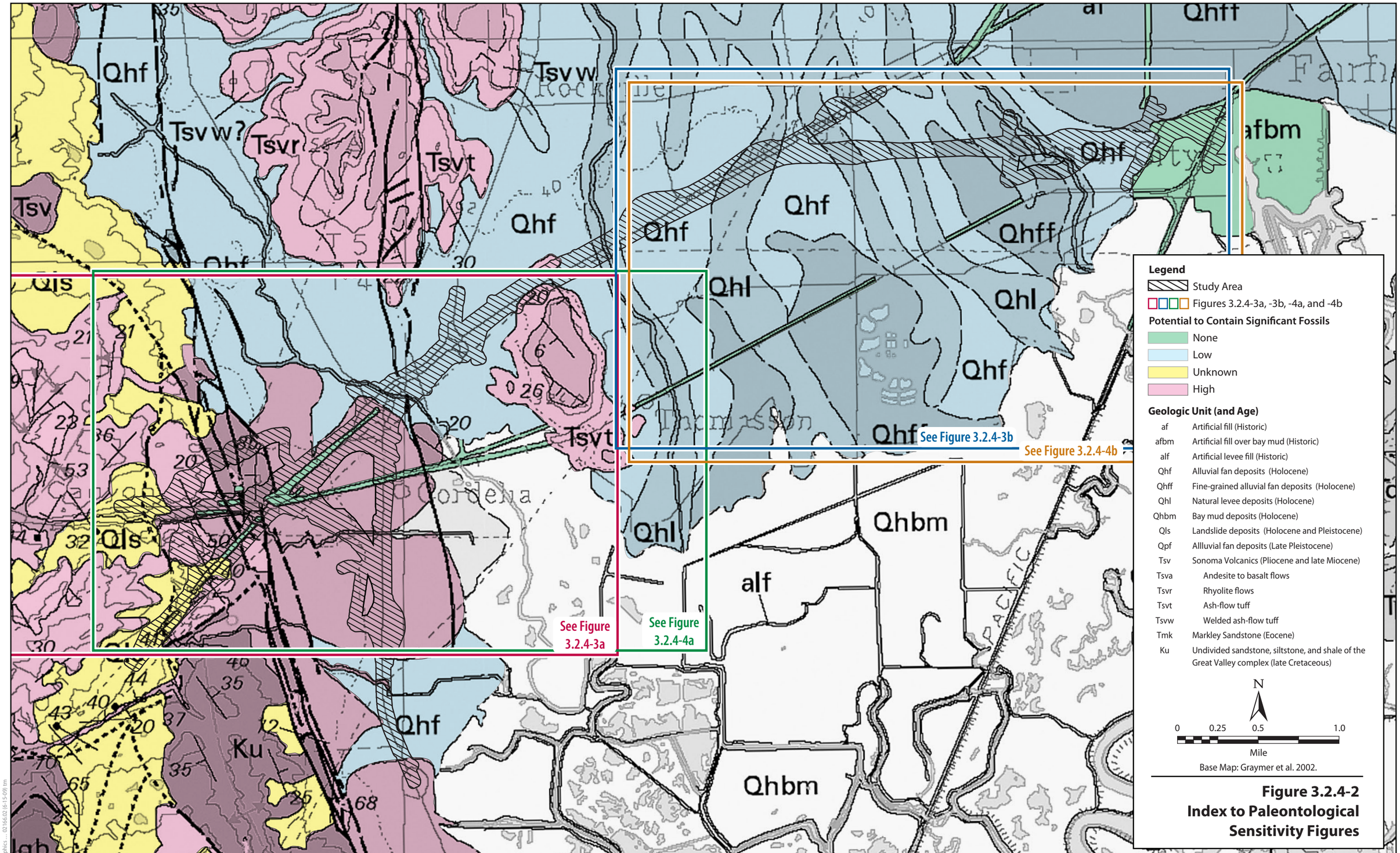

Figure 3.2.4-2
Index to Paleontological Sensitivity Figures

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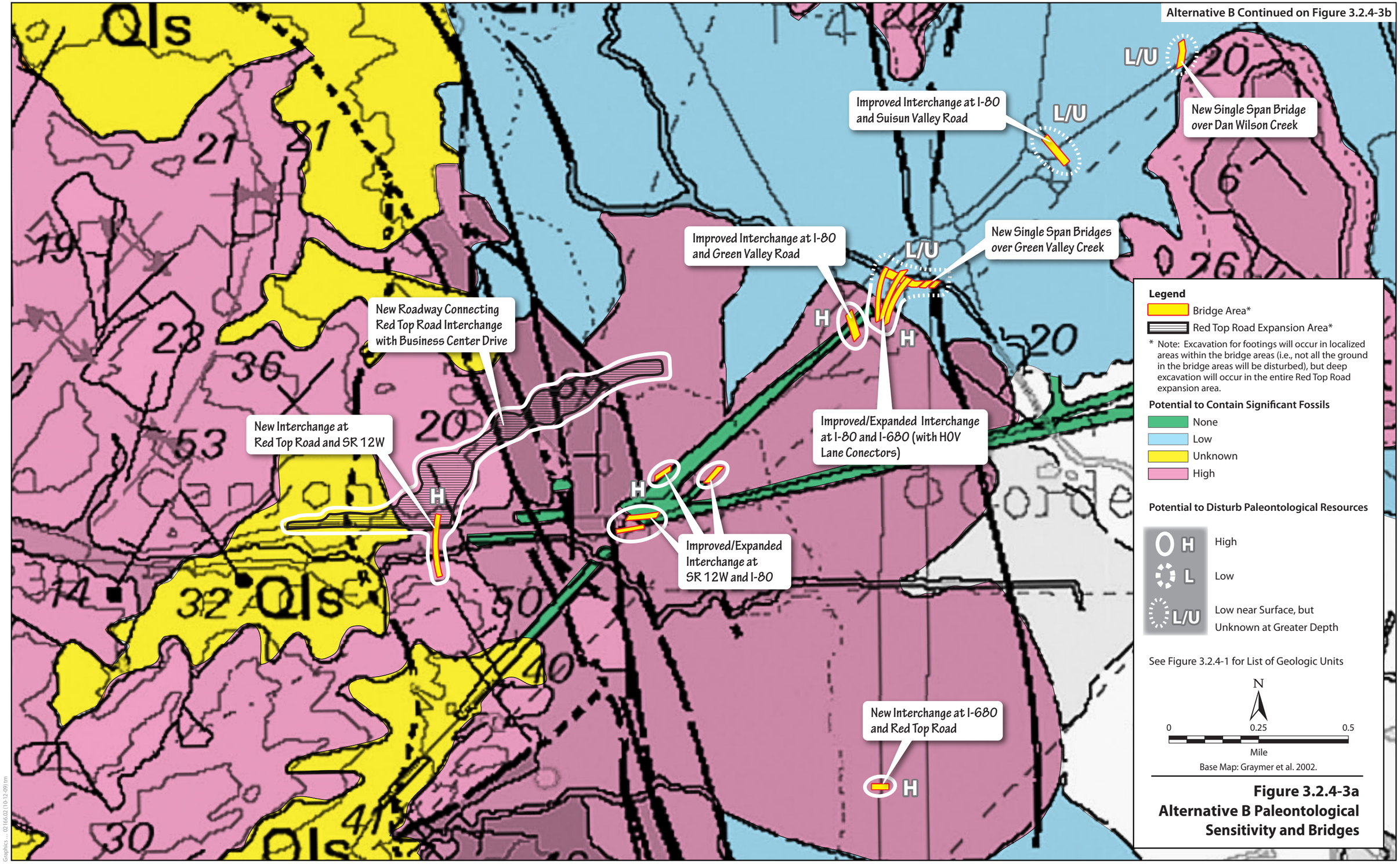

Figure 3.2.4-3a
Alternative B Paleontological Sensitivity and Bridges

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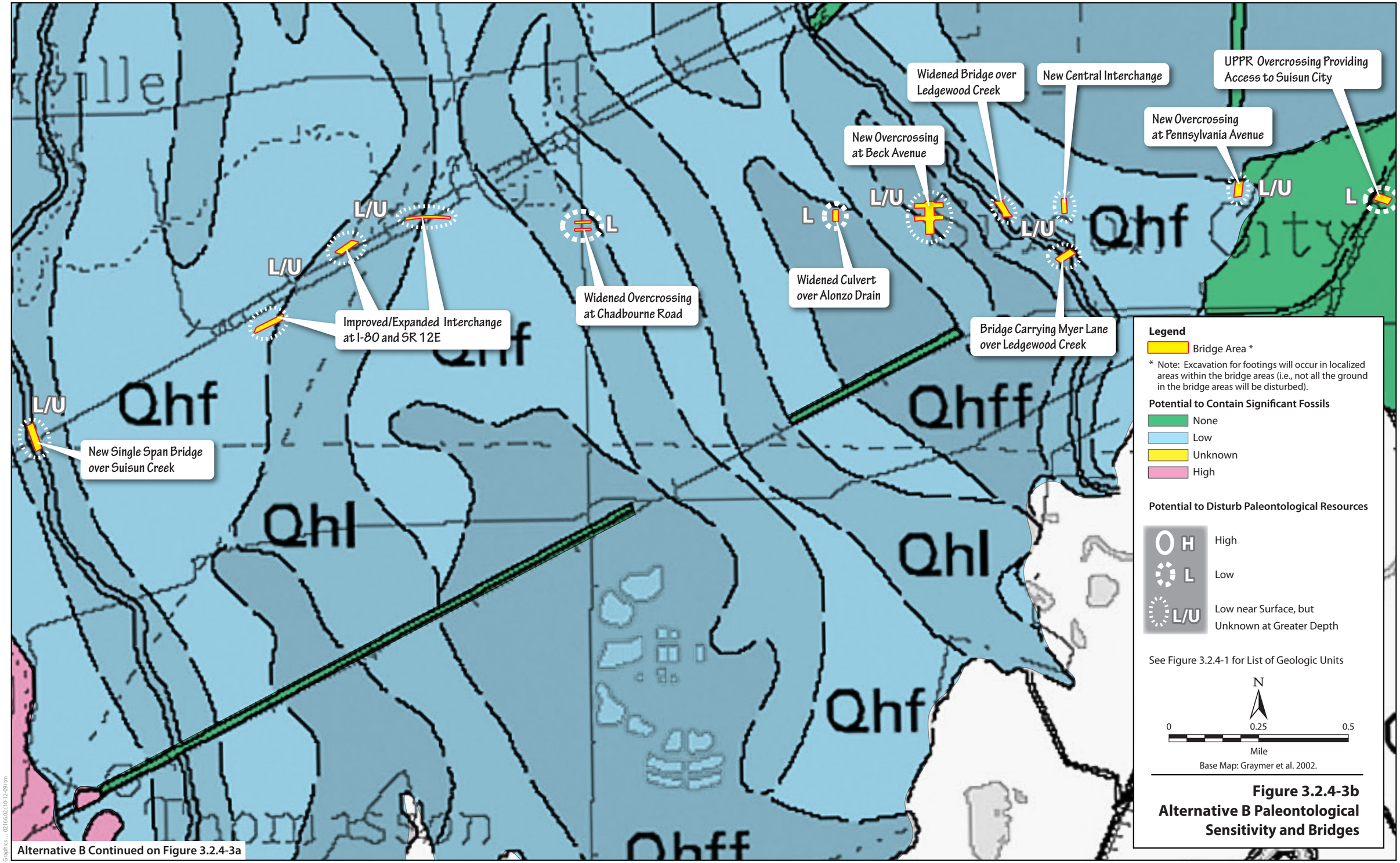

Figure 3.2.4-3b
Alternative B Paleontological Sensitivity and Bridges

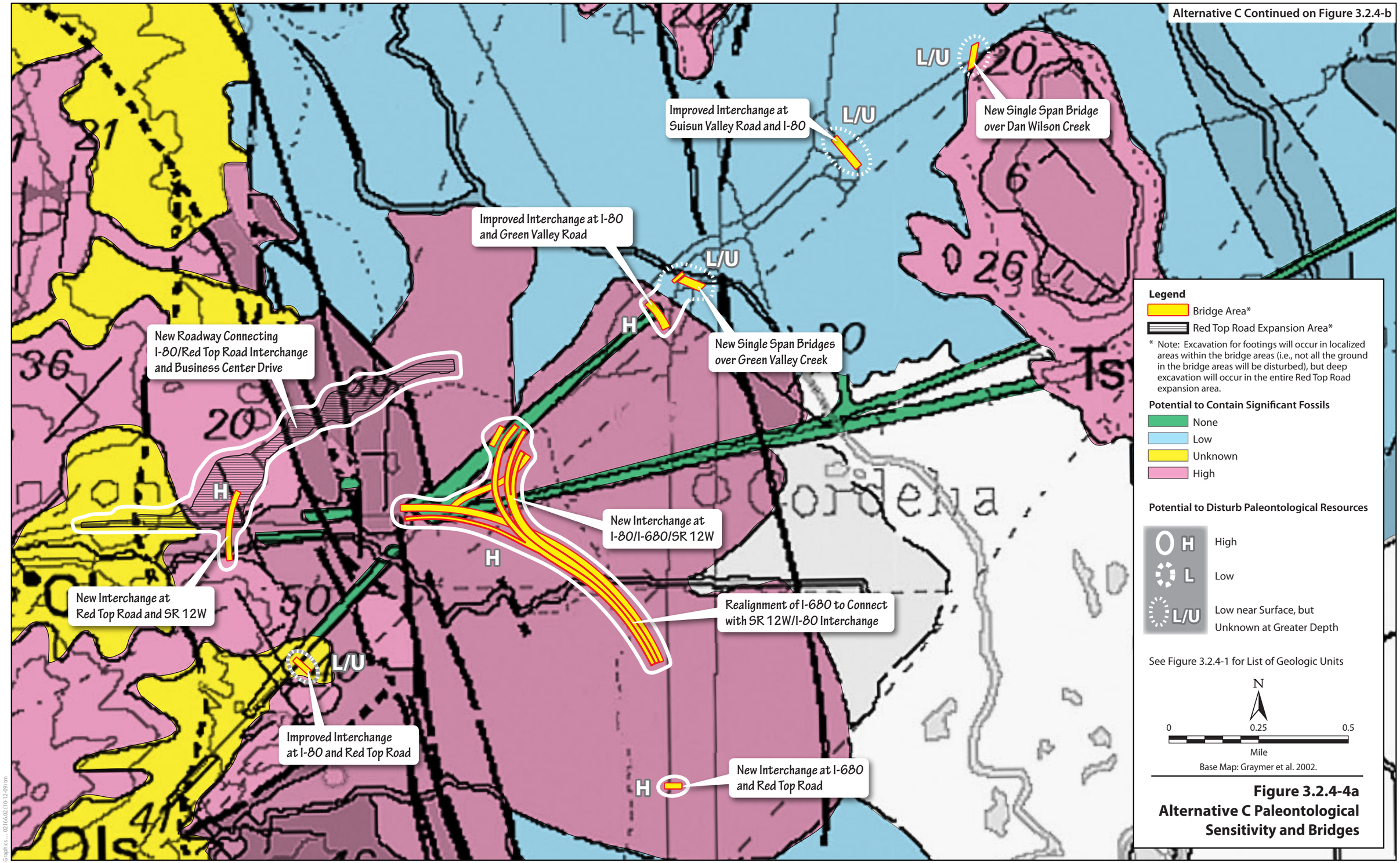

Figure 3.2.4-4a
Alternative C Paleontological Sensitivity and Bridges

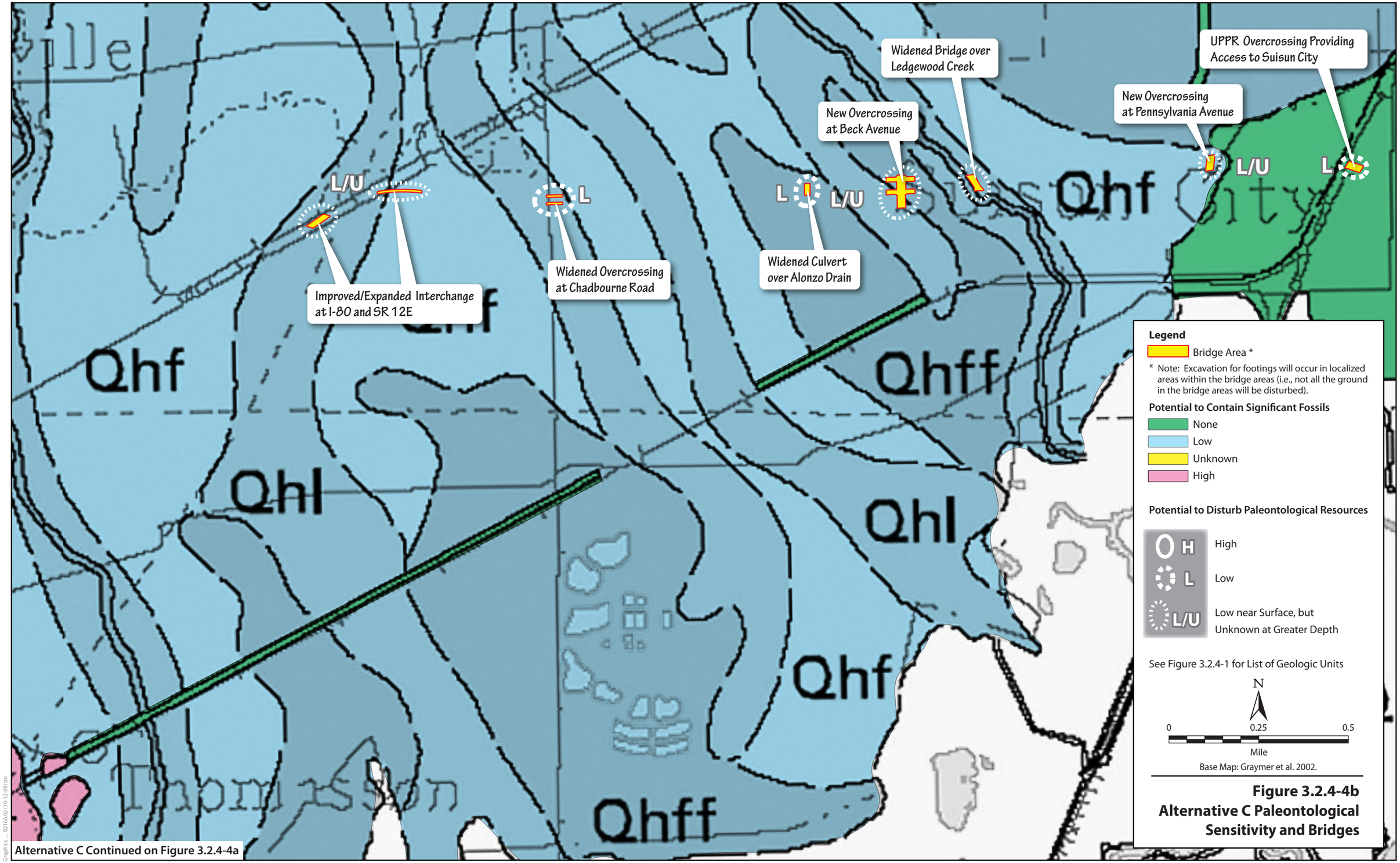

Figure 3.2.4-4b
Alternative C Paleontological Sensitivity and Bridges

3.2.5 Hazardous Waste/Materials

Regulatory Setting

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

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

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

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

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

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

The California Health and Safety Code, Hazardous Waste Control

The Hazardous Waste Control Act (HWCA) regulates the generation, treatment, storage, and disposal of hazardous waste. Hazardous waste is any material or substance that is discarded, relinquished, disposed of, or burned, or for which there is no intended use or reuse, and the material or substance causes or significantly contributes to an increase in mortality or illness; or the material or substance poses a substantial present or potential hazard to human health or the environment. These materials or substances include spent solvents and paints (oil and latex), used oil, used oil filters, used acids and corrosives, and unwanted or expired products (pesticides, aerosol cans, cleaners, etc.). If the original material or substance is labeled Danger, Warning, Toxic, Caution, Poison, Flammable, Corrosive or Reactive, the waste is very likely to be hazardous.

The California Health and Safety Code, Underground Storage Tank Regulations

Chapter 6.7 of the Health and Safety Code outlines the requirements for USTs, identifies requirements for corrective actions, cleanup funds, liability, and the responsibilities of owners and operators of USTs.

Solano County, Environmental Health Services Division, Certified Unified Program Agency

The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas within Solano County. The CUPA is a single local agency designated by the California Environmental Protection Agency as having regulatory authority for eight environmental programs. These programs are Hazardous Materials Business Plan, Hazardous Waste, California Accidental Release Prevention (Risk Management Plan), Aboveground Storage Tanks, Underground Storage Tanks, Emergency Response, Waste Tire Program, and Illegal Disposal/Complaints. The Solano County CUPA enforces those programs throughout the County. In addition to the CUPA Program, staff responds whenever there is an accidental release of hazardous materials.

In addition, the State Water Resources Control Board has contracted with the County of Solano to provide regulatory oversight for the cleanup of leaking underground storage tanks (LUSTs) under Local Oversight Program (LOP) contract. The programs service all the cities and unincorporated areas of Solano County.

The site cleanup program oversees the voluntary cleanup of contaminated property. Sections 101480 through 101490 of the California Health and Safety Code provide that a Responsible Party (RP) for a release site may request oversight of a site investigation and any remediation necessary to mitigate the site. Oversight activities include any review required of site assessment and remediation workplans, review of required sampling operations, analysis of sampling data, and establishment of site cleanup criteria. The RP can initiate oversight by submitting a written request for oversight. Once the signed agreement is received, the Environmental Health Services Division is required to notify the California Department of Toxic Substances Control (DTSC) and the applicable Regional Water Quality Control Board (RWQCB) to determine if these agencies have regulatory involvement with the site. If no concerns are raised by the State agencies, then a staff person of the Environmental Health Services Division Hazardous Materials

Section will oversee the investigation and remediation of the site. After determining that the RP has completed the site investigation and remediation necessary to protect human health and the environment then, Environmental Health Services Division Hazardous Materials Section will prepare a no-further-action "closure" letter stating that the investigation and remediation is complete.

Asbestos Regulations

Title 8 California Code of Regulations Section 1529 regulates asbestos exposure in all construction work and defines permissible exposure limits and work practices. Typically, removal or disturbance of more than 100 square feet of material containing more than 0.1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1% or less asbestos. When the asbestos content of materials exceeds 1%, virtually all requirements of the standard become effective. With respect to potential worker exposure, notification, and registration requirements, the California Division of Occupational Safety and Health (Cal/OSHA) defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1% asbestos (8 CCR 341.6).

Affected Environment

The project consists of the project footprint and surrounding land in the vicinity of Fairfield and Suisun City, Solano County, California. The approximate site location is depicted on Figure 2-1. The specific site reconnaissance for this analysis are described in detail below.

Initial Site Assessment Reports

The information below is summarized from *Initial Site Assessment, I-80, I-680, SR-12 Improvement Project, Solano County* (ISA) prepared in 2008 and updated in 2009. The ISA reports were prepared in accordance with the Department's *Initial Site Assessment Guidance* in order to determine the presence of hazards and hazardous materials within the project right-of-way and temporary construction easements.

The ISA reports included the following:

- Reviews of previously prepared environmental reports, Draft Private Property Investigation and Aerially-Deposited Lead Report. These reports document potential environmental concerns within the Department's right-of-way and properties adjacent to the proposed project.
- Review of physical setting references and observations made to obtain information concerning the topographic, geologic, and hydrogeologic characteristics of the site and vicinity.
- Summary of a site reconnaissance conducted from public thoroughfares to observe conditions and activities for indications of evidence of recognized environmental conditions.
- Review of historical sources (including prior environmental reports, aerial photographs, and topographic maps) to develop a site history detailing previous uses of the site and the surrounding area to identify potential past uses that might have led to recognized environmental conditions.

- Review of publicly available federal, state, and local regulatory agency records to help identify recognized environmental conditions at or potentially affecting the site.

The information obtained for the ISA reports is relevant only for the dates of the records reviewed or as of the date of the latest site visit. Therefore, the information is valid only as of the date of the reports. Due to the lack of sufficient right-of-entry permits, site reconnaissance of private parcels and property owner interviews were not performed.

The ISA reports are not a comprehensive site characterization and should not be construed as such. The findings and conclusions presented are predicated on the site reconnaissance, a review of the historical usage of the site, and a review of the specified regulatory records as presented in the ISA. It should be noted that wetlands delineation and surveys of asbestos, lead-containing paint (non-bridge) structure, lead in drinking water, radon, methane gas, and mold were not included in the scope of services for these reports. Therefore, the ISA reports should be deemed conclusive only with respect to the information obtained.

Site Reconnaissance

Site reconnaissance of the project area was performed in April 2008 and April 2009. The purpose of the reconnaissance was to survey the existing I-80/I-680/SR 12 corridors, adjacent roadway connector and private property conditions within and adjacent to the area from public thoroughfares to attempt to identify visual indicators of potential hazardous waste facilities/impacts. The site reconnaissance excludes the segment of eastbound I-80 from SOL PM 14.0 to 15.7 and eastbound SR 12E from SOL PM L1.8 to L2.0, the eastbound I-80 Truck Inspection Facility, and portions of adjacent property south of I-80.

Aerially Deposited Lead Report

Aerially deposited lead (ADL) in soils adjacent to highways is attributed to the historic use of leaded gasoline. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the time period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in the top two feet of material in areas within the highway right-of-way. Soils within the Department's right-of-way that contain hazardous waste concentrations of ADL can be reused under the authority of variances issued by the DTSC. The variances allow stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels on the Department's right-of-way when specific conditions are met.

The ADL report for the I-80 Eastbound Cordelia Truck Scale Relocation Project (a nearby project) is summarized in the 2009 ISA update. ADL investigation of the Department's right-of-way consisting of the eastbound shoulder of I-80, from PM 10.0 to 15.7, and eastbound SR 12E from PM L1.8 to L2.0 were performed. A total of 105 soil samples were collected for lead analysis. Additionally, 20 step-out borings were advanced and 24 soil samples were collected. Soil samples were collected from the step-out borings at selected depths between the surface and 2.5 feet, and were based upon the depth intervals where reported soluble lead concentrations (using the waste extraction test [WET]) exceeded the soluble threshold limit concentration (STLC) of 5.0 milligrams per liter (mg/l) in the corresponding initial samples. Soil analytical results and the lead statistical evaluation of the initial borings indicated the following.

- Shallow soil at the western and eastern portions of the project area would not be classified as a California hazardous waste because the 90% upper confidence limit (UCL) predicted soluble WET lead concentration is less than the lead STLC of 5.0 mg/l.
- The top one foot of soil excavated from the central portion of the area investigated should be either (1) managed and disposed of as a California (but not an RCRA—i.e., Federal) hazardous waste or (2) stockpiled and re-sampled to confirm waste classification in accordance with specific disposal facility acceptance criteria, if applicable. Underlying soil would not be classified as hazardous waste based on lead content. Based on the results of the step-out borings, the ADL impacts at hazardous-waste levels do not appear to extend further than 12 feet from the edge of pavement (EOP).
- Analytical results of the step-out boring soil samples did not report soluble WET lead at concentrations above the STLC of 5.0 mg/l. Therefore, soil excavated from areas greater than approximately 12 feet from the EOP (approximately ten feet from the initial borings) and generated for offsite disposal should not be classified as a California hazardous waste based on lead content.

Environmental Data Resources Database Search

Environmental Data Resources (EDR) performed a search of federal, state, and local databases for the project footprint and the surrounding area (Appendix E in the 2008 ISA). The following sections provide additional information regarding properties with potential hazardous materials located within approximately 0.25 mile of the project footprint.

Maps depicting the ISA study area and potential hazardous waste facilities are presented in Figures 3.2.5-1 through 3.2.5-9. Table 3.2.5-1, located at the end of this section, identifies potential hazardous waste facilities along with their respective Map ID numbers and potential impact (low and moderate risk) on right-of-way acquisition and build alternatives selection.

According to information presented in the Department of Conservation Division of Mines and Geology map, naturally occurring asbestos is not indicated in the project footprint or in the vicinity of the project (California Department of Conservation 2000).

Emergency Response Notification System

The Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances. Two ERNS sites are within the search area for the proposed project.

- Emergency Response Notification System (ERNS) listing for Eastbound I-80 and I-680 overpass—In December 1988, approximately 100 gallons of gasoline spilled from an overturned tanker truck into Green Valley Creek.
- ERNS listing for I-680 and 80 interchange—In January 1991, an overturned fuel tanker caught fire and spilled approximately 7,200 gallons of diesel, affecting soil and surface water in Green Valley and Dan Wilson Creeks.

LUST and Spills, Leaks, Investigation, and Cleanup Listings

Review of the EDR search report indicates that 19 facilities in the vicinity of the project area are referenced on the LUST and/or Spills, Leaks, Investigation, and Cleanup (SLIC) listings. Two

sites appear to be associated with property to be potentially acquired by the Department as part of the proposed improvement project, and include the following:

- **The Valine property at 4000 Russell Road in Fairfield.** Based on subsequent soil and groundwater sample results, the Solano County Department of Resource Management granted case closure on June 11, 2008.
- **The 76 station (formerly Unocal) at 119 Red Top Road in Fairfield.** The County Department of Resource Management granted UST case closure on August 25, 1997.

Table 3.2.5-2 provides a summary of LUST and SLIC cases within the project vicinity that are currently open.

Table 3.2.5-2. LUST and SLIC Properties

Map ID No.	Name	Address	Substance	Affected Media	Status
6	PrimeSource Inc./ Sequoia Supply	250 Dittmer Road	Gasoline, MTBE	Soil and Groundwater (Drinking water aquifer)	Verification Monitoring
33	Canova Moving and Storage	1336 Woolner Avenue	Gasoline, MTBE, BTEX	Soil and Groundwater, possible utility migration	Remediation
36	Sheldon Oil Co.	526 School Street	Not Reported	Soil and Groundwater	Open LUST and SLIC case; Remediation

Source: ISA Update, Solano County, 2009.

UST/AST Listings

The EDR search report indicates that 12 facilities at and in the vicinity of the project study area contain registered USTs or ASTs. Many of these facilities are also included in the LUST listings. A review of the listings indicates that two of the registered UST facilities are located at properties proposed for full or partial Department acquisition as part of the proposed improvement project: the 76 Station at 119 Red Top Road in Fairfield (UST case closed), and Super Store #70567 Industries at 199 Red Top Road in Fairfield (no pending actions or violations).

RCRA SQG, FINDS and HAZNET Listings

There are 18 facilities at or in the vicinity of the project study area that are referenced on the RCRA Small and Large Quantity Generator (SQG and LQG) listings as generating between 100 and 1,000 kilograms and greater than 1,000 kilograms, respectively, of hazardous waste per month. There are 18 facilities listed in the Facility Index System (FINDS) from cross reference to other regulatory listings relating to chemical use, storage, and disposal, and 23 facilities at or in the vicinity of the project study area are referenced in the HAZNET listing for filing hazardous waste manifests.

The EDR Orphan Summary identifies properties that have incomplete address information and could not be specifically plotted. A total of 49 properties were listed in the Orphan Summary. Approximately four of the properties listed on the Orphan Summary are located within the project study area and have been incorporated in the prior regulatory listing summaries. None of these properties, however, are properties proposed for acquisition (copies of the EDR Orphan Summary and individual EDR Site Reports for the listed facilities are presented in Appendix B in the ISA Update).

Environmental Consequences

The ISA reports identified the following potential hazardous materials/waste conditions.

- **Effects associated with nearby agricultural uses:**
  - Soil impacts associated with pesticides, herbicides, petroleum hydrocarbons, and metals from agricultural use. Pesticides appear to be present in surface soil in the central and eastern portions of the proposed project area and the Suisun Creek Bridge area.
- **Other soil effects:**
  - Contaminated soil associated with leaking storage tanks and sanitary sewer pipelines.
  - Groundwater in the eastern portion of the proposed project area and the Suisun Creek Bridge area appears to be affected by pesticides. Potential impacts may be associated with construction of bridge pilings greater than ten feet deep.
- **Effects associated with traffic or roadway maintenance:**
  - ADL at levels exceeding hazardous waste criteria have been identified within the unpaved shoulders and median within existing I-80 right-of-way in the central and eastern portions of the project area.
  - Lead-containing paint (LCP) associated with removal of existing yellow pavement striping.
- **Potential effects associated with the removal or modification of facilities or structures:**
  - Sulfur from bridge rail posts may be encountered during demolition.
  - LCP may be encountered during demolition.
  - Treated-wood waste may be encountered during demolition.
  - Asbestos-containing pipe may be encountered during demolition.
- **Effects associated with identified potential hazardous waste facilities:**
  - Past residual petroleum hydrocarbon releases may require additional UST removal and soil and groundwater remediation.

ADL is present in the surface and near-surface soils as a result of past emissions from vehicles powered by leaded gasoline. Yellow thermoplastic and paint striping, potentially containing lead chromate, is present on roadway surfaces within the project area. Structures within the existing Department rights-of-way and those present proposed for full or partial Department acquisition may contain ACMs and LCPs. Potential LCP and ACMs also may be present in bridge construction materials within the project area.

Soil sampling and analysis to evaluate ADL in shallow soil within the existing eastbound I-80 right-of-way indicates that the top one foot of soil in the central portion of the project area would be classified as hazardous waste based on lead content.

Soil sampling and analysis to evaluate properties being considered for right-of-way acquisition was conducted. Results indicate elevated levels of arsenic, vanadium, pesticides, and dieldrin exceeding acceptable residential, commercial, and industrial ESLs.

Exposure of Humans and the Environment to Groundwater Contamination as a Result of Construction Activities

As previously discussed, Table 3.2.5-1 identifies potential hazardous waste facilities along with their respective Map ID numbers and potential impact to right-of-way acquisition and build alternatives selection. Eight facilities located within the project area are considered moderate-risk. Five of these have documented groundwater contamination and as such, are considered high-risk facilities. All eight of the medium/high risk sites are located within or adjacent to the footprints of both alternatives and therefore would not influence the selection of one alternative over another. Although some of these cases are considered closed, testing for contaminants should be conducted in order to determine the extent and nature of possible contamination.

Under the No-Build Alternative, there would be no construction and therefore, no potential to expose workers or nearby land uses to hazardous materials as a result of construction activities.

Potential for Exposure of Construction Workers or Nearby Land Uses to Previously Unknown Hazardous Materials as a Result of Construction Activities

The project area generally has a moderate risk of previously unreported hazardous materials that could be discovered during construction of any of the build alternatives. The development of a health and safety plan would address this potential hazard.

Under the No-Build Alternative, there would be no construction and therefore, no potential to expose workers or nearby land uses to hazardous materials as a result of construction activities.

Potential for Exposure of Known Hazardous Materials to Humans or the Environment as a Result of Construction Activities

The project area generally has the potential for hazardous materials in the form of heavy metals, such as chromium and lead in yellow pavement striping; ACMs; soils contaminated with pesticides, herbicides, and metals; treated-wood waste; bridge rail post sulfur; bridge pilings; and petroleum hydrocarbons that could be released during construction of any of the build alternatives unless measures are taken to avoid that release. In addition, the ADL investigation report in the ISA Update confirmed the presence of ADL within the project area.

Other potential sources of contamination include aerially applied chemicals during agricultural use of adjacent parcels that could present a respiratory irritant to construction workers. Construction may require the movement or disposal of soils or materials containing some or all of these hazardous materials. Implementation of measures relating to the handling of yellow striping, contaminated soils, sampling ground water, and to timing of construction will avoid these potential adverse effects.

Under the No-Build Alternative, no construction would occur and therefore, there would be no potential to expose any known hazardous materials during construction.

Potential for Exposure of Humans and the Environment to Hazardous Conditions from the Accidental Release of Hazardous Materials as a Result of Construction Activities

Construction 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., blacktopping materials) that may result in hazardous conditions in the project area. In addition, sanitary sewer pipelines may cross or exist within the planned roadway construction alignment. If pre-existing leaks are encountered, or if pipelines are ruptured during construction, construction workers or nearby land uses could be exposed to biological contamination. These hazards are applicable to any of the build alternatives. The development of a health and safety plan would avoid and minimize this potential effect.

Under the No-Build Alternative, no construction would occur and therefore, there would be no potential for an accidental release of hazardous materials as a result of construction activities.

Avoidance, Minimization, and/or Mitigation Measures

Perform Groundwater Contamination Testing

Five sites identified in Table 3.2.5-1 have documented groundwater contamination issues and as such, are considered high-risk facilities. Although some of these cases are considered closed, testing for contaminants should be conducted in order to determine the extent and nature of possible contamination.

Therefore, subsequent to the public circulation of the draft environmental document, testing will be performed on those parcels that are affected by the selected alternative, provided that a right of entry to perform the testing can be obtained.

Develop a Health and Safety Plan to Address Worker Health and Safety

The location of underground pipeline crossings will be determined by the Underground Service Alert (USA) system for excavation work at these pipeline crossings before construction. Soil testing for contamination will be conducted prior to construction work. Soils within the Department's right-of-way that contain hazardous waste concentrations of ADL can be reused under the authority of variances issues by the California DTSC. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels on the Department's right-of-way when specific conditions are met. As necessary, a health and safety plan will be prepared to address worker safety when working with potentially hazardous materials, including biological contaminants, potential LCPs, soils potentially containing ADL, and other construction-related materials within the right-of-way for any soil disturbance.

Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadways

The Department will ensure that before construction, the contractor will sample and test yellow pavement striping scheduled for removal to determine whether lead is present. All aspects of the proposed project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. Disposal of the stripes will be at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the Department and the contractor.

Dispose of Soils Contaminated with ADL, Arsenic, Pesticides, and Herbicides in Accordance with Appropriate Regulations

Based on the results of the 2008 ADL investigation report summarized in the 2009 ISA, soils in the central and eastern portions of the project area are classified as hazardous waste. This soil will be handled or disposed of in accordance with the California Health and Safety Code DTSC requirements. Under the DTSC Variance, this soil may be reused onsite if the excavated soil is placed under clean fill or pavement and a minimum of five feet above the maximum water table elevation. Consultation and a permit from the Solano County CUPA will be obtained before reusing any contaminated soil. The CUPA will consult with the DTSC regarding any further requirements.

Based on the elevated arsenic, lead, and pesticides concentrations reported in soil samples from the upper 2.5 feet of soil at the private property parcels, the top 2.5 feet of excavated soil can be reused within the project limits by placing the soil beneath a minimum of one foot of clean fill or beneath a pavement structure. If reuse conditions are not met, material will be transported to the Class 1 disposal site at Kettleman City.

Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals

The Department will ensure that the contractor coordinates the timing of construction activities with individual growers on parcels within or adjacent to the project area to avoid any aerially applied chemical impacts on workers during construction.

Sampling and Testing of Groundwater

Groundwater sampling within the Suisun Creek Bridge vicinity of the project area should be performed to further evaluate potential contamination. Sampling and testing for contamination will be conducted during construction activities that require excavation deeper than four feet. Groundwater containing contaminates will be treated to reduce sediment load and metal content prior to discharge to surface water bodies or publicly owned treatment facilities.

Table 3.2.5-1. Summary of Identified Potential Hazardous Waste Facilities and Recommendations

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Table 3.2.5-1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS
I-80/I-680/SR-12 IMPROVEMENT PROJECT

Map ID No.	Facility	Address	APN	Impact to ROW and Acquisitions	Information Source(s)	Environmental Impacts/ Chemical of Concern	Regulatory Status	Potential Impact to I-80/I-680/SR-12 Improvement Project and Recommendations
1	Tower Mart	4720 Gold Hill Road		Low Impact Alt B and C ESA	EDR Report LUST	Active service station located west of the project ESA. Based on information presented in the EDR report, this facility was listed in the LUST database for petroleum hydrocarbon impacts to soil only.	The facility is listed with a "case closed" status from the SCDRM.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
2	**76 Station**	**119 Red Top Road**	**0180-01-0070**	**Moderate Impact Alt B and C ESA**	**Recon LUST SCDRM Files**	**Active service station located within the project ESA. USTs were removed in 1995. A leak in a waste oil UST was discovered and petroleum-impacted soil excavated. Confirmation soil samples did not contain detectable levels of contaminants. Low levels of BTEX reportedly remain in soil at a depth of 4.5 feet along the former product piping trenches. Groundwater not encountered in the excavation and the SCDRM indicates impacts to soil only. Replacement USTs reportedly subsequently installed at the facility.**	**This facility was granted UST case closed status from the SCDRM in August 1997.**	**This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. A partial or full parcel take may require UST removals, and additional soil and groundwater characterization and remediation. from past petroleum hydrocarbon releases. Exploratory borings should be performed for any planned construction excavations on and adjacent to this facility to evaluate worker health & safety and soil disposal options.**
3	Sunnyside Farms	199 Red Top Road	0180-01-0050	Low Impact Alt B and C ESA	Recon LUST SCDRM Files	The facility is currently a food distribution facility within the project ESA. Three USTs abandoned in place in 1989. Confirmation sample results were not included in SCDRM files. Three diesel ASTs reported at the facility. A fourth diesel UST and fuel dispensers removed in 2004 under SCDRM supervision. Contaminants not detected in confirmation soil samples. Groundwater was not encountered during closure activities.	No pending regulatory action or active violations were noted in SCDRM files for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate potential site impacts related to petroleum hydrocarbon releases from past UST and current AST operations.
4	Jack-in-the-Box (Former Red Top Mini Market)	107 Red Top Road (formerly 151 Red Top Road)	0180-01-0080	Low Impact Alt B and C ESA	LUST SCDRM Files 1970 Aerial	Currently a fast-food restaurant (formerly a service station) within the project ESA. One UST failed a leak test in 1986, and three USTs removed in 1987. Petroleum impacts to soil and a limited amount of soil was excavated during the UST removal. A 1996 site characterization found TPHg and low levels of BTEX in 2 of the 30 soil samples collected at 10 ft. Soil samples at the 20 foot depth from the same borings did not contain detectable levels. Water samples collected from borings within the former UST excavation contained low levels of TPHg and BTEX. Additional impacted soil and groundwater were removed from the property for offsite disposal. Contaminants were reportedly not detected in confirmation soil samples.	This facility was granted a case closed status from the SCDRM in November 1996.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
5	United Parcel Service	5000 West Cordelia Road		Low Impact Alt C ESA	Recon UST	Active UPS parcel distribution facility within the project ESA. The UPS facility was listed in the EDR report in the UST database for operation of one UST at the facility. No case files at the SCDRM for this property and no releases indicated in the EDR report.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternative C based on proposed construction area boundaries.
6	Prime Source	250 Dittmer Road		Low Impact Alt C ESA	LUST GeoTracker	The facility is an active automobile re-seller. One UST removed in 1988. Petroleum-impacted soil was encountered in the tank pit. A replacement diesel UST was installed at the same location later that year. In 1997, a motor oil UST was abandoned in place under the supervision of SCDRM. In 2005, both USTs removed. Impacted soil and groundwater were identified and the area over-excavated. Contaminants were not detected in confirmatory soil samples, though were in groundwater. Additional borings and monitoring wells installed and soil excavated. Low levels of TPHd remain in onsite groundwater.	SCDRM is evaluating consultants request for No Further Action status for the facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternative C based on proposed construction area boundaries.
7	Arco Station	105 Lopes Road		Low Impact Alt B and C ESA	Recon UST	Active gas station with no reported releases or violations. The facility was observed in the field during the site reconnaissance and was not included in the EDR Report.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
8	Napa Valley Beverage Company	497 Edison Court		Low Impact Alt C ESA	Recon SCDRM Files LUST	Two USTs removed in 1989. Low levels of contaminants encountered in soil from the tank pit. SCDRM required installation of monitoring wells. Onsite soil remediation conducted in 1990. In August 1994, a groundwater sample from near the former UST excavation contained low levels of TPHd.	This facility was granted a case closed status from the SCDRM in August 1995.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternative C based on proposed construction area boundaries.

Source: Geocon Consultants. 2009. I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update. Prepared for U.S. Department of Transportation, Federal Highways Administration, State of California, Department of Transportation. April 2009

Table 3.2.5-1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS
I-80/I-680/SR-12 IMPROVEMENT PROJECT

Map ID No.	Facility	Address	APN	Impact to ROW and Acquisitions	Information Source(s)	Environmental Impacts/ Chemical of Concern	Regulatory Status	Potential Impact to I-80/I-680/SR-12 Improvement Project and Recommendations
9	Hudson Beverage Company	237 Lopes Road		Low Impact Alt B and C ESA	Recon SCDRM Files LUST	The facility is a commercial business. Two USTs removed 1997. Impacts soil and groundwater were encountered and over-excavation and removal of groundwater conducted. Confirmation soil and groundwater samples also showed residual petroleum impacts. In 2000, two USTs closed in place. In October 2000, sampling defined the extent of impact to a localized area near the former UST pit.	This facility was granted a case closed status from the SCDRM in March 2001.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
10	Sierra Truck and Van (Formerly Trail Wagons)	225 Lopes Road		Low Impact Alt B and C ESA	SCDRM Files LUST	The facility is a commercial business. Two USTs removed in August 1993. Confirmation soil samples contained low levels of contaminants. The tank pit was over-excavated and final confirmation soil samples contained no contamination.	This facility was granted a case closed status from the SCDRM in October 1995	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
11	Saturn of Fairfield	4850 Auto Plaza Court		Low Impact Alt B and C ESA	Recon	The property is an auto dealership with no reported releases that was not listed in the EDR report, on the GeoTracker website, or in SCDRM case files.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
12	Costco Gas Station	5101 Business Center Drive		Low Impact Alt B and C ESA	Recon EDR	The property is an active gas station with no reported releases located north of the project ESA and was listed in the EDR Report in the UST, RCRA SQG, and FINDS databases. The EDR Report identified three gasoline USTs in use at the facility. The facility was not listed in the GeoTracker database or in SCDRM case files.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
13	Green Valley Cleaners	5055 Business Center Drive		Low Impact Alt B and C ESA	Recon EDR	The property is an active dry cleaner with no reported releases located north of the project ESA. The business was listed in the EDR Report in the Drycleaners and HAZNET databases. Regulatory information for the facility was not listed on the GeoTracker website or available in SCDRM case files.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
14	Former Campbells Carpets	4731 Central Way		Low Impact Alt B and C ESA	SCDRM Files LUST	The property is a vacant portion of a commercial building. One UST removed in 1989 without SCDRM permit. In August 1997, SCDRM requested, soil and groundwater sampling to evaluate impacts. Soil and groundwater samples contained petroleum hydrocarbons and BTEX. Groundwater flow direction at that time was estimated to be to be toward the southeast. A 1998 soil gas survey indicated low risk to building occupants.	This facility was granted a case closed status from the SCDRM in September 1998.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
15	**Former Terminal Stations, Inc.**	**100 Suisun Valley Road**		**Moderate Impact Alt B and C ESA**	**SCDRM Files LUST**	**Currently vacant land, formerly occupied by a truck refueling facility located immediately west of I-80, north if the I-80/I-680 interchange. In 1984 a waste oil/diesel fuel discharge from the facility to an unnamed flood control channel was discovered adjacent and parallel to I-80. Impacted soil was excavated and surface water removed for offsite disposal. In 1987, USTs were operated at the property without a SCDRM permit A 1987 soil and groundwater investigation conducted along the perimeter of the facility included two soil boring locations within the Caltrans ROW adjacent to westbound I-80. Petroleum-impacted groundwater encountered in Caltrans ROW. In 1987, widespread onsite petroleum impacts to soil were identified. In 1988 all USTs were removed under SCDRM permit. In 1993, the groundwater flow direction was toward the south (toward the I-80/I-680 interchange).Subsequent groundwater extraction was conducted and monitoring indicated decreasing contaminant levels in groundwater.**	**Based on the decreasing contaminant concentration trends in groundwater, use of the property and lack of sensitive receptors within 1,000 feet, the SCDRM concluded that the facility met the requirements for low-risk case closure. The SCDRM granted UST case closure on May 3, 2001.**	**This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed within the Caltrans ROW adjacent to the property to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal options related to former petroleum hydrocarbon releases from UST operations and past surface water discharges at the adjacent property.**
16	Vacant land (former Arco Station)	4510 Central Way		Low Impact Alt B and C ESA	SCDRM Files LUST	Currently vacant land (formerly occupied by an Arco service station prior to 1987) located east of the project ESA. In 1993, soil and groundwater samples contained petroleum hydrocarbons. Groundwater flow direction in 1993 was toward the southeast.	The SCDRM granted UST case closure in July 2001.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
17	Chevron Station	4490 Central Way		Low Impact Alt B and C ESA	Recon SCDRM Files LUST	An active service station located east of the ESA. USTs removed in 1987. Onsite soil and groundwater impacts identified. Groundwater monitoring wells installed and sampled through 1997 showed decreasing contaminant levels. Groundwater flow direction in 1997 was toward the southeast. Subsequent onsite investigations during property transaction identified additional contamination that was remediated in 2001. Site conditions were also remediated following the UST removal and clean-up through 2003.	SCDRM granted low risk UST case closure for the prior USTs in 1997 and additional case closures in March 2001 and April 2004.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.

Source: Geocon Consultants. 2009. I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update. Prepared for U.S. Department of Transportation, Federal Highways Administration, State of California, Department of Transportation. April 2009

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I-80/I-680/SR-12 IMPROVEMENT PROJECT

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18	Shell Station	4450 Central Way		Low Impact Alt B and C ESA	Recon SCDRM Files LUST	Active service station located east of the project ESA. USTs removed 1986. Onsite impacts to soil and groundwater identified. Groundwater monitoring wells were installed and monitored. Soil excavation and groundwater over-pumping conducted. Groundwater flow direction in 1996 was toward the southwest. Final groundwater sampling reported no further impacts.	SCDRM granted UST case closure in April 1996.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries
18	**76 Station**	**134 Pittman Road**		**Moderate Impact Alt B and C ESA**	**Recon SCDRM Files LUST**	**Active service station with located at the northeast corner of the Pittman Road/Suisun Valley Road entrance ramp to eastbound I-80. USTs removed in 1993 and impacted onsite soil and groundwater over-excavated and over-pumped for offsite disposal. Groundwater wells installed and monitored through 2001. Groundwater impacts indicated decreasing trends. Groundwater flow direction in 2001 was toward the west-southwest. Impacted groundwater has approached the property boundary at Pittman Road, south of the eastbound I-80 entrance ramp.**	**SCDRM granted low risk UST case closure on July 27, 2001.**	**This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed in the Caltrans ROW at the Pittman Road/I-80 area prior to construction to evaluate soil and groundwater conditions, worker health & safety, and soil disposal groundwater treatment options due to potential impacts from petroleum hydrocarbon releases at the adjacent property.**
20	Valero Station	4444 Central Place		Low Impact Alt B and C ESA	Recon UST SCDRM Files	An active service station located east of the project ESA. Gasoline and diesel UST were installed at the facility in 2001 when the station was built. No violations or unauthorized releases were noted in the SCDRM files.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
21	Arco Station	4449 Central Place		Low Impact Alt B and C ESA	Recon SCDRM Files LUST	An active service station located east of the project ESA. USTs upgraded at the facility in 1998. Petroleum impacted soil identified at that time was excavated and removed. SCDRM requested additional soil and groundwater sampling to further define impacted areas. In 1999, additional soil and groundwater samples indicated low petroleum impacts.	SCDRM granted UST case closure on June 11, 1999.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
22	Scandia Family Center	4300 Central Place		Low Impact Alt B and C ESA	Recon EDR	The facility is a miniature golf and arcade entertainment park located south of the project ESA. The EDR report listed a UST closed at the property on January 25, 2005. The facility was listed on the GeoTracker website as a registered UST facility, though not as a release site.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
23	**Former Old Fruit Bowl Mobil Station (Valine Ranch Property)**	**4000 Russell Road**		**Moderate Impact Alt B and C ESA**	**SCDRM Files LUST**	**The property is a former service station (operated from 1946 to 1972) located west of and adjacent to I-80 within the project ESA on land proposed for Caltrans acquisition. Five USTs removed in 2000 under observation by SCDRM. Onsite petroleum impacts to soil and groundwater identified. Impacted soil over-excavated for onsite remediation and groundwater over-pumped for offsite disposal. Residual petroleum impacted soil and groundwater remain onsite.**	**SCDRM granted case closure on June 11, 2008.**	**This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate soil and groundwater conditions, worker health & safety, and soil disposal and groundwater treatment options due to impacts from residual petroleum hydrocarbon releases at the property.**
24	Pacific Gas & Electric substation	South of the I-80/SR-12 East interchange		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active PG&E electrical substation with fluid-cooled pad-mounted transformers. Possible polychlorinated biphenyl (PCB) compound impacts to soil at the facility.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
25	**Moore Tractor Company**	**4088 Russell Road**	**0027-510-040**	**Moderate Impact Alt B and C ESA**	Recon Prior Phase I SCDRM Files	Currently a tractor sales and service facility located southwest of the I-80/SR-12 East interchange and within the project ESA on land proposed for Caltrans acquisition. SCDRM inspections reported bulk automotive fluids stored at the property including diesel fuel (500-gallon AST), engine oil, and waste oil. A cement sump associated with a wash rack was also noted. Past SCDRM violations have included an overflowing sump, onsite automotive fluid spills, and improper drum storage.	No pending regulatory action or active violations are noted for this facility.	This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal and groundwater treatment options related to past use of petroleum hydrocarbons and past operations at the property.
26	**Concrete Pipe Distributors**	**4974 Abernathy Road**	**0027-510-070**	**Moderate Impact Alt B and C ESA**	Recon Prior Phase I	Currently a concrete pipe distributor located southwest of the I-80/SR-12 East interchange. A prior UST was reportedly removed in approximately 1985. No SCDRM information regarding the removal. 55-gallon drums from the adjacent Moore Tractor Co. were observed stored at the facility in 1994.	No pending regulatory action or active violations are noted for this facility.	This facility presents a moderate risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal and groundwater treatment options related to former UST operation and past conditions noted at the property.
27	Ford of Fairfield	3050 Auto Mall Court		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.

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28	Chrysler dealer	2955 Auto Mall Parkway		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
29	Dodge dealer	2901 Auto Mall Parkway		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
30	Volvo dealer	2855 Auto Mall Parkway		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
31	Hyundai dealer	2775 Auto Mall Parkway		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
32	Toyota dealer	2595 Auto Mall Parkway		Low Impact Alt B and C and Options 1 and 2 ESA	Recon	Active automobile dealership with no reported releases.	No pending regulatory action or active violations are noted for this facility.	This facility presents a low risk of impacting the I-80/I-680/SR-12 West Alternatives B and C based on proposed construction area boundaries.
33	Canova Moving and Storage	1336 Woolner Avenue		Low Impact Options 1 and 2 ESA	LUST Geotracker	Currently an active moving and storage company located northwest of the project ESA. One UST removed in 1989 and petroleum-impacted soil and groundwater identified. Groundwater wells installed and impacted groundwater monitored. Groundwater concentrations decreased during the 1990s. Additional investigations have defined onsite areas on soil and groundwater impacts. Groundwater flows to the southeast, though impacted groundwater does not extend south beyond Woolner Avenue.	On-going groundwater monitoring required by SCDRM.	This facility presents a low risk of impacting the SR-12 East Options 1 and 2 based on proposed construction area boundaries.
34	Suisun Fire District	445 Jackson Street		Low Impact Options 1 and 2 ESA	LUST SCDRM Files	An active district fire station located north of the project ESA. One UST removed in 1992. The tank pit was over-excavated and soil samples contained low petroleum impacts. Onsite groundwater wells were installed and monitored. Final sampling showed no petroleum impacts to groundwater.	SCDRM granted UST case closure on July 18, 1997.	This facility presents a low risk of impacting the SR-12 East Options 1 and 2 based on proposed construction area boundaries.
35	**Former Sheldon Oil Co.**	**426 Main Street**		**Moderate Impact Option 1 ESA**	**LUST Sanborn Maps SCDRM Files**	**A former bulk petroleum storage facility located at the north end of the Suisun Channel, northeast of a portion of the project ESA (Option 1 SR-12 East Concept). The property has been redeveloped to support a commercial office building (One Harbor Plaza), associated parking lot, and harbor waterfront walkways. The former Sheldon Oil Company was depicted in 1945 and 1954 Sanborn Maps. The facility stored bulk quantities of diesel fuel No. 2, asphalt emulsion, heating fuel Nos. 4, 5, 6, and used motor oil. Onsite soil impacted by petroleum hydrocarbons to a minimum depth of 9 ft. Onsite groundwater also impacted. Impacted areas extend to the Suisun Channel. Additional information regarding investigations and clean-up at the property were not available in SCDRM files.**	**SCDRM granted case closure to the facility on October 18, 1995.**	**This facility presents a moderate risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries. Exploratory borings should be performed prior to roadway construction in areas near Main Street in Suisun City to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal and groundwater treatment options related to residual impacts related to former UST operations and other onsite chemical handling operations at the adjacent property.**
36	**Former Sheldon Oil Co.**	**526 School Street**		**Moderate Impact Option 1 ESA**	**LUST SCDRM Files**	**Currently a vacant lot (formerly used by the Sheldon Oil Co. as a truck washing/cleaning facility from the mid-1940s to 1993) located west of the Suisun Channel, at or adjacent to a portion of the project ESA (Option 1 SR-12 East Concept). Operations as the facility included the use of trichloroethylene (TCE) to clean truck tanks. Onsite TCE discharges reported and onsite soil and onsite/offsite groundwater impacted by petroleum hydrocarbons and VOCs identified. VOC-impacted groundwater has migrated offsite to the northeast. Impacted soil excavated and groundwater over-pumped for offsite disposal in 2006. Groundwater monitoring on-going.**	**On-going groundwater monitoring required by SCDRM.**	**This facility presents a moderate risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries. Exploratory borings should be performed if partial or full parcel take is contemplated or if road construction is planned near the property to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal and groundwater treatment options related to former onsite chemical handling operations.**

Source: Geocon Consultants. 2009. I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update. Prepared for U.S. Department of Transportation, Federal Highways Administration, State of California, Department of Transportation. April 2009

Table 3.2.5-1
SUMMARY OF IDENTIFIED POTENTIAL HAZARDOUS WASTE FACILITIES AND RECOMMENDATIONS
I-80/I-680/SR-12 IMPROVEMENT PROJECT

Map ID No.	Facility	Address	APN	Impact to ROW and Acquisitions	Information Source(s)	Environmental Impacts/ Chemical of Concern	Regulatory Status	Potential Impact to I-80/I-680/SR-12 Improvement Project and Recommendations
37	Former Texaco Station	522 Main Street		Low Impact Option 1 ESA	LUST SCDRM Files	Currently a municipal parking lot (formerly occupied by a service station) located east of the project ESA (Option 1 SR-12 East Concept). USTs removed prior to 1991. Petroleum-impacted soil and groundwater identified and impacted soil excavated for offsite disposal. Following excavation, soil and groundwater impacts had decreased.	SCDRM granted closure UST case closure on April 14, 1997.	This facility presents a low risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries.
38	Union Pacific Railroad/705 West Street	705 West Street		Low Impact Option 1 ESA	LUST SCDRM Files	Currently a commercial facility located southeast of the project ESA (Option 1 SR-12 East Concept). Two USTs removed in 1998. Soil and groundwater petroleum impacts identified. Shallow groundwater at the property was designated as brackish and tidally influenced and not of domestic beneficial use. Due to these conditions, additional groundwater monitoring was not required.	SCDRM granted UST case closure on July 15, 1999.	This facility presents a low risk of impacting the SR-12 East Option 1 based on proposed construction area boundaries.
NA	**I-80/I-680/SR-12 West and East Bridge Structures**	**Various Locations**	**NA**	**Existing I-80/I-680/ SR-12 West and East ROW**	**Recon**	**Existing bridge structures to be renovated, or removed.**	**NA**	**Asbestos and lead-containing paint surveys should be conducted at the bridge structures prior to any planned renovation or demolition to evaluate worker health & safety, abatement and waste disposal options and comply with applicable regulations, including Bay Area Air Quality Management District requirements.**
NA	**I-80/I-680/SR-12 West and East**	**ROW Acquisition**	**NA**	**New ROW**	**Recon**	**Properties with current or historical agricultural land use may contain residual agricultural chemicals in shallow soil.**	**NA**	**Conduct soil investigations for pesticides, herbicides, and metals as applicable on land proposed for full or partial acquisition based on past agricultural land usage to evaluate soil reuse or disposal options.**
NA	**I-80/I-680/SR-12 West and East**	**ROW Acquisition**	**NA**	**New ROW**	**Recon**	**Existing structures within the project ESA and on parcel takes requiring demolition.**	**NA**	**Asbestos and lead-containing paint surveys should be conducted prior to any planned renovation or demolition of buildings either within the Caltrans ROW or on properties proposed for full or partial takes to evaluate worker health & safety, abatement and waste disposal options and comply with applicable regulations, including Bay Area Air Quality Management District requirements.**
NA	**I-80/I-680/SR-12 West and East**	**Union Pacific Railroad Bridge and Crossing**	**NA**	**Existing I-80/I-680/ SR-12 West and East ROW**	**Recon**	**Planned excavation and grading within existing ROW and potential railroad crossing in SR-12 East Option 1. Potential metals, herbicides, petroleum hydrocarbons, and PAHs resulting from past railroad operations.**	**NA**	**Perform soil and groundwater sampling for metals, herbicides, petroleum hydrocarbons, and PAHs as applicable based on proposed construction practices at UPRR Bridge (near I-80/SR-12 West interchange and potential UPRR track crossing in Suisun City to evaluate potential impacts to soil and groundwater, worker health & safety, and soil disposal and groundwater treatment options related to past railroad operations.**
NA	**I-80/I-680/SR-12 West and East**	**Existing Corridors**	**NA**	**Existing I-80/I-680/ SR-12 West and East ROW**	**Recon Prior Nearby ADL Study**	**Planned excavation and grading within existing ROW**	**NA**	**Perform shallow soil sampling to evaluate potential ADL in soil for worker health & safety and soil disposal options related to historical automobile exhaust emissions.**
NA	**I-80/I-680/SR-12 West and East**	**Existing Corridors**	**NA**	**Existing I-80/I-680/ SR-12 West and East ROW**	**Recon**	**Planned excavation and pavement work within existing ROW**	**NA**	**Further evaluate potential hazardous waste issues or provide construction special provisions for thermoplastic traffic paint, asbestos pipe, bridge rail post sulfur and proper abandonment of wells, septic systems, and encountered unidentified USTs.**

Source: Geocon Consultants. 2009. I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update. Prepared for U.S. Department of Transportation, Federal Highways Administration, State of California, Department of Transportation. April 2009

Properties and locations listed in **BOLD** print have a moderate risk of impacting the project ESA and are recommended for further evaluation.

Notes: ESA – Environmental Study Area
UST – Underground Storage Tank
AST – Aboveground Storage Tank
UPRR– Union Pacific Rail Road
BTEX – Benzene, Toluene, Ethylbenzene, and Total Xylenes
NA – Not Applicable
EDR – Environmental Data Resources database
SFBRWQCB – San Francisco Bay Regional Water Quality Control Board
LUST – Leaking UST
PAHs – Polynuclear Aromatic Hydrocarbons
SCDRM – Solano County Department of Resource Management
ROW – Right-of-way
ADL – Aerially Deposited Lead
TPHg – Total Petroleum Hydrocarbons as Gasoline
TPHd – Total Petroleum Hydrocarbons as Diesel

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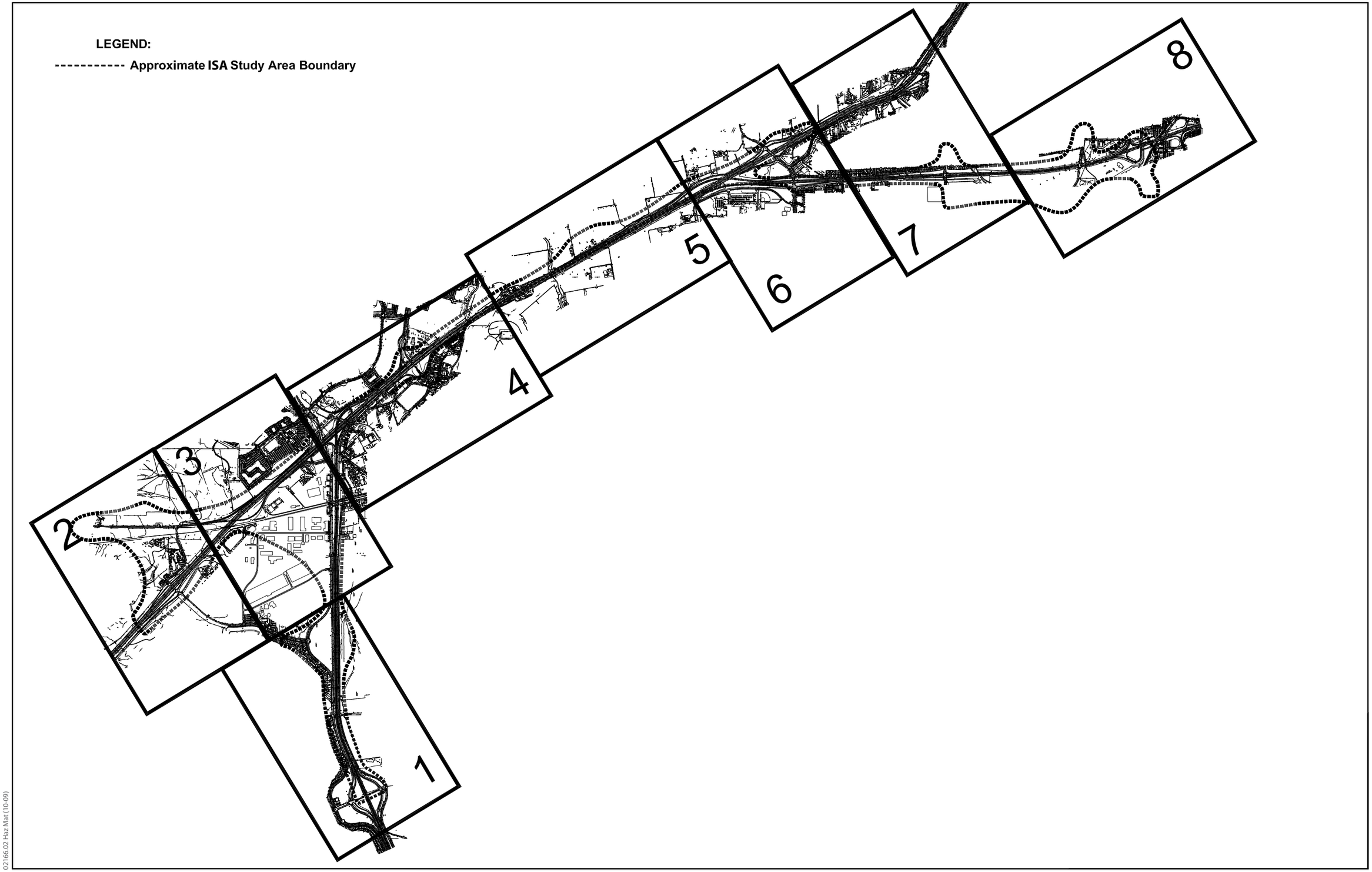


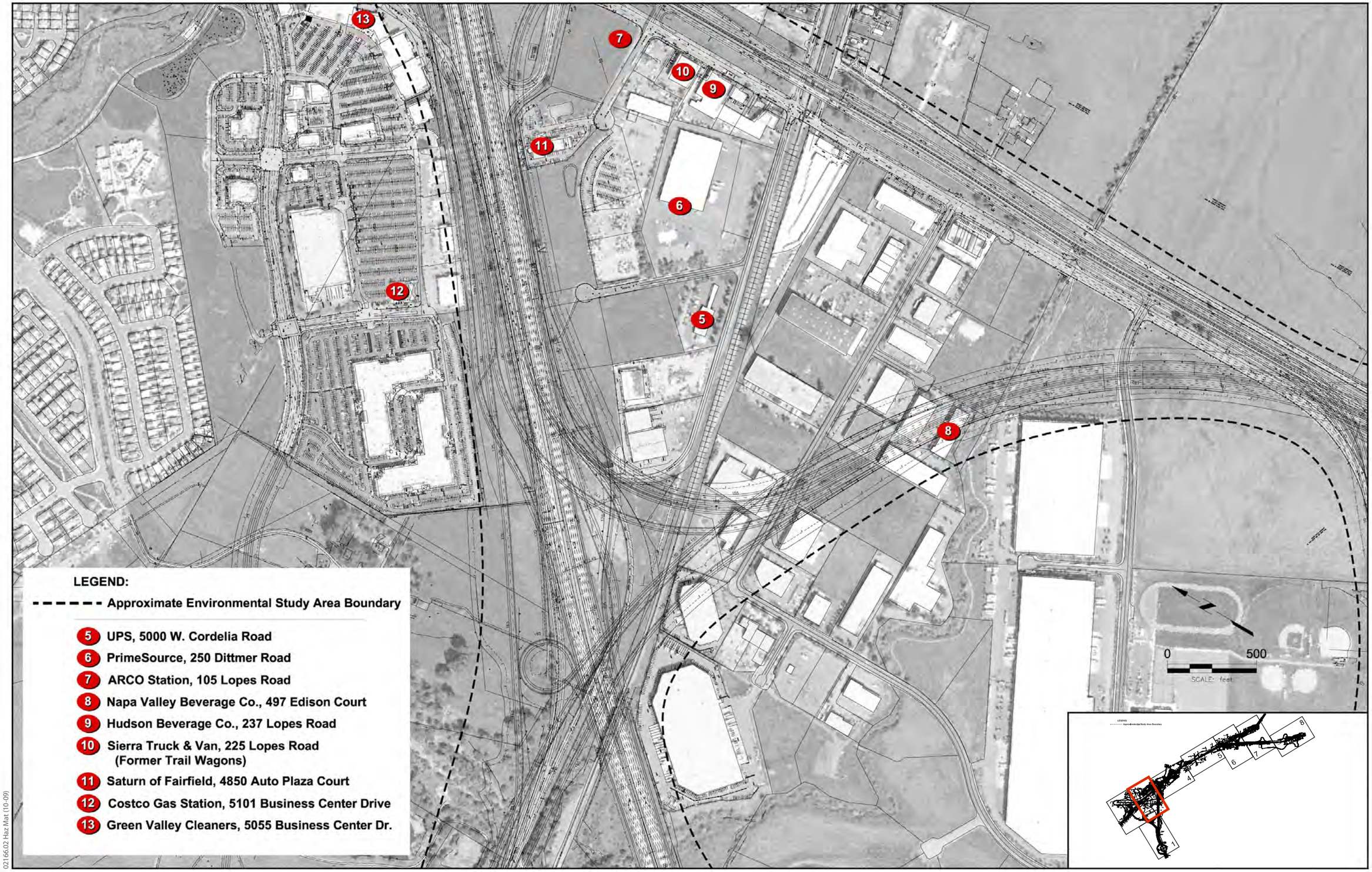
Figure 3.2.5-1
Potential Hazardous Facility Locations

02166.02 Haz Mat (10-09)

Figure 3.2.5-2
Potential Hazardous Facility Locations

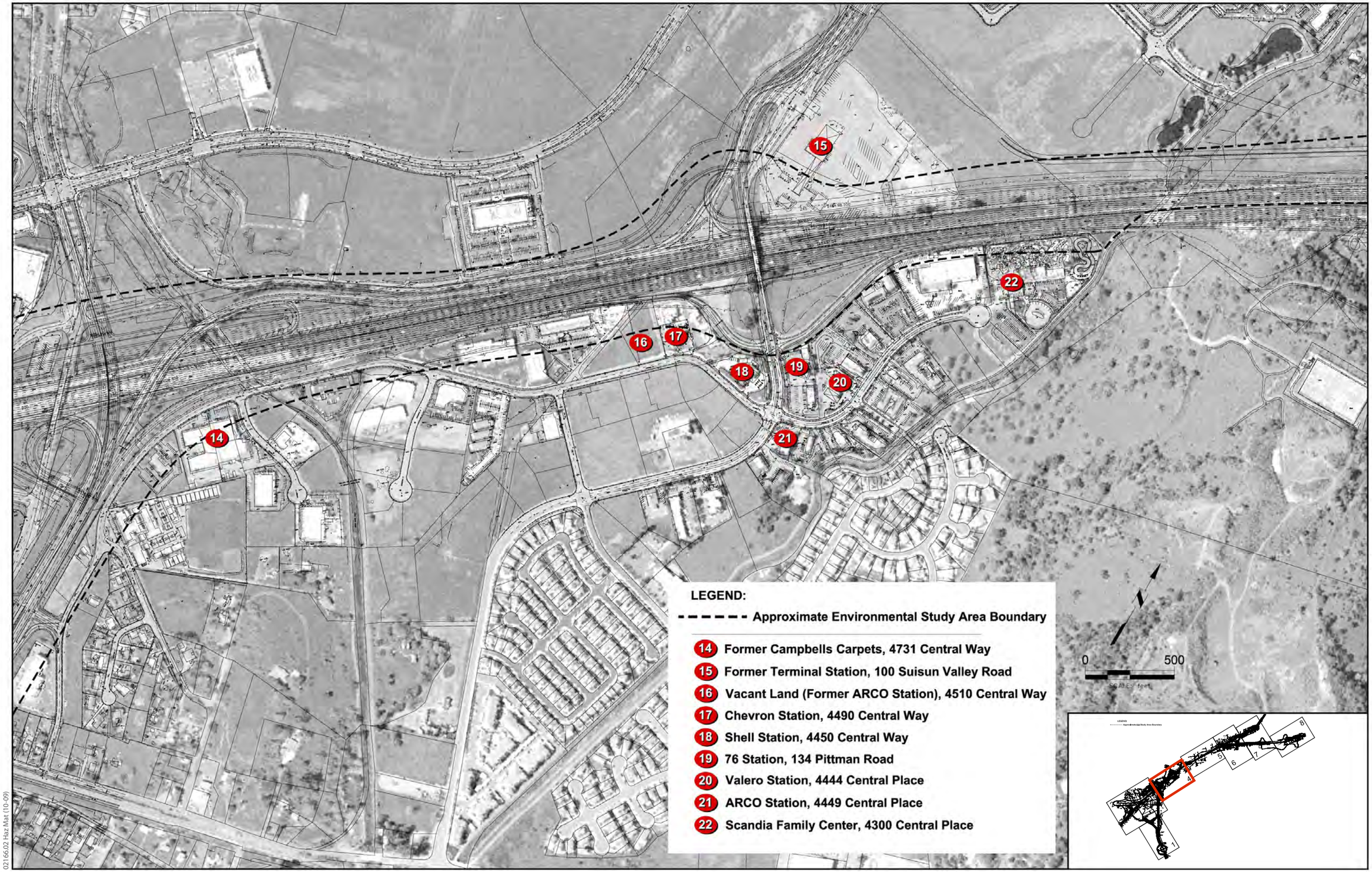
02166.02 Haz Mat (10-09)

Figure 3.2.5-3
Potential Hazardous Facility Locations



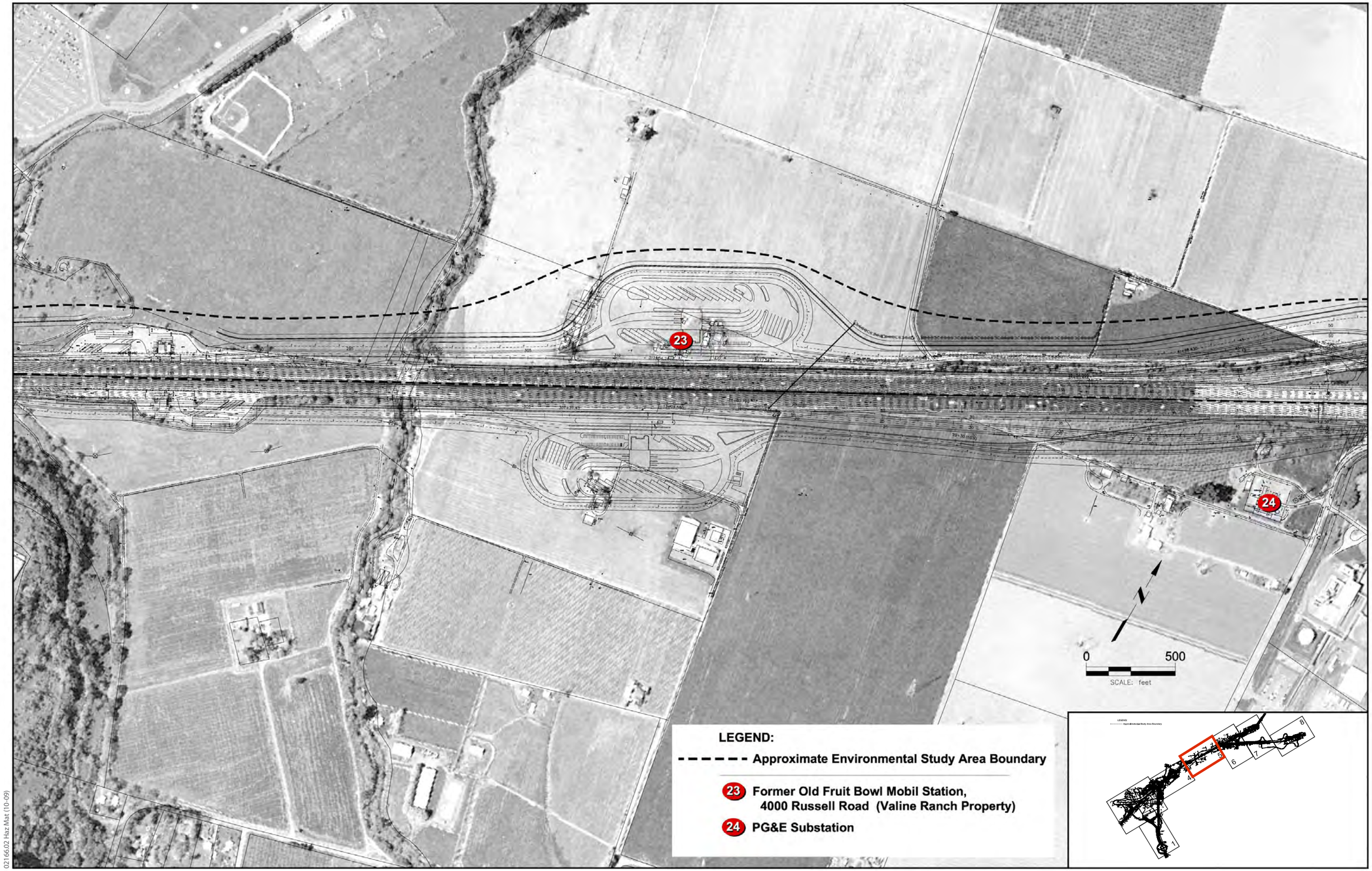
02166.02 Haz Mat (10-09)

Figure 3.2.5-4
Potential Hazardous Facility Locations



02166.02 Haz Mat (10-09)

Figure 3.2.5-5
Potential Hazardous Facility Locations



02166.02 Haz Mat (10-09)

Figure 3.2.5-6
Potential Hazardous Facility Locations

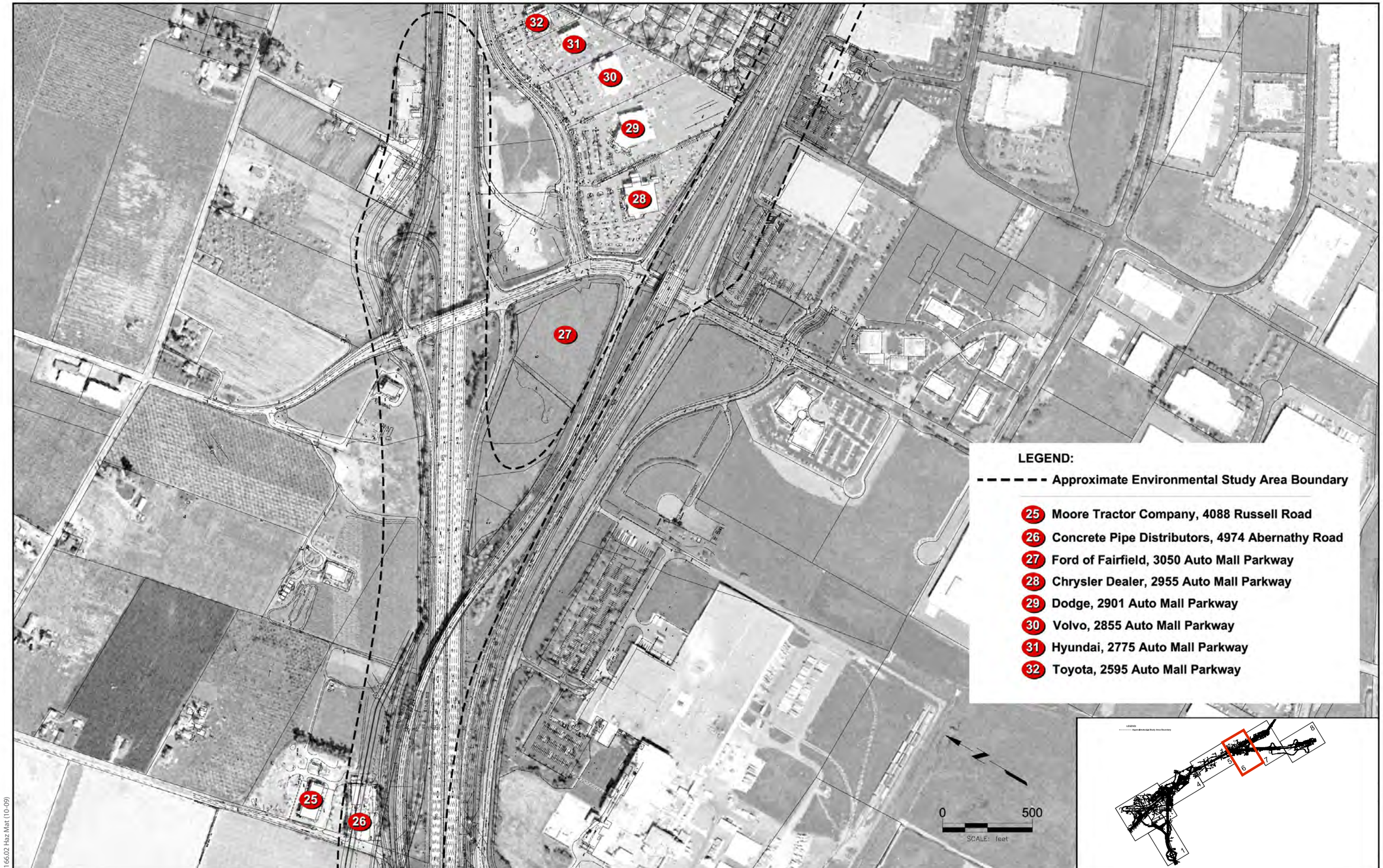


Figure 3.2.5-7
Potential Hazardous Facility Locations

02166.02 Haz Mat (10-09)

Figure 3.2.5-8
Potential Hazardous Facility Locations

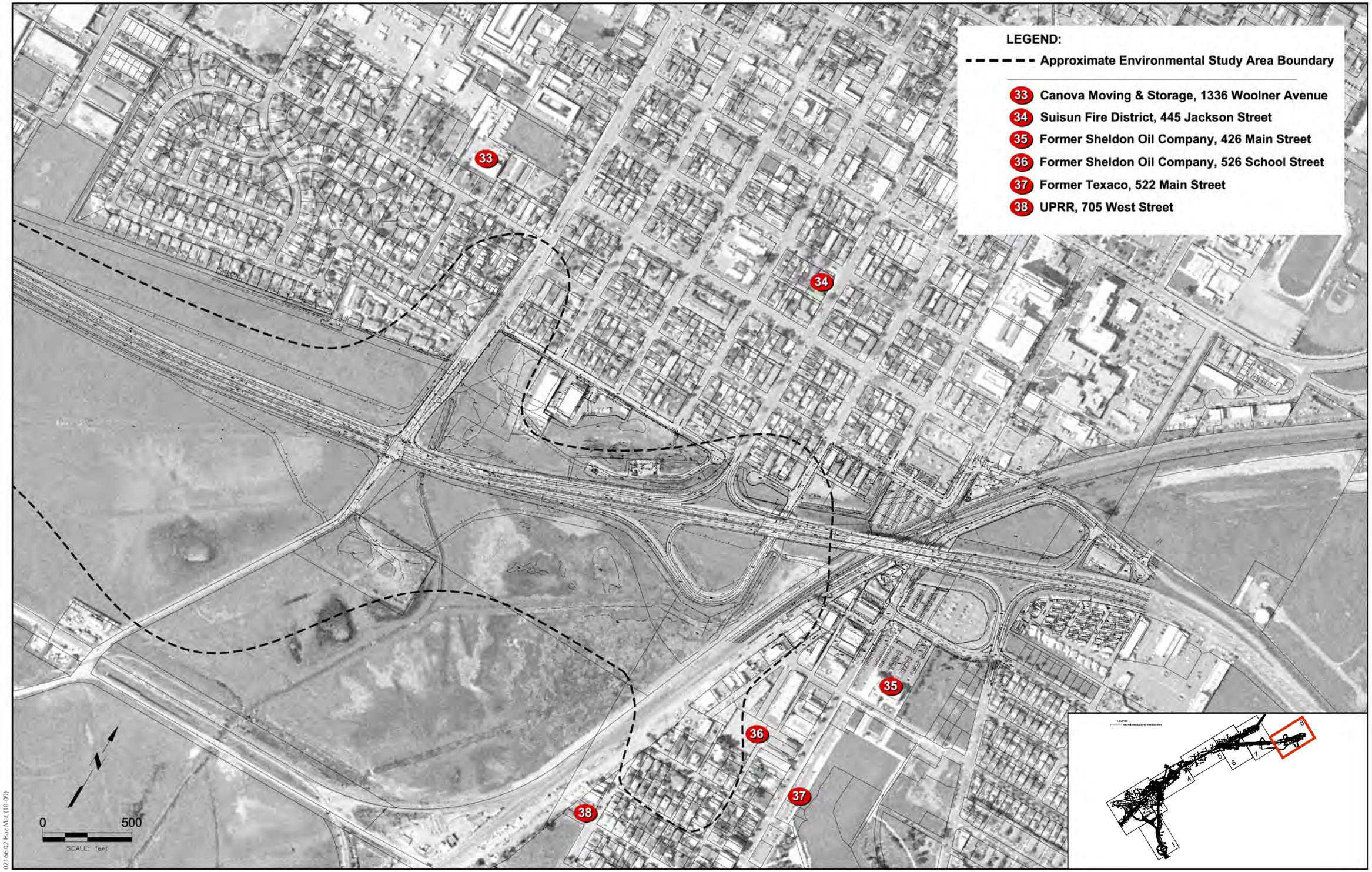


Figure 3.2.5-9
Potential Hazardous Facility Locations

3.2.6 Air Quality

Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2).

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

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTPs) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Metropolitan Transportation Commission (MTC) for Solano County and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

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

Affected Environment

This discussion is based primarily on the *Interstate 80/Interstate 680/State Route 12 Interchange Project Air Quality Study Report* (Air Quality Study Report) and the *Traffic Operations Report for the I-80/I-680/SR 12 Interchange Project* (FTOR) prepared in 2009.

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes the relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

The project alternatives lie within the Carquinez Strait region of the San Francisco Bay Area Air Basin (SFBAAB). The Carquinez Strait is the only sea-level gap between the San Francisco Bay and the Central Valley. Within the region, the prevailing winds are from the west, during the summer and fall months, marine air flows eastward through the Carquinez Strait due to high pressure off shore and low pressure in the Central Valley. These easterly winds usually contain more pollutants from the Sacramento and San Joaquin Valleys in the east than the cleaner marine air from the west. During summer and fall months, this condition can result in elevated pollutant levels as pollutants move through the strait into the central Bay Area from surrounding areas.

The high-pressure periods during the summer and fall months often are accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall. During the summer, mean maximum temperatures reach about 32.2º C (90º F), while mean minimum temperatures in the winter are typically 1.6 º–4.4º C (35 º–40º F). In distant areas like Fairfield, where the region is sheltered from the moderating effects of the strait, temperature extremes are especially pronounced.

Attainment Status

The EPA has classified the portion of Solano County within the San Francisco Bay Area Air Basin as being a marginal nonattainment area for 8-hour ozone NAAQS. For CO NAAQS, the EPA has classified urban areas of the county as a moderate maintenance area (≤ 12.7 ppm) and the rest of the county as an unclassified/attainment area (U.S. Environmental Protection Agency 2008). For PM10 NAAQS the EPA has designated the county as an unclassified/attainment area. This information is presented in Table 3.2.6-1.

The 24-hour PM2.5 standard was lowered from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ in 2006, and the EPA issued their final attainment status designations for the 35 $\mu g/m^3$ standard on October 8, 2009. The county is now designated as a non-attainment area for 24-hour PM2.5 NAAQS.

For ozone CAAQS, CARB has classified the county as being a serious nonattainment area, and for CO CAAQS CARB has classified the county as an attainment area (California Air Resources Board 2009). For PM10 and PM2.5 CAAQS, CARB has classified the county as a nonattainment area. Solano County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 3.2.6-1.

Table 3.2.6-1. Federal and State Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Solano County	
			California	National	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	N/A	180	N/A	If exceeded	N/A	Serious non-attainment	N/A
		8 hours	0.070	0.075	137	147	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area	Non-attainment	Marginal non-attainment
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate (≤ 12.7 ppm) maintenance
		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	N/A	7,000	N/A	If equaled or exceeded	N/A	N/A	N/A
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year	N/A	Attainment
		1 hour	0.18	0.100	339	N/A	If exceeded	N/A	Attainment	N/A
Sulfur dioxide	SO_2	Annual arithmetic mean	NA	0.030	NA	80	NA	If exceeded	N/A	Attainment
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment
		1 hour	0.25	N/A	655	N/A	If exceeded	N/A	Attainment	N/A
Hydrogen sulfide	H_2S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A	Unclassified	N/A
Vinyl chloride	C_2H_3Cl	24 hours	0.01	N/A	26	N/A	If equaled or exceeded	N/A	No designation	N/A
Inhalable particulate matter	PM10	Annual arithmetic mean	N/A	N/A	20	N/A	If exceeded	If exceeded at each monitor within area	Non-attainment	N/A
		24 hours	N/A	N/A	50	150	If exceeded	If exceeded on more than 1 day per year	Non-attainment	Unclassified/ attainment
	PM2.5	Annual arithmetic mean	N/A	N/A	12	15	If exceeded	If 3-year average from single or multiple community-oriented monitors is exceeded	Non-attainment	Attainment
		24 hours	N/A	N/A	N/A	35	NA	If 3-year average of 98th percentile at each population-oriented monitor within an area is exceeded	N/A	Non-attainment
Sulfate particles	SO_4	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	NA	Attainment	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	NA	If exceeded no more than 1 day per year	N/A	Attainment
		30-day average	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A	Attainment	N/A
		Rolling 3-month average	N/A	N/A	N/A	0.15	If equaled or exceeded	Averaged over a rolling 3-month period	N/A	Attainment

Source: California Air Resources Board 2009.
Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; N/A = not applicable.

Sensitive Receptors

The Bay Area Air Quality Management District (BAAQMD) generally defines a sensitive receptor as a facility or land use that houses or attracts members of the population, such as children, the elderly, and people with illnesses, who are particularly sensitive to the effects of air pollutants.

Sensitive receptors normally refer to land uses with heightened sensitivity to localized rather than regional pollutants. Examples include emissions of criteria or toxic air pollutants (PM10 and PM2.5) that have health effects and, to a lesser extent, odors or odorous compounds such as ammonia and sulfur dioxide. Sensitive receptors would not be directly affected by emissions of regional pollutants such as ozone precursors (ROG and NO_x). Various sensitive receptors are located in the vicinity of the project area (Figure 3.2.6-1) and may include: residences, schools, playgrounds, child care facilities, athletic facilities, health care facilities, convalescent centers, or rehabilitation centers. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. In the case of schools, state law requires that siting decisions consider the potential for toxic or harmful air emissions in the surrounding area.

Figure 3.2.6-1 summarizes the general locations of sensitive receptors in the project area. Figure 3.2.6-1 does not include the locations of scattered or individual sensitive receptors. Land use compatibility issues relative to the siting of pollution-emitting sources or the siting of sensitive receptors must be considered. In the case of schools, state law requires that siting decisions consider the potential for toxic or harmful air emissions in the surrounding area.

Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 3.2.6-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or $\mu g/m^3$. The nearest air quality monitoring station in the vicinity of the project area is located in Fairfield at Chadbourne Road; this station monitors for ozone. The closest monitoring station that monitors for carbon monoxide and particulate matter is located in the City of Vallejo at Tuolumne Street. Table 3.2.6-2 summarizes air quality monitoring data from the Fairfield and Vallejo monitoring stations during the last three years for which complete data are available (2006–2008).

Table 3.2.6-2. Ambient Air Quality Monitoring Data Measured at the Fairfield at Chadbourne Road and of Vallejo at Tuolumne Street Monitoring Stations

Pollutant Standards	Fairfield			Vallejo		
	2006	2007	2008	2006	2007	2008
1-Hour Ozone						
Maximum 1-hour concentration (ppm)	0.106	0.089	0.116	0.080	0.078	0.109
1-hour California designation value	0.10	0.10	0.10	0.08	0.08	0.08
1-hour expected peak day concentration	0.104	0.100	0.103	0.083	0.077	0.083
Number of days standard exceeded[a]						
CAAQS 1-hour (>0.09 ppm)	3	0	2	0	0	1
8-Hour Ozone						
National maximum 8-hour concentration (ppm)	0.087	0.067	0.090	0.069	0.066	0.075
National second-highest 8-hour concentration (ppm)	0.077	0.067	0.071	0.064	0.056	0.072
State maximum 8-hour concentration (ppm)	0.087	0.068	0.090	0.070	0.067	0.075
State second-highest 8-hour concentration (ppm)	0.077	0.067	0.071	0.064	0.056	0.073
8-hour national designation value	0.069	0.066	0.068	0.057	0.054	0.060
8-hour California designation value	0.087	0.077	0.077	0.065	0.061	0.067
8-hour expected peak day concentration	0.086	0.080	0.083	0.066	0.061	0.067
Number of days standard exceeded[a]						
NAAQS 8-hour (>0.075 ppm)	3	0	1	0	0	0
CAAQS 8-hour (>0.070 ppm)	8	0	2	0	0	3
Carbon Monoxide (CO)						
National[b] maximum 8-hour concentration (ppm)	–	–	–	2.94	2.70	1.91
National[b] second-highest 8-hour concentration (ppm)	–	–	–	2.73	2.60	1.96
California[c] maximum 8-hour concentration (ppm)	–	–	–	2.94	2.70	2.31
California[c] second-highest 8-hour concentration (ppm)	–	–	–	2.73	2.60	1.96
Maximum 1-hour concentration (ppm)	–	–	–	3.7	3.3	2.7
Second-highest 1-hour concentration (ppm)	–	–	–	3.5	3.3	2.5
Number of days standard exceeded[a]						
NAAQS 8-hour (≥9 ppm)	–	–	–	0	0	0
CAAQS 8-hour (≥9.0 ppm)	–	–	–	0	0	0
NAAQS 1-hour (≥35 ppm)	–	–	–	0	0	0
CAAQS 1-hour (≥20 ppm)	–	–	–	0	0	0
Particulate Matter (PM10)[d]						
National[b] maximum 24-hour concentration ($\mu g/m^3$)	–	–	–	46.6	49.1	42.1
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	–	–	–	43.9	47.3	31.4
State[c] maximum 24-hour concentration ($\mu g/m^3$)	–	–	–	50.1	52.4	43.6
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	–	–	–	47.2	51.1	32.4
State annual average concentration ($\mu g/m^3$)[e]	–	–	–	19.8	19.0	–
National annual average concentration ($\mu g/m^3$)	–	–	–	19.1	18.2	16.0
Number of days standard exceeded[a]						
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	–	–	–	0.0	0.0	–
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	–	–	–	0.0	12.6	–

Pollutant Standards	Fairfield			Vallejo		
	2006	2007	2008	2006	2007	2008
Particulate Matter (PM2.5)						
National[b] maximum 24-hour concentration (μg/m^3)	–	–	–	42.2	40.8	41.8
National[b] second-highest 24-hour concentration (μg/m^3)	–	–	–	40.5	40.0	31.0
State[c] maximum 24-hour concentration (μg/m^3)	–	–	–	44.0	41.5	51.2
State[c] second-highest 24-hour concentration (μg/m^3)	–	–	–	43.2	41.3	47.5
National annual designation value (μg/m^3)	–	–	–	10.2	9.8	–
National annual average concentration (μg/m^3)	–	–	–	9.8	9.8	–
State annual designation value (μg/m^3)	–	–	–	13	12	–
State annual average concentration (μg/m^3)[e]	–	–	–	12.4	12.0	–
Number of days standard exceeded[a]						
NAAQS 24-hour (>35 μg/m^3)	–	–	–	5.9	12.1	–

Sources: California Air Resources Board 2008; U.S. Environmental Protection Agency 2009.

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[c] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

[d] Measurements usually are collected every 6 days.

[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Table 3.2.6-2 indicates that the Fairfield monitoring station has exceeded the state 1-hour ozone standard on five occasions, the state 8-hour standard on ten occasions, and the national 8-hour ozone standard on four occasions during the 3-year monitoring period. During this same period, the Vallejo monitoring station has exceeded the state 1-hour ozone standard on one occasion and the state 8-hour standard on three occasions, while the national 8-hour ozone standard was not exceeded during this period. The Vallejo station has exceeded the state PM10 standard a total of 12.6 days and federal PM2.5 standard on 18 occasions during the 3-year monitoring period, while no other violations occurred at these monitoring stations during this 3-year monitoring period.

Carbon Monoxide

The project alternatives are located in a moderate (≤ 12.7 ppm) maintenance area with regards to the federal CO standard. Consequently, the evaluation of transportation conformity for CO is required. The CO transportation conformity analysis is based on the CO Protocol developed for the Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997). This CO protocol details a qualitative step-by-step procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for CO.

Particulate Matter

As previously indicated, Solano County was designated by the EPA as an unclassified/attainment area for 24-hour PM2.5 NAAQS. However, the 24-hour PM2.5 standard was lowered from 65µg/m^3 to 35 µg/m^3 in 2006, and the EPA designated the Bay Area as a nonattainment area. While the county is currently designated as a nonattainment area for 24-hour PM2.5 NAAQS, the county is designated as an attainment area for annual PM2.5 NAAQS. While conformity does not yet apply for PM2.5 (the effective date is December 14, 2010), a preliminary PM2.5 hot spot analysis in accordance with the EPA's 2006 guidance has been conducted to show that the proposed project would conform when the conformity requirements apply.

On March 10, 2006, the EPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM2.5 and PM10 nonattainment and maintenance areas. The final rule requires PM2.5 hot spot analyses to be performed for Projects of Air Quality Concern (POAQC) or any other project identified by the PM2.5 SIP as a localized air quality concern. In March 2006, the FHWA and EPA issued a guidance document titled *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration and U.S. Environmental Protection Agency 2006). The PM10 hot spot analysis is not required for project-level conformity because the area is in attainment or unclassified for the national PM10 standards. For the assessment of PM10 hot spots, the final rule is that a hot spot analysis is to be performed only for POAQCs. POAQCs are certain highway and transit projects that involve significant levels of diesel traffic or any other project identified in the PM2.5 or PM10 SIP as a localized air quality concern.

For projects identified as not being a POAQC, qualitative PM2.5 and PM10 (for regions without an approved conformity SIP) hot spot analyses are not required. For these types of projects, state and local project sponsors should briefly document in their project-level conformity determinations that CAA and 40 CFR 93.116 requirements were met without a hot spot analysis because such projects have been found to not be of air quality concern under 40 CFR 93.123(b)(1). Because this analysis assumes the area is classified as a nonattainment area for the federal PM2.5 standard, a determination must be made as to whether it would result in a PM2.5 hot spot.

Mobile-Source Air Toxics

The CAAA made controlling air toxic emissions a national priority, by which Congress mandated that the EPA regulate 188 air toxics. These substances are also known as hazardous air pollutants (HAPs). In the EPA's latest rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (*Federal Registry, Vol. 72, No. 37, page 8430, February 2007)* it identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). The IRIS is a comprehensive database of specific substances known to cause human health effects. In addition, the EPA identified the following seven compounds as priority MSATs:

- Acrolein.
- Benzene.
- 1,3-Butadiene.

- Diesel particulate matter/diesel exhaust organic gases.
- Formaldehyde.
- Naphthalene.
- Polycyclic organic matter.

While the FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future rules.

To address emissions of MSATs, the EPA has issued a number of regulations, including the 2007 rule mentioned above, that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if VMT increases by 145% as assumed, a combined reduction of 72% in the total annual emission rate for priority MSATs is projected from 1999 to 2050, as shown in the Figure 3.2.6-2.

In light of recent developments regarding MSAT's, the FHWA has issued interim guidance for the assessment of MSAT's in NEPA documents for highways projects. The *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* uses a tiered approach to addressing MSAT emissions from highway projects in NEPA documents (Federal Highway Administration 2009a). Depending on the specific project circumstances, the FHWA has identified the following three levels of analysis:

1. No analysis for exempt projects or projects with no potential for meaningful MSAT effects.
2. Qualitative analysis for projects with low potential MSAT effects.
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with Higher Potential MSAT Effects

Projects included in this category have the potential for meaningful differences among project alternatives. The FHWA expects only a limited number of projects to meet this two-pronged test. To fall into this category, projects must:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location.

or

- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000[1], or greater, by the design year. In addition, to fall into this category, projects must also be proposed to be located in proximity to populated areas.

[1] Using EPA's MOBILE 6.2 emissions model, FHWA technical staff determined that this range of AADT would be roughly equivalent to the CAA definition of a major HAP source (i.e., 25 tons per year for all HAPs or 10 tons per year for any single HAP). Significant variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.

Projects falling within this category should be more rigorously assessed for impacts, and the FHWA should be contacted for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis to forecast local-specific emission trends of the priority MSATs (benzene, acrolein, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel exhaust) for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions, mitigation options should be identified and considered.

Applicable Project MSAT Category Assessment

The FTOR prepared by the project traffic engineers does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made using a peak-hour–to–daily conversion multiplier of 4.5 (according to Joel Rabinovitz, a transportation engineer in Walnut Creek, California, in a January 29, 2009 telephone conversation). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA's MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA's 2009 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions is required (Federal Highway Administration 2009a). Therefore, an evaluation of MSAT emissions was performed using traffic data provided by Fehr & Peers, and the CT-EMFAC model.

Unavailable Information for Project-Specific MSAT Impact Analysis

The Air Quality Study Report includes a basic analysis of the likely MSAT emission impacts of the project alternatives. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the project alternatives in this technical study. Due to these limitations, a discussion regarding incomplete or unavailable information is included in the Air Quality Study Report in accordance with CEQA regulations (40 CFR 1502.22[b]).

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. Although available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, the Department has provided a quantitative analysis of MSAT emissions relative to the various alternatives and has acknowledged that all project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. In accordance with CEQA regulations (40 CFR 1502.22[b])

regarding incomplete or unavailable information, a full discussion of these inadequacies is available in the Air Quality Study Report.

Environmental Consequences

The project alternatives would generate construction-related and operational emissions. The method used to evaluate construction and operational effects is described below. See the Air Quality Study Report for more detailed methodology.

Discussions with the project traffic engineers indicated that traffic volumes would not change between the build alternatives. Therefore, existing year (2004), interim year (2015) with and without project, and design-year (2035) with and without project conditions were evaluated.

Conformity of the Regional Transportation Plan with the State Implementation Plan

The evaluation of transportation conformity with regards to criteria pollutants was done by evaluating the inclusion of the proposed project in the most recent RTP as discussed above and in the Air Quality Study Report.

The first phase of either alternative of the proposed project is fully funded in the financially constrained Regional Transportation Plan *Transportation 2035 Plan for the San Francisco Bay Area: Change in Motion* (RTP) (Appendix 1, page 126). The project is also included in the MTC's financially constrained 2009 Transportation Improvement Program as TIP ID SOL070020. The TIP is being updated to be consistent with the RTP as part of the 2011 TIP process. The 2009 RTP and 2009 TIP (Revised) were found to conform with the *State Implementation Plan* (SIP) by the MTC on April 22, 2009. The FHWA and FTA found the 2009 RTP to be in conformity with the SIP on May 29, 2009. The FHWA and FTA found the 2009 TIP (Revised) to be in conformity with the SIP also on May 29, 2009.

Because the Department has not selected a preferred alternative, conformity determination cannot be made at this time. The draft conformity analysis for the preferred alternative will be conducted in the Final Environmental Impact Statement to allow for public comment. The final conformity determination will be made in the Record of Decision. Currently, only Alternative C, Phase 1 is listed in the 2035 RTP and 2009 TIP. The design concept and scope of Alternative C, Phase 1 is consistent with the project description in the most recent 2035 RTP and 2009 TIP. The design concept and scope of the proposed project are consistent with the project listings in the 2035 RTP and 2009 TIP and would not interfere with timely implementation of TCMs.

Should another alternative be chosen, STA would be required to submit a TIP amendment for the selected alternative.

Under the No-Build Alternative, there would be no changes to the current conditions and no effect.

Potential Violations of Carbon Monoxide NAAQS or CAAQS

The effects of localized CO hot spot emissions were evaluated through CO dispersion modeling using the *Transportation Project-Level Carbon Monoxide Protocol* developed for the

Department by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. As previously discussed, emissions of CO concentrations are estimated for roadway intersections within the project area, as well as mainline I-80, I-680, and SR 12 segments. These roadway intersections and segments were modeled because they represent the roadway intersections and segments in the vicinity of the project area with the highest traffic volumes and worst levels of congestion/delay. Table 3.2.6-3 and Table 3.2.6-4 summarize the results of the intersection and segment CO modeling, respectively, and indicate that CO concentrations are not anticipated to exceed the 1- or 8- hour NAAQS and CAAQS under any of the build alternatives or the No-Build Alternative.

Potential Violations of PM2.5 NAAQS or CAAQS

The effects of localized PM were evaluated using the EPA and FHWA's guidance manual, *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (Federal Highway Administration, and U.S. Environmental Protection Agency 2006).

Solano County is currently classified as a non-attainment area with regard to the federal PM2.5 NAAQS. The build alternatives are not considered POAQCs for PM10 and PM2.5 due to <5% increase in diesel truck traffic volumes between build and no-build conditions. Confirmation of this determination will be made during interagency consultation (IAC) with the appropriate local, state, and federal agencies and the final analysis will be identified in the final environmental document.

The EPA's transportation conformity rules stipulate that transportation projects considered POAQCs, or any other project that is identified by the PM2.5 SIP as a localized air quality concern, must be analyzed for local air quality impacts (i.e., hot spot) in PM2.5 nonattainment and maintenance areas. As previously indicated, the County is designated by the EPA as a nonattainment area for the lower PM2.5 standard. While conformity does not yet apply for PM2.5, a preliminary PM2.5 hot spot analysis in accordance with the EPA's 2006 guidance should be conducted to show that the proposed project would conform when the conformity requirements apply.

As previously indicated, the FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. An approximate estimate of AADT may be made based on the peak-hour traffic volumes on these roadways (according to Joel Rabinovitz, in the conversation cited earlier), and it is estimated that mainline AADT on I-80 would be in excess of the FHWA and EPA's POAQC threshold of 125,000 AADT. In addition, based on traffic count data collected by the Department, it is anticipated that medium trucks are anticipated to account for 5% and heavy trucks are anticipated to account for 5% of all traffic on the I-80 I-680/SR 12 network (California Department of Transportation 2008).

However, because it has been concluded that diesel truck traffic volumes will not increase by more than 5% between no-build and build conditions, the build alternatives are not considered a POAQC for PM10 and PM2.5. Because the proposed project is not considered a POAQC, CAA and 40 CFR 93.116 requirements were met without a hot spot analysis because the build alternatives have been found to not be of air quality concern under 40 CFR 93.123(b)(1). Confirmation of this determination will be made during interagency consultation (IAC) with the appropriate local, state, and federal agencies and the final analysis will be identified in the final environmental document.

There would be no effect under the No-Build Alternative.

Table 3.2.6-3. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area (Intersections)

Intersection	North-South Roadway	East-West Roadway	2004			2015									2035														
			Existing			2015 No Project			2015 Alt B Phase 1			2015 Alt C Phase 1			2035 No Project			2035 Alt B Phase 1			2035 Alt C Phase 1			2035 Full Build Alt B			2035 Full Build Alt C		
			Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr	Caline Conc	1-hr	8-hr
4	Lopes Rd	Gold Hill Rd	1.6	5.3	4.06	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36	0.4	4.1	3.22	0.4	4.1	3.22	0.4	4.1	3.22	0.2	3.9	3.08	0.4	4.1	3.22
7	I-80 EB Ramps	Red Top Rd	1.4	5.1	3.92	0.9	4.6	3.57	0.9	4.6	3.57	0.9	4.6	3.57	0.6	4.3	3.36	0.7	4.4	3.43	0.5	4.2	3.29	0.4	4.1	3.22	0.5	4.2	3.29
8	I-80 WB Ramps	Red Top Rd	0.9	4.6	3.57	0.7	4.4	3.43	0.8	4.5	3.5	0.7	4.4	3.43	0.6	4.3	3.36	0.5	4.2	3.29	0.5	4.2	3.29	0.3	4	3.15	0.5	4.2	3.29
9	Jameson Canyon Rd (SR12 West)	Red Top Rd	5	8.7	6.44	1	4.7	3.64	1	4.7	3.64	0.3	4	3.15	0.6	4.3	3.36	0.7	4.4	3.43	0.2	3.9	3.08	0.1	3.8	3.01	0.2	3.9	3.08
12	Lopes Rd	Cordelia Rd	4.2	7.9	5.88	1.2	4.9	3.78	1.2	4.9	3.78	0.5	4.2	3.29	0.6	4.3	3.36	0.8	4.5	3.5	0.4	4.1	3.22	0.5	4.2	3.29	0.4	4.1	3.22
13	Lopes Rd	Bridgeport Ave	3.5	7.2	5.39	1	4.7	3.64	1.1	4.8	3.71	0.5	4.2	3.29	0.6	4.3	3.36	0.7	4.4	3.43	0.3	4	3.15	0.5	4.2	3.29	0.3	4	3.15
14	Central Wy	Cordelia Rd	2.3	6	4.55	0.6	4.3	3.36	0.6	4.3	3.36	0.7	4.4	3.43	0.4	4.1	3.22	0.4	4.1	3.22	0.3	4	3.15	0.3	4	3.15	0.3	4	3.15
18	Green Valley Rd	Business Center Dr	2.4	6.1	4.62	1.2	4.9	3.78	1.2	4.9	3.78	1.2	4.9	3.78	0.6	4.3	3.36	0.8	4.5	3.5	0.5	4.2	3.29	0.5	4.2	3.29	0.5	4.2	3.29
21	I-80 EB Ramps	Pittman Rd	5.2	8.9	6.58	1.1	4.8	3.71	1.3	5	3.85	0.9	4.6	3.57	0.6	4.3	3.36	0.6	4.3	3.36	0.5	4.2	3.29	0.5	4.2	3.29	0.5	4.2	3.29
27	I-80 EB Ramps	Abernathy Rd	3.3	7	5.25	1	4.7	3.64	1	4.7	3.64	1	4.7	3.64	0.5	4.2	3.29	0.6	4.3	3.36	0.6	4.3	3.36	0.4	4.1	3.22	0.6	4.3	3.36
30	I-80 EB Off-Ramp	West Texas St	2.5	6.2	4.69	1.2	4.9	3.78	1.4	5.1	3.92	1.1	4.8	3.71	0.6	4.3	3.36	0.8	4.5	3.5	0.6	4.3	3.36	0.5	4.2	3.29	0.6	4.3	3.36
31	I-80 EB On-Ramp - Beck Ave	West Texas St	4.3	8	5.95	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.8	4.5	3.5	0.2	3.9	3.08	0.6	4.3	3.36	0.2	3.9	3.08
38	SR 12 East	Beck Ave	3.8	7.5	5.6	1.9	5.6	4.27	0.3	4	3.15	0.3	4	3.15	1	4.7	3.64	0.2	3.9	3.08	0.2	3.9	3.08	0.3	4	3.15	0.2	3.9	3.08
39	SR 12 East	Pennsylvania Ave	4	7.7	5.74	1.9	5.6	4.27	1.8	5.5	4.2	1.8	5.5	4.2	1	4.7	3.64	1.1	4.8	3.71	1	4.7	3.64	0.3	4	3.15	1	4.7	3.64
40	Pennsylvania Ave	Cordelia Rd	0.8	4.5	3.5	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36	0.8	4.5	3.5	0.4	4.1	3.22	0.3	4	3.15	0.8	4.5	3.5	0.3	4	3.15
44	I-80 EB Ramps	Travis Blvd	5.6	9.3	6.86	1.8	5.5	4.2	1.7	5.4	4.13	1.8	5.5	4.2	0.8	4.5	3.5	1	4.7	3.64	0.8	4.5	3.5	0.8	4.5	3.5	0.8	4.5	3.5
45	Gateway Shopping Center - 2nd St	Travis Blvd	4.3	8	5.95	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
46	Pennsylvania Ave	Travis Blvd	2.8	6.5	4.9	1.1	4.8	3.71	1.1	4.8	3.71	1.1	4.8	3.71	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
51	I-80 WB On-Ramp - Hilborne Rd	Waterman Blvd	5.2	8.9	6.58	1.6	5.3	4.06	1.6	5.3	4.06	1.6	5.3	4.06	0.6	4.3	3.36	0.8	4.5	3.5	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36
53	I-80 EB Ramps	Air Base Pkwy	4.8	8.5	6.3	1.8	5.5	4.2	1.8	5.5	4.2	1.8	5.5	4.2	0.8	4.5	3.5	1	4.7	3.64	0.8	4.5	3.5	0.8	4.5	3.5	0.8	4.5	3.5
54	Health Dr	Air Base Pkwy	4.5	8.2	6.09	1.3	5	3.85	1.3	5	3.85	1.3	5	3.85	0.6	4.3	3.36	0.7	4.4	3.43	0.6	4.3	3.36	0.6	4.3	3.36	0.6	4.3	3.36

Source: ICF Jones & Stokes 2009.

[a] Receptors are located 100 feet from the center of each intersection diagonal, 71 feet from the roadway centerline, and at the boundary of the mixing zone.

[b] Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.

[c] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[d] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Table 3.2.6-4. Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area (Segments)

Segment		Existing			No Project			Alternative B Phase 1			Alternative C Phase 1			No Project			Alternative B Phase 1			Alternative C Phase 1			Full Build Alternative B			Full Build Alternative C		
		Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr	Max Receptor	1-hr	8-hr
I-680	between Gold Hill and Red Top	2.9	6.6	4.97	1.8	5.5	4.2	1.4	5.1	3.92	1.5	5.2	3.99	0.9	4.6	3.57	0.6	4.3	3.36	0.9	4.6	3.57	1.1	4.8	3.71	1	4.7	3.64
I-80	between I-680 and Green Valley Rd	5.2	8.9	6.58	2.1	5.8	4.41	1.4	5.1	3.92	2	5.7	4.34	1.3	5	3.85	0.7	4.4	3.43	1.7	5.4	4.13	0.8	4.5	3.5	1.2	4.9	3.78
SR 12 West	between Red Top Rd and I-680 SB/Green Valley Rd	4.9	8.6	6.37	2.5	6.2	4.69	2.5	6.2	4.69	2.2	5.9	4.48	1.5	5.2	3.99	1.2	4.9	3.78	1.3	5	3.85	1.2	4.9	3.78	1.2	4.9	3.78
I-80	between Pittman/Suisin Valley and Truck Scales	4.8	8.5	6.3	2	5.7	4.34	2.4	6.1	4.62	2	5.7	4.34	1.1	4.8	3.71	1.1	4.8	3.71	1.1	4.8	3.71	2	5.7	4.34	2	5.7	4.34
I-80	between Truck Scales and Abernathy/SR12 East	6	9.7	7.14	3.4	7.1	5.32	2.7	6.4	4.83	3.3	7	5.25	1.6	5.3	4.06	1.5	5.2	3.99	1.4	5.1	3.92	1.8	5.5	4.2	1.4	5.1	3.92
I-80	between Green Valley Rd and Pittman Rd	6.1	9.8	7.21	3.3	7	5.25	2.8	6.5	4.9	2.1	5.8	4.41	1.3	5	3.85	1	4.7	3.64	1	4.7	3.64	1.3	5	3.85	1.4	5.1	3.92
I-80	between Abernathy Rd and W Texas St	7.3	11	8.05	3	6.7	5.04	2.9	6.6	4.97	2.7	6.4	4.83	1.8	5.5	4.2	1.4	5.1	3.92	1.7	5.4	4.13	1.5	5.2	3.99	1.5	5.2	3.99
I-80	between Beck Ave and Travis Blvd	6.2	9.9	7.28	2.6	6.3	4.76	2.6	6.3	4.76	2.4	6.1	4.62	1.5	5.2	3.99	1.2	4.9	3.78	1.5	5.2	3.99	1.3	5	3.85	1.4	5.1	3.92
I-80	between Travis Blvd and Air Base Pkwy/Waterman Blvd	6.3	10	7.35	2.7	6.4	4.83	2.7	6.4	4.83	2.4	6.1	4.62	1.6	5.3	4.06	1.3	5	3.85	1.5	5.2	3.99	1.3	5	3.85	1.3	5	3.85
SR 12 East	between Main St and Jackson St	1.9	5.6	4.27	0.9	4.6	3.57	0.9	4.6	3.57	1	4.7	3.64	0.7	4.4	3.43	0.5	4.2	3.29	0.5	4.2	3.29	0.7	4.4	3.43	0.5	4.2	3.29
SR 12 East	between Chadbourne Rd and Beck Ave	2.1	5.8	4.41	1.4	5.1	3.92	1.2	4.9	3.78	1.7	5.4	4.13	0.8	4.5	3.5	0.6	4.3	3.36	0.7	4.4	3.43	0.9	4.6	3.57	0.8	4.5	3.5
I-680	between Red Top and Central Ave/680 interchange	2.4	6.1	4.62	1.7	5.4	4.13	1.6	5.3	4.06	1.3	5	3.85	0.7	4.4	3.43	0.8	4.5	3.5	0.6	4.3	3.36	0.8	4.5	3.5	0.7	4.4	3.43

Source: ICF Jones & Stokes 2009.

[a] Receptors are located 10, 25, 50, and 100 feet from the edge of the freeway segment on either side of the roadway segment.

[b] Background concentrations of 3.7 ppm and 2.94 ppm were added to the modeling 1-hour and 8-hour results, respectively.

[c] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[d] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Potential Generation of Significant Levels of MSAT Emissions

MSAT emissions were evaluated using the Federal Highway Administration's *Interim Guidance on Air Toxic Analysis in NEPA* (Federal Highway Administration 2006).

The area of air toxics analysis is a new and emerging field and is a continuing area of research. Currently, limited tools and techniques are available for assessing project-specific health impacts from MSATs, as there are no established criteria for determining when MSAT emissions should be considered a significant issue in the NEPA context.

To comply with Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information, Appendix C of the Air Quality Study Report contains discussion regarding how air toxics analysis is an emerging field and current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), Appendix C of the Air Quality Study Report contains a summary of current studies regarding the health impacts of MSATs.

The FTOR prepared for the project does not directly evaluate AADT on I-80/I-680/SR 12. However, based on the peak-hour traffic volumes on these roadways, an approximate estimate of AADT may be made (according to Joel Rabinovitz, in the conversation cited earlier). Based on this information, it is estimated that mainline AADT on I-80 would be in excess of the FHWA's MSAT AADT threshold of 140,000 and will be located in proximity to populated areas. Consequently, based on the FHWA's 2006 MSAT guidance, the proposed project is considered a project with higher potential MSAT effects, and a quantitative analysis of MSAT emissions was conducted using the CT-EMFAC program and traffic data presented in Table 3.2.6-5 and Table 3.2.6-6. Table 3.2.6-7 and Figure 3.2.6-3 through Figure 3.2.6-8 present modeled MSAT emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Table 3.2.6-7, which presents the project-level emissions for all alternatives, indicates that implementation of Alternative B or Alternative C would result in minor increases in all MSAT emissions for 2035 conditions. Alternative B, Phase 1 would result in small increases for all MSAT emission for 2015 and 2035 conditions. Alternative C, Phase 1 would result in minor increases for all MSAT emissions for 2015 conditions and minor increases in all MSATS except for acetaldehyde and formaldehyde, for 2035 conditions. The No-Build Alternative would result in lower MSAT emissions under 2015 conditions and 2035 conditions than all build alternatives except Alternative C, Phase 1.

To the extent that it is applicable or feasible for the project alternatives and through coordination with the project development team, implementation of measures to reduce MSAT and criteria pollutant emissions, as described in *Avoidance, Minimization, and/or Mitigation Measures*, would be implemented to reduce this effect for all build alternatives.

Table 3.2.6-5. Criteria Pollutant, MSAT, and CO_2 Modeling Peak Period Traffic Data Inputs

EMFAC Speed Bin Name	VMT Speed Bins Actual	Existing		2015 No Project		2015 Alt B Phase 1		2015 Alt C Phase 1		2035 No Project		2035 Alt B Phase 1		2035 Alt C Phase1		2035 Alt B Full Build		2035 Alt C Full Build	
		VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	0.0–4.99	3,590	0.6	6,215	0.7	2,047	0.2	3,545	0.4	21,989	2.3	12,646	1.1	3,976	0.4	3,216	0.3	2,559	0.2
10	5.0–9.99	17,038	2.6	16,242	1.7	3,562	0.4	7,539	0.8	41,087	4.3	16,067	1.4	17,791	1.7	8,904	0.7	11,641	0.9
15	10.0–14.99	11,810	1.8	14,557	1.6	3,401	0.3	9,132	0.9	48,812	5.1	15,480	1.4	16,896	1.6	8,904	0.7	15,604	1.3
20	15.0–19.99	7,904	1.2	23,837	2.6	9,252	0.9	7,337	0.8	21,129	2.2	12,036	1.1	5,964	0.6	11,460	0.9	26,090	2.1
25	20.0–24.99	23,955	3.7	30,830	3.3	14,910	1.5	16,290	1.7	21,760	2.3	18,856	1.7	18,222	1.8	29,268	2.4	39,874	3.2
30	25.0–29.99	33,274	5.1	12,635	1.4	10,365	1.1	13,777	1.4	15,723	1.7	26,951	2.4	14,660	1.4	24,901	2.0	26,252	2.1
35	30.0–34.99	50,273	7.7	28,900	3.1	28,966	2.9	36,619	3.8	40,434	4.2	65,329	5.7	36,444	3.6	37,728	3.1	41,104	3.3
40	35.0–39.99	35,486	5.5	34,740	3.7	29,240	3.0	44,901	4.7	38,276	4.0	56,737	5.0	24,450	2.4	26,778	2.2	33,182	2.7
45	40.0–44.99	28,251	4.3	40,116	4.3	41,813	4.3	50,507	5.2	35,568	3.7	45,606	4.0	53,390	5.2	28,098	2.3	56,301	4.5
50	45.0–49.99	14,061	2.2	66,066	7.1	58,947	6.0	33,837	3.5	58,120	6.1	96,091	8.4	47,359	4.6	14,827	1.2	42,022	3.4
55	50.0–54.99	35,562	5.5	58,966	6.3	99,068	10.1	104,719	10.9	72,410	7.6	88,650	7.8	142,873	13.9	210,737	17.1	240,163	19.4
60	55.0–59.99	30,615	4.7	83,806	9.0	91,023	9.3	98,014	10.2	176,533	18.5	189,314	16.6	123,109	12.0	193,360	15.6	227,071	18.3
65	60.0–64.99	103,135	15.8	192,765	20.7	194,363	19.8	209,644	21.7	111,859	11.7	171,672	15.1	193,862	18.9	188,653	15.3	153,073	12.4
70	65.0–69.99	256,001	39.3	316,914	34.1	393,885	40.1	316,180	32.8	243,730	25.6	323,270	28.3	316,593	30.8	445,133	36.0	321,283	26.0
75	70.0–74.99	0	0.0	3,691	0.4	1,886	0.2	12,296	1.3	5,176	0.5	1,716	0.2	10,966	1.1	3,622	0.3	1,816	0.1
Total		**650,956**	**100.0**	**930,280**	**100.0**	**982,728**	**100.0**	**964,339**	**100.0**	**952,605**	**100.0**	**1,140,420**	**100.0**	**1,026,555**	**100.0**	**1,235,590**	**100.0**	**1,238,035**	**100.0**

Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).

Table 3.2.6-6. Criteria Pollutant, MSAT, and CO_2 Modeling Non-Peak Period Traffic Data Inputs

EMFAC Speed Bin Name	VMT Speed Bins Actual	Existing		2015 No Project		2015 Alt B Phase 1		2015 Alt C Phase 1		2035 No Project		2035 Alt B Phase 1		2035 Alt C Phase 1		2035 Alt B Full Build		2035 Alt C Full Build	
		VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%	VMT	%
5	0.0–4.99	12,564	0.6	21,752	0.7	7,165	0.2	12,408	0.4	76,963	2.3	44,259	1.1	13,915	0.4	11,258	0.3	8,957	0.2
10	5.0–9.99	59,632	2.6	56,848	1.7	12,468	0.4	26,387	0.8	143,804	4.3	56,234	1.4	62,267	1.7	31,164	0.7	40,743	0.9
15	10.0–14.99	41,336	1.8	50,949	1.6	11,904	0.3	31,964	0.9	170,842	5.1	54,179	1.4	59,136	1.6	31,164	0.7	54,614	1.3
20	15.0–19.99	27,665	1.2	83,430	2.6	32,383	0.9	25,681	0.8	73,951	2.2	42,126	1.1	20,872	0.6	40,111	0.9	91,315	2.1
25	20.0–24.99	83,843	3.7	107,904	3.3	52,185	1.5	57,015	1.7	76,161	2.3	65,997	1.7	63,776	1.8	102,440	2.4	139,561	3.2
30	25.0–29.99	116,459	5.1	44,223	1.4	36,276	1.1	48,219	1.4	55,032	1.7	94,329	2.4	51,311	1.4	87,155	2.0	91,882	2.1
35	30.0–34.99	175,957	7.7	101,149	3.1	101,381	2.9	128,167	3.8	141,517	4.2	228,652	5.7	127,552	3.6	132,048	3.1	143,865	3.3
40	35.0–39.99	124,202	5.5	121,589	3.7	102,340	3.0	157,152	4.7	133,965	4.0	198,578	5.0	85,576	2.4	93,722	2.2	116,136	2.7
45	40.0–44.99	98,880	4.3	140,406	4.3	146,345	4.3	176,776	5.2	124,486	3.7	159,620	4.0	186,866	5.2	98,344	2.3	197,054	4.5
50	45.0–49.99	49,213	2.2	231,232	7.1	206,314	6.0	118,430	3.5	203,419	6.1	336,318	8.4	165,757	4.6	51,895	1.2	147,078	3.4
55	50.0–54.99	124,465	5.5	206,381	6.3	346,738	10.1	366,517	10.9	253,436	7.6	310,275	7.8	500,057	13.9	737,578	17.1	840,569	19.4
60	55.0–59.99	107,154	4.7	293,322	9.0	318,581	9.3	343,050	10.2	617,865	18.5	662,598	16.6	430,881	12.0	676,760	15.6	794,748	18.3
65	60.0–64.99	360,974	15.8	674,678	20.7	680,271	19.8	733,753	21.7	391,505	11.7	600,854	15.1	678,516	18.9	660,286	15.3	535,754	12.4
70	65.0–69.99	896,004	39.3	1,109,200	34.1	1,378,596	40.1	1,106,630	32.8	853,054	25.6	1,131,444	28.3	1,108,076	30.8	1,557,965	36.0	1,124,492	26.0
75	70.0–74.99	0	0.0	12,917	0.4	6,601	0.2	43,036	1.3	18,117	0.5	6,007	0.2	38,382	1.1	12,676	0.3	6,354	0.1
Total		**2,278,348**	**100.0**	**3,255,980**	**100.0**	**3,439,548**	**100.0**	**3,375,186**	**100.0**	**3,334,118**	**100.0**	**3,991,470**	**100.0**	**3,592,941**	**100.0**	**4,324,565**	**100.0**	**4,333,123**	**100.0**

Note: Calculated from Fehr and Peers peak period traffic data (Fehr & Peers 2009).

Table 3.2.6-7. I-80/I-680/SR 12 MSAT Emissions (pounds per day)

Scenario	Acrolein	Acetalydehyde	Benzene	1, 3-Butadiene	Diesel Particulate Matter	Formaldehyde
Existing (2004)	3.25	24.68	71.48	14.39	110.91	71.34
2015 No Project	1.39	14.29	32.95	6.25	71.95	38.05
2015 Alt B, Phase 1	1.76	17.00	40.50	7.90	90.88	45.97
2015 Alt C, Phase 1	1.71	16.96	39.93	7.69	88.76	45.59
2035 No Project	0.96	8.76	22.76	4.31	31.61	23.98
2035 Alt B, Phase 1	1.11	9.05	25.19	4.96	36.35	25.53
2035 Alt C, Phase 1	1.04	8.07	23.14	4.64	33.24	23.10
2035 Alt B	1.27	9.48	27.85	5.65	40.10	27.44
2035 Alt C	1.17	9.25	26.31	5.22	38.92	26.33
Comparison of Alternatives to Existing						
2015 Alt B, Phase 1 to Existing	-1	-8	-31	-6	-20	-25
2015 Alt C, Phase 1 to Existing	-2	-8	-32	-7	-22	-26
2035 Alt B, Phase 1 to Existing	-2	-16	-46	-9	-75	-46
2035 Alt C, Phase 1 to Existing	-2	-17	-48	-10	-78	-48
2035 Alt B to Existing	-2	-15	-44	-9	-71	-44
2035 Alt C to Existing	-2	-15	-45	-9	-72	-45
Comparison of Alternatives to No Project						
2015 Alt B, Phase 1 to 2015 No Project	0.37	2.72	7.55	1.65	18.94	7.91
2015 Alt C, Phase 1 to 2015 No Project	0.32	2.68	6.99	1.44	16.81	7.53
2035 Alt B, Phase 1 to 2035 No Project	0.15	0.29	2.43	0.65	4.74	1.55
2035 Alt C, Phase 1 to 2035 No Project	0.08	-0.69	0.38	0.33	1.63	-0.88
2035 Alt B to 2035 No Project	0.31	0.72	5.09	1.34	8.49	3.46
2035 Alt C to 2035 No Project	0.21	0.49	3.55	0.91	7.31	2.35

Source: Air Quality Study Report

Potential Generation of Significant Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_x, CO, PM10, PM2.5, and CO_2 for existing year (2004), construction interim year (2015) with and without project, and design-future year (2035) with and without project conditions were evaluated through modeling conducted using the Department's CT-EMFAC model and vehicle activity data provided in the FTOR.

Table 3.2.6-8 summarizes the modeled yearly emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the build alternatives. Vehicular emission rates are anticipated to lessen in

future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 3.2.6-8. I-80/I-680/SR 12 Project-Related Emissions (pounds per day)

Scenario	ROG	NO_x	CO	PM10	PM2.5	CO_2[a]
Existing (2004)	2,720	7,671	39,631	191	176	493,410
2015 No Project	1,424	4,386	19,025	206	187	694,836
2015 Alt B, Phase 1	1,696	5,696	24,179	249	226	870,093
2015 Alt C, Phase 1	1,697	5,527	23,656	247	225	857,141
2035 No Project	995	1,625	10,379	222	207	908,948
2035 Alt B, Phase 1	1,054	1,900	12,097	228	213	1,014,343
2035 Alt C, Phase 1	948	1,742	11,094	203	189	915,991
2035 Alt B	1,125	2,109	13,426	238	221	1,093,767
2035 Alt C	1,092	2,032	12,888	238	220	1,079,032
Comparison of Alternatives to Existing						
2015 Alt B, Phase 1 to Existing	-1,024	-1,976	-15,452	58	50	376,683
2015 Alt C, Phase 1 to Existing	-1,023	-2,145	-15,975	56	49	363,731
2035 Alt B, Phase 1 to Existing	-1,665	-5,772	-27,534	37	36	520,932
2035 Alt C, Phase 1 to Existing	-1,771	-5,929	-28,537	12	12	422,581
2035 Alt B to Existing	-1,594	-5,562	-26,205	47	45	600,357
2035 Alt C to Existing	-1,628	-5,639	-26,743	46	43	585,621
Comparison of Alternatives to No Project						
2015 Alt B, Phase 1 to 2015 No Project	272	1,310	5,154	44	39	175,257
2015 Alt C, Phase 1 to 2015 No Project	273	1,141	4,631	42	38	162,305
2035 Alt B, Phase 1 to 2035 No Project	59	275	1,718	6	6	105,395
2035 Alt C, Phase 1 to 2035 No Project	-47	117	715	-19	-18	7,043
2035 Alt B to 2035 No Project	130	484	3,047	16	14	184,819
2035 Alt C to 2035 No Project	97	407	2,509	16	13	170,084

Source: Air Quality Study Report
[a] CO_2 presented in metric tons per year.

Emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the construction-interim year (2015) and design-future year (2035) scenarios. Because the Department has statewide jurisdiction, and the setting for projects varies so extensively across the state, the Department has not and has no intention to develop thresholds of significance for CEQA. Further, because most air district thresholds have not been established by regulation or by delegation down from a federal or state agency with regulatory authority over the Department, the Department is not required to adopt those thresholds in their documents. Nevertheless, project-level operational emissions are presented in Table 3.2.6-8. In 2035, ROG, NO_x, CO, PM10, and PM2.5 emissions would increase for Alternative B, Alternative C, and Alternative B, Phase 1 when compared to the No-Build Alternative. Alternative C, Phase 1 would result in increases in ROG, NO_x, CO, PM10, and PM2.5 emissions for 2015 conditions, and increases in NO_x and CO emissions for 2035 conditions. ROG, PM10, and PM2.5 emissions would decrease for 2035 conditions. As previously indicated, there are no established criteria for determining when MSAT emissions should be considered a significant issue given that the EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process and the emerging state of the science and of project-level analysis techniques. To the extent that it is applicable or feasible for the proposed project and through

coordination with the project development team, implementation of measures to reduce MSAT and criteria pollutant emissions, as described in *Avoidance, Minimization, and/or Mitigation Measures*, would be implemented to reduce this effect for all build alternatives.

Potential Temporary Increase in Ozone Precursors (ROG and NO_x), CO, and PM10 Emissions during Grading and Construction Activities

Construction activity is a source of dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceeding state air quality standards for ozone, CO, PM10, and PM2.5). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and roadway construction. Emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the build alternatives would likely be caused by construction traffic on temporary areas.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include CO, nitrogen oxides (NO_x), volatile organic compounds (VOCs), directly emitted particulate matter (PM10 and PM 2.5), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NO_x and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM10, PM2.5, and small amounts of CO, SO_2, NO_x, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM10 emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM10 emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

The EPA estimates that construction activities for large development projects add 1.09 tonne (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50%. The Department's Standard Specifications (Section 14) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM10 emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, VOCs and some soot particulate (PM10 and PM2.5) in exhaust emissions. If construction activities were to increase traffic

congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting Federal standards can contain up to 5,000 parts per million of sulfur, whereas on-road diesel is restricted to less than 15 parts per million of sulfur. However, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so SO_2-related issues due to diesel exhaust will be minimal. Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the sites increases.

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

The SMAQMD's Road Construction Emissions Model (Version 6.3.1) was used to estimate construction-related ozone precursors ROG and NO_x, CO, PM10, PM2.5, and CO_2 emissions from construction activities. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive dust (PM10 and PM2.5), and off-road construction vehicles. This analysis is based on anticipated construction equipment calculated by the Road Construction Emissions Model, which estimates construction equipment based on project size, duration of construction activities, and level of daily construction activities. While exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to major dust-generating activities, which include grubbing/land clearing and grading/excavation. In addition, dust estimates do not account for control measures required by BAAQMD.

Construction of the fundable first phase is expected to begin in 2012. It was assumed that construction activities would occur for eight hours per day. There are no projected dates for later phases of construction. The total project length was assumed to be 13 miles, and total area of disturbed ground is 192.5 acres for Alternative B and 220.2 acres for Alternative C. To represent a worst-case scenario, the total area of disturbed ground associated with Alternative C was evaluated, with an assumed maximum of 55.1 acres disturbed per day (based on a default assumption that the maximum amount of acreage disturbed in any given day would be 0.25 of the overall assumed project acreage). It was also assumed that no soil would be imported or exported. Construction activities were divided into separate phases and analyzed separately. Construction emission estimates represent the maximum emissions for each phase of construction. Total emissions per day represents the potential maximum daily emissions, while the total emissions provides an estimate of total maximum emissions associated with construction of the proposed project. The results of modeling for construction activities for the worst case alternative, Alternative C, are summarized in Table 3.2.6-9.

Table 3.2.6-9. Worst-Case Construction Emission Estimates (pounds per day)

Construction Phase	ROG	NO_x	CO	PM10	PM2.5	CO_2[a]
Grubbing/land clearing	64.7	547.3	287.9	574.7	135.9	7,019.0
Grading/excavation	56.5	440.6	271.4	573.5	134.8	6,659.8
Drainage/utilities/sub-grade	32.7	215.1	135.0	563.3	125.8	3,153.4
Paving	33.4	180.4	136.8	15.1	13.8	2,320.5
Total	**187.3**	**1,383.3**	**831.1**	**1,726.5**	**410.3**	**19,152.7**

Source: Air Quality Study Report
Note: Emissions calculations based on Road Construction Emissions Model (Version 6.3.1).
[a] CO_2 presented in metric tons per year.

Construction activities are subject to requirements found in the Standard Specifications for Construction of Local Streets and Roads (California Department of Transportation 2006). Standard Specification Section 14 stipulates that construction activities must comply with all rules, regulations, ordinances, and statutes of the local air pollution control district; addresses dust control requirements; and addresses dust palliatives.

Implementation of the Department's standard specification and measures to control dust and exhaust emissions during construction would help to minimize air quality impacts from construction activities.

There would be no effect under the No-Build Alternative because there would be no construction.

Naturally Occurring Asbestos

According to the California Department of Conservation's 2000 publication, *A General Location Guide for Ultramafic Rock in California*, there are no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) in or near the project area (California Department of Conservation 2000). As such, there is no potential for impacts related to NOA emissions during construction activities. However, construction activities that involve the demolition of any building or structure containing asbestos would be subject to EPAs National Emissions Standards for Hazardous Air Pollutants (NESHAP) and CARB's Airborne Toxic Control Measures (ATCMs).

Climate Change

Climate change is analyzed in Chapter 4. Neither the EPA nor the FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the FHWA's climate change Web site (Federal Highway Administration 2009b), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

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

Avoidance, Minimization, and/or Mitigation Measures

Amend the Transportation Improvement Program to Include Additional Alternatives

STA will submit a TIP amendment for the selected alternative if Alternative C, Phase 1 is not selected as the Preferred Alternative.

Implement Measures to Reduce MSAT and Criteria Pollutant Emissions

The project applicant shall implement measures to reduce MSAT emissions where feasible. The U.S. Department of Transportation Federal Highway Administration presents mitigation strategies to reduce emissions of MSATs (Federal Highway Administration 2006). Operational and long-term MSAT emissions are much more difficult to control than short-term construction MSAT emissions because variables such as daily traffic and vehicle fleet mix are elusive and beyond the Department's control. To the extent that it is applicable or feasible for the proposed project and through coordination with the project development team, the Department will consider the following MSAT emission reduction measures:

- Implement operational strategies that focus on speed limit enforcement and traffic management.
- Implement active Intelligent Transportation System programs, such as traffic management centers or incident management systems.
- Implement anti-idling strategies, such as truck-stop electrification.
- Establish buffer zones between new and expanded highway alignments and areas of vulnerable populations.
- Modify local zoning and develop guidelines that are more protective to separate emissions from sensitive receptors.

Most of the construction impacts on air quality are short term in duration and, therefore, will not result in adverse or long-term conditions. The Department's Standard Specifications pertaining to dust control and dust palliative requirement is a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of the Department's Standard Specifications, Section 14 "Environmental Stewardship" "requires the contractor to comply with rules, ordinances, regulations, and statutes.

Implementation of the following measures would minimize air quality impacts from construction activities.

Implement California Department of Transportation Standard Specification Section 14

To control the generation of construction-related PM10 emissions, the project proponent will follow Standard Specification Section 14, "Environmental Stewardship," which addresses the contractor's responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; and convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Section 14-9.02 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 14.9-01.

- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right-of-way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in 17 CCR 93114.
- A dust control plan will be developed to address sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts on existing communities.
- Equipment and materials storage sites will be located as far away as practical from residential and park uses. Construction areas will be kept clean and orderly.
- To the extent feasible, ESAs will be established for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Track-out reduction measures such as gravel pads at project access points, will be used to minimize dust and mud deposits on roads affected by construction traffic.
- Transported loads of soils and wet materials will be coved prior to transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to reduce PM10 and deposition of particulate during transportation.
- Dust and mud deposited on paved, public roads due to construction activity and traffic will be removed to decrease particulate matter.
- To the extent feasible, construction traffic will be routed and scheduled to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Vegetation will be planted or mulched as soon as practical after grading to reduce windblown particulate in the area.

Implement Additional Control Measures for Construction Emissions of Fugitive Dust

Additional measures to control dust shall be borrowed from the BAAQMD (see Table 3.2.6-10) and implemented to the extent practicable when the measures have not already been incorporated and do not conflict with requirements of the Department's Standard Specifications, Special Provisions, NPDES permit, and the Biological Opinions, Clean Water Act Section 404 permit, Clean Water Act Section 401 Certification, and other permits issued for the project.

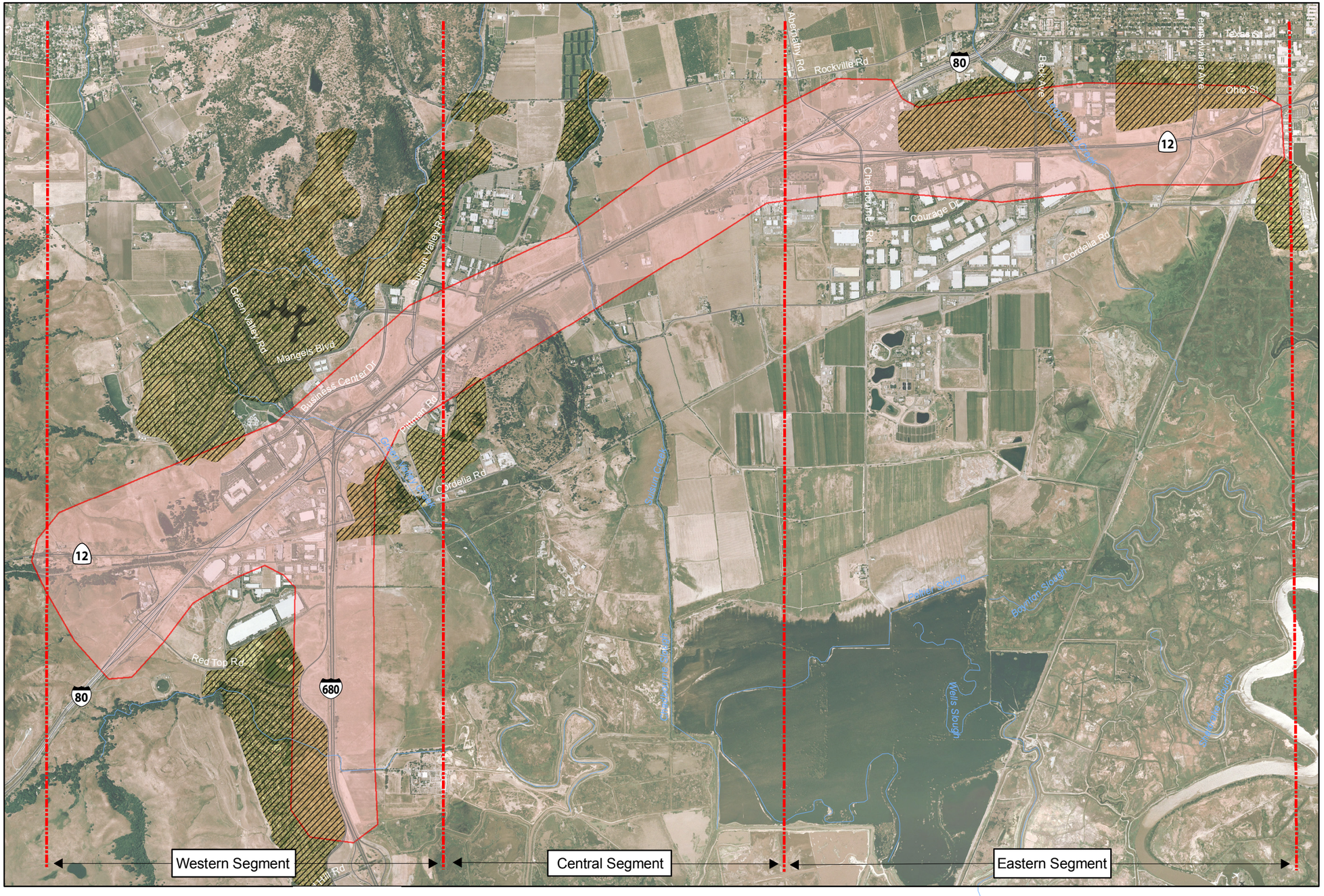
Table 3.2.6-10. Feasible Control Measures for Construction Emissions of PM10

Basic Control Measures (The following controls should be implemented at all construction sites.)
• Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 0.6 meters (2 feet) of freeboard. • Pave; apply water three times daily; or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
Enhanced Control Measures (The following additional measures should be implemented at construction sites greater than four acres in area.)
• Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more). • Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand). • Limit traffic speeds on unpaved roads to 24.1 kilometers per hour (15 miles per hour). • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible.
Optional Control Measures (The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or for any other reason may warrant additional emissions reductions, but the project applicant is not required to implement them.)
• Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site. • Install windbreaks or plant trees or vegetative wind breaks at windward sides of construction areas. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour. • Limit the area subject to excavation, grading, and other construction activity at any one time.

Source: Bay Area Air Quality Management District 1999.

Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment

The construction contractor will be required to implement measures to reduce construction-related exhaust emissions. Such measures could include, but are not limited to maintaining properly tuned engines; minimizing the idling time of diesel powered construction equipment to two minutes; using alternative powered construction equipment (i.e., compressed natural gas, biodiesel, electric); using add-on mitigation devices such as diesel oxidation catalysts or particulate filters; using equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines; phasing project construction; and limiting the operating hours of heavy-duty equipment.



Legend

I680/I80/SR12 Interchange

- Proposed Project Area
- Segment Lines
- General Location of Sensitive Receptors in Vicinity of Project Area *

* Does not include locations of scattered sensitive receptors in the project area.

1 inch equals 3,000 feet

Meters: 0 — 750 — 1,500

Feet: 0 — 3,100 — 6,200

Source: Nolte 2007, ESRI 2005, CirclePoint 2007, NAIP 2006.

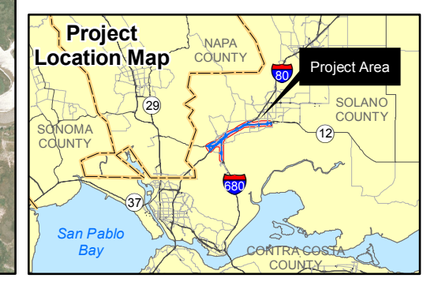


Figure 3.2.6-1
Project Area Map and General Locations of Sensitive Receptors

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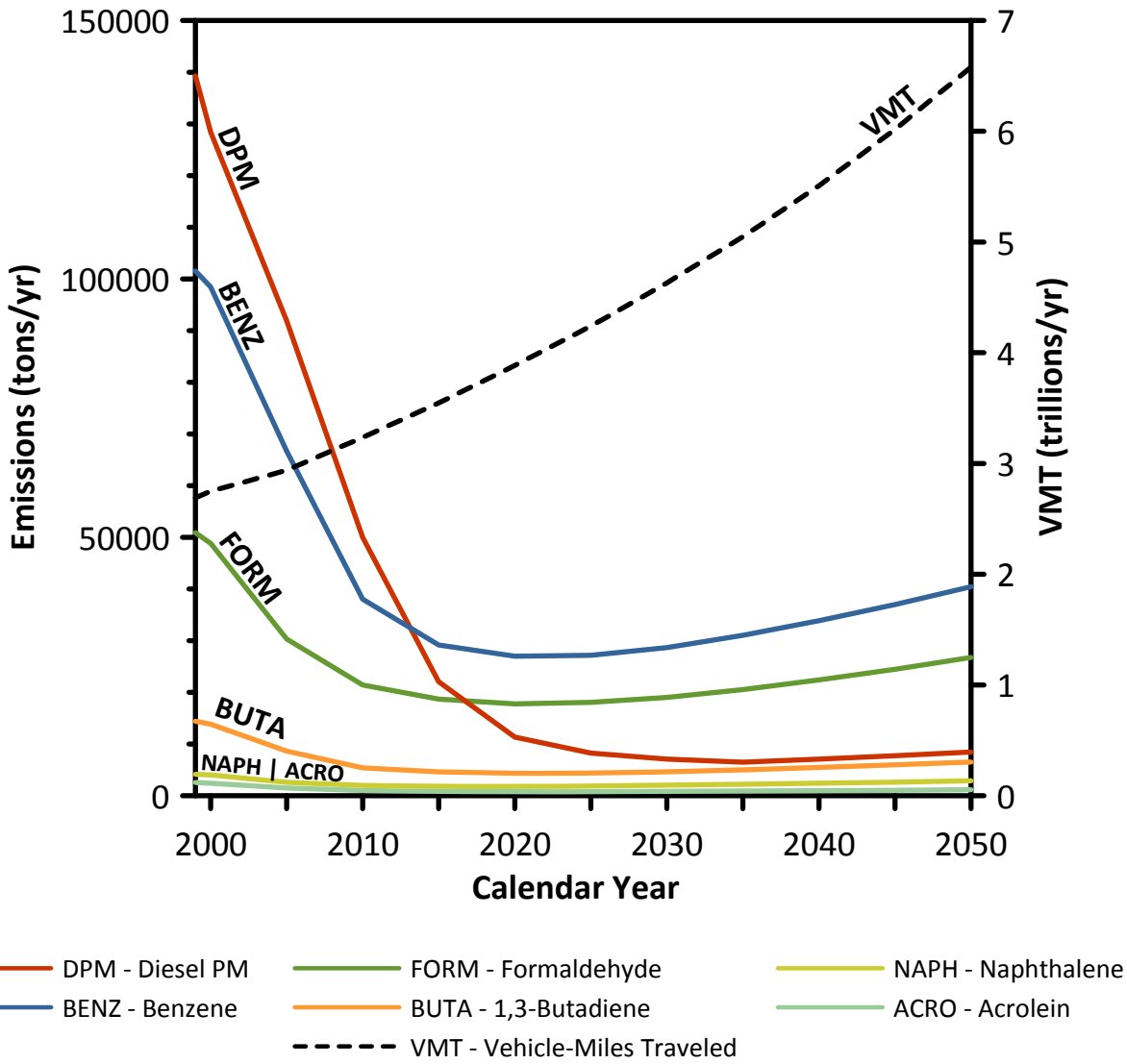

Note: (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: FHWA 2009

Graphics/Projects/02166.02/EIS (11-09) SS

Figure 3.2.6-2
National MSAT Emission Trends 1999-2050
For Vehicle Operating on Roadways Using EPA's Mobile6.2 Model

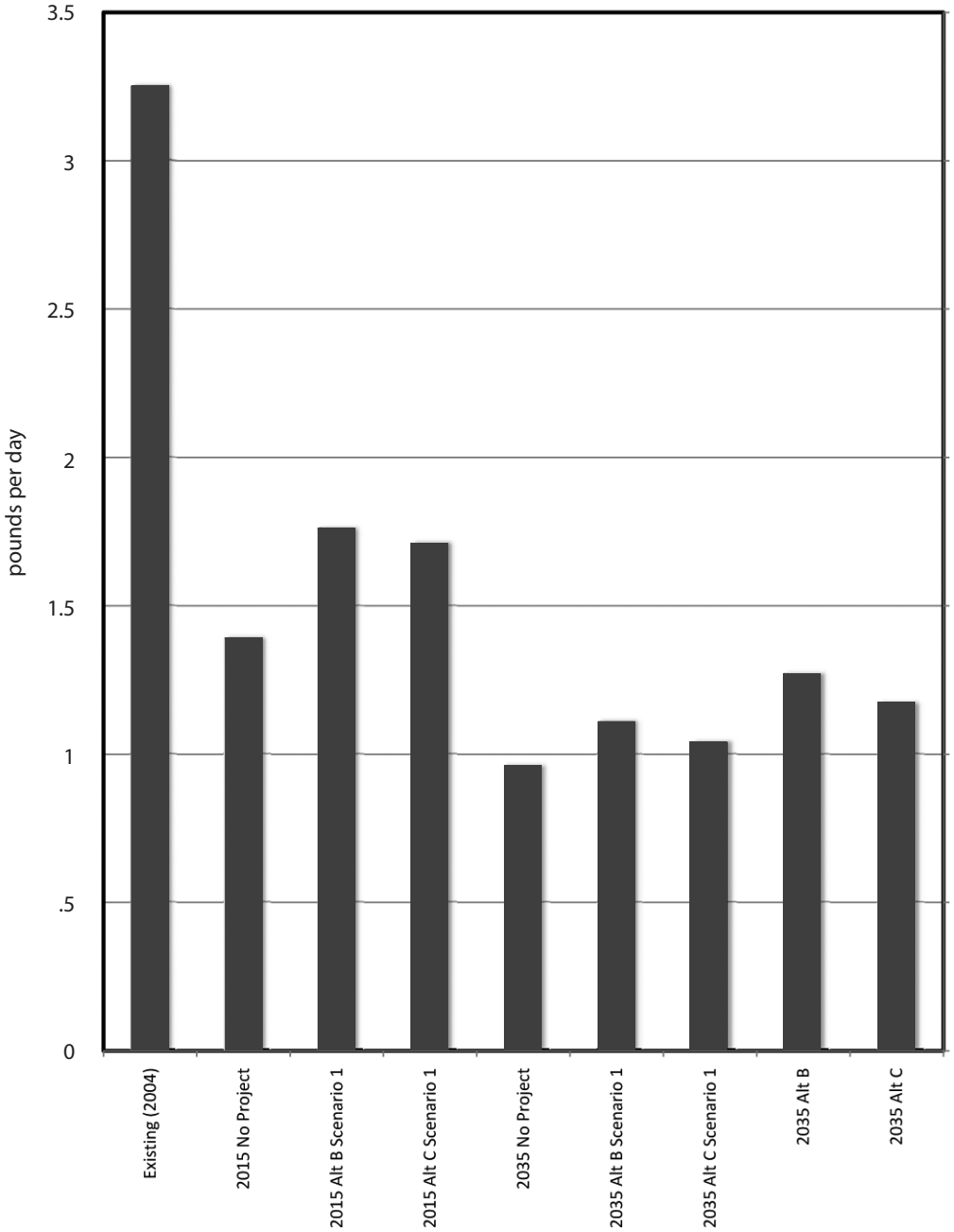

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Figure 3.2.6-3
Summary of Project Level Acrolein Emissions (pounds per day)

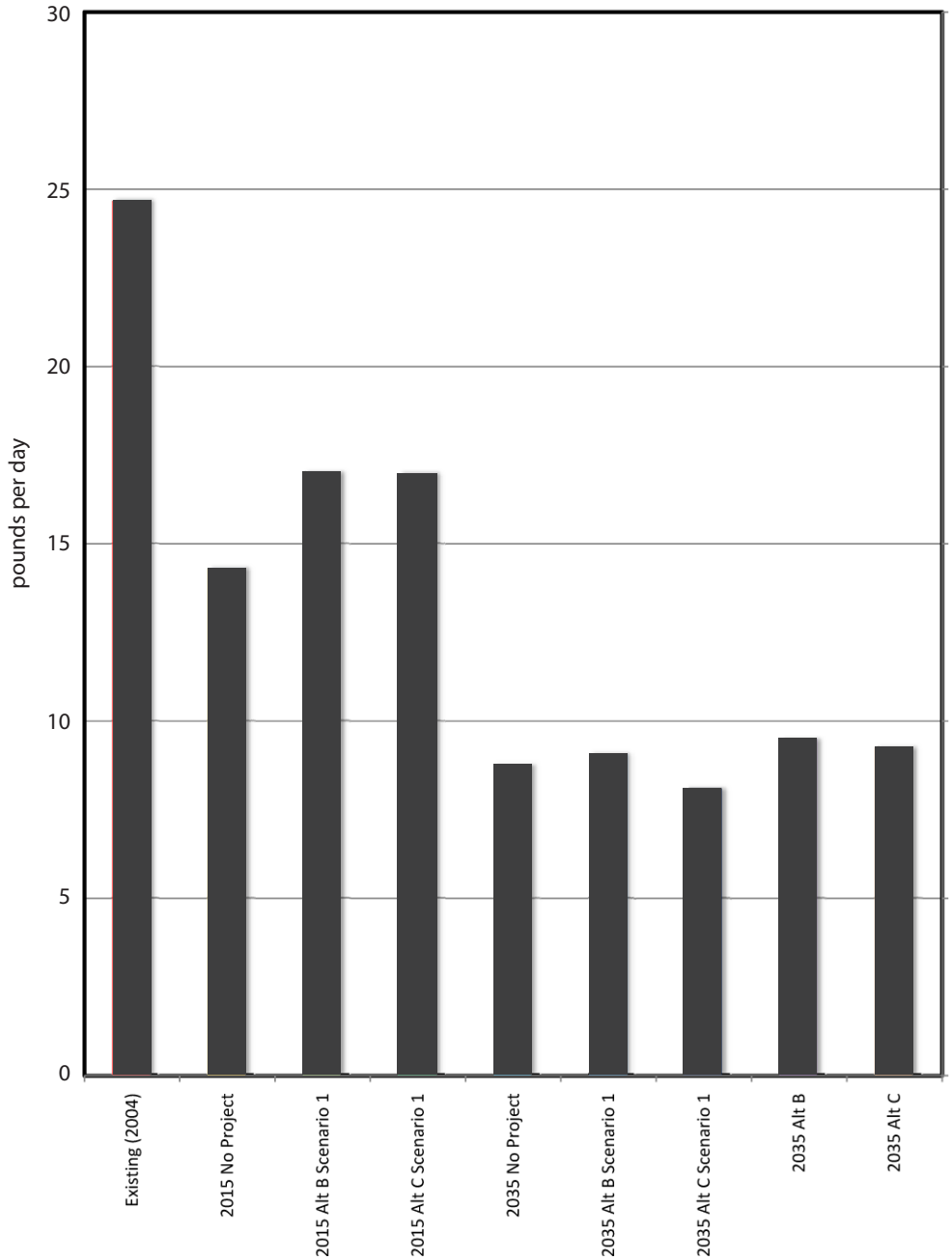

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Figure 3.2.6-4
Summary of Project Level Acetaldehyde Emissions (pounds per day)

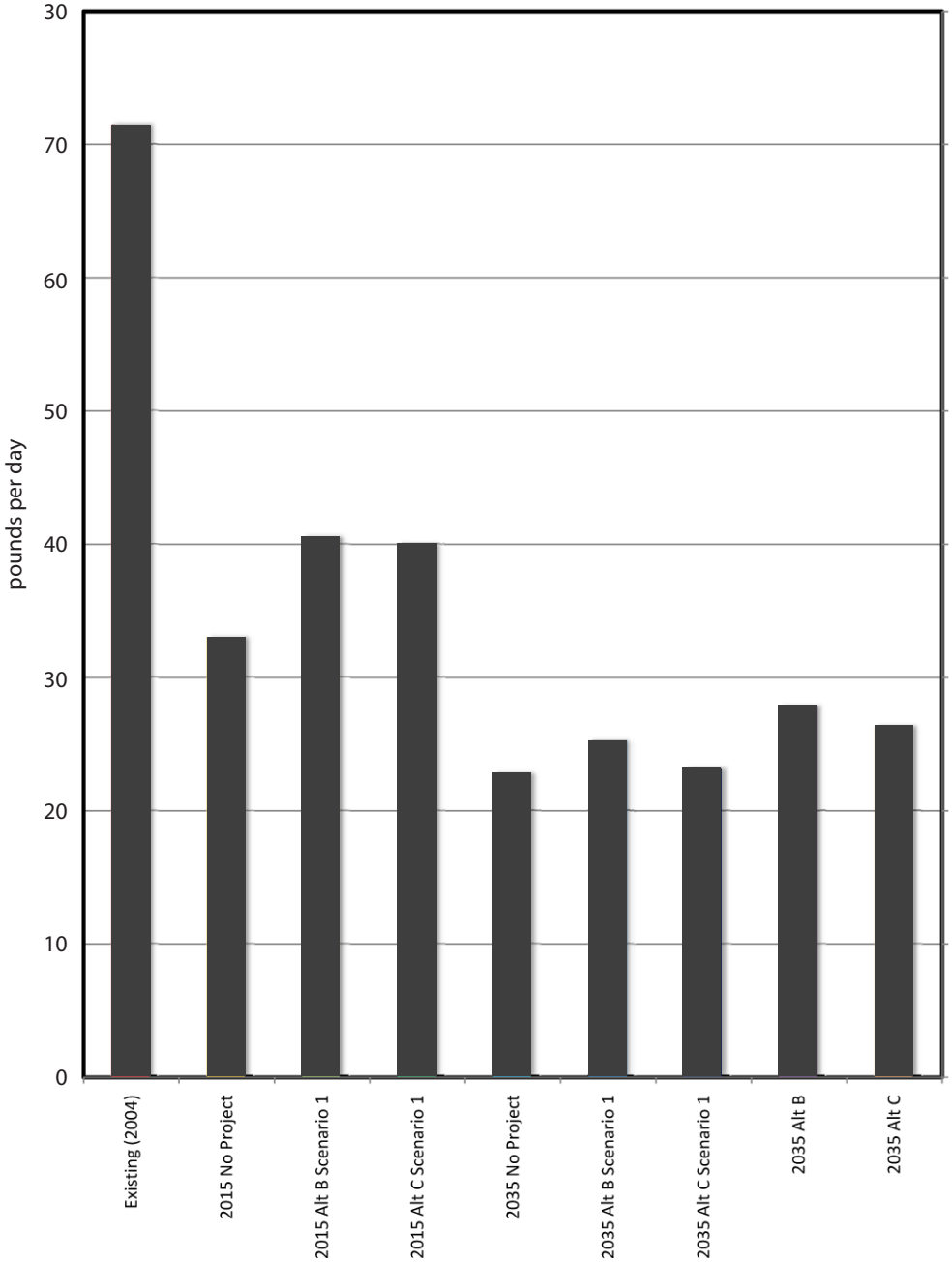

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Figure 3.2.6-5
Summary of Project Level Benzene Emissions (pounds per day)

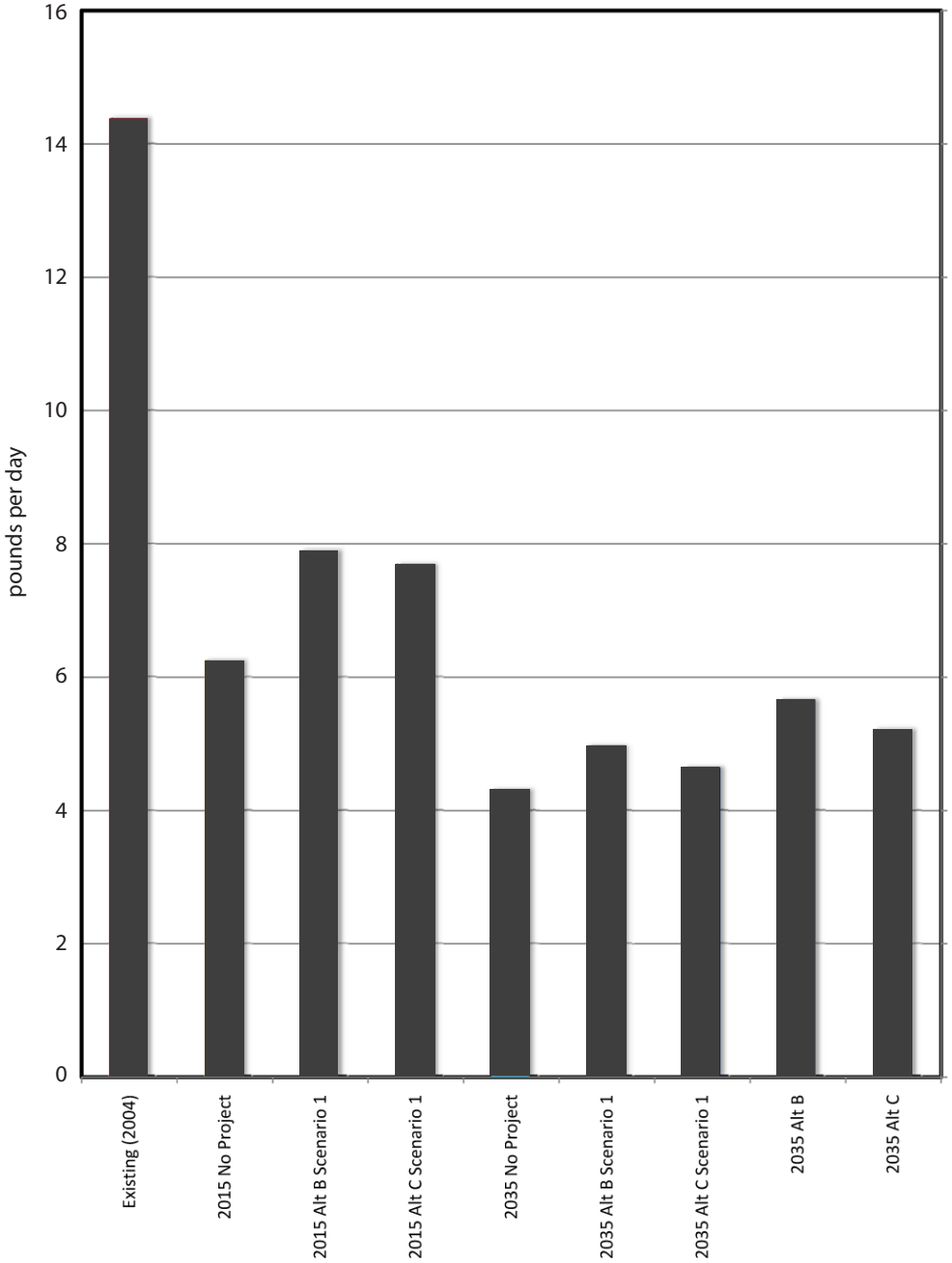

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Figure 3.2.6-6
Summary of Project Level 1,3-Butadiene Emissions (pounds per day)

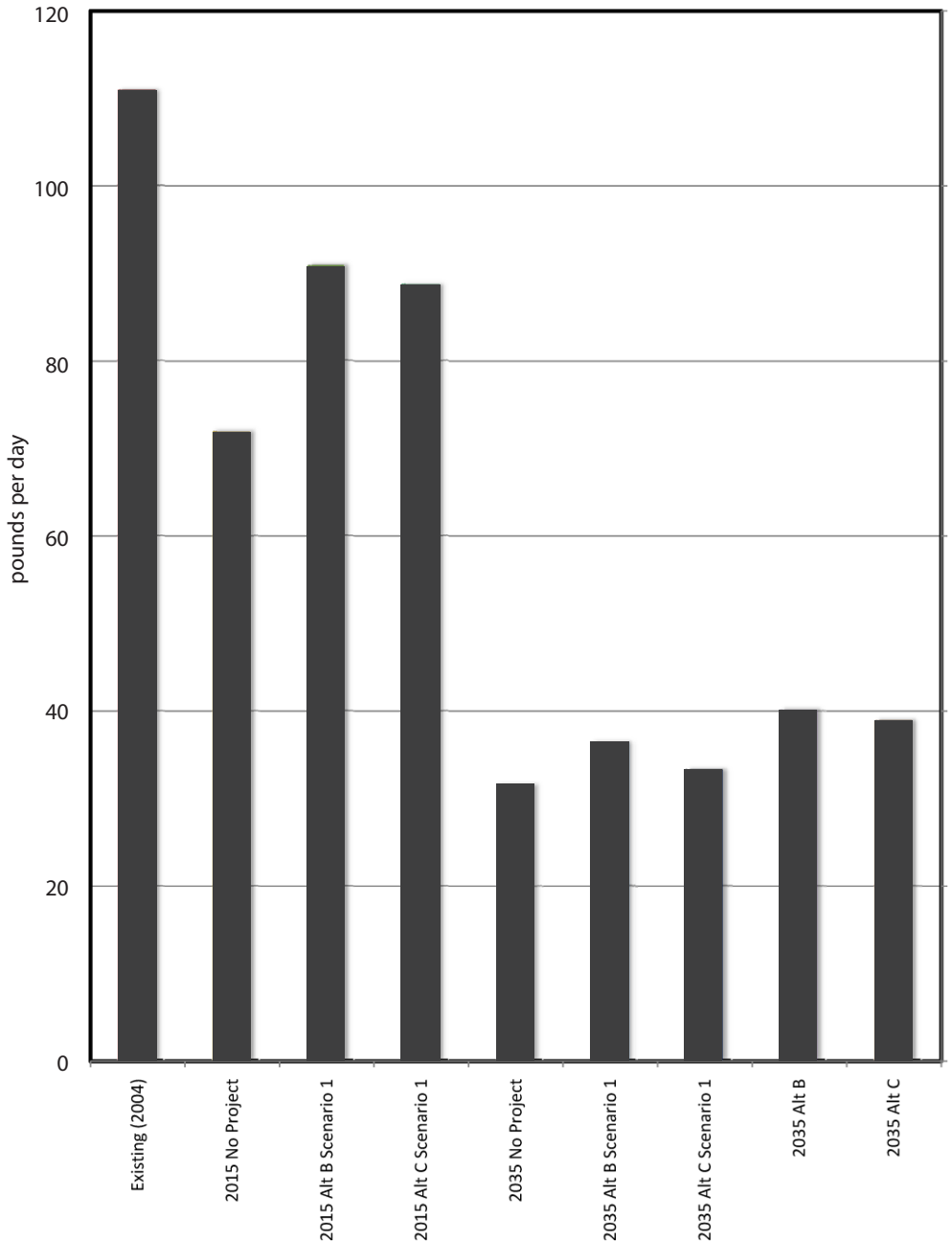

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Figure 3.2.6-7
Summary of Project Level Diesel Particulate Matter Emissions (pounds per day)

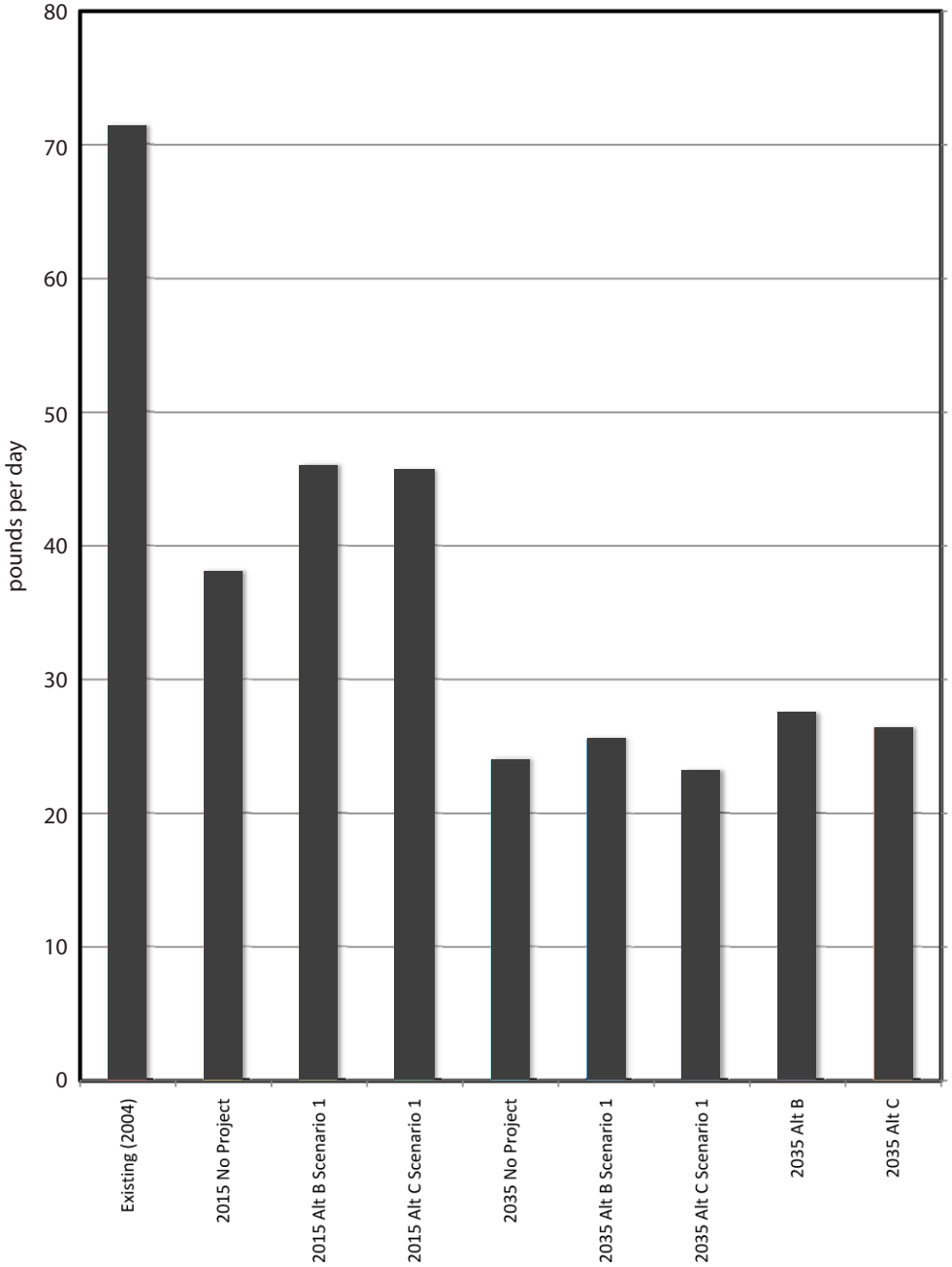

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Figure 3.2.6-8
Summary of Project Level Formaldehyde Emissions (pounds per day)

3.2.7 Noise

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis; please see Chapter 4, "California Environmental Quality Act Evaluation," for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and the Department, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 3.2.7-1 lists the noise abatement criteria for use in the 23 CFR 772 analysis.

Table 3.2.7-1. 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 Categories A or B above
D	Not applicable	Undeveloped lands.
E	52 interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Note: dBA $L_{eq}(h)$ = one-hour A-weighted equivalent sound level.

Table 3.2.7-2 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Table 3.2.7-2. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 300m (1000 ft)		
	100	
Gas Lawn Mower at 1 m (3 ft)		
	90	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)		Food Blender at 1 m (3 ft)
	80	Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime		
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		
		Library
Quiet Rural Nighttime	30	Bedroom at Night,
		Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with the Department's *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (California Department of Transportation 2006), a noise impact occurs when the future noise level with the project results in a substantial increase in the noise level (defined as an increase of 12 dB or more) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as a noise level within 1 dB of the NAC.

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

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

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3-dB increase in sound level. However, subjective perception of a doubling of loudness may be different than what is measured. In noisy environments, changes in noise of 1 to 2 dB are generally not detectable. However, it is widely accepted that the normal human ear begins to perceive a sound level increase of 3 dB in typical noisy environments. A 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. A 3-dB increase is considered a perceptible increase in noise level.

Affected Environment

The *Noise Study Technical Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project* (Noise Study) was prepared in 2010. The technical report discusses potential noise impacts and related noise abatement measures associated with the construction and operation of mainline and interchange improvements on I-80, I-680, and SR 12 and the construction and operation of a truck scale facility on I-80 in Solano County. The report was prepared to comply with 23 CFR 772, "Procedures for Abatement of Highway Traffic Noise," and the Department's noise analysis policies as described in the Traffic Noise Analysis Protocol.

The project area consists of a mix of residential, commercial, and industrial land uses (Activity Categories B and C). For the purposes of this analysis, land uses in the project area are grouped into a series of lettered regions as described below. Figures 3.2.7-1 through 3.2.7-16 in Volume 2 of this document identify the locations of these lettered regions. Figures 3.2.7-1 through 3.2.7-8 show the project area under Alternative B (and the fundable first phase). Figures 3.2.7-9 through 3.2.7-16 show the project area under Alternative C (and the fundable first phase).

Area A: Area A is located on the west side of I-680, north of Gold Hill Road, and is a dense single-family residential neighborhood (Activity Category B) adjacent to Lopes Road, extending north to Silver Creek Road. A sound barrier with a nominal height of six feet is located between I-680 and residences in Area A (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area A1: Area A1 is located on the west side of I-680, adjacent to Lopes Road and south of Gold Hill Road. This is a neighborhood densely populated with single-family residences (Activity Category B). A sound barrier with a nominal height of six feet is located between I-680 and residences in Area A1 (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area B: Area B is located on the west side of I-680, between Silver Creek Road and Rolling Hills Park. This area consists of residential townhouse units (Activity Category B) surrounded by a sound barrier with a nominal height of six feet (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12). This area also includes a walking trail that leads into Rolling Hills Park (Activity Category B).

Area C: Area C is located on the west side of I-680, north of Rolling Hills Park, extending along Lopes Road north to Red Top Road. This is a neighborhood densely populated with single-family residences (Activity Category B). Sound barriers with a nominal height of six feet are located between I-80 and residential receivers in this area (refer to Volume 2, Figures 3.2.7-4 and 3.2.7-12).

Area D: Area D is located on the west side of I-680, north of Cordelia Road. This area consists of two single-family residences on small lots adjacent to Lopes Road (Activity Category B), in the northwest quadrant of the Cordelia Road/Lopes Road intersection; and commercial land uses (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-3 and 3.2.7-11).

Area E: Area E is located on the east side of I-680 on both sides of Cordelia Road. This area consists of scattered single-family homes (Activity Category B), and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-3 and 3.2.7-11).

Area F: Area F is located north of Business Center Drive, which will connect to the North Connector in the future under both Alternatives B and C. A single-family residential subdivision (Activity Category B) is located in this area. The area consists mostly of retail and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-1 and 3.2.7-9).

Area G: Area G is located on the south side of SR 12E east of I-80. This area consists of the baseball diamond and park area adjacent to Busch Drive and west of Chadbourne Road (Activity Category B). The area consists mostly of retail and commercial buildings (Activity Category C) that do not include areas of frequent human use. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

Area H: Area H is located on the north side of SR 12E east of I-80. This area is a single-family residential neighborhood (Activity Category B) that extends from east of Abernathy Road to

Beck Avenue. Two sound barriers in this area extend along SR 12; one extends along Marquette Way and has a nominal height of eight feet, and the other extends along Burgundy Way and has a nominal height of ten feet (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

Area I: Area I is located on the north side of SR 12E and consists of single-family residences (Activity Category B) along Diamond Way and Diamond Court. A sound barrier with a nominal height of eight feet is located between SR 12 and the residential area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

Area J: Area J is located on the north side of SR 12E and consists of single-family residences (Activity Category B) along Ontario Street and Ontario Court. A sound barrier with a nominal height of eight feet is located between SR 12 and the residential area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

Area K: Area K is located on the north side of SR 12E and consists of single-family residences (Activity Category B) and the Fairfield Vista apartment buildings along James Street and west of Pennsylvania Avenue. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

Area L: Area L is located on the north side of SR 12E and consists of single-family residences and apartments (Activity Category B) along Illinois Street and Ohio Street. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

Area M: Area M is located on the south side of SR 12E and consists of single-family residences and apartments (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) along Sacramento Street and Solano Street. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-8 and 3.2.7-16).

Area N: Area N is located along Chadbourne Road on the north side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C). There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-7 and 3.2.7-15).

Area O: Area O is located on the south side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) near Hale Ranch Road. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-6 and 3.2.7-14).

Area P: Area P is located on the south side of I-80 and consists of scattered single-family residences (Activity Category B) and commercial buildings with no areas of outdoor frequent human use (Activity Category C) near Cordelia Road. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-6 and 3.2.7-14).

Area Q: Area Q is located in an area on the north side of I-80 bound by Dan Wilson Creek and Suisun Creek. This area is planned for mixed commercial and residential development (Activity Categories B and C) under the Fairfield Corporate Commons project (City of Fairfield 2005). Locations of residential use within the development are based on the configuration studied in the

Fairfield Corporate Commons Draft EIR. There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-5, 3.2.7-6, 3.2.7-13, and 3.2.7-14).

Area R: Area R is located in the southeastern quadrant of the I-80/Pittman Road interchange. This area consists of hotels with outdoor swimming pools (Activity Category B), a family outdoor recreation area, and commercial use (Activity Category C). There are no existing sound barriers in this area (refer to Volume 2, Figures 3.2.7-5 and 3.2.7-13).

Environmental Consequences

Noise Monitoring

The existing noise environment in the project area was characterized by short- and long-term noise monitoring. Short-term noise monitoring was conducted on Tuesday, October 9, and Wednesday, October 10, 2007. Short-term noise monitoring was conducted over 15-minute intervals at or near Activity Category B land uses within the project area. The short-term measurement positions are identified in Figures 3.2.7-1 through 3.2.7-16 in Volume 2. Table 3.2.7-3 summarizes the results of the short-term noise monitoring conducted in the project area.

Table 3.2.7-3. Summary of Short-Term Noise Monitoring

Measurement Location	Description	Area	Start Time	Duration (min.)	Existing Wall Height	Measured L_{eq}
ST-1	Ramsey Road, End of Smith Lane	E	4:20 p.m.	15	N/A	70.9
ST-2	First-row residence on Bridgeport Avenue	E	4:20 p.m.	15	N/A	62.8
ST-3	Second-row residence on Bridgeport Avenue	E	4:20 p.m.	15	N/A	63.1
ST-4	First-row residence on Silverado Drive	C	3:29 p.m.	15	6 feet	58.9
ST-5	Rolling Hills Park	B	3:29 p.m.	15	N/A	59.1
ST-6A	Trail, Rolling Hills Park	B	11:57 a.m.	15	N/A	63.9
ST-6B	Trail, Rolling Hills Park	B	3:29 p.m.	15	N/A	64.8
ST-7	First-row residence on Ridgecrest Court	A	11:57 a.m.	15	6 feet	56.2
ST-8	Second-row residence on Ridgecrest Court	A	11:57 a.m.	15	6 feet	47.2
ST-9	First-row residence on Northwood Drive	A	1:02 p.m.	15	6 feet	50.7
ST-10	Second-row residence on Northwood Drive	A	1:02 p.m.	15	6 feet	48.0
ST-11	Trail, Northwood Drive	A	1:02 p.m.	15	6 feet	68.3
ST-12	Fairfield Vista Apartments, Pennsylvania Avenue	K	12:32 p.m.	15	N/A	52.5
ST-13	First-row residence, James Street	K	12:32 p.m.	15	N/A	48.2
ST-14	First-row residence, James Street	K	12:32 p.m.	15	N/A	48.9
ST-15	First-row residence, Ontario Court	J	3:56 p.m.	15	8 feet	59.5
ST-16	First-row residence, Burgundy Way	H	2:52 p.m.	15	8 feet	54.2
ST-17	First-row residence, Burgundy Way	H	2:52 p.m.	15	8 feet	54.6
ST-18	First-row residence, Marquette Way	H	3:56 p.m.	15	8 feet	59.6
ST-19	First-row residence, Marquette Way	H	3:56 p.m.	15	8 feet	59.0
I-80-ST-1	Cordelia Road	I-80	1:00 p.m.	15	N/A	60.4
I-80-ST-6	Hamilton Avenue	I-80	3:00 p.m.	15	N/A	54.2
I-80-ST-13	Lozano Lane	I-80	11:00 a.m.	15	N/A	71.1

Note: N/A = not applicable.

Short-term monitoring was conducted at 23 positions within the project area. The maximum level measured was 71.1 dBA L_{eq}. The median level was 47.2 dBA L_{eq}.

Long-term monitoring position LT-1 was conducted at one position, next to Suisun Creek on the south side of I-80, approximately 200 feet from the edge of pavement (shown in Figures 3.2.7-5 and 3.2.7-13). The long-term sound level data was collected over five consecutive 24-hour periods, beginning on Thursday, January 19, 2006, and ending on Wednesday, January 25, 2006. The average loudest-hour sound level measured was 68.4 dBA L_{eq}1h, during the 7 a.m. hour.

Traffic Noise Modeling

A noise impact analysis was conducted for the proposed project. Three-dimensional modeling objects were developed using CAD drawings, aerials, and topographic contours provided by the STA. These objects were digitized into the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). Loudest-hour traffic volumes, classification percentages, and speeds used to model traffic noise under existing and design-year (2035) conditions were provided in the FTOR for the proposed project. Table 3.2.7-4 summarizes the traffic noise modeling results under existing and design-year conditions.

Exposure of Noise Sensitive Land Uses to Increased Traffic Noise

Modeling results in Table 3.2.7-4 indicate that predicted traffic noise levels for the design-year with-project conditions would approach or exceed the NAC of 67 dBA, L_{eq}(h), for Activity Category B land uses within the project area.

Noise impacts resulting from a substantial increase over existing noise levels (12 dB) are not predicted to occur under the proposed project. As such, the increase in noise levels as a result of project operations would not be considered a significant adverse effect. However, because noise levels in the project area would approach or exceed the NAC thresholds, noise abatement must be considered.

Modeling results also indicate that predicted traffic noise levels for the design-year with-project conditions approach or exceed the NAC of 72 dBA, L_{eq}(h), for Activity Category C land uses within the project area. However, none of these Category C areas have exterior frequent human use that would benefit from lowered noise levels. Accordingly, no noise abatement is considered for any Category C uses in the project area.

Under Alternative B, Phase 1, noise impacts are predicted to occur in areas D, E (just south of the I-80/680 interchange), and R (just east of Suisun Valley Road). The affected units include 13 residences, an outdoor swimming pool (at the Days Inn) and an outdoor recreation area (Scandia Family Center). Under Alternative B, 28 residences along SR 12 and I-80 would be affected in addition to the noise impacts under Alternative B, Phase 1, resulting in a total of 49 affected units (Table 3.2.7-5).

Under Alternative C, Phase 1, one residence adjacent to I-680 would be exposed to high noise levels, resulting in a total of one unit affected (refer to Table 3.2.7-6). Under Alternative C, residences along I-80 and SR 12 are included in the project area, resulting in a total of 37 affected units, as shown in Table 3.2.7-6. The units affected include 29 residences, an outdoor swimming pool (at the Days Inn) and an outdoor recreation area (Scandia Family Center).

As indicated in Table 3.2.7-4, design year with-project traffic noise levels are predicted to be more than 3 dB greater than design year no-project traffic noise levels. This increase is more than the threshold of a perceptible change (3 dB).

Under Alternative B, noise levels would increase at Venus Drive (Area F), Busch Drive (Area G), Marquette Way (Area H) and Burgundy Way (Area H). Noise levels would exceed the NAC at the Marquette Way. Under Alternative B, Phase 1, noise levels would increase at Burgundy Way (Area H) only, and would not approach or exceed the NAC. Under Alternative C, noise levels would increase at James Street (Area K), Sacramento Street (Area M), and Marquette Way (Area H), but would only approach or exceed the NAC at Marquette Way. No exposure of sensitive land uses to traffic noise is expected to occur under Alternative C, Phase 1. Under the No-Build Alternative, noise levels associated with traffic would increase in the future as traffic congestion associated with growth increases (Table 2.3.7-4).

None of the receptors within the project boundaries would be exposed to a substantial increase over existing noise levels under any of the project alternatives. Therefore, no adverse effects related to increased traffic noise are expected.

Table 3.2.7-4. Traffic Noise Impact Evaluation, I-80, I-680 and SR 12

Position	Location	Area	Existing Traffic Noise Level, dBA, L_{eq}(h)	Design-Year No-Project Traffic Noise Level, dBA, L_{eq}(h)	Design-Year With Project, Alternative B Phase 1			Design-Year With Project, Alternative B Buildout			Design-Year With Project, Alternative C Phase 1			Design-Year With Project, Alternative C Buildout			Traffic Noise Impact[a]
					Noise Level, dBA, L_{eq}(h)	Increase re Existing, dB	Increase re No-Project, dB	Noise Level, dBA, L_{eq}(h)	Increase re Existing, dB	Increase re No-Project, dB	Noise Level, dBA, L_{eq}(h)	Increase re Existing, dB	Increase re No-Project, dB	Noise Level, dBA, L_{eq}(h)	Increase re Existing, dB	Increase re No-Project, dB	
A06	Birkdale Circle	A	61	63	64	+ 3	+ 1	64	+ 3	+ 1	64	+ 3	+ 1	64	+ 3	+ 1	–
A11	Stoneridge Circle	A	62	64	65	+ 3	+ 1	65	+ 3	+ 1	65	+ 3	+ 1	65	+ 3	+ 1	–
A13	Stoneridge Circle	A	62	64	65	+ 3	+ 1	65	+ 3	+ 1	65	+ 3	+ 1	65	+ 3	+ 1	–
B01	Smith Lane	B	61	63	64	+ 3	+ 1	64	+ 3	+ 1	64	+ 3	+ 1	64	+ 3	+ 1	–
B04	Rolling Hills Park	B	67	68	69	+ 2	+ 1	69	+ 2	+ 1	69	+ 2	+ 1	69	+ 2	+ 1	A/E All alts
C01	Silverado Drive	C	61	63	63	+ 2	0	64	+ 3	+ 1	63	+ 2	0	64	+ 3	+ 1	–
C04	Silverado Drive	C	60	62	63	+ 3	+ 1	63	+ 3	+ 1	63	+ 3	+ 1	63	+ 3	+ 1	–
C05	Silverado Drive	C	60	62	62	+ 2	0	63	+ 3	+ 1	62	+ 2	0	63	+ 3	+ 1	–
D01	Lopes Road	D	70	71	70	0	- 1	71	+ 1	0	n/a	n/a	n/a	n/a	n/a	n/a	A/E, Alt. B(ph1) B
E01	Bridgeport Avenue	E	68	70	70	+ 2	0	70	+ 2	0	n/a	n/a	n/a	n/a	n/a	n/a	A/E, Alt. B(ph1) B
E05	Cordelia Road	E	67	69	68	+ 1	- 1	69	+ 2	0	n/a	n/a	n/a	n/a	n/a	n/a	A/E, Alt. B(ph1) B
E10	Ritchie Road	E	63	63	63	0	0	63	0	0	n/a	n/a	n/a	n/a	n/a	n/a	–
E11	Ramsey Road	E	66	68	69	+ 3	+ 1	69	+ 3	+ 1	n/a	n/a	n/a	n/a	n/a	n/a	A/E, Alt. B(ph1) B
E12	Ramsey Road	E	73	75	74	+ 1	- 1	74	+ 1	- 1	74	+ 1	- 1	74	+ 1	- 1	A/E All alts
F01	Venus Drive	F	53	55	57	+ 4	+ 2	59	+ 6	+ 4	56	+ 3	+ 1	57	+ 4	+ 2	–
G01	Busch Drive Baseball Diamond	G	60	62	n/a	n/a	n/a	65	+ 5	+ 3	n/a	n/a	n/a	64	+ 4	+ 2	–
H01	Marquette Way	H	64	66	n/a	n/a	n/a	68	+ 4	+ 2	n/a	n/a	n/a	68	+ 4	+ 2	A/E, Alt. B C
H06	Marquette Way	H	64	66	n/a	n/a	n/a	69	+ 5	+ 3	n/a	n/a	n/a	69	+ 5	+ 3	A/E, Alt. B C
H09	Marquette Way	H	62	64	n/a	n/a	n/a	68	+ 6	+ 4	n/a	n/a	n/a	68	+ 6	+ 4	A/E, Alt. B C
H11	Marquette Way	H	61	63	n/a	n/a	n/a	66	+ 5	+ 3	n/a	n/a	n/a	66	+ 5	+ 3	A/E, Alt. B C
H12	Marquette Way	H	59	61	n/a	n/a	n/a	62	+ 3	+ 1	n/a	n/a	n/a	62	+ 3	+ 1	–
H21	Burgundy Way	H	59	61	64	+ 5	+ 3	64	+ 5	+ 3	n/a	n/a	n/a	63	+ 4	+ 2	–
I01	Diamond Way	I	59	61	59	0	- 2	59	0	- 2	n/a	n/a	n/a	60	+ 1	- 1	–
I11	Diamond Way	I	59	61	62	+ 3	+ 1	62	+ 3	+ 1	n/a	n/a	n/a	62	+ 3	+ 1	–
J01	Ontario Street	J	59	61	61	+ 2	0	61	+ 2	0	n/a	n/a	n/a	63	+ 4	+ 2	–
K01	James Street	K	58	61	n/a	n/a	n/a	58	0	- 3	n/a	n/a	n/a	62	+ 4	+ 1	–
K04	James Street	K	62	62	n/a	n/a	n/a	64	+ 2	+ 2	n/a	n/a	n/a	65	+ 3	+ 3	–
L04	Illinois Street	L	59	61	n/a	n/a	n/a	62	+ 3	+ 1	n/a	n/a	n/a	63	+ 4	+ 2	–
L06	Ohio Street	L	61	63	n/a	n/a	n/a	65	+ 4	+ 2	n/a	n/a	n/a	64	+ 3	+ 1	–
M01	Sacramento Street	M	51	53	n/a	n/a	n/a	54	+ 3	+ 1	n/a	n/a	n/a	59	+ 8	+ 6	–
N01	Chadbourne Road	N	63	64	n/a	n/a	n/a	65	+ 2	+ 1	n/a	n/a	n/a	65	+ 2	+ 1	–
O01	Hale Ranch Road	O	70	72	n/a	n/a	n/a	73	+ 3	+ 1	n/a	n/a	n/a	73	+ 3	+ 1	A/E All alts
P01	Cordelia Road	P	65	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	–[b]
Q01	Fairfield Commons (future)	Q	54	55	n/a	n/a	n/a	56	+ 2	+ 1	n/a	n/a	n/a	56	+ 2	+ 1	–
Q03	Fairfield Commons (future)	Q	55	56	n/a	n/a	n/a	57	+ 2	+ 1	n/a	n/a	n/a	57	+ 2	+ 1	–
Q04	end of Russell Road	Q	71	72	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	n/a[b]	–[b]
R01	Days Inn Pool (R1)	R	74	75	76	+ 2	+ 1	76	+ 2	+ 1	n/a	n/a	n/a	76	+ 2	+ 1	A/E All alts
R02	Scandia Rec Center (R2)	R	78	79	80	+ 2	+ 1	80	+ 2	+ 1	n/a	n/a	n/a	80	+ 2	+ 1	A/E All alts

[a] A/E indicates that traffic noise levels approach or exceed the NAC for the corresponding Activity Categories in the area.
[b] This property is taken under future project alternatives

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Table 3.2.7-5. Counts of Affected Residences, Alternative B, and Alternative B, Phase 1

Area	Primary Source of Traffic Noise	Alternative B, Phase 1		Alternative B	
		Approach or Exceed NAC	Substantial Increase over Existing Noise Levels	Approach or Exceed NAC	Substantial Increase over Existing Noise Levels
A	I-680	0	0	0	0
B	I-680	0	0	0	0
C	I-680	0	0	0	0
D	I-680	2	0	2	0
E	I-680	11	0	11	0
F	North Connector	0	0	0	0
G	SR 12	N/A	N/A	0	0
H	SR 12	0	0	25	0
I	SR 12	0	0	0	0
J	SR 12	0	0	0	0
K	SR 12	N/A	N/A	0	0
L	SR 12	N/A	N/A	0	0
M	SR 12	N/A	N/A	0	0
N	I-80	N/A	N/A	0	0
O	I-80	N/A	N/A	3	0
P	I-80	N/A	N/A	0	0
Q	I-80	0	0	0	0
R	I-80	8[a]	0	8[a]	0
Total Units Affected		**21**	**0**	**49**	**0**

Note: N/A = not applicable.

[a] Impact count for non-residential outdoor use is based on one unit per 100 linear feet of highway frontage.

Table 3.2.7-6. Counts of Affected Residences, Alternative C and Alternative C, Phase 1

Area	Primary Source of Traffic Noise	Alternative C, Phase 1		Alternative C	
		Approach or Exceed NAC	Substantial Increase over Existing Noise Levels	Approach or Exceed NAC	Substantial Increase over Existing Noise Levels
A	I-680	0	0	0	0
B	I-680	0	0	0	0
C	I-680	0	0	0	0
D	I-680	N/A	N/A	N/A	N/A
E	I-680	1	0	1	0
F	North Connector	0	0	0	0
G	SR 12	N/A	N/A	0	0
H	SR 12	N/A	N/A	25	0
I	SR 12	N/A	N/A	0	0
J	SR 12	N/A	N/A	0	0
K	SR 12	N/A	N/A	0	0
L	SR 12	N/A	N/A	0	0
M	SR 12	N/A	N/A	0	0
N	I-80	N/A	N/A	0	0
O	I-80	N/A	N/A	3	0
P	I-80	N/A	N/A	0	0
Q	I-80	N/A	N/A	0	0
R	I-80	N/A	N/A	8[a]	0
Total Units Affected		**1**	**0**	**37**	**0**

Note: N/A = not applicable.

[a] Impact count for nonresidential outdoor use is based on one unit per 100 linear foot of highway frontage.

Exposure of Noise-Sensitive Land Uses to Construction Noise

Construction noise is regulated by the Department's Standard Specifications Section 14-8, "Sound Control Requirements," which states 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 3.2.7-7 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 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 3.2.7-7. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82

Source: Federal Transit Administration 2006.

No adverse noise effects from construction are anticipated, because construction would be conducted in accordance with the Department's Standard Specifications Section 14-8 and applicable local noise standards. Construction noise would be short-term, intermittent, and masked by local traffic noise. Under the No-Build Alternative, no new noise effects associated with project construction would occur.

Avoidance, Minimization, and/or Mitigation

Noise Abatement Evaluation under 23 CFR 772

None of the receptors within the project boundaries would be exposed to a substantial increase (greater than 12 dB) in future predicted noise levels under any of the project alternatives. Consequently, no adverse effects under NEPA were identified. However, several receptors within the project area would experience high noise levels that approach or exceed the NAC thresholds. Under the requirements of 23 CFR 772 noise abatement in the form of noise barriers was considered for the following areas that are predicted to experience high noise levels:

- Area E (All Project Alternatives).
- Area H (Project Alternatives B and C).
- Area O (Project Alternatives B and C).
- Area R (Project Alternatives B and C, Alternative B, Phase 1).

Potential noise abatement measures include the following:

- 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.
- Acoustically insulating public-use or nonprofit institutional structures.

Because of the configuration and location of the proposed project, noise barriers are the only form of noise abatement evaluated in this report. Each noise barrier has been evaluated for feasibility based on achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated. The Department's 2009 base cost-per-residence allowance is $31,000. Additional allowance dollars are added to the base allowance based on absolute noise levels, the increase in noise levels resulting from the proposed project, achievable noise reduction, and the date of building construction in the area. Worksheets in Appendix B of the Noise Study summarize the reasonable cost allowance calculations, based on the procedure outlined in the Protocol.

For any noise barrier to be considered reasonable from a cost perspective the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, and retaining walls. The design of noise barriers presented in this report is preliminary only and has been conducted at a level appropriate for environmental review but not for final design of the proposed project.

Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during the final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of the noise abatement will be made upon completion of the project design.

Area D (Alternatives B and Alternative B, Phase 1)

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at residences in Area D will be in the range of 70–71 dBA-L_{eq}[h]. Traffic noise impacts are predicted to occur at two residences in this area under Alternative B. Receivers in Area D lie outside of the project area under Alternative C, so they are not considered for noise abatement under Alternative C.

Noise Barrier D was designed for the edge of southbound I-680, and was analyzed for feasibility to benefit receivers in Area D. Detailed modeling analysis of Barrier D indicates that a barrier with a height of up to 16 feet would provide a maximum noise reduction of less than 5 dB at noise-sensitive receiver locations. Barrier D is therefore not considered to be feasible.

A noise barrier along the western edge of Lopes Road would not be feasible because the affected residences require access to Lopes Road, and an acoustically effective barrier would block driveway access. Therefore, noise barriers are not considered a feasible noise abatement option for Area D.

Area E

Table 3.2.7-4 indicates that traffic noise levels at residences in Area E will be in the range of 63–74 dBA-L_{eq}[h]. Traffic noise impacts are predicted to occur at 11 residences in this area.

Noise Barrier E-1 was designed for the northbound edge of I-680, and was analyzed for feasibility to benefit receivers adjacent to Cordelia Road and Bridgeport Avenue. Traffic noise from local roadways such as Cordelia Road contributes significantly to sound levels, decreasing the potential for a noise barrier along I-680 to benefit receivers adjacent to Cordelia Road. Detailed modeling analysis of Barrier E-1 indicates that a barrier with a height of 16 feet would provide a maximum noise reduction of less than 5 dB at noise-sensitive first-row receiver locations. Barrier E-1 is therefore not considered to be feasible.

Construction of noise barriers along local roads such as Cordelia Road would not be feasible because the affected residences require access to the local roads, and an acoustically effective barrier would block those access points.

Noise Barrier E-2 was designed to benefit a single ranch property south of Bridgeport Avenue, and was evaluated for wall heights in the range of 6–16 feet. Barrier E-2 would extend approximately 1,160 linear feet within Caltrans right-of-way between I-680 northbound and Ramsey Road. Detailed modeling analysis of Barrier E-2 indicates that construction of this barrier at a height of ten to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier E-2 is therefore considered feasible from an acoustical perspective. Barrier E-2 would meet the Department's line-of-sight requirement at a barrier height of 12 feet. Table 3.2.7-8 summarizes the calculated reasonable allowances for Noise Barrier E-2. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier E-2 is shown in Figure 3.2.7-17.

Table 3.2.7-8. Summary of Reasonableness Determination Data—Barrier E-2, Ramsey Road

Barrier I.D.: E-2, Ramsey Road						
Predicted Sound Level without Barrier						
Design-year noise level, dBA-L_{eq}[h]	69					
Design-year noise level minus existing noise level, dB	3					
Design Year with Barrier	**Height: 6 feet**	**Height: 8 feet**	**Height: 10 feet**	**Height: 12 feet**	**Height: 14 feet**	**Height: 16 feet**
Barrier noise reduction, dB	3	4	5	6	6	7
Number of benefited residences	0	0	1	1	1	1
New highway or more than 50% of residences predate 1978	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable allowance per benefited residence	$45,000	$45,000	$45,000	$47,000	$47,000	$47,000
Total reasonable allowance	N/A	N/A	$45,000	$47,000	$47,000	$47,000

Note: N/A = not applicable.

Noise Barrier E-3 was analyzed for feasibility to benefit a single ranch property east of Red Top Road. Barrier E-3 would extend approximately 750 linear feet within Caltrans right-of-way between I-680 northbound and Ramsey Road. Barrier E-3 was evaluated for wall heights in the range of 6–16 feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. Detailed modeling analysis of Barrier E-3 indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier E-3 is therefore considered feasible from an acoustical perspective. Table 3.2.7-9 summarizes the calculated reasonable allowances for Barrier E-3. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier E-3 is shown in Figure 3.2.7-17.

Table 3.2.7-9. Summary of Reasonableness Determination Data—Barrier E-3, Ramsey Road

Barrier I.D.: E-3, Ramsey Road						
Predicted Sound Level without Barrier						
Design-year noise level, dBA-L_{eq}[h]	74					
Design-year noise level minus existing noise level, dB	1					
Design Year with Barrier	**Height: 6 feet**	**Height: 8 feet**	**Height: 10 feet**	**Height: 12 feet**	**Height: 14 feet**	**Height: 16 feet**
Barrier noise reduction, dB	5	5	6	7	7	7
Number of benefited residences	1	1	1	1	1	1
New highway or more than 50% of residences predate 1978	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable allowance per benefited residence	$45,000	$45,000	$47,000	$47,000	$47,000	$47,000
Total reasonable allowance	$45,000	$45,000	$47,000	$47,000	$47,000	$47,000

Note: N/A = not applicable.

Area H (Project Alternatives B and C)

The traffic noise modeling results in Table 3.2.7-4 indicate traffic noise levels residences in Area H will be in the range of 62–69 dBA-L_{eq}[h]. Traffic noise impacts are predicted to occur at 25 residences in this area. There are two existing noise barriers within Area H. The first noise barrier (Barrier H-1) has a nominal height of eight feet and extends along the SR 12E right-of-way parallel to Columbus Drive to the Chadbourne Road exit ramp. All 25 affected receivers are first-row residences located behind Barrier H-1.The second barrier (Barrier H-2) has a nominal height of ten feet and extends along the SR 12E right-of-way from Beck Avenue to the end of Burgundy Way.

Barrier H-1 would extend approximately 2,250 linear feet within SR 12 right-of-way and perpendicular to SR 12 along the existing noise barrier footings on both sides of the neighborhood enclosing Marquette Way (see Figure 3.2.7-18). Detailed modeling analysis of Barrier H-1 indicates that increasing the height of the existing barrier to at least 14 feet would provide a noise reduction of 5 dB or more at first-row residences. Increasing the height of existing Barrier H-1 is therefore considered feasible from an acoustical perspective.

Increasing the height of Barrier H-1 to 14 feet would meet the Department’s line-of-sight requirement. Table 3.2.7-10 summarizes the calculated reasonable allowances for wall heights from ten to 16 feet. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier H-1 is shown in Figure 3.2.7-18 in Volume 2.

Segments of Noise Barrier H-1 lie outside of Caltrans right-of-way, so would need to meet additional requirements before approval for construction. First, all affected property owners would need to approve construction of the segments of the Barrier H-1 which lie outside Caltrans right-of-way. Second, each affected property owner must enter into a contract agreement with Caltrans to specify responsibilities related to construction and maintenance of noise barriers.

Table 3.2.7-10. Summary of Reasonableness Determination Data—Barrier H-1, Marquette Way

Barrier I.D.: H-1, Marquette Way						
Predicted Sound Level without Barrier						
Design-year noise level, dBA-L_{eq}[h]	69					
Design-year noise level minus existing noise level, dB	6					
Design Year with Barrier	**Height: 6 feet**	**Height: 8 feet**	**Height: 10 feet**	**Height: 12 feet**	**Height: 14 feet**	**Height: 16 feet**
Barrier noise reduction, dB	0	0	2	4	6	7
Number of benefited residences	0	0	0	0	25	25
New highway or more than 50% of residences predate 1978	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable allowance per benefited residence	$45,000	$45,000	$45,000	$45,000	$47,000	$47,000
Total reasonable allowance	N/A	N/A	N/A	N/A	$1,175,000	$1,175,000

Note: N/A = not applicable.

Detailed modeling analysis of Noise Barrier H-2 indicates that increasing the height of the barrier to 16 feet would result in a maximum noise reduction of less than 5 dB at noise-sensitive first-row receiver locations. No receivers would benefit from increasing the height of Barrier H-2. Increasing the height of Barrier H-2 is therefore not considered to be feasible.

Area O (Project Alternatives B and C)

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at single-family residences will be up to 73 dBA-L_{eq}[h]. Traffic noise impacts are predicted to occur at three residences in this area. No noise barriers are currently located in this area. Barrier O (also Barrier SB4 in the I-80 Eastbound Cordelia Truck Scales Relocation Project) consists of two barriers that would provide shielding for traffic noise from both I-80 and the SR 12E flyover transition ramp. Barrier O would have a total length of approximately 4,800 linear feet within Caltrans right-of-way adjacent to I-80 eastbound to SR 12 transition ramps. Barrier O was evaluated for wall heights in the range of 6–16 feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. Detailed modeling analysis of Barrier O indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier O is therefore considered feasible from an acoustical perspective.

Table 3.2.7-11 summarizes the calculated reasonable allowances for the two barriers at equal heights. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study. Barrier O is shown in Figure 3.2.7-19 in Volume 2.

Table 3.2.7-11. Summary of Reasonableness Determination Data—Barrier O, Hale Ranch Road

Barrier I.D.: O (SB4), Hale Ranch Road						
Predicted Sound Level without Barrier						
Design-year noise level, dBA-L_{eq}[h]	73					
Design-year noise level minus existing noise level, dB	4					
Design Year with Barrier	**Height: 6 feet**	**Height: 8 feet**	**Height: 10 feet**	**Height: 12 feet**	**Height: 14 feet**	**Height: 16 feet**
Barrier noise reduction, dB	3	4	7	8	9	9
Number of benefited residences	0	0	1	3	3	3
New highway or more than 50% of residences predate 1978	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable allowance per benefited residence	$47,000	$47,000	$49,000	$49,000	$51,000	$51,000
Total reasonable allowance	N/A	N/A	$49,000	$147,000	$153,000	$153,000

Note: N/A = not applicable.

Area Q—Fairfield Corporate Commons

The Fairfield Corporate Commons project is currently under construction. The project is a mixed-use development that includes office buildings, single- and multi-family residential units, and a hotel. The Fairfield Corporate Commons Draft EIR included a noise study, which assessed noise impacts predicted to result from construction activities and operations from the long-term buildout of the project. The noise analysis was done to determine the project's conformity to local land use compatibility standards. The study determined that potentially significant impacts would occur at exterior areas of frequent human use associated with the planned residential use.

Based on the preliminary configuration of land use studied in the report, mitigation in the form of noise barriers was required to reduce impacts at exterior locations. However, David Feinstein of the City of Fairfield Planning Department confirmed in a September 25, 2009, telephone conversation with ICF Jones & Stokes personnel that residential outdoor use areas would be located behind continuous building structures, which would function as shielding elements from traffic noise on the North Connector and I-80.

The traffic noise modeling results in Table 3.2.7-4 indicate traffic noise levels at planned residential use areas associated with the future Fairfield Corporate Commons project would be up to 57 dBA-L_{eq}[h]. No traffic noise impacts are predicted to occur within the Fairfield Corporate Commons project.

In addition, an existing residence in Area Q is expected to be removed due to construction of a truck scales facility on westbound I-80 as part of the project. Therefore, no noise abatement was considered for Area Q.

Area R (Project Alternatives B and C, Alternative B, Phase 1)

The traffic noise modeling results in Table 3.2.7-4 indicate that traffic noise levels at Scandia Family Center and the outdoor pool area of the Days Inn will be up to 80 dBA-L_{eq}[h]. Traffic noise impacts are therefore predicted to occur in this area. No noise barriers are currently located in this area. The two-barrier system identified as Barrier R in Figure 3.2.7-20 in Volume 2 (Barrier NR for the I-80 HOV Lanes Project) was evaluated for wall heights in the range of 6–16

feet, and would meet the Caltrans line-of-sight requirement at a barrier height of 12 feet. The Barrier R two-barrier system would have a total length of approximately 1,400 linear feet within eastbound I-80 right-of-way. Detailed modeling analysis of Barrier R indicates that a barrier with a height of up to 16 feet would provide noise reduction of 5 dB or more at noise-sensitive receiver locations. Barrier R is therefore considered feasible from an acoustical perspective.

Table 3.2.7-12 summarizes the calculated reasonable allowances for this wall. Reasonable allowance calculation sheets are provided in Appendix B of the Noise Study.

Table 3.2.7-12. Summary of Reasonableness Determination Data—Barrier R, Pittman Road

Barrier I.D.: R (NR), Pittman Road						
Predicted Sound Level without Barrier						
Design-year noise level, dBA-L_{eq}[h]	80					
Design-year noise level minus existing noise level, dB	2					
Design Year with Barrier	**Height: 6 feet**	**Height: 8 feet**	**Height: 10 feet**	**Height: 12 feet**	**Height: 14 feet**	**Height: 16 feet**
Barrier noise reduction, dB	5	6	7	9	10	10
Number of benefited residences	7	7	8	8	8	8
New highway or more than 50% of residences predate 1978	Yes	Yes	Yes	Yes	Yes	Yes
Reasonable allowance per benefited residence	$49,000	$51,000	$51,000	$53,000	$53,000	$53,000
Total reasonable allowance	$343,000	$357,000	$408,000	$424,000	$424,000	$424,000

Note: N/A = not applicable.

Under with-project design-year conditions, receiver R02 (Volume 2, Figure 3.2.7-20) is predicted to be exposed to a noise level of 80 dBA L_{eq}. This location is therefore predicted to be exposed to a severe traffic noise impact as defined in the Protocol. Noise abatement that is not reasonable and feasible as defined in the Protocol may be considered for severe traffic noise impacts on a case-by-case basis. This type of abatement is called extraordinary abatement. Barrier R would provide at least 5 dB of noise reduction and would reduce noise to less than 74 dBA L_{eq} at this location at a height of eight feet (as shown in Appendix C of the Noise Study). In the event that this barrier is not determined to be reasonable and feasible, it may be considered for extraordinary abatement.

Noise Abatement Decision Report

A Noise Abatement Decision Report (NADR) was prepared to include noise abatement construction cost estimates that have been prepared by the project engineer based on site-specific conditions. These cost estimates are then compared to the total reasonableness allowances as shown in Table 3.2.7-13.

Table 3.2.7-13. Summary of Reasonableness Allowances and Cost Estimates for Evaluated Noise Barrier Designs

Height (ft)	Receivers Benefited	Barrier Length (linear feet)	Barrier Area (square feet)	Department Cost Allowance per Residence ($)	Department Reasonableness Allowance ($)	Estimated Construction Cost ($)	Cost-Reasonable?
Barrier H-1							
14	25	2,250	31,500	$47,000	$1,175,000	$1,560,000	No
16	25	2,250	36,000	$47,000	$1,175,000	$1,700,000	No
Barrier E-2							
10	1	1,160	11,600	$45,000	$45,000	$440,000	No
12	1	1,160	13,920	$47,000	$47,000	$500,000	No
14	1	1,160	16,240	$47,000	$47,000	$560,000	No
16	1	1,160	18,560	$47,000	$47,000	$600,000	No
Barrier E-3							
6	1	750	4,500	$45,000	$45,000	$200,000	No
8	1	750	6,000	$45,000	$45,000	$260,000	No
10	1	750	7,500	$47,000	$47,000	$280,000	No
12	1	750	9,000	$47,000	$47,000	$330,000	No
14	1	750	10,500	$47,000	$47,000	$370,000	No
16	1	750	12,000	$47,000	$47,000	$390,000	No
Barrier O							
10	1	4,800	48,000	$49,000	$49,000	$2,530,000	No
12	3	4,800	57,600	$49,000	$147,000	$2,800,000	No
14	3	4,800	67,200	$51,000	$153,000	$3,030,000	No
16	3	4,800	76,800	$51,000	$153,000	$3,250,000	No
Barrier R							
6	7	1,400	8,400	$49,000	$343,000	$500,000	No
8	7	1,400	11,200	$51,000	$357,000	$570,000	No
10	8	1,400	14,000	$51,000	$408,000	$650,000	No
12	8	1,400	16,800	$53,000	$424,000	$730,000	No
14	8	1,400	19,600	$53,000	$424,000	$790,000	No
16	8	1,400	22,400	$53,00	$424,000	$850,000	No

As shown in Table 3.2.7-13, the estimated construction costs exceed the reasonableness allowance in all cases. Accordingly, the barrier designs studied in this analysis are not considered reasonable from a cost perspective. The determination of final reasonableness will made upon completion of the public input process.

Minimize Construction Noise

The Department's Standard Specification Section 14-8.02 will be implemented to minimize noise effects from construction. In addition, the following measures may be implemented to further minimize noise effects from construction:

- Use of equipment with sound-control devices that are no less effective than those provided on the original equipment.
- Prohibition of the use of any equipment with an unmuffled exhaust.

- Changing the location of stationary construction equipment to maximize the distance to noise sensitive uses.
- Turning off idling equipment.
- Rescheduling construction activity to non-sensitive hours of the day.
- Notifying adjacent residents in advance of construction work.
- Installing acoustic barriers around stationary construction noise sources.

3.2.8 Energy

Regulatory Setting

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

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts on the environment, including energy impacts.

California's Energy Action Plan (updated in 2008) describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy demand and transmission capacity needs, clean and efficient fossil-fuel–fired generation is supported.

Affected Environment

This discussion is based primarily on the *Interstate 80/Interstate 680/State Route 12 Energy Technical Report* (Energy Report) prepared in 2010. The affected environment includes the physical boundaries of the roadway construction site as well as the total vehicle flow passing through the completed roadway. Traffic flow passing through the project area at build-out is intrinsically connected to traffic patterns throughout the region, underpinned by socioeconomic and regulatory factors throughout the state and nation. Thus the affected environment can best be thought of as the regional energy budget. For reasons discussed in detail below, a comprehensive analysis of the regional energy budget is beyond the scope of this report. This analysis therefore is restricted to direct energy consumption and indirect energy consumption as defined below.

Direct Energy Use

Direct energy use is the energy used in the actual propulsion of a vehicle using the facility. It can be measured in terms of the thermal value of the fuel (usually measured in British thermal units [BTUs]), the cost of the fuel, or the quantity of electricity used in the engine or motor.

Indirect Energy Use

Indirect energy is defined as all the remaining energy used to run a transportation system, including construction energy, maintenance energy, and any substantial impacts on energy expenditures related to project-induced land use changes and mode shifts, and any substantial changes in energy associated with vehicle operation, manufacturing or maintenance due to increased automobile use.

Environmental Consequences

Determination of Adverse Effects

There are no thresholds of significance for energy consumption. Instead, the Department and the Federal Highway Administration (FHWA) require a discussion of the potential energy effects of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

A qualitative comparison of the project alternatives was employed in this analysis. Direct energy consumption was relatively assessed across the project alternatives through a comparison of peak vehicle miles traveled (VMT) (a.m. and p.m.), total VMT, and delay hours. To assess indirect energy consumption, the construction parameters of the project alternatives were compared. The qualitative analysis was determined to be the simplest way of comparing the project alternatives. This approach limits the need for assumptions and avoids significant limitations in standard, but outdated methodologies.

Historically, transportation energy studies quantified direct and indirect energy expenditures. Quantitative analyses of direct energy consumption were a summation of the peak and non-peak energy for vehicle movement for the analysis period, which was typically the period from the completion of project construction to 20 years following the completion of project construction. In assessing the direct energy impact, assumptions are made when considering various factors, including vehicle fleet mix, annual VMT, fuel economy, and variation of fuel consumption rates over time and by vehicle type. Additional assumptions were made, including:

- New-model fleet fuel efficiency would always be improving.
- Vehicle fuel usage in rural settings would differ from vehicle fuel usage in urban settings.
- Multiple occupant vehicles could use high occupancy vehicle lanes.
- Pavement would be maintained in fair to reasonable condition.

Quantification analyses of indirect energy were the summation of energy required to construct, operate, and maintain the transportation network, as well as to manufacture and maintain on-road vehicles and transit vehicles. This approach relied on factors (construction equipment operation energy factors and maintenance energy factors) that have remained unchanged for 30 years. The methodology to estimate construction energy expenditures using project construction cost requires adjusting future construction costs to the 1977 highway construction price index, which is almost always overlooked.

Today we can no longer make these same assumptions. The on-the-road vehicle fleet mix can vary in type and age with the economy. The on-the-road vehicle fleet fuel usage rates will depend on the on-the-road vehicle fleet mix and can be propelled by gasoline or diesel fuels as well as by other means, including gasoline-electric hybrids, plug-in electricity, fuel cells, and compressed natural gas. New-model vehicle fleet fuel usage rates are known, but we do not know how the rates may change as vehicles age. There may be new or improved technologies during the analysis period that constitute significant leaps in vehicle fuel conservation rates and efficiency. With fuel injection technology, the commonly used assumptions about cold starts are outdated and are not deemed appropriate for this analysis. Vehicle fleet fuel efficiency doesn’t

always increase over time; vehicle fleet fuel efficiency actually decreased in the 1990s with the proliferation of sport utility vehicles. There may be no differences in vehicle fuel usage between rural and urban settings with urban expansion. Express (toll) lanes may replace high-occupancy vehicle lanes in the near future. Pavement condition may become worse over time if funding for maintenance improvements remains scarce. Construction equipment and techniques have improved in the last 30 years, so construction equipment operation energy factors require updating.

The project alternatives in and of themselves cannot influence the vehicle fleet, future fuel economy, or development patterns that steer regional driving patterns. All project alternatives would be equally affected by these uncertain future scenarios. However, at the writing of this document, both the regulatory environment and the market are responding to climate change concerns, and a transformation of American driving patterns and technologies seems likely within a generation. The practice of assuming present-day fuel economy and fleet conditions is commonly implemented as a worst-case scenario for energy analyses, but at this time the likelihood of large-scale changes in this sector would render that assumption grossly incorrect. This analysis has therefore relied on a comparison of the raw traffic numbers and has not converted them to BTUs.

In addition, numerous contributors to the energy balance within a project area require complicated and rigorous economic analysis. The decision of where people buy homes, how far they regularly commute, the choice of personal vehicle and the fuel price at which consumers begin to alter their transportation patterns are just a few examples of large-scale patterns that ultimately affect the number of vehicles in the project area. Traditional energy analyses for roadway projects have ignored these components, and consequently attributed increases in VMT uniquely to the implementation of the project—a gross oversimplification of the regional energy budget.

With so many unknowns and a multitude of future energy scenarios, a quantitative analysis has a high risk of being inaccurate and meaningless. Consequently, a qualitative analysis would provide more useful information upon which to judge a proposed project and its alternatives. The qualitative approach employed is described in detail in the “Methods” section.

Methods

The energy analysis addresses both direct and indirect energy. The direct energy analysis includes the potential for increased energy consumed by fossil-fuel–powered vehicles using the interchange. A discussion of motor vehicle traffic (VMT and average travel speeds) through the interchange is a component of the direct energy analysis because VMT and speeds can infer direct energy consumption. These VMT values were not converted to BTUs, avoiding the need to make assumptions about the future vehicle fleet or fuel economy. This approach essentially assumes that all future developments in fuel carbon content, fuel economy, fuel technology, and regulation affect the projected VMT equally across alternatives, and that the build alternatives would have no effect on these variables.

The indirect energy analysis addresses the energy associated with construction and maintenance of the interchange and other roadway infrastructures. This approach compares the amounts of various construction materials required for each alternative. Construction-related energy

consumption and energy consumption embodied in materials production is assumed to be directly proportional to roadway elevation, length, area and volume needed. By comparing the raw materials employed, the need to use speculative or outdated factors relating energy consumption to cost are avoided. The cost of acquiring individual materials may vary dramatically in response to global demand and availability. A lump cost estimate masks the effects of these fluctuations and is only very indirectly related to the true energy consumed.

Direct Energy Consumption

This analysis compares the estimated VMT, delay, and average network speed on the I-80/I-680/SR 12 interchange system-wide measure of effectiveness network (i.e., the portion of the network included in the traffic study) that would result under implementation of the project alternatives. The analysis parallels the *Air Quality Study Report* of the EIR by presenting direct energy (fuel consumption through VMT) calculations associated with estimated vehicle speeds from the traffic study.

A comparison of traffic metrics in the project area in 2015 and 2035 are shown in Tables 3.2.8-1 and 3.2.8-2. It is assumed that societal, economic, or regulatory changes affecting fuel economy are equally reflected in the VMTs for each project alternative. Thus assumed fuel economy is not required to convert VMT to energy consumption in order to compare alternatives.

Table 3.2.8-1. Traffic Flow during Operations in Year 2015 and Ranking of Alternatives (score in parenthesis)

Vehicles		No-Build	Alternative B Phase 1	Alternative C Phase 1
Project distance (miles)		–	6.23	10.17
VMT/hour	a.m. p.m.	449,870(*0*) 480,410(*0*)	451,325*(1)* 531,935*(1)*	448,800(*0*) 516,055(*0*)
Vehicle hours of delay/hour	a.m. p.m.	1,075(*0*) 5,100*(1)*	840(*0*) 2,150(*0*)	1,105*(1)* 3,110 (*0*)
Average network speed (miles per hour)	a.m. p.m.	51.2*(1)* 36.2*(1)*	52.6*(1)* 47.6(*0*)	51.0*(1)* 43.3(*0*)
Daily VMT		4,186,260(*0*)	4,424,670*(1)*	4,341,848(*0*)
Off-peak VMT		3,255,980(*0*)	3,441,410 *(1)*	3,376,993(*0*)
Total score		***3***	***5***	***2***

Source: Final Traffic Operations Report.

Table 3.2.8-2. Traffic Flow during Operations in Year 2035 and Ranking of Alternatives (score in parentheses)

Peak Hour Vehicles		No-Build	Alternative B	Alternative C	Alt B, Ph 1	Alt C, Ph 1
Project distance (miles)	–	–	21.17	22.95	6.23	10.17
VMT/hour	a.m. p.m.	539,445 *(0)* 413,160*(0)*	575,300*(0)* 660,290*(0)*	577,480 *(1)* 660,555 *(1)*	564,605 *(1)* 575,815 *(1)*	546,625*(0)* 480,410*(0)*
Vehicle hours of delay/hour	a.m. p.m.	3,695 *(1)* 19,065 *(1)*	1,335 *(0)* 5,420*(0)*	1,260*(0)* 5,995 *(0)*	1,845*(0)* 10,155*(0)*	3,020 *(1)* 16,095 *(1)*
Average network speed (miles per hour)	a.m. p.m.	41.8 *(1)* 15.9 *(1)*	52.4*(0)* 40.1*(0)*	52.7*(0)* 38.5*(0)*	48.9*(0)* 28.9*(0)*	44.2*(0)* 19.8*(0)*
Daily VMT	–	4,286,723*(0)*	5,560,155*(0)*	5,571,158 *(1)*	5,131,890 *(1)*	4,621,658*(0)*
Off-peak VMT	–	3,334,118*(0)*	4,324,565*(0)*	4,333,123 *(1)*	3,991,470 *(1)*	3,594,623*(0)*
Total points	**–**	***4***	***0***	***4***	***4***	***2***

Source: Final Traffic Operations Report

Tables 3.2.8-1 and 3.2.8-2 utilize a point system to compare No-Build Alternative with the various full-build alternatives (Alternative B and Alternative C) based on the various traffic flow metrics. One point was assigned to the alternative with the larger value for a particular traffic metric, presumably resulting in higher energy consumption relative to the other alternatives. The build and no-build alternatives are compared to estimate which would result in greater energy consumption, and a point is given if the alternative would potentially increase energy relative to the other alternatives. The higher the total points for each alternative, the greater the assumed direct energy consumption.

When comparing the fundable first phases of the alternatives to the no-build conditions, Alternative B, Phase 1 would result in increase in peak hourly, daily, and off-peak VMT while decreasing hours of delay when compared to both Alternative C, Phase 1, and the No-Build Alternative. The fundable first phases of both alternatives would increase VMT, reduce hours of delay, and increase average network speeds over 2035 no-build conditions. In general, energy consumption is minimized under traffic conditions that minimize delay hours, maintain speeds between 45 and 55 mph, and limit the need for vehicles to exit the freeway onto surface streets in order to avoid heavy traffic conditions. The relative scoring system shown in Table 3.2.8-1 indicates that at 2015, Alternative C, Phase 1 is the better performing build alternative for the specific metrics listed. However, neither fundable first phase would result in wasteful or excessive use of direct energy.

When comparing the two full build alternatives to no-build conditions, Alternative C would increase peak hourly VMT, daily VMT, and off-peak VMT compared to both Alternative B and the No-Build Alternative. Average network speed would improve for both build alternatives, but the resulting difference in fuel economy between the two is considered negligible. Alternative C would result in a greater increase in VMT relative to the No-Build Alternative and would decrease a.m. hours of delay and a.m. network speed. Alternative B would improve p.m. hours of delay and network speed. Total VMT is directly proportional to fuel consumed while average network speed is inversely proportional, through a certain range. The relative scoring system shown in Table 3.2.8-2 indicates that at 2035, Alternative B is the better performing full-build alternative for the specific metrics listed. However, neither full-build alternative would result wasteful or excessive use of direct energy.

This analysis does not take into account vehicles leaving the freeway in response to traffic conditions and the fuel consumption associated with surface-street driving patterns. Neglecting this activity likely introduces greatest error into the No-Build scenario because hours of delay are highest for this Alternative. A rigorous analysis accounting for these factors would allow more clear differentiation of Alternatives B and C, although it is expected that direct energy consumption is similar. Based on the data presented in Tables 3.2.8-1 and 3.2.8-2, Alternatives B and C should be considered comparable in 2035 for direct energy consumption, with Alternative B as a slightly better alternative.

Indirect Energy Consumption

This analysis compares the quantities of material for structures construction and numbers of structure types for the No-Build Alternative, Alternative B, and Alternative C. An additional metric used is lane-miles of roadway requiring maintenance after construction is complete. The total amount of energy required is inferred from these metrics and no assumptions regarding cost were made. Because many of the alternatives included in the proposed project are at conceptual planning stages and detailed construction information, such as the number of equipment, materials, and labor hours are not available, no detailed quantitative assessment of construction and maintenance impacts is possible. Were this information available, materials-specific energy factors and equipment-specific fuel economy could be employed to calculate construction-related energy consumption.

The qualitative comparison analysis presented here assumes that larger amounts of materials equates with more energy use due to increased labor hours, increased hauling of materials, and increased embodied energy consumption in materials manufacture. Construction- and maintenance-related metrics are presented for comparison in Table 3.2.8-3. An identical scoring system to that used for the direct energy evaluation was applied here.

Table 3.2.8-3 indicates that construction of Alternative B will require a larger volume of excavated roadway and a larger area of asphalt concrete (AC). Additionally, Alternative B requires more material associated with edge drains, median islands, sidewalk, curbs and gutters as compared to Alternative C. Conversely, construction of Alternative C will require a larger area be covered with Portland cement concrete (PCC) pavement and more barriers and guardrails. The total square footage of structures as defined by the client is larger in Alternative C. The total lane miles of roadway requiring maintenance would be higher for Alternative C. Without a more rigorous assessment of the energy associated with each of the unique construction activities listed in Table 3.2.8-3, it is impossible to quantify the total energy consumed for the aggregate of construction tasks. Some construction activities may be inherently more energy intensive than others, and thus apparent energy benefits in one metric could be negated in another. In general, Alternative B has larger values in more construction categories than Alternative C.

The estimated number of lane-miles for Alternative B, Alternative C, Alternative B Phase 1, and Alternative C, Phase 1 (Table 3.2.8-3) served as an estimate for maintenance energy usage. Based on the information from the *Draft Interchange Pavement and Interchange Configuration Data* (Nolte Associates 2009), the total estimated PCC and AC lane-miles for Alternative B and Alternative C are estimated to be approximately 86 to 90 lane-miles for PCC pavements and 20 to 25 lane-miles for AC pavements. According to Table C-14 in Appendix C of the Caltrans

1983 report, the estimated amount of energy factor required to maintain the roadway is approximately 16.3 and 17.8 billion BTUs per lane-mile for PCC and AC pavements, respectively.

According to the project description, Alternative C will have considerably more PCC and AC pavement to maintain than Alternative B and No-Build scenarios. For the fundable first phases of the project alternatives, Alternative C, Phase 1 will require more maintenance energy than Alternative B, Phase 1.

Based on the data presented in Table 3.2.8-3, Alternative B and C would result in comparable levels of indirect energy consumption. For the fundable first phases of the project alternatives, Alternative B, Phase 1 would result in slightly less indirect energy consumption. However, neither project alternative nor their fundable first phases are anticipated to result in wasteful or excessive indirect energy expenditures.

Table 3.2.8-3. Materials Consumption for Construction and Maintenance and Ranking of Alternatives (score in parentheses)

Indirect Energy	No-Build	Alternative B	Alternative C	Alt B, Phase 1	Alt C, Phase 1
Roadway excavation (cubic yard [cy])	–	2,800,000 *(1)*	2,523,000 *(0)*	750,000*(0)*	2,187,000*(1)*
Imported borrow (cy)	–	1,120,000 *(0)*	2,129,000 *(1)*	75,000*(0)*	607,400*(1)*
Portland cement concrete (PCC) pavement roadway (cy)	–	220,000*(1)*	126,852*(0)*	64,000*(0)*	137,611*(1)*
Asphalt concrete (AC) Pavement (cy)	–	280,000*(0)*	302,333*(1)*	60,000*(1)*	19,393*(0)*
Bridge structures PCC (cy)	–	106,000*(0)*	115,050*(1)*	54,000*(0)*	80,470*(1)*
Bridge structures rebar (pounds)	–	22,000,000*(0)*	23,895,000*(1)*	11,000,000*(0)*	16,713,000*(1)*
Lighting (units)	–	305*(1)*	206*(0)*	130*(1)*	108*(0)*
Traffic signals (units)	–	22*(1)*	16*(0)*	8*(1)*	7*(0)*
Overhead sign structures (units)	–	20*(0)*	20*(0)*	10*(0)*	10*(0)*
Ramp meters (units)	–	19*(1)*	17*(0)*	5*(0)*	6*(1)*
Striping (feet)	–	1,788,000*(1)*	1,566,000	710,000*(1)*	693,800*(0)*
Retaining walls (square feet)	–	475,000*(1)*	407,700*(0)*	388,300*(1)*	325,100*(0)*
Noise barriers (square feet)	–	25,000*(0)*	25,000*(0)*	33,000*(1)*	0*(0)*
Barriers and guardrails (feet)	–	108,000*(0)*	110,400*(1)*	32,300*(0)*	34,800*(1)*
Sidewalk, curb, and gutter(square feet)	–	243,500*(1)*	117,800*(0)*	120,700*(0)*	143,880*(1)*
Temporary MSE walls (square feet)	–	50,000*(0)*	50,000*(0)*	38,000*(1)*	0*(0)*
Total for all structures (square feet)		806,704*(0)*	1,050,281*(1)*	398,195*(0)*	619,000*(1)*
PCC lane-miles	75.83*(0)*	86.34*(0)*	89.75 *(1)*	29.34*(0)*	48.13*(1)*
AC lane-miles	17.76*(0)*	20.57*(0)*	25.36((*1)*	0.98*(0)*	9.03*(1)*
Total Points	***0***	***8***	***8***	***6***	***11***

Source: John Thomson, personal communication, 2009.

Note: Construction cost estimate sheets are located in Appendix A of the *Interstate 80/Interstate 680/State Route 12 Energy Technical Report.*

Environmental Consequences

Increased Consumption of Direct Energy

Direct energy consumption for each alternative would result from motor vehicle travel through the project area. This analysis compares traffic data summarized in the FTOR for the proposed project and inferred future energy consumption from the relationship between traffic conditions and fuel consumption.

Both build alternatives would result in increased VMT, reduced hours of delay, and increased motor vehicle speed over no-project conditions. Increased VMT would result from increased motor vehicle trips traveling a greater distance over the project area. Increased vehicle speeds would increase travel flow and reduce congestion, which may result in reduced fuel consumption. The optimal fuel efficiency varies by vehicle, but generally the lowest fuel economy is in the 0–25 mph range, and the optimal range is 45–55 mph, with a steady decline in efficiency occurring as speeds exceed 55 mph. Under 2035 Alternative B and C full-build conditions, a.m. peak hour vehicle speeds increase to the optimal range for fuel efficiency (52.4 mph for Alternative B; 48.9 mph for Alternative B, Phase 1; 52.7 mph for Alternative C; 44.2 mph for Alternative C, Phase 1), a condition that would increase fuel efficiency when compared to no-project a.m. average speeds (41.8 mph). Improved traffic flow would reduce the vehicle hours of delay for all build scenarios (except 2015 Alternative C, Phase 1), a condition that might reduce fuel use as lower traffic speeds (0–25 mph) result in poor fuel economy. It is unknown to what extent drivers bypass the existing interchange and use alternate and potentially longer-distance traffic routes because of existing traffic conditions. The inability to capture these VMTs in the analysis likely has the greatest affect on the No-Build Alternative where delay hours are highest.

Implementation of either build alternative would relieve traffic congestion by reducing vehicle hours of delay and increasing network speeds, while increasing total VMT through the project area. However, none of the build alternatives are expected to result in an inefficient, wasteful, or unnecessary consumption of energy.

Increase Consumption of Indirect Energy

Indirect energy consumption would result from project construction and maintenance. Construction of the proposed project would result in the consumption of energy to prepare the project site, manufacture and deliver construction materials to the project site, and construct the roadway interchange and associated structures. This increased fossil fuel consumption from project construction is not expected to have an appreciable impact on energy resources.

Based on the qualitative comparison, Alternative C would result in more AC pavement, more bridge structures (both PCC and rebar), slightly more barriers and guardrails, and would have a longer project distance. Based on the qualitative comparison, Alternative B would require more PCC pavement, more lighting, more traffic signals, more ramp meters, more striping, and more sidewalks, curbs, and gutters. For the fundable first phase scenarios, Alternative C, Phase 1 will require more PCC bridge structures, rebar structures, AC pavements, and roadway base aggregate materials than Alternative B, Phase 1. The construction of any of the proposed build

alternatives would be a necessary component of the project and a one-time expenditure of energy. This one-time expenditure of energy would provide for energy benefits in the long run because reduced congestion and improved traffic flow through the interchange might result in reduced direct energy consumption. Based on the qualitative analysis, Alternative C was determined to be the most preferable alternative.

Implementation of the proposed project would result in an increase in indirect energy consumption relative to the No-Build Alternative due to project construction and maintenance. However, the associated construction and maintenance of the build alternatives are not expected to result in an inefficient, wasteful, or unnecessary consumption of energy.

Avoidance, Minimization, and/or Mitigation Measures

For the proposed project alternatives, an adverse impact on energy consumption would occur if a project alternative results in wasteful, inefficient, or unnecessary consumption of energy. The increase in energy consumption associated with any of the build alternatives is not expected to result in an inefficient, wasteful, or unnecessary consumption of energy. Mitigation of any impacts on energy is largely beyond the authority of STA, MTC, and the Department, and unimplementable on a project-specific basis. Because the build alternatives would not result in wasteful or excessive use of energy, avoidance, minimization, and mitigation measures would not be necessary.

3.3 Biological Environment

The biological study area generally comprises the project construction footprint and an area outside the project footprint to accommodate construction activities and staging where needed. The approximately 772-acre biological study area also includes areas outside of this general construction footprint in order to analyze indirect impacts on listed species. These additional areas include known occurrences of special-status plants within 250 feet of the construction footprint, seasonal wetlands that provide habitat for listed shrimp species within 250 feet of the construction footprint, elderberry shrubs within 100 feet of the construction footprint, California red-legged frog (*Rana aurora draytonii*) (CRLF) aquatic and upland habitat, and CRLF Critical Habitat within one mile. Where seasonal wetlands extend beyond the 250-foot boundary, the entire wetland is included in the biological study area.

Potential biological resources associated with the proposed project were identified through agency coordination, a review of existing information, and field surveys. Field surveys included botanical surveys (May 2004, May 2005, August 2007, December 2008, and April 2009); wetland delineations (April, May, and June 2004; June and August 2007; August 2008) and verification (January 2009); reconnaissance-level surveys and CRLF site assessment (July and October 2007); fisheries habitat assessment (July 2007); valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) surveys (July 2007); vernal pool fairy and tadpole shrimp habitat assessments (July 2007 and February 2009); Callippe silverspot butterfly habitat survey (Monk & Associates 2004c); a fish passage assessment (September 2006, August 2007); salt-marsh harvest mouse site assessment (August 2007); and tree surveys (November and December 2007). The analysis presented in this chapter is based on the technical reports (listed below) that documented the above studies.

- *Interstate 80/Interstate 680/State Route 12 Interchange Natural Environmental Study* (2010).
- *Site Assessment for California Red-legged Frog for the Interstate 80/Interstate 680/State Route 12 Interchange Project*, submitted to the U.S. Fish and Wildlife Service (USFWS) on March 3, 2009, for review (2009).
- *Preliminary Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project*; field verified in January 2009, final verification on July 9, 2009.
- *Interstate 80/Interstate 680/State Route 12 Project Biological Assessment for Contra Costa Goldfields, Callippe Silverspot Butterfly, Vernal Pool Fairy and Tadpole Shrimps, California Red-Legged Frog, and Valley Elderberry Longhorn Beetle* (in prep).
- *I-80/I-680/SR 12 Interchange Project Fish Passage Assessment for Green Valley, Ledgewood, and Suisun Creeks, Solano County, California* (2010).

3.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in Section 3.3.5, "Threatened and Endangered Species." Also see Section 3.3.2, "Wetlands and Other Waters."

The study area supports nine natural communities of special concern: riparian woodland, blue oak woodland, live oak woodland, valley oak woodland, perennial marsh, perennial drainage, seasonal drainage, alkali seasonal marsh, and seasonal wetland (Volume 2, Figure 3.3-1). In the discussions of riparian woodland and oak woodlands below, the sheet numbers shown in parentheses indicate the sheet numbers in Volume 2, Figures 3.3-2a, 3.3-2b, 3.3-2c, and/or 3.3-2d. All biological resource figures are bound separately in Volume 2 of this document. Affected acreage is tabulated for each natural community under each alternative in Table 3.3.1-1.

Only riparian woodland and oak woodlands (blue oak woodland, live oak woodland, and valley oak woodland) are discussed in this section. The wetland communities and drainages are discussed in Section 3.3.2, "Wetlands and Other Waters." Other parts of the study area support upland scrub, other woodland, eucalyptus grove, orchard, vineyard, nonnative annual grassland, ruderal, row crops, landscaped, and a small area of open water in an artificial pond.

3.3.1.1 Riparian Woodland

Regulatory Setting

Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and decline in extent. The Solano County Water Agency (SCWA) administrative draft habitat conservation plan (HCP) concludes that the riparian corridor along Suisun Valley Creek is important because it provides connectivity between the West Hills and Suisun Marsh (Solano County Water Agency 2009). The California Department of Fish and Game (CDFG) has adopted a no-net-loss policy for riparian habitat values, and the streambed alteration agreement (SAA) would include mitigation requirements for a loss of riparian vegetation. The USFWS mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644).

Table 3.3.1-1. Summary of Impacts on Sensitive Communities by Project Alternative

Impact Type	Sensitive Natural Communities (acres)											
	Riparian Wood-land	Blue Oak Wood-land	Valley Oak Wood-land	Live Oak Wood-land	Perennial Drainage	Jurisdictional Seasonal Drainage[b]	Nonjurisdictional Seasonal Drainage	Jurisdict-tional Perennial Marsh[a]	Nonjurisdictional Perennial Marsh	Jurisdic-tional Alkali Seasonal Marsh	Jurisdic-tional Seasonal Wetland	Non-Jurisdic-tional Seasonal Wetland
Alternative B												
Temporary	0.34	0.52	<0.01	4.12	0.30	0.85	0	5.25	0.01	0.28[c]	1.64[c]	0.01[c]
Permanent	1.28	0	0.47	6.37	0.59	1.78	<0.01	5.09	0.03	1.75	8.19	0
Total Alternative B Impacts	**1.62**	**0.52**	**0.47**	**10.49**	**0.89**	**2.63**	**<0.01**	**10.34**	**0.04**	**2.03**	**9.83**	**0.01**
Alternative B, Phase 1												
Temporary	0.02	0.52	0.01	0	0.17	0.14	0	1.97	0.01	0	0	0
Permanent	0.12	0	0.46	0	0.06	0.81	0	0.39	0.03	0	1.84	0
Total Alternative B, Phase 1 Impacts	**0.14**	**0.52**	**0.47**	**0**	**0.23**	**0.95**	**0**	**2.36**	**0.04**	**0**	**1.84**	**0**
Alternative C												
Temporary	0.41	0.14	0.05	3.14	0.45	0.56	0	2.44	0	0.13[c]	1.07[c]	0
Permanent	1.12	4.22	0.54	12.85	0.66	2.05	<0.01	5.73	0	1.03	8.30	0.78
Total Alternative C Impacts	**1.53**	**4.36**	**0.59**	**15.99**	**1.11**	**2.61**	**<0.01**	**8.17**	**0**	**1.16**	**9.37**	**0.78**
Alternative C, Phase 1												
Temporary	0.06	0	0	2.03	0.05	0.08	0.01	1.41	0	0	0.01[c]	0
Permanent	1.09	0	0.44	13.19	0.08	1.89	<0.01	0.41	0	0.07	3.89	0.77
Total Alternative C, Phase 1 Impacts	**1.15**	**0**	**0.44**	**15.22**	**0.13**	**1.97**	**0.01**	**1.82**	**0**	**0.07**	**3.90**	**0.77**

[a] Perennial marsh acreages include areas mapped as perennial wetland drainage in the delineation.

[b] Non-jurisdictional seasonal drainage impacts are provided in Section 3.3.2.5, but are not included in this table. No compensatory mitigation is required for the impacts on non-jurisdictional seasonal drainages, as discussed in Section 3.3.2.5.

[c] Temporary impacts on jurisdictional and non-jurisdictional seasonal wetland will be avoided and minimized through use of barrier fencing, worker training, and biological monitoring during construction.

Affected Environment

Riparian woodland occurs along the drainages in the study area listed here and illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.

- Jameson Canyon Creek (OW-8) (Sheets 7, 9, and 14) south of SR 12W and on the east side of I-680, and its tributary south of I-80 (OW-8c) (Sheet 7).
- Two roadside ditches south of I-80 along Cordelia Road west of I-680 (W-26 and W-41) (Sheets 7–8).
- Green Valley Creek (W-45) (Sheet 17).
- Suisun Creek at I-80 (OW-56) (Sheet 22).
- Ledgewood Creek at SR 12E (W-90) (Sheet 32).

Tree species that characterize riparian woodland in the study area include valley oak, coast live oak, willows, white alder, California buckeye, California bay, Fremont's cottonwood, and box elder. Riparian woodland also supports elderberry shrubs in three locations: along Green Valley Creek north of I-80, adjacent to the east side of Dan Wilson Creek, and along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek. Herbaceous groundcover consists of nonnative grasses, sedge species, mugwort, and Bermuda grass, and shrubs include Himalayan blackberry, California wild rose, poison-oak, and California wild grape.

Riparian woodland habitat provides wildlife movement corridors up- and downstream for fish, amphibians, reptiles, birds, and mammals on a seasonal basis. However, its biological value is reduced because of fragmentation by roads and nearby development.

Affected acreage in riparian woodland is tabulated for each alternative in Table 3.3.1-1.

Environmental Consequences

Loss or Disturbance of Riparian Woodland Resulting from Construction

Construction of Alternative B would result in a permanent loss of approximately 1.28 acres of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2a).

- Jameson Canyon Creek (OW-8) and the tributary of Jameson Canyon Creek (OW-8c) south of I-80 for widening of I-80 for the I-80/I-680/SR 12W interchange.
- Two roadside ditches (W-26 and W-41) south of I-80 along Cordelia Road west of I-680 for the I-80/I-680/SR 12W interchange (Sheets 7–8).
- The north side of Suisun Creek (OW-56) for the widening of I-80 (Sheet 22).
- Ledgewood Creek (W-90) for widening of SR 12E (Sheet 32).

Construction of Alternative B, Phase 1 would result in a permanent loss of approximately 0.12 acre of riparian woodland. These impacts would occur along Ledgewood Creek south of SR 12E within the project footprint (Volume 2, Figure 3.3-2b, Sheet 32).

Under Alternative C, construction of the proposed project would result in a permanent loss of approximately 1.12 acres of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2c).

- Jameson Canyon Creek (OW-8) and the tributary to Jameson Canyon Creek south of I-80 (OW-8c) for widening of I-80 for the I-80/I-680/SR 12W interchange (Sheet 7).
- Jameson Canyon Creek west of I-680 for realignment of I-680 to SR 12W (Sheets 9 and 14).
- One roadside ditch south of I-80 along Cordelia Road west of I-680 (W-26) for the I-80/I-680/SR 12W interchange (Sheet 8).
- The north side of Suisun Creek (OW-56) for widening of I-80 (Sheet 22).
- Ledgewood Creek (OW-90) for widening of SR 12E (Sheet 32).

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 1.09 acre of riparian woodland along the following drainages within the project footprint (Volume 2, Figure 3.3-2d).

- Jameson Canyon Creek west of I-680 (OW-8) and one of its tributaries (OW-8c) for the realignment of I-680 to SR 12W (Sheets 9 and 14).
- Roadside ditches south of I-80 along Cordelia Road west of I-680 (W-26 and W-41) for the I-80/I-680/SR 12W interchange (Sheet 8).
- Ledgewood Creek (OW-90) for the widening on SR 12E (Sheet 32).

The permanent impact area would include riparian trees, as well as woody understory plants such as young trees, coyote brush, Himalayan blackberry, and possibly elderberry, adjacent to the south side of the study area at Suisun Creek and along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek.

Approximately 0.34 acre of riparian woodland vegetation would be temporarily disturbed during construction of Alternative B in the areas listed above for permanent impacts. Under Alternative B, Phase 1, approximately 0.02 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. Under Alternative C, approximately 0.41 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. Under Alternative C, Phase 1, approximately 0.06 acre of riparian woodland vegetation would be temporarily disturbed during construction at the areas listed above for permanent impacts. This impact would include the probable removal of additional trees and understory vegetation to provide equipment access to the drainages.

Indirect impacts on riparian woodland vegetation could occur from adjacent construction activity. Riparian vegetation is adjacent to the construction area and would not be removed for construction, but it could sustain damage from equipment.

Implementation of avoidance, minimization, and/or mitigation measures to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring will

protect trees during construction and avoid indirect impacts. Implementation of compensation measures would mitigate loss of riparian habitat.

State and federal agencies require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian woodland vegetation is considered adverse because it provides a variety of important ecological functions and values.

Under the No-Build Alternative, there would be no temporary or permanent impacts on riparian woodland.

Avoidance, Minimization, and/or Mitigation Measures

Place Environmentally Sensitive Area Fencing around All Sensitive Biological Resources in and near the Construction Area

Orange construction barrier fencing will be installed to identify environmentally sensitive areas (ESAs). A qualified biologist will identify sensitive biological resources adjacent to the construction area before the final design plans are prepared so that the areas to be fenced can be included in the plans. The area that generally would be required for construction, including staging and access, is shown in Figure 3.3-1 in Volume 2 (Biological Study Area Boundary). Portions of this area that are to be avoided during construction will be fenced off to avoid disturbance. Sensitive biological resources that occur adjacent to the construction area include sensitive natural communities; native trees to be retained; special-status wildlife habitats for VELB, CRLF, and western pond turtle (*Actinemys marmorata*); and nests of special-status birds.

Temporary fences around the ESAs will be installed as one of the first orders of work in accordance with the Department's specifications. Before construction, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the barrier fencing and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as ESAs and identified clearly on the construction plans. The fencing will be installed before construction activities are initiated, maintained throughout the construction period, and be removed after completion of construction.

Conduct Environmental Awareness Training for Construction Employees

A USFWS-approved biologist will be retained to develop and conduct environmental awareness training for construction employees on the importance of on-site biological resources, including sensitive natural communities; native trees to be retained; special-status wildlife habitats for VELB, CRLF, and western pond turtles; nests of special-status birds; and avoidance of invasive plant introduction and spread. The environmental awareness program will be provided to all construction personnel to brief them on the life history of special-status species in or adjacent to the project area, the need to avoid adverse effects on sensitive biological resources, any terms and conditions required by state and federal agencies, and the penalties for not complying with biological mitigation requirements. If new construction personnel are added to the project, the contractor's superintendent will ensure that the personnel receive the mandatory training before starting work. An environmental awareness handout, describing and illustrating sensitive

resources that will be avoided during project construction and identifying all relevant permit conditions, will be provided to each person.

Retain a Biological Monitor to Conduct Visits during Construction in Sensitive Habitats

A qualified biologist will be retained to conduct construction monitoring in and adjacent to all sensitive habitats when construction is taking place near sensitive habitat areas. Construction monitoring frequency will range from daily to weekly depending on the biological resource. The monitor, as part of the overall monitoring duties, will inspect the fencing along the creek and drainages in the construction area that support riparian vegetation, surrounding native trees and woodlands, and special-status wildlife habitats. The biological monitor will assist the construction crew as needed to comply with all project implementation restrictions and guidelines. The biological monitor also will be responsible for ensuring that the contractor maintains the staked and flagged perimeters of the construction area and staging areas adjacent to sensitive biological resources and stopping work if necessary.

Avoid and Minimize Potential Disturbance of Riparian Communities

Potential disturbance of riparian communities will be avoided and minimized by implementing the following measures.

- The potential for long-term loss of riparian vegetation will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least one foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary within the construction zone. To protect nesting birds, the project proponent will not allow pruning or removal of woody riparian vegetation between February 15 and August 31 without preconstruction surveys.
- A certified arborist will be retained to oversee any necessary pruning of riparian trees.
- The areas that undergo vegetative pruning will be inspected immediately before construction, immediately after construction, and one year after construction to determine the amount of existing species cover, cover that has been removed, and cover that resprouts. If, after one year, these areas have not resprouted sufficiently to return to the pre-project level, the project proponent will replant the areas with the same species (native species) to reestablish the vegetation cover.

Compensate for Temporary and Permanent Loss of Riparian Vegetation

Temporary construction-related loss of riparian vegetation will be compensated for by replanting the temporarily disturbed areas with the same native species. Replanting will occur immediately after completion of the construction activities and no later than October 15 to minimize erosion, creek sedimentation, and adverse effects on fish.

Permanent loss of riparian vegetation will be compensated for at a ratio to be determined in cooperation with the CDFG. Potential mitigation areas are available at Solano Community College; the Solano Land Trust’s Lynch Canyon Open Space, which is northwest of I-80 in

American Canyon; and the King Ranch Open Space, which is west of I-680 in the American Canyon area (according to Sue Wickham, project coordinator at the Solano Land Trust, in a phone conversation with Lisa Webber of ICF Jones & Stokes on March 12, 2008, and an e-mail to the same recipient on October 13, 2008). Compensation may be combined with project impacts on CRLF riparian habitat.

The temporary and permanent losses of riparian vegetation will be compensated for through the preparation of a mitigation planting plan, including a species list and number of each species, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants, or plants grown from local material.

Planted species will be based on those removed from the project area and will include valley oak, interior live oak, willows, white alder, California buckeye, California bay, and Himalayan blackberry. Native understory species, such as sedge species, mugwort, California wild rose, poison-oak, California wild grape, or other suitable species, will be planted. Plantings will be monitored annually for three years or as required in the project permits.

If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

3.3.1.2 Oak Woodlands

Regulatory Setting

Local and state agencies recognize oak woodlands as sensitive natural communities. The Resources Chapter of the draft Solano County General Plan (2008) includes policies to protect oak woodlands and heritage trees, encourage the planting of native tree species, and develop an ordinance to protect oak woodlands and heritage oak trees. The CDFG recognizes oak woodland types that include valley oak as rare natural communities of high priority for inventory in the California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2003). The California State Board of Forestry and Fire Protection oak conservation policy supports a statewide program of research and education known as the Integrated Hardwood Range Management Program. The State Wildlife Conservation Board enacted the Oak Woodlands Conservation Act of 2001 to recognize the importance of oak woodlands and provide financial support for oak woodland conservation activities. State agencies protect blue oak and valley oak woodlands under Senate Concurrent Resolution (SCR) 17; however, impacts on live oak woodland also have to be addressed under CEQA. The CDFG recommends avoidance, minimization, and compensatory mitigation for the loss of native oak trees and oak woodland habitat. The loss or disturbance of oak woodland vegetation is considered adverse because this vegetation is declining and provides important wildlife habitat and other ecological functions and values.

The City of Fairfield Tree Conservation ordinance (FCC 25.36) also protects native trees that may occur in oak woodlands, including native oaks (*Quercus* spp.), bay laurel (*Umbellularia californica*), madrone (*Arbutus menziesi*), and California buckeye (*Aesculus californica*). This ordinance protects native trees located inside the City Limit Line on public property or on private

property developed or landscaped with City approval, but not those located within the Caltrans right-of-way. Because all the oak woodlands in the study area are located either outside the City Limit Line or inside of the Caltrans right-of-way, no native trees in these woodlands are protected under the City ordinance.

Individual native trees in the study area that do not occur in or adjacent to riparian and oak woodland communities are discussed in Section 3.3.7, "Native Trees."

Affected Environment

The study area supports three types of oak woodland: blue oak woodland, valley oak woodland, and interior live oak woodland. Because oak woodlands are regulated as a general type rather than as separate community types, and the woodland types are often intergraded, the same mitigation would be required for impacts on all three community types.

The locations of each oak woodland type in the study area are listed here illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.

- Blue oak woodland occurs only in one location in the study area: on the hill south of I-80 and west of the I-80 westbound truck scale (Sheet 21). This community is dominated by blue oak with a nonnative grassland understory and scattered poison-oak shrubs.
- Several patches of valley oak woodland occur in the study area. One area occurs at the northeast quadrant of the Green Valley Road/Business Center Drive intersection (Sheet 17). A small area of valley oak woodland is located in the I-80 on-ramp loop at the I-80/I-680 interchange (Sheets 17–18). Valley oak woodland is also at the south side of I-80 near the eastbound truck scales (Sheet 21). This community is dominated by valley oak trees, although the overstory also contains coast live oak and blue oak. The understory is open and grassy with blue wildrye and poison-oak.
- Live oak woodland occurs in the study area along the north and south sides of SR 12W (Sheets 3–5 and 7–8) and west of the I-80 eastbound truck scales (Sheet 21). This community type is dominated by interior live oak with elderberry and poison-oak shrubs and an understory of nonnative annual grasses, creeping wildrye, and purple needlegrass.

Affected acreage in oak woodland is tabulated for each alternative in Table 3.3.1-1.

Environmental Consequences

Permanent Loss and Temporary Disturbance of Oak Woodlands

Construction of Alternative B would result in a permanent loss of approximately 0.47 acre of valley oak and 6.37 acres of live oak woodland types within the following parts of the project area (Volume 2, Figure 3.3-2a):

- Valley oak woodland in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80.
- Live oak woodland in the area proposed for the realignment of Red Top Road, the Red Top Road on- and off-ramps to SR 12W, and the SR 12W westbound on-ramp from WB I-80.

Temporary impacts occurring in the areas adjacent to the construction area for Alternative B could affect up to 0.52 acre of blue oak woodland, less than 0.01 acre of valley oak woodland, and up to 4.12 acres of live oak woodland. Shading of live oak woodland vegetation could occur in the area of the SR 12W connector ramps, which would be elevated. The effects of shading could include loss of vegetation over time in the area adjacent to the project footprint. No permanent impacts on blue oak woodland would occur within the Alternative B footprint.

Construction of Alternative B, Phase 1 would result in no permanent loss of no blue oak woodland, but a loss of approximately 0.46 acre of valley oak woodland in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80 (Volume 2, Figure 3.3-2b). Temporary impacts in the area adjacent to the construction area could affect up to 0.52 acre of blue oak woodland and 0.01 acre of valley oak woodland. No permanent or temporary impacts on live oak woodland would occur within the Alternative B, Phase 1 footprint.

Construction of Alternative C would result in a permanent loss of approximately 4.22 acres of blue oak woodland on the hillside west of the former eastbound truck scales, and 0.54 acre of valley oak woodland and 12.85 acres of live oak woodland types within the same general parts of the project area as described for Alternative B (Volume 2, Figure 3.3-2c). Temporary impacts in the area adjacent to the construction area could affect up to 0.14 acre of blue oak woodland, 0.05 acre of valley oak woodland, and 3.14 acres of live oak woodland.

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 0.44 acre of valley oak woodland and 13.19 acres of live oak woodland along SR 12W and in the area between Dan Wilson Creek and the former eastbound truck scale location proposed for widening of I-80 (Volume 2, Figure 3.3-2d). Approximately 2.03 acres of live oak woodland could be temporarily affected, but no temporary effects on valley oak woodland would occur. No permanent or temporary impacts on blue oak woodland would occur within the Alternative C, Phase 1 footprint.

Under both build alternatives, indirect impacts on oak woodland vegetation outside the temporary impact zone could result from adjacent construction activity and damage from equipment. Construction could cause indirect impacts on trees in the oak woodland due to long-term damage through excessive pruning before construction begins.

Avoidance, Minimization, and/or Mitigation Measures

CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of native oak trees and oak woodland habitat. The loss or disturbance of oak woodland vegetation is considered significant because it provides important wildlife habitat and other ecological functions and values. Implementation of the measure below and measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1 would address

the loss and disturbance of riparian habitat. Implementation of measures designed to protect sensitive natural communities described in Section 3.3.1.1 will protect adjacent vegetation during construction and minimize indirect impacts.

Compensate for temporary and permanent loss of oak woodland vegetation.

Temporary construction-related loss of oak woodland habitat will be compensated for by replanting the temporarily disturbed area with the native species removed, including blue oak, valley oak, and interior live oak. Replanting will occur in fall so that less frequent irrigation and maintenance will initially be necessary.

The permanent loss of oak woodland vegetation will be compensated for at a minimum ratio of 1:1 (1 acre restored or created for every one acre permanently affected). This ratio will be confirmed through coordination with state agencies as part of the permitting process for the proposed project. Potential mitigation areas are available at the Solano Land Trust's Lynch Canyon Open Space, which is northwest of I-80 in American Canyon, and the King Ranch Open Space, which is west of I-680 in the American Canyon area (Wickham pers. comm.). A mitigation planting plan will be developed that includes a species list and number of each, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants, or plants grown from local material obtained within the American Canyon watershed. Planted species will be based on those removed from the project area and will include valley and interior live oak, as well as suitable native understory species such as blue wildrye, creeping wildrye, and purple needlegrass. Plantings will be monitored annually for three years, or as required in the project permits. A minimum of 75% of the plantings will have survived at the end of the monitoring period for mitigation to be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated until the survival criterion is met.

3.3.2 Wetlands and Other Waters

The information presented here is taken from the *Preliminary Delineation of Waters of the United Stated for the Interstate 80/Interstate 680/State Route 12 Interchange Project* and the *Interstate 80/Interstate 680/State Route 12 Interchange Project Natural Environment Study*. The wetland delineation was submitted to the U.S. Army Corps of Engineers (USACE) in August 2008. A field verification of the preliminary delineation was conducted with Andrea Meier of the USACE San Francisco District on January 7, 2009, and final verification of the revised map occurred on July 9, 2009. This section addresses waters of the United States, which are under the jurisdiction of the USACE, as well as wetland and drainage features that are outside USACE jurisdiction (nonjurisdictional features) and are regulated only as waters of the state. Impacts on nonjurisdictional features are also discussed per CEQA requirements in Chapter 4. Jurisdictional wetlands and other waters (waters of the United States) in the study area include perennial drainages (American Canyon Creek, parts of Green Valley Creek, parts of Dan Wilson Creek, Suisun Creek, and parts of Ledgewood Creek); seasonal drainages (Jameson Canyon Creek and unnamed drainages); perennial wetland drainages (parts of Green Valley Creek, parts of Dan Wilson Creek, parts of Ledgewood Creek, and unnamed drainages); perennial marshes; alkali seasonal marshes; and seasonal wetlands. Non-jurisdictional features (waters of the state) in the

study area include seasonal drainages (irrigation and roadside ditches) and seasonal wetlands. In the discussions below, the sheet numbers shown in parentheses indicate the sheet numbers in Figures 3.3-2a, 3.3-2b, 3.3-2c, and 3.3-2d in Volume 2.

Documentation of this, and other, consultation with the USACE is presented in Appendix H and discussed in Chapter 5.

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (EPA).

The Department, FHWA, the Army Corps of Engineers, the U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service entered into a memorandum of understanding (MOU) to integrate NEPA and the Clean Water Act for EIS projects that have five or more acres of permanent impacts on Waters of the United States. Under this MOU, the signatory agencies agree to coordinate at three checkpoints: 1) purpose and need, 2) identification of range of alternatives, and 3) preliminary determination of the least environmentally damaging practicable alternative (LEDPA) and conceptual mitigation plan. The goal of the MOU process is allow the USACE to more efficiently adopt the EIS for their Section 404 permit action.

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the CDFG and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600–1607 of the California Fish and Game Code (CFGC) require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the CDFG before beginning construction. If the CDFG determines

that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCB were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details. Wetlands and drainages that are not under USACE jurisdiction but have beneficial uses are considered waters of the State and are regulated by the RWQCB. The RWQCB also issues waste discharge requirements (WDRs) for loss of waters of the State.

3.3.2.1 Perennial Drainage

Affected Environment

The drainage numbers used in this discussion correspond to the numbers used in the delineation of waters of the United States. However, there are drainage features that were not labeled on the delineation maps because they were in areas that had been delineated for other projects. These drainages are labeled in Figures 3.3-2a through 3.3-2d in Volume 2 for the purpose of discussion in this document. Perennial drainages that are densely vegetated are discussed separately from the unvegetated perennial drainages in this section. See the “Perennial Marsh” section below for descriptions of vegetated perennial drainages.

The following unvegetated drainages in the study area are perennial and carry flow year-round or nearly year-round.

- The downstream reach of American Canyon Creek (OW-23) (Sheet 12).
- Dan Wilson Creek (OW-53) (Sheet 21).
- Suisun Creek (OW-56) (Sheet 22).
- Culverted parts of Ledgewood Creek (OW-90) (Sheet 32) and its tributary (OW-90a) (Sheets 30-31).

Functions and values of perennial drainages in the study area include flood conveyance and providing food and habitat for fish and wildlife species.

Drainages that connect to the Suisun Marsh sloughs and tributaries of these drainages are considered waters of the United States, subject to regulation under CWA Section 404. Both permanent and temporary placement of material in these areas, including cofferdams and bridge supports, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB.

Affected acreage in perennial drainage is tabulated for each alternative in Table 3.3.1-1.

Environmental Consequences

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional drainages. Impact acreages are based on the final USACE-verified delineation.

Loss or Disturbance of Perennial Drainage Resulting from Construction

Construction of both of the build alternatives would result in permanent and temporary losses of perennial drainage within the project area as summarized in Tables 3.3.2-1 through 3.3.2-4 and Figures 3.3-2a through 3.3-2d in Volume 2.

Under Alternative B, permanent impacts on perennial drainages would include construction associated with removal and replacement of the bridges over Dan Wilson Creek (OW-53) (Sheet 21) and Suisun Creek (OW 56) (Sheet 22) and replacement of culverts on American Canyon Creek (OW-23) (Sheet 12), a tributary of Ledgewood Creek (OW-90a) (Sheet 31), and Ledgewood Creek (OW-90) (Sheet 32) (Volume 2, Figure 3.3-2a). Construction would result in a total area of fill of 3.52 acres (Table 3.3.2-1).

Table 3.3.2-1. **Direct Impacts on Drainages in the Study Area under Alternative B[a]**

Drainage Type	Area of Permanent Fill (acres)	Area of Temporary Fill (acres)	Total Area of Fill (Permanent + Temporary) (acres)
Waters of the State (Nonjurisdictional)			
Seasonal (constructed)	<0.01	0	<0.01
Waters of the U.S. (Jurisdictional)			
Perennial	0.59	0.30	0.89
Seasonal	1.78	0.85	2.63
Total direct impacts	**2.37**	**1.15**	**3.52**

[a] In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages. Under Alternative B, Phase 1, permanent impacts on perennial drainages would include construction associated with removal and replacement of the bridges over Dan Wilson Creek (OW-53) (Sheet 21) and Ledgewood Creek (OW-90) (Sheet 32) and with replacement of culverts on American Canyon Creek (OW-23) (Sheet 12) and Ledgewood Creek (Sheet 32) (Volume 2, Figure 3.3-2b). Construction of Alternative B, Phase 1 would result in a total area of fill of 1.18 acres, the lowest of the first fundable phase of the alternatives.

Table 3.3.2-2. **Direct Impacts on Drainages in the Study Area under Alternative B, Phase 1[a]**

Drainage Type	Area of Permanent Fill (acres)	Area of Temporary Fill (acres)	Total Area of Fill (Permanent + Temporary) (acres)
Waters of the State (Nonjurisdictional)			
None	N/A	N/A	N/A
Waters of the US (Jurisdictional)			
Perennial	0.06	0.17	0.23
Seasonal	0.81	0.14	0.95
Total direct impacts	**0.87**	**0.31**	**1.18**

[a] Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the acreages for waters of the U.S. in this table also represent acreages of waters of the State. Under Alternative C, permanent and temporary impacts on perennial drainages would be in the same areas as described for Alternative B, though the total area of fill would be slightly higher, and is the highest of the build alternatives (Table 3.3.2-3).

Table 3.3.2-3. Direct Impacts on Drainages in the Study Area under Alternative C [a]

Drainage Type	Area of Permanent Fill (acres)	Area of Temporary Fill (acres)	Total Area of Fill (permanent + temporary) (acres)
Waters of the State (Nonjurisdictional)			
Seasonal (constructed)	<0.01	0	<0.01
Waters of the US (Jurisdictional)			
Perennial	0.66	0.45	1.11
Seasonal	2.05	0.56	2.61
Total direct impacts	**2.71**	**1.01**	**3.72**

[a] In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages. Construction of Alternative C, Phase 1 would result in permanent loss of perennial drainage (summarized in Table 3.3.2-4), for replacement of culverts on American Canyon Creek (OW-23) (Sheet 12) and the widening of SR 12E over the tributary of Ledgewood Creek (OW-90a) (Sheet 31). Approximately 0.05 acre of the Ledgewood Creek tributary would also be temporarily affected.

Table 3.3.2-4**. Direct Impacts on Jurisdictional Drainages in the Study Area under Alternative C, Phase 1 [a]**

Drainage Type	Area of Permanent Fill (acres)	Area of Temporary Fill (acres)	Total Area of Fill (Permanent + Temporary) (acres)
Waters of the State (Nonjurisdictional)			
Seasonal	<0.01	0.01	0.01
Waters of the US (Jurisdictional)			
Perennial	0.08	0.05	0.13
Seasonal	1.89	0.08	1.97
Total direct impacts	**1.97**	**0.14**	**2.11**

[a] In this table, the acreages for waters of the State (nonjurisdictional) include only those drainages that are not also waters of the U.S. Because all drainages that are waters of the U.S. (jurisdictional) are also considered waters of the State, the total acreage for waters of the State would include both the nonjurisdictional and jurisdictional acreages. Under the No-Build Alternative, there would be no impacts on perennial drainage.

Although the bridges over Dan Wilson Creek and Suisun Creek are clear spans, and no piers would be placed below the ordinary high water mark (OHWM), and existing piers and supports would be removed from the creekbed. The removal may result in the need for placing fill and recontouring the bed, which would be a direct permanent impact. This analysis assumes that the bridge abutments at Dan Wilson Creek and Suisun Creek would be constructed above the OHWM and would not result in permanent fill. The SR 12E bridges carrying on- and off-ramps over Ledgewood Creek would each include a single pier wall within the OHWM of the creek, which would be permanent fill. Replacement of the culvert on I-680 at American Canyon Creek with a longer culvert and replacement of the culvert under SR 12E at Ledgewood Creek would be permanent fill. For bridge construction, cofferdams installed during construction would be considered a temporary impact.

Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of perennial drainages that lie outside the project footprint.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures in Section 3.3.1.1 (installation of construction barrier fencing, environmental awareness training, and biological

monitoring) and the measures listed below to protect water quality, prevent erosion, and restore and compensate for drainage habitat would address the impacts on perennial drainages for all build alternatives.

Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands

Features to be protected include American Canyon, Green Valley, Suisun, Dan Wilson, and Ledgewood Creeks; unnamed drainages; and wetlands in and adjacent to the project area. The following BMPs will be implemented before and during construction.

- All earthwork or foundation activities involving creeks, culverts, and bridges will occur in the dry season (generally between June 1 and October 15).
- Equipment used in and around drainages and wetlands will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance, staging, and materials storage will be performed at least 300 feet from all drainages and wetlands. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands.
- Any surplus concrete rubble, asphalt, or other rubble from construction will be taken to an appropriate landfill.
- An erosion control plan will be prepared and implemented for the proposed project. It will include the following provisions and protocols:
  - Discharge from dewatering operations, if needed, and runoff from disturbed areas will be made to conform to the water quality requirements of the waste discharge permit issued by the RWQCB.
  - Material stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1. All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.
  - Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed project and will be removed after the working area is stabilized or as directed by the engineer. The SWPPP for the proposed project will detail the applications and type of measures and the allowable exposure of unprotected soils.
  - Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed dust-producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved streets will be swept daily following construction activities.
  - The contractor will conduct periodic maintenance of erosion and sediment control measures.
  - An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.

Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat

Portions of the drainages temporarily disturbed by cofferdam construction will be restored to original grade and preconstruction conditions following construction, and no permanent impacts will result.

The permanent fill of other waters of the United States in drainages will be compensated for at a minimum ratio of 1:1 (one acre restored or created for every one acre permanently affected). The actual compensation ratios will be determined through coordination with the RWQCB and the USACE as part of the permitting process. Permanent loss of perennial and seasonal drainage will be compensated for by implementing one or a combination of the following options.

- Purchase credits for created riparian stream channel at a locally approved mitigation bank. Written evidence will be provided to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Compensate out of kind for loss of drainages by implementing compensatory mitigation for riparian woodland impacts described in the measure to compensate for temporary and permanent loss of riparian vegetation in Section 3.3.1.1. The acreage restored to compensate for loss of drainages will be added to the acreage restored for loss of riparian habitat.

3.3.2.2 Seasonal Drainage

Affected Environment

Seasonal drainages in the study area primarily carry water after storm events and during the wet season. This category includes both natural seasonal drainages and constructed seasonal drainages, both of which provide habitat for wildlife. Some natural and constructed seasonal drainages in the study area are considered jurisdictional by the USACE and are subject to regulation under CWA Section 404. Drainages that are not under USACE jurisdiction but have beneficial uses would be considered waters of the State that would be regulated by the RWQCB, which would issue WDRs for loss of drainage area.

Natural Seasonal Drainage

Natural seasonal drainages in the study area are listed here illustrated in Figures 3.3-2a through 3.3-2d in Volume 2.

- Jameson Canyon Creek and its tributaries (OW-8, OW-8a, OW-8b, OW-8c, OW-8d, and OW-8e) (Sheets 3, 4, 5, 7, 9, and 14).
- Drainages north of SR 12W (OW-149 and OW-161) (Sheet 5).
- Erosional drainages north of I-80 and Red Top Road (OW-1a and OW-2b) (Sheets 2 and 3).
- Erosional drainages west of I-680 (OW-150 and OW-151) (Sheet 13).

Functions of natural seasonal drainages in the study area include flood conveyance during and after storm events. Most natural seasonal drainages in the study area ultimately drain to Cordelia or Peytonia Sloughs, which in turn drain to Suisun Bay and are considered jurisdictional by the USACE. These features are subject to USACE regulation under CWA Section 404 and are

considered sensitive natural communities. Some natural seasonal drainages in the study area are not subject to USACE jurisdiction, because they have no connection to the tidal sloughs that drain to Suisun Bay. However, these natural drainages are considered sensitive natural communities and would be considered waters of the state regulated by the RWQCB.

Constructed Seasonal Drainages

Constructed seasonal drainages occur throughout the study area and include ditches excavated in upland areas along roadsides, railroads, and agricultural fields or around developments. Some ditches are concrete lined. Roadside and irrigation ditches that were constructed in uplands and do not connect to a natural stream are not subject to USACE jurisdiction and are not considered sensitive natural communities.

Environmental Consequences

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional and nonjurisdictional seasonal drainages. Impact acreages are based on the final USACE-verified delineation.

Loss or Disturbance of Nonjurisdictional Seasonal Drainages

Construction of the full build alternatives would involve the installation of culverts and placement of fill for road widening, resulting in direct disturbance of nonjurisdictional constructed seasonal drainages. Under Alternative B, Alternative C, and Alternative C, Phase 1, less than 0.01 acre of nonjurisdictional irrigation ditch would be placed in a culvert for construction. Alternative B, Phase 1 would not affect nonjurisdictional seasonal drainages.

Loss or Disturbance of Jurisdictional Seasonal Drainages Resulting from Construction

Temporary impacts on jurisdictional seasonal drainages under both build alternatives would occur during project construction activities for equipment access and placement of cofferdams and falsework.

Alternative B

Construction of Alternative B would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-1 and Volume 2, Figures 3.3-1 and 3.3-2a). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the areas listed below.

- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheets 7, 9, and 14); its tributaries (OW-8b, OW-8d, OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, OW-160) (Sheets 3, 4, and 5) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Grading and culverting of unnamed drainages for the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).

- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1a, OW-2, OW-2a, OW-2b, OW-8, OW-57, OW-87, OW-88, OW-93, OW-139, and OW-141) (Sheets 1, 2, 3, 7, 19, 20, 21, and 23); I-680 (OW-8, OW-43, OW-44, OW-103c, OW-104, OW-150, and OW-151) (Sheets 10, 11, 13, 15, and 16); and SR 12E (OW-90b, OW-110, and OW-119) (Sheets 25, 32, 33, and 34).
- Improvements to the I-80/I-680 interchange (OW-45a, OW-45d, OW-45e, OW-61a, and OW-61) (Sheets 8, 16, 17, and 18).

Alternative B, Phase 1

Construction of Alternative B, Phase 1 would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-2 and Volume 2, Figure 3.3-2b). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-57, OW-87, OW-88, OW-93, OW-139, and OW-141) (Sheets 19, 20, and 21); I-680 (OW-8, OW-43, OW-44, OW-104, OW-150, and OW-151) (Sheets 13, 14, 15, and 16); and SR 12E (OW-90b) (Sheet 32);
- Improvements to the I-80/I-680 interchange (OW-45a, 45d, OW-45e, OW-61a, and OW-61) (Sheets 16, 17, and 18).

Alternative C

Construction of Alternative C would result in a permanent loss of and a temporary loss of jurisdictional seasonal drainage within the project area (summarized in Table 3.3.2-3 and Volume 2, Figure 3.3-2c). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in Jameson Canyon Creek tributaries (OW-8b, OW-8d, and OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, and OW-160) (Sheets 3, 4, and 5) for realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Grading and culverting of unnamed drainages within the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).
- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1a, OW-2, OW-2a, OW-2b, OW-8, OW-57, OW-87, OW-88, OW-93, and OW-139) (Sheets 1, 2, 3, 7, 19, 20, 21, and 23); I-680 (OW-8, OW-19, OW-103c, OW-150, and OW-151) (Sheets 11 and 13); and SR 12E (OW-110, OW-90b, and OW-119) (Sheets 25, 32, 33, and 34).
- Improvements to the I-80/I-680 interchange (OW-8, OW-45a, OW-61a, and OW-61) (Sheets 8, 9, 14, 16, and 17).

Alternative C, Phase 1

Construction of Alternative C, Phase 1 would result in a permanent loss and a temporary loss of jurisdictional seasonal drainage within the project area (Table 3.3.2-4 and Volume 2, Figure 3.3-2d). These impact acreages are based on the final USACE-verified delineation.

Permanent impacts on jurisdictional seasonal drainages would occur in the following areas.

- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8); its tributaries (OW-8a, OW-8b, OW-8d, and OW-8e) (Sheets 3, 4, and 5); and unnamed drainages (OW-13, OW-15, OW-86, OW-149, and OW-160) (Sheets 3, 4, and 5) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Grading and culverting of unnamed drainages within the extension of Red Top Road north of SR 12W (OW-145, OW-153, and OW-161) (Sheets 5 and 6).
- Replacement and lengthening of culverts in unnamed jurisdictional seasonal drainages throughout the project area for road widening on I-80 (OW-1, OW-1a, OW-2, OW-2a, and OW-8) (Sheets 1, 2, 3, and 7); I-680 (OW-19, OW-150, and OW-151) (Sheet 13); and SR 12E (OW-119) (Sheet 33).
- Improvements to the I-80/I-680 interchange (OW-8, OW-45a, OW-61a, and OW-61) (Sheets 8, 9, 14, 16, and 17).
- Widening of I-80 east of the interchange (OW-87) (Sheet 19).

No-Build Alternative

Under the No-Build Alternative, there would be no impacts on seasonal drainage.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures (in Section 3.3.1.1) to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring, and measures to protect water quality, to prevent erosion, and to restore and compensate for drainage habitat (in Section 3.3.2.1) would address the impacts on jurisdictional seasonal drainages for all build alternatives.

3.3.2.3 Perennial Marsh

Affected Environment

Perennial marsh includes areas mapped in the delineation of waters of the United States as perennial wetland drainages, as well as areas mapped as perennial marsh. Perennial marsh occurs within study area drainages in the following areas (Volume 2, Figures 3.3-2a through 3.3-2d).

- An unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103c-1) (Sheet 11).
- Green Valley Creek and an unnamed tributary (W-45 and W-45g) (Sheets 17 and 18).
- Dan Wilson Creek upstream of I-80 (W-53) (Sheet 21).
- The downstream reach of Ledgewood Creek that crosses SR 12E (W-90), and an unnamed constructed tributary to Ledgewood Creek (W-90a) (Sheets 30, 31, and 32).

- An unnamed drainage south of SR 12E (W-175) (Sheet 33).

Green Valley Creek has a cement-lined bed and bank under the I-80 bridge but also has sediment deposits built up in portions of the creekbed. These sediment "islands" support some emergent vegetation, including willow and cattail, which is transient and can be scoured during high flows. The unnamed drainage, Dan Wilson Creek, and Ledgewood Creek have natural beds and banks, although Ledgewood Creek and the unnamed constructed tributary are culverted under SR 12E. In Ledgewood Creek and the tributary, the open water and emergent vegetation habitats are considered to function as a single ecological unit.

The four drainages listed above support freshwater marsh vegetation but are mentioned separately from either the perennial marsh or drainage types because they have characteristics and functions of both types. Dominant plant species observed in perennial wetland drainages include narrow-leaved cattail, bulrush, Himalayan blackberry, watercress, water-milfoil, and Goodding's willow. Water is present year-round, or nearly year-round, in these areas. Wetland functions of perennial wetland drainages in the study area include flood conveyance and wildlife habitat because of the presence of generally dense wetland vegetation.

Perennial marsh wetlands that are outside of drainages occur in the following parts of the study area (Volume 2, Figures 3.3-2a through 3.3-2d).

- A pond north of SR 12W (W-150) (Sheet 5).
- A drainage basin between Rodriquez High School and Lopes Road (W-149) (Sheet 13).
- A pond north of Cordelia Road (W-105) (Sheets 15 and 16).
- In a mitigation area east of Green Valley Creek (W-45e-1) (Sheet 18).
- Surrounding a water treatment plant at the east end of SR 12E (W-136 and W-137) (Sheet 35).
- In the Webster Street off-ramp loop on SR 12E (W-155) (Sheet 35).
- South of SR 12E at the eastern end of the study area (W-142) (Sheets 33, 34, and 35).

Dominant plant species observed in perennial marsh wetlands include those found in the perennial wetland drainages, as well as California blackberry, Harding grass, curly dock, and soft rush. This community type is inundated or saturated year-round. Perennial marsh at the east end of SR 12E is brackish.

Wetland functions of perennial marsh in the study area include flood storage, groundwater discharge due to high water tables, sediment control (in the case of marsh that directly abuts a drainage), and wildlife habitat associated with the presence of generally dense wetland vegetation.

Perennial wetland drainages that connect to the Suisun Marsh sloughs and tributaries of these drainages are considered waters of the United States, subject to regulation under CWA Section 404. Placement of material in these areas, including cofferdams, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization

from the USACE and CWA Section 401 water quality certification from the RWQCB. An SAA from the CDFG would be required for construction activity within perennial wetland drainages and their floodplains. No creeks in the study area are regulated by the State Lands Commission, and construction would not require a land lease amendment (Jones pers. comm.). Perennial marshes that are not under USACE jurisdiction but have beneficial uses would be considered waters of the State that would be regulated by the RWQCB, which would issue WDRs for loss of wetlands.

Environmental Consequences

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional perennial marsh wetlands. Impact acreages are based on the final USACE-verified delineation. Affected acreage in this community is tabulated for each alternative in Table 3.3.1-1.

Loss or Disturbance of Nonjurisdictional Perennial Marsh

Under Alternative B and Alternative B, Phase 1, approximately 0.03 acre of nonjurisdictional perennial marsh in an isolated wetland (W-105 [Volume 2, Figures 3.3-2a and 3.3-2b, Sheets 15 and 16]) would be permanently affected and approximately 0.01 acre of the same wetland would be temporarily affected by construction for the widening of I-680.

No nonjurisdictional perennial marsh would be affected under Alternative C or Alternative C, Phase 1.

Loss or Disturbance of Jurisdictional Perennial Marsh Resulting from Construction

Construction of both of the build alternative would involve installation of culverts and placement of fill for road widening, resulting in direct disturbance of jurisdictional perennial marsh, including perennial wetland drainages and marsh habitat that occurs outside of drainages. Additional indirect impacts caused by sedimentation or modification of hydrology could occur in portions of perennial wetland drainages that lie outside the project footprint.

Alternative B

Construction of Alternative B would result in a permanent loss of approximately 5.09 acres of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2a).

- An unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103c-1), due to a lengthened culvert for the widening of I-680 (Sheet 11).
- One unnamed tributary of Green Valley Creek (W-45g) for the off-ramp from northbound I-680 to eastbound I-80 and Green Valley Road (Sheet 18).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) for a new off-ramp from westbound I-80 to Green Valley Road (Sheet 18).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E by ten feet on both sides (Sheets 30, 31, and 32).

- Two brackish perennial marshes south of SR 12E at the eastern end of the study area (W-142, W-175) for widening of SR 12E and construction of access to Main Street in Suisun City (Sheets 33, 34, and 35).

Under Alternative B, a total of 5.25 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impacts listed above as well as in Green Valley Creek (W-45) (Sheet 17) and Dan Wilson Creek upstream of I-80 (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges within the I-80/I-680 interchange.

Alternative B, Phase 1

Construction of Alternative B, Phase 1 would result in a permanent loss of approximately 0.39 acre of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2b).

- One unnamed tributary of Green Valley Creek (W-45g) for the off-ramp from northbound I-680 to eastbound I-80 and Green Valley Road (Sheet 18).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) for a new off-ramp from westbound I-80 to Green Valley Road (Sheet 18).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E (Sheets 30, 31, and 32).

Under Alternative B, Phase 1, a total of 1.97 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impacts listed above, as well as in Green Valley Creek (W-45) (Sheet 17) and Dan Wilson Creek (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges within the I-80/ I-680 interchange.

Alternative C

Construction of Alternative C would result in a permanent loss of approximately 5.73 acres of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2c).

- A drainage basin between Rodriquez High School and Lopes Road (W-149) for improvements to I-680 (Sheet 13).
- A small area of marsh in an unnamed drainage adjacent to the east side of Ramsey Road, the frontage road east of I-680 (W-103 and W-103c-1), for a lengthened culvert for widening of I-680 (Sheet 11).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E on both sides (Sheets 30, 31, and 32).
- An unnamed drainage (W-175) south of SR 12E, a feature in the Webster Street off-ramp loop on SR 12E (W-155), and a feature south of SR 12E at the eastern end of the study area

(W-142) for widening of SR 12E and construction of access to Main Street in Suisun City (Sheets 33, 34, and 35).

Under Alternative C, a total of 2.44 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impact areas listed above, as well as in Green Valley Creek (W-45) (Sheets 17 and 18) and Dan Wilson Creek upstream of I-80 (W-53a) (Sheet 21) for installation of cofferdams during construction of clear-span bridges associated with the I-80/I-680 interchange.

Alternative C, Phase 1

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 0.41 acres of jurisdictional perennial marsh. Perennial marsh would be filled in the following features within the project footprint (Volume 2, Figure 3.3-2d).

- A drainage basin between Rodriquez High School and Lopes Road (W-149) for improvements to I-680 (Sheet 13).
- The downstream reach of Ledgewood Creek (W-90) that crosses SR 12E and an unnamed constructed tributary of Ledgewood Creek (W-90a) for widening of the culvert under SR 12E on the south side (Sheets 31 and 32).

A total of 1.41 acres of temporary impacts would occur in jurisdictional perennial marsh, including areas adjacent to the permanent impact areas listed above, as well as in Green Valley Creek (W-45) (Sheets 17 and 18), for installation of cofferdams during construction of clear-span bridges associated with the I-80/I-680 interchange.

No-Build Alternative

Under the No-Build Alternative, no construction activities would occur, and no impacts on perennial marshes would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures (in Section 3.3.1.1) to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring; measures (in Section 3.3.2.1) to protect water quality, to prevent erosion, and to restore and compensate for drainage habitat; and the measures listed below would address the impacts on perennial marsh under all build alternatives.

Restore Temporarily Disturbed Perennial Marsh

Portions of perennial marsh temporarily disturbed by cofferdam construction will be restored to original grade and preconstruction conditions following construction. Any temporarily disturbed marsh vegetation in the channel is anticipated to regenerate.

Compensate for Permanent Loss of Wetlands

In compliance with the CWA Section 404 permit and WDRs, the permanent loss (fill) of wetlands, including perennial marsh, alkali seasonal marsh, and seasonal wetland, will be compensated for and measures will be taken to ensure no net loss of habitat functions. Loss of

wetlands will be compensated for at a minimum ratio of 1:1 (one acre of mitigation for every one acre filled). The actual compensation ratios will be determined through coordination with the RWQCB and the USACE as part of the permitting process. Compensation may be a combination of mitigation bank credits and restoration/creation of habitat. Permanent loss of wetland habitat will be compensated for by implementing one or a combination of the following options.

- Purchase credits for the affected wetland type (perennial marsh, alkali seasonal marsh, or seasonal wetland) at a locally approved mitigation bank. Written evidence will be provided to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Develop and ensure implementation of a wetland restoration plan that involves creating or enhancing the affected wetland type (perennial marsh, alkali seasonal marsh, or seasonal wetland) on the project site. Potential restoration sites will be evaluated to determine whether this is a feasible option. If it is determined that onsite restoration is possible, a restoration plan will be developed that describes where and when restoration will occur and who will be responsible for developing, implementing, and monitoring the restoration plan. The plan will also include a species list and number of each species, planting locations, and maintenance requirements. Plantings will be similar to those removed from the project area and will consist of cuttings taken from local plants, or plants grown from local material obtained within the Suisun Bay watershed. Plantings will be monitored annually for three years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected. Mitigation sites will be protected in perpetuity in a conservation easement.

3.3.2.4 Alkali Seasonal Marsh

Affected Environment

Alkali seasonal marsh was mapped only in the area south of SR 12E at the eastern end of the study area (Figures 3.3-2a through 3.3-2d, Sheet 33 in Volume 2). This area is surrounded by seasonal wetland and nonnative annual grassland. Alkali seasonal marsh is seasonally inundated or saturated and is distinguished from seasonal wetland habitat by the presence of saline soils and salt-tolerant species, including curved sicklegrass, alkali weed, alkali heath and, in low areas, pickleweed.

Local, state, and federal agencies recognize alkali seasonal marshes as sensitive natural communities. Alkali seasonal marsh wetlands in the study area are considered waters of the United States, subject to regulation under CWA Section 404. Placement of material in these areas, including cofferdams, would be considered placement of fill within waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB.

Environmental Consequences

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional

alkali seasonal marsh wetlands. Impact acreages are based on the final USACE-verified delineation. Affected acreage in this community is tabulated for each alternative in Table 3.3.1-1.

Loss or Disturbance of Alkali Seasonal Marsh Resulting from Construction

Construction of Alternative B, Alternative C, and Alternative C, Phase 1 would involve placement of fill, resulting in direct disturbance of jurisdictional alkali seasonal marsh. These impact acreages are based on the final USACE-verified delineation. No alkali seasonal marsh occurs in the Alternative B, Phase 1 study area, and no impacts on this habitat would result from construction of Alternative B, Phase 1.

Construction of Alternative B would result in a permanent loss of approximately 1.75 acres of alkali seasonal marsh. Alkali seasonal marsh would be filled for the new SR 12E off-ramp, extension of Meyer Lane between Beck and Pennsylvania Avenues, and widening of Pennsylvania Avenue south of SR 12E (W-163, W-164, W-166, and W-168) (Volume 2, Figure 3.3-2a, Sheet 33). Under Alternative B, 0.28 acre of alkali seasonal marsh lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts.

Construction of Alternative C would result in a permanent loss of approximately 1.03 acres of alkali seasonal marsh. Alkali seasonal marsh would be filled for construction of the Pennsylvania Avenue interchange (W-163, W-164, and W-166) and widening of Pennsylvania Avenue south of SR 12E (W-168) (Volume 2, Figure 3.3-2c, Sheet 33). Under Alternative C, 1.07 acre of alkali seasonal marsh lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts

Construction of Alternative C, Phase 1 would result in a permanent loss of approximately 0.07 acre of alkali seasonal marsh. Alkali seasonal marsh would be filled for construction of the Pennsylvania Avenue interchange (W-163 and W-164) (Volume 2, Figure 3.3-2d, Sheet 33).

Temporary impacts could potentially occur in portions of alkali seasonal marsh wetlands that lie outside the project footprint under Alternatives B, C, and C, Phase 1. However, implementation of avoidance, minimization, and/or mitigation measures to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring in Section 3.3.1.1 would avoid and minimize temporary impacts on alkali seasonal marsh.

Under the No-Build Alternative, no construction activities would occur, and no impacts on alkali seasonal marshes would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures to protect water quality and prevent erosion and sedimentation and to restore and compensate for drainage habitat in Section 3.3.2.1, and measures to compensate for permanent loss of wetlands in Section 3.3.2.3 would address the permanent impacts on alkali seasonal wetland under all build alternatives.

3.3.2.5 Seasonal Wetland

Affected Environment

The numbers used to refer to seasonal wetlands in this discussion are the numbers used in the delineation of waters of the United States conducted in the study area. However, there are wetland features that were not labeled on the delineation maps, because they were in areas that had been delineated for other projects. These wetlands are labeled on Figures 3.3-2a through 3.3-2d in Volume 2 for the purpose of discussion in this document.

Numerous seasonal wetlands were mapped in the study area; they are mostly in or adjacent to areas disturbed by development and agriculture. Many seasonal wetlands in the study area are near roadways and receive runoff from the roads. The vegetation in these wetlands is correspondingly degraded, often dominated by nonnative annual grasses and nonnative forbs. Dominant species observed in this wetland type typically include Italian ryegrass, Mediterranean barley, Harding grass, rabbits-foot grass, creeping wildrye, creeping spikerush, curly dock, iris-leaved rush, toad rush, prickly ox-tongue, birds-foot trefoil, and alkali mallow.

This habitat type also includes features south of SR 12E and west of Pennsylvania Avenue that were more specifically identified as “seasonally saturated annual grassland” in the wetland delineation conducted for another project in that area (Huffman-Broadway Group 2007). These areas are dominated by Italian ryegrass, Mediterranean barley, alkali weed, and alkali heath. Some seasonal wetlands located south of SR 12E support special-status vernal pool species. These wetlands were not categorized separately from the other seasonal wetlands, but they do provide higher quality habitat and support more native species.

Wetland functions of seasonal wetlands in the study area include flood storage, groundwater recharge, wildlife habitat, and—in the case of wetlands that support more native species—rare and endangered species habitat.

Some of the seasonal wetlands in the study area are considered jurisdictional by the USACE and subject to regulation under CWA Section 404; some are isolated features. Placement of material in these areas would be considered placement of fill in waters of the United States. This activity would require Section 404 authorization from the USACE and CWA Section 401 water quality certification from the RWQCB. Wetlands that are not under USACE jurisdiction but have beneficial uses would be considered waters of the State that would be regulated by the RWQCB, which would issue WDRs for loss of wetlands. Regardless of USACE or state jurisdiction, however, local, state, and federal agencies recognize seasonal wetlands as sensitive natural communities.

Environmental Consequences

Construction of the project alternatives would involve the installation of culverts and placement of fill for road widening and bridge construction, resulting in direct disturbance of jurisdictional and nonjurisdictional seasonal wetlands. Affected acreages in jurisdictional and nonjurisdictional seasonal wetlands are tabulated for each alternative in Table 3.3.1-1.

Loss or Disturbance of Nonjurisdictional Seasonal Wetland

Construction of Alternative B or Alternative B, Phase 1 would not have any permanent effect on nonjurisdictional seasonal wetlands. Construction of Alternative C would result in a permanent loss of approximately 0.78 acre of nonjurisdictional seasonal wetland as a result of project construction for improvements to the I-80/I-680 interchange (W-20 and W-147) (Volume 2, Figure 3-3-2c, Sheets 9, 12, and 14). Alternative C, Phase 1 would result in a permanent loss of approximately 0.77 acre of nonjurisdictional seasonal wetland for improvements to the I-80/I-680 interchange (W-147) (Volume 2, Figure 3-3-2d, Sheets 9 and 14). Additional temporary impacts during project construction and indirect impacts caused by sedimentation or modification of hydrology could occur in seasonal wetlands that lie outside the project footprint.

Loss or Disturbance of Jurisdictional Seasonal Wetland Resulting from Construction

Under both of the build alternatives, temporary impacts during project construction and indirect impacts caused by sedimentation or modification of hydrology could occur in portions of seasonal wetlands that lie outside the project footprint. However, implementation of avoidance, minimization, and/or mitigation measures to install construction barrier fencing, to conduct environmental awareness training, and for biological monitoring in Section 3.3.1.1 would avoid and minimize temporary impacts on seasonal wetland.

Alternative B

Construction of Alternative B would involve placement of fill, resulting in a permanent loss of approximately 8.19 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2a). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas because of project construction.

- The realignment area to be graded for Red Top Road north of SR 12W (W-187 and W-189) (Sheets 5 and 6).
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (W-13, W-14, W-15, W-148, W-149, W-149a, W-156, W-159, W-194, and W-195) (Sheets 4, 5, and 6).
- Widening of the SR 12W/I-80 interchange (W-60 and W-62) (Sheets 7 and 8).
- Improvements to the SR 12W/I-680 interchange (W-28, W-29, W-30, W-42, W-63, W-64, W-143, W-144, W-145, and W-146) (Sheet 8).
- Improvements to the I-80/I-680 interchange (W-45a-1, W-45a-2, W-45-1, W-45-2, W-61, W-80, W-81, W-86, W-109, and W-191) (Sheets 17 and 18).
- Widening of I-80 east of the interchange (W-192 and W-193) (Sheet 21).
- Construction of the Meyer Lane extension between Beck and Pennsylvania Avenues (W-131 and W-132) (Sheet 32).

- The overcrossing and local road improvements at Pennsylvania Avenue and SR 12E (W-121, W-122, W-123, W-127, W-128, W-130, W-162, W-165, W-167, W-169, W-170, W-173, and W-174) (Sheets 32, 33, and 34).

Under Alternative B, 1.64 acres of jurisdictional seasonal wetland lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts.

Alternative B, Phase 1

Construction of Alternative B, Phase 1 would involve placement of fill, resulting in a permanent loss of approximately 1.84 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2b). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts would occur in parts or all of seasonal wetlands W-45-1, W-45a-2, W-45-2, W-61, W-63, W-80, W-81, W-86, W-109, and W-191 (Sheets 8, 17, and 18) for improvements to the interchange.

Alternative C

Construction of Alternative C would involve placement of fill, resulting in a permanent loss of approximately 8.30 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2c). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas as a result of project construction.

- The realignment area to be graded for Red Top Road north of SR 12W (W-184, W-187, and W-189) (Sheets 5 and 6).
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (W-13, W-14, W-15, W-148, W-149, W-149a, W-156, W-159, W-194, and W-195) (Sheets 4 and 5).
- Widening of the SR 12W/I-80 interchange (W-60 and W-62) (Sheets 7 and 8).
- Improvements to the SR 12W/I-680 interchange (W-28, W-29, W-30, W-42, W-63, W-64, W-143, W-145, and W-146) (Sheet 8).
- Improvements to the I-80/I-680 interchange (W-20, W-45a-1, W-45a-2, W-45-1, W-45-2, W-61, W-80, W-86, W-109, W-145, and W-191) (Sheets 9, 12, 13, 14, 17, and 18).
- The interchange at and widening of Pennsylvania Avenue (W-120, W-123, W-127, W-130, W-152, W-162, W-165, W-167, W-169, W-170, W-171, W-172, W-173, and W-174) (Sheets 32, 33, 34, and 35).

Under Alternative C, 1.07 acres of jurisdictional seasonal wetland lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts.

Alternative C, Phase 1

Construction of Alternative C, Phase 1 would result in direct disturbance of jurisdictional and nonjurisdictional seasonal wetlands.

Construction of Alternative C, Phase 1 would involve placement of fill, resulting in a permanent loss of approximately 3.89 acres of jurisdictional seasonal wetland (Table 3.3.1-1 and Volume 2, Figure 3.3-2d). These impact acreages are based on the final USACE-verified delineation. Direct permanent impacts on parts or all of seasonal wetlands would occur in the following areas because of project construction.

- The realignment area to be graded for Red Top Road north of SR 12W (W-184, W-187, and W-189) (Sheets 5 and 6).
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (W-13, W-14, W-15, W-148, W-149, W-149a, W-159, W-194, and W-195) (Sheets 4 and 5).
- Improvements to the SR 12W/I-680 interchange (W-28, W-29, W-30, W-42, W-60, W-62, W-63, W-64, W-143, and W-146) (Sheets 7 and 8).
- Improvements to the I-80/I-680 interchange (W-20, W-45a-1, W-45a-2, W-45-1, W-45-2, W-60, W-61, W-62, W-109, W-144, W-145, and W-191) (Sheets 9, 12, 13, 14, 17, and 18).
- Widening of SR 12E (W-162) (Sheets 32 and 33).

Under Alternative C, Phase 1, 0.01 acre of jurisdictional seasonal wetland lies within the temporary impact area, but implementation of avoidance and minimization measures below will avoid temporary impacts.

No-Build Alternative

Under the No-Build Alternative, no construction activities would occur, and no impacts on seasonal wetlands would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures to protect water quality and prevent erosion and sedimentation and to restore and compensate for drainage habitat in Section 3.3.2.1, and measures to compensate for permanent loss of wetlands in Section 3.3.2.3, would address the permanent impacts on seasonal wetlands under all build alternatives.

3.3.3 Plant Species

Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and the CDFG share regulatory responsibility for the protection of special-status plant species. *Special-status* species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Section 3.3.4, “Threatened and Endangered Species” in this document for detailed information regarding these species.

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

Table 3.3.3-1. Summary of Sensitive Plant Species and Native Tree Impacts by Project Alternative

	(number of plants, unless otherwise stated)						
	Alkali Milk-Vetch	**Pappose Tarplant**	**Contra Costa Gold-fields**	**Gold-fields Critical Habitat (acres)**	**Stream-side Daisy**	**Saline Clover**	**Native Trees[a] (# of trees)**
Alternative B							
Temporary	0	0	0	14.02	0	0	0
Permanent	0	185	30	55.91	0	35	13
Total	**0**	**185**	**30**	**69.93**	**0**	**35**	**13**
Alternative B, Phase 1							
Temporary	0	0	0	1.18	0	0	0
Permanent	0	0	0	7.27	0	0	6
Total	**0**	**0**	**0**	**8.45**	**0**	**0**	**6**
Alternative C							
Temporary	0	0	0	8.55	0	0	0
Permanent	0	200	30	39.59	0	65	14
Total	0	200	30	48.14	0	65	14
Alternative C, Phase 1							
Temporary	0	0	0	0.70	0	0	0
Permanent	0	2	0	5.41	0	0	4
Total	**0**	**2**	**0**	**6.11**	**0**	**0**	**4**

[a] Includes only native trees mapped outside of riparian woodland and oak woodland habitats.

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

Botanical surveys of the study area were conducted in April and May 2004, April and May 2005, August 2007, and April 2009. Botanical surveys for the Gentry-Suisun project included a portion of the study area south of SR 12E and were conducted in spring 2000 and 2002; summer 2000; and April 6, 7, 8, 11, 12, 13, and 15, 2005. Five sensitive plant species (Table 3.3.3-1 located at the end of this section) were found in the study area during these surveys: alkali milk-vetch, pappose tarplant, Contra Costa goldfields, streamside daisy, and saline clover. Contra Costa goldfields are discussed in Section 3.3.5, Threatened and Endangered Species. The remaining species are discussed below.

Table 3.3.3-1 summarizes impacts on special-status plant species and native trees. Impacts on Contra Costa goldfields are discussed in Section 3.3.5.1, and impacts on native trees are discussed in Section 3.3.7.

3.3.3.1 Alkali Milk-Vetch

Alkali milk-vetch (*Astragalus tener* var. *tener*) is an annual herb in the pea family (Fabaceae) that blooms between March and June. Alkali milk-vetch occurs in alkaline vernal pools and annual grasslands with adobe clay (heavy clay) soils at elevations below 200 feet. Alkali milk-vetch has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California with 20%–80% of occurrences threatened). The primary threats to this species are development; competition from nonnative plants; habitat destruction, especially agricultural conversion; and possibly trampling. (California Native Plant Society 2009.)

Alkali milk-vetch is known from the southern Sacramento Valley, northern San Joaquin Valley, and east San Francisco Bay Area. It is currently recorded in the CNDDB at 67 locations in Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, San Francisco, San Joaquin, Santa Clara, Solano, Sonoma, Stanislaus, and Yolo Counties. Of this total, 24 occurrences are in Solano County. One of these is recorded in the study area south of SR 12E, and another is approximately 0.5 mile south of this location. (California Natural Diversity Database 2010.)

Affected Environment

Four populations of alkali milk-vetch occur in seasonal wetland habitat approximately 250 to 350 feet south of the study area, but outside the project construction areas, along SR 12E, between Ledgewood Creek and Pennsylvania Avenue (Volume 2, Figure 3.3-2a, Sheets 32–33). Based on surveys in 2000–2002 and 2005, these occurrences varied from one to 20 plants (Vollmar Consulting 2005). Although the occurrences were not found in 2009, the habitat remains suitable and the plants are assumed to be extant. Below average rainfall and varied temperature patterns in 2009 may have affected germination and growth of annual species such as alkali milk-vetch.

Environmental Consequences

Potential direct and indirect effects on Alkali Milk-Vetch

Alkali milk-vetch plants are outside the temporary and permanent impact areas for all build alternatives. With implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Sections 3.3.2.1, none of the build alternatives would result in indirect effects on seasonal wetlands that support alkali milk-vetch. However, the project alternatives would not be constructed in the area of the alkali milk-vetch occurrences for many years, and updated surveys for the species will be needed to document the extent and number of plants at that time to ensure that the species has not established within the project footprint. If the species is found within the proposed construction area, compensation for loss of plants would be based on the preconstruction data obtained from the updated surveys.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described below would address impacts to alkali milk-vetch.

Conduct Preconstruction Surveys for Special-status Plants

As a prerequisite to developing compensatory mitigation, a qualified botanist will be retained to conduct botanical surveys of the portion of the study area to be affected within one year prior to construction of each construction phase of the project. A list of special-status species with potential to occur in the study area will be compiled based on contemporary CNDDB and CNPS Inventory data. Surveys will be conducted during the blooming period for these special-status plants. Surveys will be conducted consistent with CNPS guidelines for botanical surveys (California Native Plant Society 2001).

If any special-status plants are identified during the surveys, the botanist will photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form, and submit the completed Survey Form to the CNDDB. The amount of compensatory mitigation required will be based on the results of these surveys.

Compensate for Loss of Special-status Plants

Permanent loss (areas directly affected in the project area) of occupied special-status plant habitat for alkali milk-vetch, pappose tarplant, streamside daisy, or saline clover will be compensated for through preservation at a ratio of 3:1 (3 acres preserved for each one acre of occupied habitat removed during construction). The area to be preserved will include either private property or City of Fairfield property located within a high-value vernal pool conservation area identified in the Solano Multispecies HCP (Solano County Water Agency 2009). Suitable habitat for special-status plant species affected by project construction will be purchased, preserved, and managed in perpetuity. Detailed information will be provided to the agencies on the location and quality of the preservation area, the feasibility of protecting and managing the area in perpetuity, and the responsible parties involved. Other pertinent information will also be provided, to be determined through future coordination with the resource agencies.

3.3.3.2 Pappose Tarplant

Pappose tarplant (*Centromadia parryi* ssp. *parryi*) is an annual herb in the sunflower family (Asteraceae) that blooms between May and November. Pappose tarplant is found in meadows and seeps, salt marsh, and mesic annual grassland, often on alkaline soils at elevations below 1,400 feet. Pappose tarplant has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California, with 20–80% of occurrences threatened). The primary threats to the species have been development and habitat disturbance. (California Native Plant Society 2009.)

Pappose tarplant is known historically from central California in the Sacramento Valley and San Joaquin Valley. It is currently recorded in the CNDDB at 23 occurrences in Butte, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma Counties. Of this total, 13 occurrences are recorded in Solano County. One of these 13 occurrences is recorded in the study area south of SR 12E, and another is approximately 0.25 mile south of this location. One additional occurrence is generally mapped south of the I-80/I-680 interchange. (California Natural Diversity Database 2010.)

Affected Environment

A total of 43 occurrences of pappose tarplant (approximately 7,000 plants) were found during the August 2007 and April 2009 botanical surveys of the study area (Volume 2, Figure 3.3-2a, Sheets 32–33). Points shown in Figure 3.3-2a represent stands of between one and 6,000 plants. This species was observed primarily in seasonal wetlands (W-118, W-134 W-135, W-162, W-163, W-165, W-166, and W-172), but three occurrences are in areas of nonnative annual grassland near these seasonal wetlands.

There are six occurrences (approximately 185 plants) of pappose tarplant in the proposed construction area for Alternative B, seven occurrences (approximately 200 plants) for Alternative C, and one stand (two plants) for Alternative C, Phase 1. None occur within 250 feet of the Alternative B, Phase 1 construction area.

All but one of these occurrences are south of SR 12E and east of Ledgewood Creek; one is north of SR 12E approximately 200 feet east of Ledgewood Creek. Additional occurrences were observed in the study area but outside the temporary and permanent impact areas. Five occurrences are within 250 feet of the temporary impact boundary for Alternative B, 33 occurrences are within the temporary impact boundary for Alternative C, and two occurrences are within the temporary impact boundary for Alternative C, Phase 1.

Environmental Consequences

Loss or Disturbance of Pappose Tarplant

Based on the 2007 and 2009 survey results, approximately 185 pappose tarplants would be removed within the Alternative B footprint south of SR 12E for construction of the Meyer Lane extension, widening of SR 12E, and construction of the frontage road south of SR 12E and west of Pennsylvania Avenue (Volume 2, Figure 3.3-2a, Sheets 32–33). Indirect effects on the 33 stands of pappose tarplant outside the Alternative B construction area but within 250 feet of the temporary impact area could result from adjacent construction activity. These plants would not be removed for construction, but they could be indirectly affected by earthmoving activities and changes in hydrology.

Pappose tarplants are outside the temporary and permanent impact areas for Alternative B, Phase 1.

Within the Alternative C footprint, approximately 200 pappose tarplant plants would be removed south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue (Volume 2, Figure 3.3-2c, Sheet 33). Indirect effects on the five stands of pappose tarplant outside the construction area but within 250 feet of the temporary impact area could occur from adjacent construction activity.

Within the Alternative C, Phase 1 footprint, two pappose tarplant plants would be removed south of SR 12E for construction of the Meyer Lane extension, widening of SR 12E, and the frontage road south of SR 12E and west of Pennsylvania Avenue (Volume 2, Figure 3.3-2d, Sheets 32–33). Indirect effects on the two stands of pappose tarplant (approximately 300 plants) outside the

construction area but within 250 feet of the temporary impact area could result from adjacent construction activity.

Because pappose tarplant is not a state- or federally listed species, authorization under FESA or CESA would not be required for removal of the plants. However, CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of a CNPS List 1B.2 species. The loss or disturbance of pappose tarplant is considered significant because this species is identified by CNPS as rare or endangered in California.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1 would protect pappose tarplant and wetland habitat from indirect impacts. Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 this would address impacts to pappose tarplant.

3.3.3.3 Streamside Daisy

Streamside daisy (*Erigeron biolettii*) is a perennial herb in the sunflower family (Asteraceae). This species blooms between June and October and occurs in rocky, mesic areas, including woodlands below 2,300 feet. Streamside daisy has no state or federal listing status but is on CNPS List 3 (plants about which more information is needed to determine their status). The CNDDB does not currently include any records for streamside daisy, but the CNPS Inventory records the species in Humboldt, Mendocino, Marin, Napa, Solano, and Sonoma Counties (California Native Plant Society 2009; California Natural Diversity Database 2010).

Affected Environment

Streamside daisy was observed in August 2007 at one location outside the study area within approximately 100 feet of the study area boundary, in the area north of the westbound I-80 truck scales (Volume 2, Figure 3.3-2a, Sheet 21). This site is a rocky hill vegetated by valley oak woodland, and fewer than 20 plants were observed. Since the time of the survey, the vegetation has been removed and the hill has been graded for another project. The population of streamside daisy on the hill is extirpated, because the hill has been removed.

Environmental Consequences

Potential Direct and Indirect Effects on Streamside Daisy

Streamside daisy plants near the study area have been removed. However, the project alternatives would not be constructed in this area for several years, and updated surveys for the species will be needed to document of the presence of any streamside daisy plants at that time to ensure that the species has not established within the project footprint. If the species is found within the proposed construction area, compensation for loss of plants would be based on the preconstruction data obtained from the updated surveys.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would address effects to streamside daisy.

3.3.3.4 Saline Clover

Saline clover (*Trifolium depauperatum* var. *hydrophilum*) is an annual herb in the pea family (Fabaceae). This species blooms between April and June and grows in mesic, alkaline areas, including annual grasslands and vernal pools at elevations below 1,000 feet. Saline clover has no federal or state listing status, but it is on CNPS List 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California with 20–80% of occurrences threatened). Saline clover is threatened by development. The CNDDB currently lists 20 records of saline clover occurrences in Alameda, Monterey, Napa, San Benito, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma Counties. Of this total, two occurrences are recorded in Solano County. (California Natural Diversity Database 2010.)

Affected Environment

Based on surveys in 2000–2002 and 2005, a total of 12 occurrences of saline clover were found in seasonal wetland habitat south of SR 12E and east of Ledgewood Creek (Volume 2, Figure 3.3-2a, Sheets 32–33). These occurrences varied from one to 100 plants and were located outside the project construction area (Vollmar Consulting 2005). No occurrences were found within the proposed construction area, but eight occurrences were within 250 feet of the temporary impact boundary for the project. Based on surveys in 2000–2002 and 2005, these occurrences varied from one to 100 plants (Vollmar Consulting 2005). In April 2009, five additional occurrences of saline clover were observed north of the previously observed locations, and all five occur within the project construction area for Alternative B and Alternative C. The five occurrences varied from one to ten plants each.

Environmental Consequences

Direct and Indirect Effects on Saline Clover

Five occurrences of saline clover totaling 35 plants in an approximately 0.2-acre area are within the permanent impact area for Alternative B (Volume 2, Figure 3.3-2a, Sheet 33), based on the 2009 surveys. These plants would be removed within the project footprint south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue. An additional two occurrences are within the temporary impact area. Indirect effects on the four stands of saline clover outside the construction area but within 250 feet of the temporary impact area could result from adjacent construction activity. These plants would not be removed for construction, but they could be indirectly affected by earthmoving activity and changes in hydrology.

Six occurrences of saline clover totaling 65 plants in two 0.1-acre locations are within the permanent impact area for Alternative C (Volume 2, Figure 3.3-2c, Sheet 33), based on the 2005 and 2009 surveys. These plants would be removed within the project footprint south of SR 12E for widening of SR 12E and construction of the interchange at Pennsylvania Avenue. Indirect effects on the four stands of saline clover could result from adjacent construction activity.

Saline clover plants are outside the temporary and permanent impact areas for Alternative B, Phase 1 and Alternative C, Phase 1.

Because saline clover is not a state- or federally listed species, authorization under FESA or CESA would not be required for removal of the plants. However, CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of a CNPS List 1B.2 species. The loss or disturbance of saline clover is considered significant because the species is identified by CNPS as rare or endangered in California.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1 will avoid indirect effects on saline clover. With implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would address impacts to saline clover.

3.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts on wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA's NMFS) and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 3.3.5, "Threatened and Endangered Species." All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA's NMFS candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act.
- Migratory Bird Treaty Act.
- Fish and Wildlife Coordination Act.

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act.
- Sections 1600–1603 of the California Fish and Game Code.
- Sections 4150 and 4152 of the California Fish and Game Code.

Based on the CNDDB search results and the USFWS list for the project region, 29 special–status wildlife species and ten special-status fish species were determined to have the potential to occur in the project region (Table 3.3.4-1 located at the end of this section). After completion of field surveys and review of species distribution and habitat requirements data, the biologists

determined that 12 of the 29 wildlife species and six of the ten fish species would not occur in the study area because the area lacks suitable habitat for the species or is outside the species' known range. An explanation for the absence of each of these species from the study area is provided in the table.

Three of the 17 special-status wildlife species that could occur in the study area (burrowing owl, northern harrier, and western pond turtle) have been observed in the study area. Suitable habitat for eight additional special-status wildlife species—three birds and five bat species—was found in the study area during field surveys; accordingly, these species as well as migratory birds, raptors, and swallows have the potential to occur in the study area and may be affected by construction activities. The other six special-status wildlife species are threatened or endangered species discussed in Section 3.3.5. Impacts on these species are summarized in Table 3.3.4-2.

Four special-status fish species—central California coast steelhead, river lamprey, Sacramento splittail, and fall-run/late-fall-run Chinook salmon—have potential to occur in the study area based on the presence of suitable habitat. Central California coast steelhead is a threatened species and is discussed in Section 3.3.5.

3.3.4.1 Western Pond Turtle

Western pond turtle (*Actinemys marmorata*) is designated a state species of special concern. Western pond turtle occurs from Baja California to the lower Columbia River in Oregon and Washington (Jennings et al. 1992).

Western pond turtles are thoroughly aquatic, preferring the quiet waters of ponds, reservoirs, and sluggish streams (Stebbins 1985). The species occurs in a wide range of both permanent and intermittent aquatic environments (Jennings et al. 1992). Western pond turtles spend considerable time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris. They move up to 1,300 feet or more to upland areas adjacent to watercourses to deposit eggs and to overwinter (Jennings and Hayes 1994). Western pond turtles spend time in upland habitats during the spring and summer, frequently moving between aquatic and upland habitats (Rathbun et al. 2002). Western pond turtles typically become active in March and return to overwintering sites by October or November (Jennings et al. 1992).

Affected Environment

Western pond turtles were observed in the two ponds (Mangels pond and perennial marsh W-150) north of SR 12W (Solano Transportation Authority 2007) (Volume 2, Figure 3.3-2a, Sheet 5). One of those ponds (W-150 on the north side of SR 12W) is within the Alternative B, Alternative C, and Alternative C, Phase 1 study areas. In addition, there is suitable upland habitat around the two ponds, some of which is within the study area.

A western pond turtle was observed in Ledgewood Creek at I-80 (approximately one mile upstream of the study area for Alternatives B and C) in April and September 2008 during construction monitoring surveys for the I-80 HOV project. In addition to Mangels pond and W-150, the following locations in the study area provide potential aquatic habitat for western pond turtles. The following locations can be found in Volume 2, Figure 3.3-2a.

Table 3.3.4-2. Summary of Special-Status Wildlife and Fish Species Potential Presence and/or Impacts by Project Alternative

Impact Type	Callippe Butterfly Habitat Present	Vernal Pool Fairy and Tadpole Shrimp Habitat (acres)	VELB (number of shrubs)	CRLF Aquatic Habitat (acres)	CRLF Upland Habitat (acres)[a]	CRLF Critical Habitat	Western Pond Turtle Potential Presence	Swainson's Hawk Foraging Habitat (compensation) acreage[b]	Nesting Birds[c]	Special-Status Bats	Central California Coast Steelhead	Central Valley Fall/Late Fall–Run Chinook Salmon	Sacramento Splittail	River Lamprey
Alternative B														
Indirect		1.71	1											
Direct	Yes	1.33	11	Temp: 2.20 Perm: 1.25	Temp: 36.40 Perm: 105.89	Temp: 2.94 Perm: 16.47	Yes	Perm: 447.42 (366.50)	Yes	Yes	Yes	Yes	Yes	Yes
Alternative B, Phase 1														
Indirect		0.04	0											
Direct	No	0.20	1	Temp: 1.44 Perm: 0.16	Temp: 1.52 Perm: 54.70	No	Yes	Perm: 56.51(50.86)	Yes	Yes	Yes	Yel s	Yes	Yes
Alternative C														
Indirect		1.10	1											
Direct	Yes	1.51	10	Temp: 0.36 Perm: 1.56	Temp: 30.99 Perm: 126.57	Temp: 1.51 Perm: 21.50	Yes	Perm: 230.92 (181.79)	Yes	Yes	Yes	Yes	Yes	Yes
Alternative C, Phase 1														
Indirect		0.26	0											
Direct	Yes	1.45	10	Temp: 0.17 Perm: 2.41	Temp: 6.38Per m: 144.90	Temp: 0.48 Perm: 22.54	Yes	Perm: 183.10 (145.72)	Yes	Yes	Yes	Yes	No	Yes

a Upland habitat for CRLF includes riparian woodland, live oak woodland, blue oak woodland, valley oak woodland, other woodland, upland scrub, seasonal wetland, alkali seasonal marsh, non-native annual grassland, and ruderal vegetation communities.

b See Chapter 4 and under each alternative for a description of compensation for Swainson's hawk foraging habitat based on its distance from a known nest. DFG uses a 1:1 ratio for compensation within 1 mile of a nest and a 0.75:1 ratio for compensation within 1-5 miles of a nest. Temporary losses of foraging habitat were not included in the effects chapter because the habitat will return to baseline following construction.

c Includes special-status birds such as burrowing owl and northern harrier as well as resident and migratory species.

.Two locations on Ledgewood Creek at SR 12E (Sheet 32).

- Suisun Creek (Sheet 22).
- Dan Wilson Creek (Sheet 21).
- Green Valley Creek (Sheets 17 and 18).
- American Canyon Creek (Sheet 12).
- Four locations on Jameson Canyon Creek (Sheets 3, 7, and 9).

Except for W-150 north of SR 12W, upland habitat in the study area is in heavily disturbed areas along I-80, I-680, and SR 12E. If turtles nest or overwinter in these locations, they would do so in the narrow strip of riparian habitat between the aquatic habitat and urban development, agricultural crops, and roads.

Environmental Consequences

Because suitable aquatic habitat for western pond turtles is present within the study area, pond turtles could be affected by the project alternatives. Western pond turtles are very sensitive to disturbances and quickly retreat into the water when threatened. If pond turtles are present in the creek channel or along the creek bank during the construction period, they could be injured or killed during construction.

Potential Loss or Disturbance of Western Pond Turtles Resulting from Construction

Alternative B and Alternative C include Mangels pond, W-150, and upland habitat north of SR 12W, one location on Jameson Canyon Creek, crossings in Green Valley Creek, Dan Wilson Creek, Suisun Creek, and Ledgewood Creek and one location on Jameson Canyon Creek. Alternative B, Phase 1 would include construction in the vicinity of Green Valley Creek, Dan Wilson Creek, and Ledgewood Creek, which provide potential aquatic habitat. Western pond turtles could be directly affected during construction activities in creeks and in upland habitat around ponds and adjacent to creeks.

Alternative B, Phase 1 includes construction associated with removal and replacement of the bridges over Dan Wilson Creek and Ledgewood Creek and with replacement of culverts on American Canyon Creek and Ledgewood Creek. Western pond turtles could be directly affected during construction in creeks and in upland habitat around the creeks.

Alternative C, Phase 1 includes culverts or crossings over Green Valley Creek, and four locations on Jameson Canyon Creek—at Red Top Road, upstream from Red Top Road, I-80, and upstream from I-680. Although the areal extent of effects would be less than those described for Alternatives B and C, all project effects on western pond turtle would be the same as those described for Alternative B.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on western pond turtle.

Avoidance, Minimization, and/or Mitigation Measures

See avoidance, minimization and/or mitigation measures described in Section 3.3.1.1 and 3.3.2.1, as well as the measure below.

Conduct Preconstruction Surveys for Western Pond Turtle

A qualified biologist will conduct preconstruction surveys for western pond turtle in conjunction with surveys for CRLF (see Section 3.3.5.5, "Conduct Preconstruction Surveys for California Red-Legged Frog") immediately preceding construction activities in the creeks and near ponds, and will move turtles to a safe location.

3.3.4.2 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is a fully protected species under CFGC 3511. The species has a restricted distribution in the United States, occurring only in California and western Oregon and along the Texas coast (American Ornithologists' Union 1983). The species is fairly common in California's Central Valley lowlands. White-tailed kites nest in riparian and oak woodlands and forage in nearby grasslands, pastures, agricultural fields, and wetlands. White-tailed kites use nearby treetops for perching and nesting sites. Voles and mice are common prey species.

Affected Environment

No white-tailed kite nest sites are known from the study area, but the CNDDB (2010) lists one record along Suisun Creek approximately 0.5 mile south of I-80. Riparian habitat in and adjacent to the study area provides potential nesting habitat for white-tailed kites. Kites could also nest in riparian and oak woodlands north of SR 12W. However, it is unlikely that white-tailed kites would nest in the study area because of its proximity to I-80/I-680/SR 12. Annual grasslands in the study area are located along I-80/I-680/SR 12 and within developed portions of Fairfield. These areas are not typically used by white-tailed kites for foraging. Higher quality foraging habitat (open agricultural fields) occurs in portions of the study area that would not be affected by the proposed project.

Environmental Consequences

Although there is a low likelihood that white-tailed kites would nest adjacent to I-80/I-680/SR 12, tree removal or noise associated with construction activities could result in the disturbance of nesting white-tailed kites if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

Potential Disturbance of Nesting White-Tailed Kites Resulting from Construction

Both build alternatives would result in a permanent loss and temporary disturbance of riparian woodland in the study area, which provides potential nesting habitat for white-tailed kites.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on white-tailed kites.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization and/or mitigation measures in Section 3.3.1.1 and the measure below will ensure that the proposed project will not result in an adverse effect on white-tailed kites, their eggs, or young.

Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary

To avoid and minimize effects on nesting migratory birds, one or more of the following surveys and restrictions will be implemented.

- Tree and shrub removal will occur during the nonbreeding season for most migratory birds and raptors (generally between September 1 and February 15).
- If construction activities, including tree and shrub removal, are scheduled to occur during the breeding season for migratory birds and raptors (generally between February 15 and September 1), a qualified wildlife biologist (with knowledge of the species to be surveyed) will be retained to conduct nesting migratory bird and raptor surveys before the start of construction. A set of three nesting surveys should be conducted within a 2-week period just prior to initiation of construction activities (including tree removal) between February 15 and September 1. If no active nests are detected during these surveys, tree removal can proceed.
- If surveys indicate that migratory bird or raptor nests are present in the survey area, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or until after a qualified wildlife biologist determines that the young have fledged (usually late June to mid-July). The extent of these buffers will be determined by the biologist (in coordination with the CDFG) and will depend on the level of noise or construction disturbance, the line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances. Suitable buffer distances may vary between species.

3.3.4.3 Western Burrowing Owl

Western burrowing owl (*Athene cunicularia*) is designated as a state species of special concern. Western burrowing owl is found throughout much of California in annual and perennial grassland, desert, and arid scrubland. It also can be found in vacant lots in residential areas, railroad ballast, dirt roads, and canal levees. The presence of burrows is the most critical requirement for western burrowing owl habitat; the species uses burrows excavated by ground squirrels and badgers, as well as artificial burrows, such as cement culverts, debris piles, or openings under roads. Its breeding season extends from March through August, peaking in April and May.

Affected Environment

Several (ten-plus) occurrences of burrowing owl have been reported within a ten-mile radius of the study area (California Natural Diversity Database 2010). Burrowing owls were observed near Alternative B, Alternative C, and Alternative C, Phase 1 project limits north of SR 12W, in November 2003 and March 2004 (Solano Transportation Authority 2007). Annual grassland,

edges of agricultural ditches and farm roads, and fallow fields in the project area provide suitable foraging and nesting habitat for burrowing owls. Minimal loss of foraging habitat for western burrowing owls would occur because most of the construction would occur in existing roadbeds and rights-of-way.

Environmental Consequences

If western burrowing owls are nesting in or within 250 feet of the construction right-of-way, grading and excavation activities could result in the removal of an occupied breeding or wintering burrow site and loss of adults, young, or eggs. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

Potential Disturbance of Burrowing Owls and Permanent Loss of Habitat Resulting from Construction

Both build alternatives and Alternative C, Phase 1 would result in a permanent loss and temporary disturbance of annual grassland that provides potential nesting habitat for western burrowing owl in and adjacent to the study area north of SR 12W. Both build alternatives could result in disturbances to burrowing owls that might be present in areas of annual grassland, edges of agricultural ditches and farm roads, and fallow fields in the study area.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on burrowing owls.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization and/or mitigation measures in Section 3.3.1.1 and measures listed below will ensure that there will be no adverse effects on burrowing owl burrows, eggs, or young.

Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary

CDFG (1994) recommends that preconstruction surveys be conducted in suitable habitat (except paved areas) in a project study area and in a 250-foot-wide buffer zone around the construction site to locate active burrowing owl burrows. This would apply to habitat north of SR 12W that provides the most suitable habitat for breeding burrowing owls. A qualified biologist will be retained to conduct preconstruction surveys for active burrows according to the CDFG guidelines. The surveys will include a nesting season survey and a wintering season survey (wintering season is the season immediately preceding construction).

If no burrowing owls are detected, no further mitigation is required. If active burrowing owl burrows are detected, the following measures will be implemented.

- Occupied burrows will not be disturbed during the nesting season (February 1–August 31).
- When destruction of occupied burrows is unavoidable outside the nesting season (September 1–January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new

burrows created (installing artificial burrows) at a ratio of 2:1 on protected lands approved by the CDFG. Newly created burrows will conform to guidelines established by the CDFG.

- If owls must be moved away from the project construction area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. At least one week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows.
- If avoidance is the preferred method of dealing with potential impacts, no disturbance will occur within 160 feet of occupied burrows during the nonbreeding season (September 1 to January 31) or within 250 feet during the breeding season. Avoidance also requires that at least 6.5 acres of foraging habitat (based on an approximately 300-foot foraging radius around an occupied burrow) be permanently preserved for each pair of breeding burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to the CDFG for approval.

Compensate for Loss of Burrowing Owl Nesting Habitat

If active burrowing owl burrows are found and the owls must be relocated, the loss of foraging and burrow habitat in the project construction area will be offset by acquiring and permanently protecting a minimum of 6.5 acres of foraging habitat per occupied burrow, ideally in the project construction area. The protected lands should be located adjacent to the occupied burrowing owl habitat in the project construction area or at another occupied site near the project construction area. The location of the protected lands will be determined in coordination with the CDFG. If on-site compensation is not feasible, the Department will purchase credits at an approved mitigation bank. It may be possible to compensate for burrowing owl habitat in conjunction with compensation for loss of Swainson's hawk habitat (Section 3.3.5.6).

3.3.4.4 Northern Harrier

Northern harrier (*Circus cyaneus*) is a state species of special concern. The breeding range includes most of the Central Valley, the Delta, Suisun Marsh, and portions of San Francisco Bay. Northern harriers use tall grasses and forbs in wetlands and field borders for cover (Zeiner et al. 1990). They roost on the ground in shrubby vegetation, often near a marsh edge. The species' breeding season is between April and late August, with peak activity in June and July. Northern harriers feed mainly on voles, other small mammals, birds, small reptiles, crustaceans, and insects.

Affected Environment

Northern harriers are not known to nest in the study area (California Natural Diversity Database 2010) but are known to nest in Solano County. In 2004, a northern harrier was observed foraging over grassland habitat north of SR 12W (Solano Transportation Authority 2007). The tall annual grassland north of SR 12W in the project area provides suitable foraging and nesting habitat for northern harriers (Volume 2, Figure 3.3-2a, Sheets 5 and 6).

Environmental Consequences

There is potential for northern harriers to nest in the undisturbed annual grassland habitat north of SR 12W. In addition to direct mortality during the breeding season from construction

activities, noise associated with construction activities could result in the disturbance of nesting northern harriers if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

Potential Disturbance of Nesting Northern Harriers Resulting from Construction

Under Alternative B, Alternative C, and Alternative C, Phase 1, nesting northern harriers could be disturbed during construction in annual grassland habitat north of SR 12W. There is no suitable nesting habitat for northern harrier within the project area for Alternative B, Phase 1 and therefore there would be no effects to nesting habitat under this alternative.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on northern harriers.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the avoidance, minimization, and /or mitigation measure listed below will ensure that there will be no adverse effects on northern harrier nests, eggs, or young.

Conduct Preconstruction Nesting Surveys for Northern Harrier in the Annual Grassland Habitat North of SR 12W

To avoid and minimize impacts on nesting northern harriers, one or more of the following surveys and restrictions will be implemented.

- Ground disturbance for all construction activities will occur during the non-breeding season for northern harriers (generally between August 16 and March 15).

  Or:

  If construction activities, including grubbing and excavation, are scheduled to occur during the breeding season for northern harriers (generally between March 16 and August 15), a qualified wildlife biologist (with knowledge of the species to be surveyed) will be retained to conduct nesting surveys before the start of construction. The nesting surveys should be conducted within one week before initiation of construction activities (including grubbing) between March 16 and August 15.

  If no active nests are detected during these surveys, no additional mitigation is required.

- If surveys indicate that northern harrier nests are present in the survey area, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or until after a qualified wildlife biologist determines that the young have fledged (usually late June to mid-July). The extent of these buffers will be determined by the biologist (in coordination with the CDFG) and will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances.

3.3.4.5 Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is a state species of special concern. It is a common year-round resident throughout the lowlands and foothills of California. Loggerhead shrikes prefer open habitats with shrubs, fences, utility line poles, or other perches. They tend to avoid urbanized areas but frequent open croplands. Nests are usually hidden in densely foliaged shrubs or trees. The breeding season is March through August.

Affected Environment

No loggerhead shrikes were observed in the study area during the field surveys; however, loggerhead shrikes are known to nest in Solano County, and trees and shrubs in the study area provide suitable nesting habitat for the species.

Environmental Consequences

If loggerhead shrikes are nesting in or adjacent to the construction right-of-way, grading and excavation activities could result in the removal of an occupied breeding site and loss of adults, young, or eggs. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests in or near the study area. Such disturbance would violate CFGC Sections 3503.5 and 3511 and the MBTA.

Potential Disturbance of Nesting Loggerhead Shrikes Resulting from Construction

Under both build alternatives, nesting loggerhead shrikes could be disturbed during construction throughout the study area.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on loggerhead shrikes.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will ensure that there will be no adverse effects on loggerhead shrike nests, eggs, or young.

3.3.4.6 Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is a state species of special concern. It is a resident in the Central Valley from Butte County south to Kern County. Nests are usually in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields. Habitat must be large enough to support 50 pairs.

Affected Environment

No tricolored blackbirds were observed in the study area during the field surveys; however, tricolored blackbirds are known to nest in Solano County, and marshes and shrubs in the study area provide suitable nesting habitat for the species.

Environmental Consequences

Implementation of either build alternative could affect nesting tricolored blackbirds if construction activities remove or otherwise disturb occupied nests during the breeding season. Construction activities during the breeding season that result in death of young or loss of reproductive potential would violate CFGC Sections 3503 and 3503.5 and the MBTA.

Potential Disturbance of Nesting Tricolored Blackbirds Resulting from Construction

Implementation of either build alternative could affect nesting tricolored blackbirds, if construction activities remove or otherwise disturb occupied nests during the breeding season. Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on tricolored blackbirds.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will ensure that project construction will not result in adverse effects on tricolored blackbird nests, eggs, or young.

3.3.4.7 Migratory Birds and Raptors

Several migratory birds and raptors could nest in and adjacent to the study area. The breeding season for most birds is generally February 15 through August 31. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and CFGC Sections 3503 and 3503.5.

Affected Environment

A number of nesting birds have been observed in the study area during preconstruction surveys for the I-80 HOV construction project. In 2008 and 2009, biological monitors observed a nesting mockingbird, Anna's hummingbird, cliff swallow, northern rough-winged swallow, wrentit, bushtit, California spotted towhee, white-throated swifts, and black phoebes. Potential nesting habitat for other migratory birds and raptors occurs in riparian habitat, trees, oak woodlands, and shrubs in the Alternative B study area.

Environmental Consequences

Implementation of both of the build alternatives could affect nesting birds, including raptors, if construction activities remove or otherwise disturb occupied nests during the breeding season. Construction activities during the breeding season that result in death of young or loss of reproductive potential would violate CFGC Sections 3503 and 3503.5 and the MBTA.

Potential Disturbance of Nesting Migratory Birds and Raptors Resulting from Construction

Implementation of the build alternatives could affect nesting migratory birds and raptors if construction activities remove or otherwise disturb occupied nests during the breeding season. Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on migratory birds or raptors.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization, and/or mitigation measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for nesting birds and raptors in Section 3.3.4.2 will avoid adverse effects on nesting migratory birds and raptors.

3.3.4.8 Swallows

Swallows are not considered sensitive wildlife species. However, their occupied nests and eggs are protected by both federal and state laws, including the MBTA. Cliff and barn swallows are two swallow species that frequently build mud nests on the undersides of artificial structures, such as bridges. The two species winter in South America and arrive back in California to breed in February. Nesting generally occurs from March to August, and migration south occurs in September and October (Zeiner et al. 1990).

Affected Environment

Empty and remnant swallow nests were observed on the undersides of the bridge decks and ledges within the study area. At Green Valley and Suisun Creeks, no nests or nest remnants were observed in 2008 or 2009 during monitoring surveys for the I-80 HOV project, but approximately three cliff swallow nests were removed from the eastbound lanes on Green Valley Creek in 2007. During the 2008 monitoring surveys, the on-ramp from I-680 to EB I-80 (just south of the EB I-80 lanes) that spans Green Valley Creek had approximately 30 remnant cliff swallow nests, and the Central Way bridge (the southernmost of the four bridges) had an active cliff swallow colony of approximately 50 nests.

Environmental Consequences

Construction activities associated with bridge construction for both build alternatives could result in the direct loss of active swallow nests. Loss of a nest could in turn result in the death of adults, young, or eggs. This would violate CFGC Section 3503 and the MBTA.

Potential Disturbance to Nesting Swallows Resulting from Construction

Construction activities associated with bridge construction under both build alternatives could result in the direct loss of active swallow nests.

Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on nesting swallows.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the measure below to prevent swallows from nesting adjacent to new bridge construction will ensure that this alternative will not result in an adverse effect on swallow nests, eggs, or young.

Prevent Swallows from Nesting Adjacent to New Bridge Construction

To avoid adverse effects on nesting swallows and other bridge-nesting migratory birds that are protected under the MBTA and CFGC, the following measures will be implemented.

- If bridge construction will take place during the breeding season (generally between February 15 and August 31), a qualified wildlife biologist will be retained to inspect all bridges during the swallows' non-breeding season (August 16 through February 14). If nests are found and are abandoned, they may be removed. To avoid damaging active nests adjacent to new bridge construction, nests must be removed before the breeding season begins (February 15).
- After nests are removed, the undersides of the bridges will be covered with 0.5- to 0.75-inch mesh net or poultry wire. All net installation will occur before February 15. The netting will be anchored so that swallows cannot attach their nests to the bridge through gaps in the net.
- An option to netting is to daily remove any newly constructed nests until the start of construction.
- If netting of the bridges does not occur by February 15 and swallows colonize the bridge, modifications to this structure should not begin before August 31 of that year or until a qualified biologist has determined that the young have fledged and all nest use has been completed.

If appropriate steps are taken to prevent swallows from constructing new nests, work can proceed at any time of the year.

3.3.4.9 Roosting Bats

Two species of special concern and three Working Bat Group priority bat species have potential to occur in the study area: pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), and Yuma myotis (*Myotis yumanensis*). Both pallid bats and Yuma myotis use bridges over perennial waterways or in or near open agricultural or grassland areas. Western red bats could occur in riparian woodland and orchards. All five bat species use trees for roosting. These areas provide abundant roosts as well as a source of insects, the primary food source for bats.

Affected Environment

At the time of the 2007, 2008, and 2009 field surveys, no evidence of bat presence (guano, urine staining, odor, or vocalizations) was observed on portions of the undersides of the existing bridges over creeks in the study area. However, the undersides of the bridge decks contained expansion joints that could provide roosting sites for bats. This habitat would not support a maternal roost but could support a small number of day- or night-roosting bats. In addition to bridges, trees throughout the study area provide suitable roost sites.

Environmental Consequences

Potential bat roosting areas occur in portions of the existing bridges and more mature trees in riparian woodland on Dan Wilson, American Canyon, Jameson Canyon, Green Valley, Suisun, and Ledgewood Creeks that could be directly disturbed during new bridge construction. No bridge roosting habitat would be permanently removed. Noise disturbances associated with new bridge construction and pile driving could disturb day-roosting bats if they are present in the bridge during construction. However, these disturbances would be temporary and would not result in the death of a large number of bats. Both build alternatives could remove bat roosting habitat in trees, with the potential to adversely affect roosting bats.

Potential Disturbance to Roosting Bats Resulting from Construction

Both build alternatives have the potential to disturb roosting bats. Noise disturbances during bridge construction would be temporary, and no avoidance, minimization, or mitigation measures are recommended. Tree-roosting bats could be adversely affected under all build alternatives by the removal of mature trees in the construction area. Under the No-Build Alternative, no construction activities would occur and there would be no adverse effects on roosting bats.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the measure below to conduct preconstruction surveys for bats will ensure that there are no adverse effects on roosting bats.

Conduct Preconstruction Surveys for Roosting Bats in Mature Trees

The following measure will be incorporated in the project construction conditions to minimize direct impacts on roosting bats.

- Avoid disturbances to mature oak and cottonwood species. These tree species have the highest potential for bat roosts. If tree removal is unavoidable, these trees should be surveyed with a bat detector to determine bat occupancy. If roosting bats are present, consultation with the CDFG is necessary to assess options for avoiding impacts on the bats. Avoidance could include determining a no-disturbance buffer around trees with maternal bat roosts, the appropriate timing of removal of roost trees, the feasibility of installing exclusion devices at roosts, and providing alternative roost sites (i.e., bat houses).

3.3.4.10 River Lamprey

Affected Environment

River lamprey (*Lampetra ayresi*), a state species of special concern, could occur in the study area in any of the drainages, although the occurrence of river lamprey has not been explicitly documented. The study area falls within the species' distribution and environmental conditions generally support their habitat requirements. While it appears that the creeks in the study area do not support spawning or rearing habitat for river lamprey, these creek segments at a minimum support migration habitat for both adult and juvenile river lamprey. Juvenile lampreys (ammocoetes) rear in the silt and sand of backwater areas. None of the creeks in the study area have backwater habitat in the immediate vicinity of the impact areas: Green Valley and Ledgewood Creeks have concrete-lined channels and Suisun Creek has high-velocity water and gravel in the construction area. This is unsuitable rearing habitat for ammocoetes.

Environmental Consequences

Potential Effects on River Lamprey Resulting from Construction

Construction of either build alternative could affect water quality, substrate conditions, channel morphology, water temperature, and river lamprey movement in streams that provide habitat for river lamprey. In addition, all build alternatives could result in disturbance and direct injury to

river lamprey. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek, and would have potential impacts only on Green Valley and Ledgewood Creeks. Under the No-Build Alternative, no construction activities would occur, and no impacts on river lamprey or its habitat would occur.

Water Quality

The assessment of water quality addresses the effects of both sediment and contaminants on river lamprey and their habitat. Activities associated with bridge removal and reconstruction, highway improvements, and revegetation could increase erosional processes, thereby increasing sedimentation and turbidity in downstream waterways. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Increased turbidity can increase fish mortality; reduce feeding opportunities for fish, including rearing lamprey; and cause fish to avoid important habitat. Contaminants include toxic substances such as metals, petroleum products, pesticides, fertilizers, sewage, and uncharacteristically high sediment loading. Construction materials such as concrete, sealants, oil, and paint could adversely affect water quality if accidental spills occurred during project construction. Increased pollutant concentrations could limit fish production, abundance, and distribution by direct mortality of fish or their prey.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and avoidance, minimization, and/or mitigation measures listed below that would prevent contaminants from entering streams and restrict the construction time frame for in-water work would address this impact.

Habitat and Channel Morphology

Construction activities associated with the project alternatives that would affect fish habitat include stream dewatering, removal of existing bridge structures, placement of new bridge abutments, and activities related to revegetation. Bridge replacement and bank stabilization activities would require removal of vegetation, resulting in temporary loss of vegetative cover and reducing fish habitat complexity. Construction activities, such as heavy equipment use, could also change the channel morphology by damaging or compacting the streambed substrate.

Riparian vegetation, including shaded riverine aquatic (SRA) cover, is an essential component of fish habitat. Undercut banks and overhead SRA cover, such as canopy cover and overhanging vegetation, provide fish with protection from predators, maintain shade necessary to reduce thermal input, and provide nutrients to the stream in the form of fallen leaves and insects. Riparian vegetation is also important in maintaining undercut banks and controlling streambank erosion, thereby contributing to instream structural diversity. Bridge construction would remove vegetation and SRA cover. However, the amount of vegetation removal is relatively minor, and revegetation would mitigate any long-term adverse effects related to its removal.

Construction activities in the streambeds could also change channel morphology and cause migration habitat to be degraded. However, the channels would be restored to preproject conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks , and no permanent changes to channel morphology are expected.

Implementation of measures listed below to minimize impacts on creek channels would avoid or minimize the potential for adverse effects.

Water Temperature

As a result of the lack of specific information regarding the habitat requirements of river lamprey, especially the ammocoete (juvenile lamprey) rearing stage, it is unknown whether existing water temperatures in the study area are suitable for ammocoete rearing. Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction, survival, and migration.

Water temperature is controlled primarily by flow, weather, stream width, stream depth, and shading of the stream surface. The proposed project would affect shade provided by riparian vegetation, however the amount of shade that would be affected by vegetation removal is relatively minor. Revegetation that is proposed in disturbed areas, combined with the shading provided by the bridge extension, is expected to maintain existing shade conditions in the study area.

Based on an evaluation conducted during the field visit, the proposed project would affect a relatively minimal amount of SRA cover and would not affect the low-flow channel geometry that could affect residence time, depth, or area of water exposed to solar radiation. From the perspective of water temperature, the temporary reduction in stream shading from removal of SRA cover vegetation would not result in any measurable increase in water temperature. Furthermore, the loss of shade would be offset over time by the increased shading provided by the new bridges at Suisun and Ledgewood Creeks and the replacement and reestablishment of riparian vegetation in the affected areas. Implementation of the proposed project is not expected to affect creek shading and water temperature, therefore the project would not adversely affect river lamprey or its habitat.

Implementation of measures listed below to minimize impacts on creek channels would further ensure that river lamprey or river lamprey habitat is not adversely affected as a result of construction.

Interference with Movement

Construction activities associated with the project alternatives would require temporary redirection of the flow of water through the use of cofferdams and pipelines. These devices could block the migration of adult and juvenile river lamprey. However, construction activities would be avoided during the primary migration time of river lamprey (i.e., fall, winter, and spring). Furthermore, maintenance of fish passage conditions through the construction site during stream dewatering activities would further reduce the potential for impacts on fish movement. The pipeline would be checked every few hours (or more often, if necessary) to clear debris buildup that may occur during construction. Therefore, temporary stream diversions associated with construction are not likely to adversely affect migrating river lamprey.

Implementation of measures listed below to restrict the timing of in-water work and to maintain a migration corridor in the study area creek channels would minimize or avoid any adverse effects on fish movement.

Disturbance and Direct Injury

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating in or adjacent to the water body. However, survival may be altered if disturbance causes fish to leave protective habitat (increasing exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. Injury and mortality may result from direct and indirect contact with humans and machinery, sound pressure, and physiological stress.

Physical disturbance and injury are most likely to occur during in-water work. Project actions that involve in-water work include removing and disturbing aquatic vegetation, removing sediment and debris from the stream channel, and removing the current bridge structures. Project actions that cause no direct harm but may temporarily disturb fish include movement of construction equipment and personnel, lighting, removal and disturbance of riparian vegetation, and grading and construction of access roads and staging areas adjacent to the stream.

Short-term noise disturbance caused by pile driving would occur during construction. Pile driving and blasting can generate intense sound pressure that can injure or kill fish. The effects on fish can range from avoidance to direct mortality, depending on the species, life stage, and intensity of the pressure waves. Factors that influence the intensity of pressure waves include the proximity to the source, the maximum force generated, the rate at which the maximum force is generated, and characteristics of the medium (i.e., water and substrate) through which the waves travel. It is unknown how lamprey react to pile driving, but it is expected ammocoetes would move out of the disturbed area.

During in-channel construction activities, some harassment or delay of migrating adults or juveniles may occur because of noise, artificial light, and other disturbances. However, these disturbances are not expected to be of sufficient extent, duration, or intensity to affect survival, growth, or spawning success.

Implementation of the measures listed below to restrict the timing of in-water work, to provide alternate migration corridors through creek channels, and to minimize noise impacts would ensure that this is not an adverse effect.

Potential Effects on River Lamprey Associated with Operations

Water Quality

Both build alternatives will result in increased impervious surfaces. The fundable first phases of the alternatives have smaller footprints than the full build alternatives and, therefore, would result in lesser impacts. The Green Valley Creek crossing under Alternative C is slightly smaller than that of Alternative B and, therefore, Alternative C would result in a lesser effect. Under the No-Build Alternative, no additional impervious surfaces would be constructed and therefore there would be no potential effect on water quality from operations.

The increase in new impervious surfaces combined with runoff from petroleum products and other contaminants from automobiles potentially would result in an increase of contaminated runoff. The potential for impacts would likely be greatest during the initial winter storm event, or "first flush," when pollutant constituents would be concentrated.

Although the creeks in the study area are believed to have no spawning or rearing habitat for river lamprey, pollutants entering the creeks could adversely affect migration of river lamprey.

Most of the discharges from the proposed project would occur in winter and spring, when dilution would greatly limit the amount of nutrient and pollutant constituent loading in the creeks. However, this effect on river lamprey is considered potentially adverse because of the potential for direct effects associated with the "first flush."

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed below to prevent contaminants from entering the stream channel would minimize this effect.

Avoidance, Minimization, and/or Mitigation Measures

Prevent Contaminants and Hazardous Materials from Entering the Stream Channel

A SWPPP will be implemented as part of the NPDES Construction General Permit and General Construction Activity Storm Water Permit to minimize the potential for sediment input to the aquatic system. A toxic materials control and spill response plan will be developed and implemented to regulate the use of hazardous materials, such as the petroleum-based products used as fuel and lubricants for equipment and other potentially toxic materials associated with project construction. In addition, the following measures will be implemented.

- Falsework will be installed to keep bridge debris and construction and maintenance materials from falling into streams during demolition, construction, and substantial maintenance activities.
- When concrete is poured to construct bridge footings or other infrastructure in areas of flowing water, work must be conducted to prevent contact of wet concrete with water (e.g., within a cofferdam).

Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons

In-channel construction, including riverbank and channel-bed construction below the OHWM, will be limited to the summer low-precipitation period (June 1–October 15) to reduce the likelihood of adverse effects on rearing juvenile salmonids and on adult fish spawning and migration, unless otherwise approved by appropriate resource agencies.

Minimize Impacts on Creek Channels

The following measures will be implemented to decrease impacts on the creek channel and habitat. Please also see the avoidance and minimization efforts in Section 3.3.2.1 "Perennial Drainage."

- The duration and extent of in-water activities will be limited to the maximum extent practicable.
- The minimum amount of wood, sediment, gravel, and other natural debris will be removed to maintain and protect bridge function, ensure suitable fish passage conditions, and minimize disturbance of the streambed.
- Immediately upon completion of in-channel work, temporary fills (as needed), cofferdams, and other in-channel structures will be removed in a manner that minimizes disturbance to downstream flows and water quality.
- Streamflow through the widened portion of the bridges must meet the velocity, depth, and other passage criteria for salmonids as described by NOAA's NMFS and the CDFG—or as developed in cooperation with NOAA's NMFS and the CDFG—to accommodate site-specific conditions.
- All creek channels will be returned to pre-project conditions.

Provide Alternate Migration Corridor through Creek Channels

In-water construction activities will provide a migratory route through the creek channel by installing cofferdams in all creeks around the new footing excavations. Pipelines may be installed at Green Valley and Suisun Creeks to ensure fish passage through the project areas.

The pipeline in Green Valley and Suisun Creeks will be a corrugated steel pipe, approximately 24 to 36 inches in diameter, allowing passage of various sizes of fish. The pipe will span the width of the bridge plus ten feet on either side. It will be laid down in the channel so that all water passes through the pipeline, and it will be removed as soon as possible after construction. If flows exceed the capacity of the steel pipe, an additional or larger-diameter pipe will be installed to convey the increased flow. Subject to the sufficiency of ambient conditions in upstream and downstream stream reaches unaffected by project construction, adequate fish passage conditions will be sustained by maintaining contiguous flows, avoiding the creation of vertical drops in excess of six inches, and maintaining suitable water velocities (i.e., eight feet per second or less) and water depths (minimum of one foot).

Cofferdams will affect no more of the stream channel than is necessary to support completion of the construction activity. Flow will be diverted the minimum distance necessary to isolate the construction area. Water will be released downstream at an appropriate rate to maintain downstream flows at all times.

Retain a Fish Biologist During Instream Construction

Because special-status fish might be present and subject to potential injury or mortality from construction activities, a qualified biologist will conduct preconstruction surveys of the project area to determine whether such species are present or likely to be present near the project site. When special-status fish are present and could be affected by construction activities, the project biologist will identify appropriate methods to capture, handle, exclude, and relocate those individuals. All fish exclusion and salvage activities will adhere to accepted NMFS and CDFG protocols.

Minimize Noise Impacts on Special-Status Fish Species

Potential injury and mortality associated with pile driving will be avoided or minimized by implementing the following measures.

- Vibratory hammers will be used whenever feasible.
- The smallest pile driver and minimum force necessary will be used to complete the work.

3.3.4.11 Fall- /Late Fall–Run Chinook Salmon

Affected Environment

The Central Valley fall- /late fall–run evolutionarily significant unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) is a federal species of special concern and a commercial species. Only fall-run Chinook salmon are likely to occur in the study area streams (late fall–run Chinook salmon spawn and rear primarily in the Sacramento River drainage). Fall-run Chinook salmon have been documented as occurring upstream of the study area (National Marine Fisheries Service 2006). For example, redds (nests) have been observed upstream of I-80 near Mangels Boulevard in Green Valley Creek; in Suisun Creek the upper limit of the Chinook salmon run extends to the Napa/Sonoma County line, more than six miles upstream of I-80. Chinook salmon have also been observed in Ledgewood Creek upstream of I-80. There is a potential spawning gravel patch in Suisun Creek about 20 feet downstream of the existing bridge. Spawning habitat is not supported in Green Valley and Ledgewood Creeks in the study area; however, both creeks support migration habitat for fall-run Chinook salmon. It is unlikely that Chinook salmon occur in Dan Wilson, American Canyon, or Jameson Canyon Creeks because these drainages are relatively small and dry and do not appear to support habitat conditions necessary for migration and spawning of fall-run Chinook salmon.

Fall-run Chinook salmon, a commercially valuable species, is managed under the Magnuson-Stevens Fishery Conservation and Management Act. This act requires that all federal agencies consult with NOAA's NMFS on all proposed projects that may adversely affect Essential Fish Habitat (EFH). EFH is the aquatic habitat (water and substrate) necessary for fish to spawn, breed, feed, or grow to maturity (National Marine Fisheries Service 1998) that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. Because Chinook salmon is managed by NMFS and the species occurs in the study area streams, these streams are considered EFH for Chinook salmon.

Environmental Consequences

Potential Effects on Chinook Salmon Resulting from Construction

Construction of either build alternative could affect water quality, channel morphology, water temperature, and Chinook salmon movement in streams that provide habitat for Chinook salmon. In addition, both build alternatives could result in disturbance and direct injury to Chinook salmon. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek, and would have potential impacts only on Green

Valley and Ledgewood Creeks. Under the No-Build Alternative, no construction activities would occur, and no impacts on Chinook salmon or its habitat would occur.

Water Quality

As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Green Valley, Suisun, and Ledgewood Creeks from construction activities and equipment. These water quality effects could increase Chinook salmon mortality; reduce feeding opportunities, including for rearing juveniles; and cause Chinook salmon to avoid important habitat. Increased pollutant concentrations could limit Chinook salmon production, abundance, and distribution by direct mortality of eggs, fry, and juveniles or by reducing availability of prey for juvenile Chinook salmon.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed in Section 3.3.4.10 to prevent contaminants from entering streams and to restrict in-water work to avoid spawning seasons would address this effect.

Habitat and Channel Morphology

As described above in Section 3.3.4.10, project construction activities would affect fish habitat (e.g., through vegetation removal) and could also change channel morphology by disturbing the streambed substrate. However, revegetation would mitigate the minor loss of vegetation and SRA cover, and the channels would be restored to pre-project conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks. No permanent changes to channel morphology are expected.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would address this impact.

Water Temperature

Under existing conditions, habitat for juvenile Chinook salmon rearing in the study area is marginal to unsuitable. Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction, survival, and migration. This is especially true for Chinook salmon, which have relatively narrow temperature requirements for carrying out their life history. Any increase in water temperatures could further reduce the suitability of habitat in the study area for Chinook salmon.

As described above in Section 3.3.4.10, the project alternatives would have a minor effect on SRA cover. Revegetation proposed in disturbed areas, combined with the shading provided by the bridge extension, would be expected to offset shade loss and result in maintaining existing water temperatures in the study area. Therefore, the project alternatives would not adversely affect growth, reproduction, survival, or migration of Chinook salmon with respect to water temperature.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would ensure that there would be no adverse water temperature effects.

Interference with Movement

As described above in Section 3.3.4.10, construction activities associated with the project alternatives would require the use of cofferdams and pipelines, which could interfere with the migration of adult and juvenile Chinook salmon. However, the timing of construction activities and maintenance of fish passage through the construction site during stream dewatering activities would reduce the potential for impacts on fish movement. Therefore, temporary stream diversions associated with construction are not likely to adversely affect juvenile Chinook salmon.

Implementation of the measures listed in Section 3.3.4.10 to restrict the timing of in-water work and to maintain a migration corridor in the study area creek channels would minimize or avoid any adverse effects on fish movement.

Disturbance to Potential Spawning Habitat

A potential spawning gravel bed was observed in Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction. It is anticipated that the gravel bed would not be disturbed by the project alternatives. All construction equipment would access the construction site from the existing bridge and road. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions using, to the extent practicable, gravel removed from the site. No spawning habitat was observed on Ledgewood Creek or Green Valley Creek in the project area (the channel bottom at these two locations is concrete lined).

Alternatives B and C both include construction on Suisun Creek and therefore could disturb potential spawning habitat for Chinook salmon. Because no construction is proposed on Suisun Creek under the fundable first phase of either alternative or under the No-Build Alternative, there would be no effect on spawning habitat under these alternatives.

Implementation of measures listed below to avoid potential spawning habitat and measures in 3.3.4.10 to minimize impacts on creek channels would address this impact.

Disturbance and Direct Injury

As described above in Section 3.3.4.10, noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. Under Alternative B, short-term noise disturbance caused by pile driving would occur within Ledgewood Creek.

Potential direct effects of pile-driving activities include increased noise and turbidity. Researchers have suggested that salmonids can hear pile-driving noise approximately 2,000 feet from the source (Feist et al. 1992). Feist et al. (1992) observed that pile driving altered the distribution and behavior of juvenile pink and chum salmon. The potential impact on salmonids from pile-driving activities depends on the distance separating the noise-generating activity from fish and the duration of these activities. Evidence suggests that, although pile-driving noise may affect the distribution and behavior of juvenile pink and chum salmon, no significant changes occurred in their overall abundance (Feist et al. 1992).

Implementation of measures in Section 3.3.4.10 to restrict in-water work to avoid spawning seasons and to minimize noise impacts on fish would address this impact.

Potential Water Quality Effects on Chinook Salmon Associated with Operations

Water Quality

As described above in Section 3.3.4.10, both build alternatives except the No-Build Alternative would result in increased impervious surfaces and potential for contaminated runoff. The potential increase in contaminated runoff entering the creeks could adversely affect Chinook salmon that use the creeks for migration, spawning, and rearing. Pollutants could also cause mortality to, and reduced growth of, the egg, larval, and juvenile life stages of Chinook salmon.

Implementation of the measure in Section 3.2.3 to prepare and implement a SWPPP and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would address this impact.

Potential Interference with Movement

Current conditions in Ledgewood Creek under SR 12E are such that fish movement could be impeded by low water levels. Shallow water in the existing notched box culvert may create unfavorable passage conditions for adults. Results from modeling conducted for the fish passage assessment indicate that the proposed extension of the culvert under SR 12E would exacerbate existing shallow water conditions during the migration season and would worsen fish passage conditions relative to current conditions. Bridge widening would occur under both build alternatives. Implementation of measures discussed below to address shallow water depths by improving the channel downstream of the culvert would improve postproject fish passage conditions at Ledgewood Creek.

Under the No-Build Alternative, no construction would take place and the current conditions would remain. The impediment to fish movement would remain and no measures to improve conditions would be implemented.

Avoidance, Minimization, and/or Mitigation Measures

Avoid Potential Fish Spawning Habitat

In-water construction activities will avoid disturbance of the spawning gravel bed immediately downstream of the existing bridge on Suisun Creek. If the gravel cannot be avoided, the gravel will be removed temporarily and replaced to preconstruction conditions, using—to the extent practicable—gravel removed from the site. If imported gravel is used, only washed river rock ranging in size from 0.25- to 4.0-inches will be used (i.e., angular rock or unwashed gravel will not be used).

Implement Culvert Retrofit at the SR 12E Crossing on Ledgewood Creek

Because the proposed culvert design would maintain the existing culvert dimensions (width and slope) and exacerbate existing shallow water depths at low flows, it is recommended that the culvert invert be modified to concentrate low flows to increase water depths when flows are low

(i.e., less than 20 cfs). Several potential alternatives to address anticipated shallow water depths are described below.

- **Low-Flow Walls.** Low-flow walls running parallel to the long axis of the culvert and straddling the low-point of the culvert mid-line could be installed to help confine the width of low flows and increase water depths. The walls could be configured at the inlet such that it directs and concentrates low flows to the mid-line of the culvert between the walls and be constructed of concrete, steel, or untreated wood (e.g., redwood). Steel and untreated wood would need to be anchored using recessed bolts glued (epoxy) into holes drilled into the culvert bottom. It should be noted that wood and steel are subject to decomposition over time, and therefore, would potentially require greater maintenance than concrete. The height of the walls and the distance separating the left and right walls would be determined based on hydraulic analyses to achieve minimum water depths of one foot. It is further recommended that once the dimensions of the low-flow walls are determined, a hydraulic analysis be performed to confirm that the low-flow walls do not compromise the culvert's ability to safely pass flows with a 1% exceedance.
- **Offset (Washington) Baffles.** As an alternative to or in conjunction with low-flow walls, offset (Washington) baffles can be utilized to further increase minimum water depths while providing resting habitat for migrating fish. As described above for low-flow walls, offset baffles could be constructed out of concrete, steel, or untreated wood with steel and untreated wood being subject to decomposition and therefore greater maintenance than concrete. Several different offset baffle configurations used in combination with or without low-flow walls are possible; the precise configuration would be determined based on hydraulic analyses and subject to evaluations to determine effects on safely passing flows with a 1% exceedance. While offset baffles have the added benefit of creating resting habitat for fish (especially during higher flows), they also have greater potential to trap debris which can render them impassable in extreme circumstances.

3.3.4.12 Sacramento Splittail

Affected Environment

Sacramento splittail (*Pogonichthys macrolepidotus*), a state species of special concern, is present in Suisun Marsh and its associated sloughs, including Peytonia Slough (Schroeter et al. 2006). Due to the connection of Ledgewood Creek with Peytonia Slough downstream of the project area, water quality impacts could affect Sacramento splittail occurring in Peytonia Slough.

Environmental Consequences

Potential Water Quality Effects on Sacramento Splittail Resulting from Construction

Both build alternatives have the potential to affect water quality in Ledgewood Creek. Alternative B could have a greater effect than the other alternatives because it includes construction of a second, new bridge to the south. Under Alternative C and the fundable first phase of both alternatives, only the existing culvert would be widened. Under the No-Build Alternative, no construction activities would occur, and no impacts on Sacramento splittail or its habitat would occur.

As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Ledgewood Creek from construction equipment. These water quality effects could increase Sacramento splittail mortality; reduce feeding opportunities, including those for rearing splittail; and cause splittail to avoid important habitat. Increased pollutant concentrations could limit Sacramento splittail reproduction, abundance, and distribution by direct mortality of splittail or their prey.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and avoidance, minimization, and/or mitigation measures in Section 3.3.4.10 to prevent contaminants from entering streams would address this impact.

Potential Water Quality Effects on Sacramento Splittail Associated with Operations

As described above in Section 3.3.4.10, water quality effects could result from construction of new bridges and increased impervious surfaces at Ledgewood Creek. Pollutants entering Ledgewood Creek and carried downstream could cause mortality to and reduced growth of the egg, larval, and juvenile life stages of Sacramento splittail. As mentioned above, implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would minimize this effect.

Avoidance, Minimization, and/or Mitigation Measures

See the measure to prepare and implement a SWPPP in Section 3.2.3 and measures to prevent contaminants from entering streams in avoidance, minimization, and/or mitigation measures in Section 3.3.4.10.

3.3.5 Threatened and Endangered Species

This section addresses species listed or eligible for listing as threatened or endangered. Tables 3.3.3-1 and 3.3.4-1 list the threatened and endangered plant and animal species, respectively, with potential to occur in the study area. The USFWS list of federally listed species for the study area is provided in Appendix F.

Based on early coordination with USFWS it was determined that there is potential for a “may affect” determination for the following federally listed species:

- Contra Costa goldfields (*Lasthenia conjugens*),
- Callippe silverspot butterfly (*Speyeria callippe callippe*),
- Vernal pool fairy shrimp (*Branchinecta lynchi*),
- Vernal pool tadpole shrimp (*Lepidurus packardi*),
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*),
- California red-legged frog (*Rana aurora draytonii*), and

- Central California coast steelhead (*Oncorhynchus mykiss*).

Caltrans has made a "no effect" determination for the remaining 27 federally species listed below based on the absence of suitable habitat or because the project is outside of the species range.

- Conservancy fairy shrimp (*Branchineta conservatio*)
- Delta green ground beetle (*Elaphrus viridis*)
- Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*)
- California freshwater shrimp (*Syncaris pacifca*)
- Green sturgeon (*Acipenser medirostris*)
- Tidewater goby (*Eucyclogobius newberyi*)
- Delta smelt (*Hypomesus transpacificus*)
- Coho salmon (*Oncorhynchus kisutch*)
- Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*)
- California tiger salamander (*Ambystoma californiense*)
- Alameda whipsnake (Masticophis lateralis euryxanthus)
- Giant garter snake (*Thamnophis gigas*)
- Western snowy plover (*Charadrius alexanderinus nivosus*)
- California brown pelican (*Pelecanus occidentalis californicus*)
- California clapper rail (*Rallus longirostris obsoletus*)
- California least tern (*Sternula antillarum browni*)
- Northern spotted owl (*Strix occidentalis caurina*)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*)
- Baker's stickyseed (*Blennosperma bakeri*)
- Tiburon paintbrush (*Castilleja affinis ssp. neglecta*)
- Suisun thistle (*Cirsium hydrophilum var. hydrophilum*)
- Soft bird's-beak (*Cordylanthus mollis ssp. mollis*)
- Colusa grass (*Neostapfia colusana*)
- Antioch Dunes evening –primrose (*Oenothera deltoides* ssp. *howellii*)
- San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)
- Keck's checker-mallow (*Sidalcea keckii*)
- Solano grass (*Tuctoria mucronata*)

One state listed species known to occur in the study area, the Swainson's hawk (*Buteo Swainsoni*), is also included in this section. However, the proposed project would not result in take of a state-listed species including Swainson's hawk or California tiger salamander. We confirmed with Melissa Escaron, Staff Environmental Scientist with CDFG that the recently state listed California tiger salamander was not in the action area (Escaron pers. comm.). Therefore, no California Endangered Species Act (CESA) coordination is required.

One additional species with the potential to occur within the study area, salt-marsh harvest mouse (*Reithrodontomys raviventris*), was determined to be not present within the study area. Dr. Phil Leitner conducted a habitat assessment for salt-marsh harvest mouse (federally listed as endangered and a fully protected species) on August 31, 2007. The primary survey area was south of SR 12E between Ledgewood Creek and Suisun City. To assess the condition of adjoining habitat, he also inspected the area north of SR 12E that is within the project footprint, and areas to the south as far as Cordelia Road. Dr. Leitner concluded, in a letter sent to Stephanie Myers of ICF Jones & Stokes on September 2, 2007, that there is no suitable salt-marsh harvest mouse habitat within the project footprint. The area did support this species more than 20 years ago, but land use changes appear to have significantly reduced and degraded the pickleweed habitat. The small patches of pickleweed that remain do not have the structure and density required by salt-marsh harvest mouse.

Impacts on habitat for each sensitive wildlife species and fish are tabulated for each project alternative in Table 3.3.4-2.

During preparation of this document, ICF coordinated with the following federal and state agencies.

March 20, 2008: Ms. Myers contacted USFWS biologist Peter Johnsen to initiate coordination concerning the potential for effects on federally listed species in the project vicinity. Mr. Johnsen requested a project description and stated that he would be our contact for Section 7 coordination and consultation. Ms. Myers emailed him a copy of the project description on March 25, 2008.

November 19, 2009: Ms. Webber, Ms. Myers, and Ms. Ashkar from ICF met with Caltrans biologist, Mr. Hashemi and USFWS biologist John Cleckler to review the interchange project, discuss our approach to analysis for the BA, and discuss listed species issues including but not limited to CRLF, its critical habitat, and callippe silverspot butterfly.

March 26, 2010. ICF obtained a species list from the USFWS website of all federally proposed and listed endangered and threatened species and critical habitat that could occur in the vicinity of the proposed project (Appendix F).

June 28, 2010. Meeting between Caltrans, STA, ICF and FWS to discuss BA species effects and conservation measures.

November 2009 through July 30, 2010: Numerous email exchanges between ICF, Caltrans, and USFWS biologists.

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the USFWS and NOAA's NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

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

Magnuson-Stevens Fishery Conservation and Management Act

The federal Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 94-265), protects essential fish habitat (EFH), which is the aquatic habitat (water and substrate) that is necessary for fish to spawn, breed, feed, or grow to maturity (Pacific Fishery Management Council 1999) and that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem.

The Magnuson-Stevens Act establishes the following requirements.

- Federal agencies undertaking, permitting, or funding activity that may adversely affect EFH are required to consult with NOAA's NMFS.
- NOAA's NMFS must provide conservation recommendations for any federal or state activity that may adversely affect EFH.
- Federal agencies, within 30 days of receiving conservation recommendations from NOAA's NMFS, must provide a detailed response in writing to NOAA's NMFS regarding the conservation recommendations (the response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH, or reasons for not following the recommendations).

3.3.5.1 Contra Costa Goldfields

Contra Costa goldfields (*Lasthenia conjugens*) is an annual herb in the sunflower family (Asteraceae). It can bloom from March to June but is usually at its peak bloom in the project region in late April and early May. Contra Costa goldfields inhabits neutral to alkaline or saline vernal pools and adjacent seasonally moist grassy areas at elevations below 1,500 feet. It is dependent on continuous, high soil-moisture content and appears to occupy deep pools that dry out later in the growing season, rather than very shallow, "flashy" pools (Ornduff 1966; Rajakaruna 2003). Saturated, low-salinity soils appear to provide optimum conditions for germination and growth of Contra Costa goldfields (Collinge et al. 2003). Contra Costa goldfields requires insect pollinators for reproduction. Ground-nesting solitary bees (Andrenidae) that nest in the uplands around vernal pools are important pollinators of the goldfields genus (Thorp and Leong 1998).

Contra Costa goldfields was federally listed as endangered on July 18, 1997 (62 FR 33029–33038).The USFWS designated final critical habitat for Contra Costa goldfields on February 10, 2006 (71 FR 7217–7266). The designation of critical habitat requires federal agencies to consult with the USFWS regarding any action that could destroy or adversely modify critical habitat. This species is included in the 2005 recovery plan for vernal pool species (U.S. Fish and Wildlife Service 2005).

Contra Costa goldfields has no state listing status, but it is on CNPS List 1B.1 (rare, threatened, or endangered in California and elsewhere; seriously endangered in California—more than 80% of occurrences threatened/high degree and immediacy of threat). The primary threats to the species have been historical habitat loss, commercial and residential development, grazing, and competition from invasive nonnative plants (California Native Plant Society 2009).

Contra Costa goldfields is known historically from coastal valleys in central California (from Mendocino to Santa Barbara County) and from the western edge of the Sacramento Valley, north of Suisun Marsh. The CNDDB lists 32 occurrences in Alameda, Contra Costa, Marin, Mendocino, Monterey, Napa, and Solano Counties (California Natural Diversity Database 2010). The largest known concentration of Contra Costa goldfields is in Solano County in the City of Fairfield. Of the 32 total recorded occurrences, 12 are recorded in Solano County.

Affected Environment

Based on the 2005 surveys (Vollmar Consulting 2005), two stands of Contra Costa goldfields (29 plants) occur within seasonal wetland W-165 in the Alternative B footprint south of SR 12E on the west side of Pennsylvania Avenue as illustrated in Volume 2, Figure 3.3-2a (Sheet 33). The total area occupied by the plants in these three stands was less than 0.01 acre. Thirteen additional stands (Sheets 33 and 35) with a total of 420 plants, based on the 2005 survey results (Vollmar Consulting 2005), were mapped within several hundred feet of the Alternative B project area. Nine of the stands are within 250 feet of the project area; these supported 190 plants in 2005 (Vollmar Consulting 2005).

Four stands of Contra Costa goldfields occur within seasonal wetlands (W-165, W-171, and W-174) in the project footprint for Alternative C south of SR 12E, on the west and east sides of Pennsylvania Avenue as illustrated in Volume 2, Figure 3.3-2c (Sheet 33). Based on the 2005

surveys (Vollmar Consulting 2005), the two stands in W-165 west of Pennsylvania Avenue comprised a total of 29 plants, and the stands in W-171 and W-174 east of Pennsylvania Avenue each comprised a single plant. The total area occupied by the plants in these four stands was less than 0.01 acre. Eleven additional stands (Sheets 33 and 35) with a total of approximately 420 plants, based on the 2005 survey results (Vollmar Consulting 2005), were mapped within several hundred feet of the Alternative C project area. One of the stands, less than 100 feet from the project area, contained one plant in 2005 (Vollmar Consulting 2005). Three of the stands (totaling 116 plants) were within 250 feet of the temporary impact area.

No Contra Costa goldfields have been found within the Alternative B, Phase 1 or Alternative C, Phase 1 study areas.

Because Contra Costa goldfields is an annual plant, the numbers of plants that grow in an area can vary widely from year to year, depending on rainfall, disturbance regime, and other factors that affect seed germination and plant survival (U.S. Fish and Wildlife Service 2005). Although the stands of Contra Costa goldfields were not found in April 2009, the habitat remains suitable and the plants are assumed to be extant. Below average rainfall and varied temperature patterns in 2008/2009 may have affected germination and growth of this species for spring 2009. For the purposes of this analysis, the extent of occupied habitat and numbers of plants are based on the 2005 data.

The area immediately south of SR 12E between Beck Avenue and Pennsylvania Avenue includes the northern edge of Vernal Pool Critical Habitat Unit 5B, which is designated for Contra Costa goldfields (71 FR 7217–7266).

Environmental Consequences

Loss or Disturbance of Contra Costa Goldfields Resulting from Construction

Impacts on Contra Costa goldfields could occur under either full build alternative. Although special-status plant species were found during the botanical surveys of the Alternative B, Phase 1 and Alternative C, Phase 1 study areas, none occur within the temporary or permanent impact area.

Based on the 2005 and 2009 survey results, approximately 30 Contra Costa goldfields plants in a total area of less than 0.01 acre would be removed within the Alternative B and Alternative C footprints. Under Alternative B, this would occur south of SR 12E for construction of the Meyer Lane extension, the frontage road south of SR 12E and west of Pennsylvania Avenue, and widening of Pennsylvania Avenue south of SR 12E (Volume 2, Figure 3.3-2a, Sheets 32–33). Under Alternative C, impacts would occur south of SR 12E on either side of Pennsylvania Avenue for construction of the Pennsylvania Avenue interchange (Volume 2, Figure 3.3-2c, Sheet 33).

A total of 55.91 acres of critical habitat for Contra Costa goldfields would be permanently removed and approximately 14.02 acres of critical habitat would be temporarily disturbed with implementation of Alternative B.

Alternative B, Phase 1 would not directly affect Contra Costa goldfield plants, but 7.27 acre of its critical habitat would be permanently removed and 1.18 acre would be temporarily affected.

A total of 39.59 acres of Contra Costa goldfields critical habitat would be permanently removed in the Alternative C project area and approximately 8.55 acres of critical habitat would be temporarily affected by construction of Alternative C.

Alternative C, Phase 1 would not directly affect Contra Costa goldfield plants, but 5.41 acre of its critical habitat would be permanently removed and 0.70 acre would be temporarily affected.

Implementation of the measures to compensate for the loss of Contra Costa goldfields would reduce the severity of this effect.

Indirect effects from adjacent construction activity for Alternatives B and C could affect the eight stands of Contra Costa goldfields outside the construction area but within 250 feet of the temporary impact area. These plants would not be removed for construction but could be indirectly affected by changes in hydrology and siltation from earthmoving activities.

Implementation of measures to install construction barriers, to conduct environmental awareness training and to conduct biological monitoring discussed in Section 3.3.1.1 and the measure to protect water quality and prevent erosion and sedimentation discussed in Section 3.3.2.1 would protect Contra Costa goldfields and wetland habitat, avoiding this potential effect.

Because Contra Costa goldfields is a federally listed species, consultation under FESA would be required for removal of the plants. Loss or disturbance of Contra Costa goldfields and its critical habitat would be considered an adverse effect. The federal lead agency must ensure that its activities do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. Improvements to SR 12E that are not included in a fundable first phase of an alternative would not be constructed until funding is available, which is not expected until after 2035. The proposed Gentry-Suisun development project includes this same area; therefore, if the Gentry-Suisun project is constructed before the I-80/I-680/SR 12 project, the Contra Costa goldfield plants in the area will have been removed.

Under the No-Build Alternative, no construction activities would occur, and no effects on Contra Costa goldfields or its habitat would occur.

Avoidance, Minimization, and/or Mitigation Measures

See measures to install construction barriers, to conduct environmental awareness training and to conduct biological monitoring discussed in Section 3.3.1.1 and the measure to protect water quality and prevent erosion and sedimentation discussed in Section 3.3.2.1.

Compensate for the Loss of Contra Costa Goldfields

A plan to compensate for the permanent loss of Contra Costa goldfields will be developed and implemented. The Contra Costa goldfields compensation plan will include mitigation for impacts on seasonal wetlands, because the primary constituent elements of critical habitat for the goldfields are associated with seasonal wetlands/vernal pool habitat. The total compensation area

required will be based on vernal pool mitigation requirements for Category 1 conservation zones of moderate and high quality, as outlined in the administrative draft SCWA HCP (Solano County Water Agency 2009).

The Contra Costa goldfields compensation plan will be developed through extensive and well-documented coordination between the Department, resource agency specialists, and conservation groups. Based on the current draft SCWA HCP (2009), compensation for permanent loss (areas directly affected in the project area) of Contra Costa goldfields will consist of restoration of Contra Costa goldfields habitat by transplantation of Contra Costa goldfields onto suitable habitat sites on private property. Restoration will occur at a minimum 4:1 ratio (four acres of vernal pool habitat restored for each one acre of occupied habitat area removed). Suitable restoration habitat will be within pools that lack Contra Costa goldfields. The habitat will either be within the same population area that the seed is taken from or will be a minimum of 0.5 mile from extant Contra Costa goldfields populations in another area.

A qualified restoration ecologist will work with resource agency specialists and knowledgeable individuals to identify a transplantation area and ensure that the area can be managed and protected in perpetuity. Transplanting the Contra Costa goldfields plants will entail the activities listed below.

- Identifying suitable transplant sites within Vernal Pool Critical Habitat Unit 5B that either do not support the goldfields or support a sparse cover of goldfields.
- Moving the plant material and seed bank to the transplant sites.
- Monitoring the transplant sites to document recruitment and survival rates.

The restoration ecologist will develop a detailed transplanting and monitoring plan. The following general steps will be involved in the transplanting and monitoring efforts, as appropriate.

- Conduct a site analysis to document the biotic and physical requirements of the Contra Costa goldfield plants that will be affected by the proposed action. This task will include an evaluation of the plant populations to gather the following information: soil type, soil salinity, plant species associations, aspect, level of disturbance, and surrounding upland vegetation cover and soil type.
- Identify and evaluate sites that may be suitable for transplanting the Contra Costa goldfields. Preferred sites will include pools with neutral soils; saturated conditions through at least mid-spring; and solitary bee nesting habitat, such as mounds and uplands with friable soils. The information identified in the previous bullet item will be gathered for the transplant sites.
- Prepare the transplant sites by excavating the topsoil, roughening the subsoil, presoaking the subsoil, and removing weeds from the surrounding area.
- Excavate the topsoil from the area containing the Contra Costa goldfields that would be directly affected by the proposed action. The topsoil will be excavated with the seed bank and any roots in place (depth of excavation will be determined after further research on the species and site conditions). This excavation will occur after the plants have flowered and set seed (generally by June or July). The excavation will be done by hand or with a truck-

mounted tree spade. The type of equipment chosen will depend on the depth and diameter of excavation required. The topsoil will be placed on the transplant site immediately after excavation. This activity will be conducted or monitored by a botanist to ensure that the appropriate amount of topsoil is removed and placed in the appropriate location. Special project specifications will be developed for removing and relocating soils containing Contra Costa goldfields. A post-transplantation report will be prepared, documenting the measures used to relocate the populations and where they were relocated.

- Protect the transplanted Contra Costa goldfields by installing temporary exclusion fencing with signs around the transplant sites. The purpose of this temporary fencing will be to prevent animals and humans from entering and disturbing the transplant sites during the establishment phase. The fencing will remain in place during the monitoring period or longer, if it appears that the populations could be significantly disturbed by grazing or human encroachment. Grazing might be necessary in and around the transplant area over the long term to prevent overgrowth and encroachment by other species.
- Conduct periodic maintenance visits to ensure that the transplant sites are undisturbed and the fencing is in place. Maintenance activities may consist of manual weeding, supplemental watering, and mending of fences.
- Monitor the transplanted populations to document survival and recruitment rates over a period established in consultation with the resource agencies and vernal pool community experts. The populations will be monitored annually during the flowering period to document success rates and identify remedial actions. The detailed transplanting and monitoring plan will provide specific monitoring protocols and documentation procedures. A copy of the annual monitoring reports and the final monitoring report, with maps of the transplant sites, will be provided to the USFWS and public agencies for their review.

3.3.5.2 Callippe Silverspot Butterfly

Callippe silverspot butterfly was listed as an endangered species in 1997 (FR 62:64306). It has no state status but fits the CEQA definition of a rare species. Callippe silverspot is endemic to the San Francisco Bay Area. Additional populations occur in the Sky Valley–Lake Herman area of southern Solano County; at Sears Point in Sonoma County; and in the area between Dublin, Pleasanton, and Sunol in Alameda County.

Callippe silverspot occurs in grasslands where its sole larval foodplant (Johnny jump-up, or violet [*Viola pedunculata* (Violaceae)]) grows. Callippe silverspot occurs in hilly terrain with a mixture of topographic relief. Adults tend to congregate on prominent hilltops, a behavior known as *hilltopping*, where they search for potential mates. The flight season is usually from about mid-May through early July but may vary depending on seasonal weather conditions. Because of the length of the flight season, adults visit several different flowers to obtain nectar—as the plants flower during different periods of the flight season. When available, favored nectar plants include mints, especially *Monardella*; thistles, such as *Silybum* and *Cirsium;* and buckeyes (*Aesculus*). Flowers of other species may also be visited, depending on their availability at a particular location. Areas where the larval and adult food plants grow do not always coincide with areas where mate location and other behaviors occur. Once the larvae metamorphose, adult butterflies may travel up to several miles to find suitable nectar plants. (Arnold 1981).

Affected Environment

Two populations of Johnny jump-ups, the larval host plant, were identified in the grasslands near the west end of the realignment for Red Top Road north of SR 12W (Volume 2, Figure 3.3-2a, Sheets 5 and 6). During surveys conducted in 2004 (Monk & Associates 2004c), two distinct populations were identified—one of which is within the Alternative B and Alternative C study area. The second population is approximately 300 feet north of the study area.

Environmental Consequences

Potential Loss or Disturbance of Callippe Silverspot Butterfly Resulting from Construction

Alternative B, Alternative C, and Alternative C, Phase 1 all have the potential to destroy or disturb callippe silverspot butterfly or its habitat.

Under Alternative B, Phase 1, no construction is proposed in the vicinity of Red Top Road and SR 12W, therefore there would be no potential for effects.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of the avoidance and minimization measure provided below would reduce the severity of this potential effect.

Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Callippe Silverspot Butterflies

A qualified biologist will be retained to conduct presence-absence surveys for callippe silverspot butterflies. Surveys will be conducted in the grassland habitat north of SR 12W. Presence-absence surveys consist of a search for larval host plants, larval surveys, followed by adult flight surveys.

Surveys consist of looking for the host larval plant, Johnny jump-ups , during its blooming period (early January through April); and if plants are found then searching for larvae prior to the adult flight season. Larval surveys consist of laying down cover boards and looking for signs of larval feeding damage on the Johnny jump-ups. The number of survey visits for larvae will depend the extent of the plant populations.

Adults usually start flying in mid May which is when the biologist will start weekly surveys until the end of the adult flight season, typically 8-10 adult surveys at approximately weekly intervals (weather permitting). Surveys will also be conducted at the nearby control sites, where butterflies are known to have occurred in the recent past. Because of the lengthy survey period it may be necessary to conduct the surveys the year before construction starts. If butterflies are found, preconstruction surveys for Johnny jump-ups will be conducted the year of construction and populations of Johnny jump-ups found outside of the construction work area will be fenced and flagged to ensure complete avoidance during construction.

3.3.5.3 Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp

Vernal pool fairy shrimp is listed as threatened under FESA (59 FR 48136). Vernal pool fairy shrimp occurs in the Central Valley from Tehama to Madera Counties and in the eastern margin of the central and southern Coast Ranges from San Benito to Ventura Counties. A disjunct population occurs in Riverside County (Eng et al. 1990). Most known locations are in the Sacramento and San Joaquin Valleys and along the eastern margin of the central Coast Ranges (Eng et al. 1990).

Vernal pool tadpole shrimp is listed as endangered under FESA (59 FR 48136). Vernal pool tadpole shrimp occurs in the Central Valley from Shasta County in the north to Merced County in the south, and a disjunct population occurs in western Alameda County (Rogers 2001).

Vernal pool fairy shrimp and vernal pool tadpole shrimp (listed branchiopods) are restricted to seasonal wetland habitats (e.g., vernal pools and wet swales) in California that provide the necessary environmental conditions. These species produce cysts (eggs) that lie dormant in the soil over summer and hatch when pools fill during the winter rainy season. To complete their life cycle, vernal pool fairy shrimp and vernal pool tadpole shrimp require an annual cycle of inundation during cold and wet winter months, when the water temperature is cool and oxygen concentration is high, contrasted by dry soil conditions during the summer months (Helm 1998; Eriksen and Belk 1999).

Vernal pool fairy shrimp and vernal pool tadpole shrimp are not known to occur in shallow seasonal wetlands that lack a defined basin and do not provide a water column of sufficient depth (>1 inch) and duration (three to four weeks), because such conditions are necessary for reproduction. Similarly, these species do not occur in wetlands that remain wet or damp throughout most of the year (such as seasonal marsh and perennial wetlands) or permanent bodies of water (such as riverine and marine habitats) because these conditions do not allow egg cysts to properly dry and cure (59 FR 48136–48153).

Affected Environment

There are ten records of vernal pool fairy shrimp occurrence reported within ten miles of the study area and 23 records reported from Solano County. Vernal pool tadpole shrimp has been reported to occur in 17 locations within ten miles of the project area and in 30 locations within Solano County (California Natural Diversity Database 2010). The greatest density of occurrence records for these species is reported from south of the project area, near Jepson Prairie. The study area does not occur within designated critical habitat for vernal pool fairy shrimp (71 FR 7117). Vernal Pool Critical Habitat Units 12A and 12B are located in Napa County, approximately six miles west of the study area.

Alternative B

There are 31 suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp within 250 feet of the Alternative B construction area (i.e., within the study area for vernal pool crustaceans).

Suitable habitat was observed in the areas listed below and illustrated in Figure 3.3-2a in Volume 2.

- Along the north and south sides of SR 12W west of I-80 (Sheets 4–6).
- In disturbed areas on the north side of I-80 (Sheets 11 and 14).
- Along Ramsey Road west of I-680 (Sheets 11 and 14).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheets 32–34).
- On the south side of SR 12E between Webster Street and Ledgewood Creek (Sheet 32).

Suitable habitat features observed during the habitat assessment were primarily seasonal wetlands. Many of the habitat features occur in disturbed areas that are subject to plowing, disking, stormwater runoff, and other human influences that greatly reduce the ecologic value these habitats provide for listed shrimp species.

Alternative B, Phase 1

Four suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp are located within 250 feet of the Alternative B, Phase 1 construction area.

Suitable habitat was observed in two locations in the Alternative B, Phase 1 study area as illustrated in Figure 3.3-2b in Volume 2.

- In disturbed areas on the north side of I-80 (Sheets 8 and 17).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheet 32).

Alternative C

There are 28 suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp located within 250 feet of the Alternative C project construction area.

During the July 27, 2007, habitat assessment, suitable habitat was indentified in the project areas listed below and illustrated in Figure 3.3-2c in Volume 2.

- Along both the north and south sides of SR 12W west of I-80 (Sheets 4–6).
- In disturbed areas on the north side of I-80 (Sheets 8 and 17).
- Along Ramsey Road west of I-680 (Sheet 11).
- Along the north side of SR 12E between Beck and Pennsylvania Avenues (Sheets 32–34).
- On the south side of SR 12E between Webster Street and the railroad tracks on the edge of Suisun City (Sheet 35).

Alternative C, Phase 1

Nineteen suitable habitat features for vernal pool fairy shrimp or vernal pool tadpole shrimp are located within 250 feet of the project construction area for Alternative C, Phase 1.

Suitable habitat was observed in the project areas listed below and illustrated in Figure 3.3-2d in Volume 2.

- Along the north and south sides of SR 12W west of I-80 (Sheets 4–6).

- In disturbed areas on the north side of I-80. (Sheets 8 and 17).

Environmental Consequences

Potential Loss or Disturbance of Vernal Pool Fairy Shrimp/Vernal Pool Tadpole Shrimp Resulting from Construction

Both build alternatives would result in temporary and permanent impacts on vernal pool fairy shrimp or vernal pool tadpole shrimp. See the discussions below for more specific information

The USFWS generally considers all habitats for listed shrimp species that are located within 250 feet of ground disturbance to be indirectly affected unless suitable habitat is separated from construction activities by a road or other suitable barrier. The acreages below are based on this assumption. Project construction would directly affect suitable seasonal wetlands through excavation and road construction. Indirect impacts on suitable seasonal wetlands that could result from project activities include altered hydrology, soil compaction, introduction of urban stormwater runoff, and increased human activity.

Under the No-Build Alternative, no construction activities would occur, and no effects on vernal pool fairy shrimp or vernal pool tadpole shrimp or their habitat would occur.

Alternative B

Alternative B would directly affect 13 suitable habitat features (all pools within the construction footprint) totaling 1.33 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp (Table 3.3.5-1 and Volume 2, Figure 3.3-2a). In addition, Alternative B could indirectly affect 18 suitable habitat features (all pools within 250 feet of the construction footprint) totaling 1.71 acres of habitat for these species.

Table 3.3.5-1. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp in the Study Area under Alternative B

Pool Identification Number	Direct Impact	Indirect Impact
W-13 (Sheet 5)	0.28	
W-14 (Sheet 4)	0.08	
W-15 (Sheet 5)	0.19	
W-25 (Sheet 14)	0.21	
W-35 (Sheet 11)		0.01
W-36 (Sheet 11)		0.01
W-37 (Sheet 11)		0.21
W-38 (Sheet 11)		0.08
W-39 (Sheet 11)		0.14
W-45a-2 (Sheet 17)	0.16	
W-45-3 (Sheet 17)	0.02	
W-63 (Sheet 8)	0.02	
W-118 (Sheet 32)		0.04
W-121 (Sheet 34)	0.06	
W-128 (Sheet 33)	0.02	
W-133 (Sheet 32)		0.06
W-134 (Sheet 32)		0.09
W-135 (Sheet 32)		0.28
W-143 (Sheet 4)	0.09	

Pool Identification Number	Direct Impact	Indirect Impact
W-149 (Sheet 5)	0.16	
W-151 (Sheet 6)		0.04
W-154 (Sheet 35)		0.14
W-177 (Sheet 5)		0.07
W-182 (Sheet 6)		0.01
W-183 (Sheet 6)		0.37
W-184 (Sheet 6)		0.06
W-185 (Sheet 6)		0.05
W-186 (Sheet 6)		0.01
W-187 (Sheet 6)	0.01	
W-188 (Sheet 6)		0.04
W-189 (Sheet 6)	0.03	
Total impact (acres)	**1.33**	**1.71**
Total combined impact (acres)	**3.04**	

Alternative B, Phase 1

Alternative B, Phase 1 would directly affect three suitable habitat features encompassing 0.20 acre of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp. In addition, Alternative B, Phase 1 could indirectly affect one suitable habitat feature encompassing 0.04 acre of habitat for these species (Table 3.3.5-2 and Volume 2, Figure 3.3-2b).

Table 3.3.5-2. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative B, Phase 1

Pool Identification Number	Direct Impact	Indirect Impact
W-45a-2 (Sheet 17)	0.16	
W-45-3 (Sheet 17)	0.02	
W-63 (Sheet 8)	0.02	
W-118 (Sheet 32)		0.04
Total impact (acres)	**0.20**	**0.04**
Total combined impact (acres)	**0.24**	

Alternative C

Project construction would directly affect suitable seasonal wetlands through excavation and road construction. Alternative C would directly affect 13 suitable habitat features totaling 1.51 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp. In addition, Alternative C could indirectly affect 15 suitable habitat features totaling 1.10 acres of habitat for these species (Table 3.3.5-3 and Volume 2, Figure 3.3-2c).

Table 3.3.5-3. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative C

Pool Identification Number	Direct Impact	Indirect Impact
W-13 (Sheet 5)	0.28	
W-14 (Sheet 4)	0.08	
W-15 (Sheet 5)	0.19	
W-25 (Sheet 14)		0.21
W-35 (Sheet 11)		0.01
W-36 (Sheet 11)		0.01
W-37 (Sheet 11)		0.21
W-38 (Sheet 11)		0.08
W-39 (Sheet 11)		0.14
W-45a-2 (Sheet 17)	0.16	

Pool Identification Number	Direct Impact	Indirect Impact
W-45-3 (Sheet 17)		0.02
W-63 (Sheet 8)	0.02	
W-118 (Sheet 32)		0.04
W-121 (Sheet 34)	0.06	
W-128 (Sheet 33)	0.02	
W-143 (Sheet 4)	0.09	
W-149 (Sheet 5)	0.16	
W-151 (Sheet 6)	0.04	
W-154 (Sheet 36)		0.14
W-177 (Sheet 5)		0.07
W-182 (Sheet 6)		0.01
W-183 (Sheet 6)	0.37	
W-184 (Sheet 6)		0.06
W-185 (Sheet 6)		0.05
W-186 (Sheet 6)		0.01
W-187 (Sheet 6)	.01	
W-188 (Sheet 6)		0.04
W-189 (Sheet 6)	0.03	
Total impact (acres)	**1.51**	**1.10**
Total combined impact (acres)	**2.61**	

Alternative C, Phase 1

Alternative C, Phase 1 would directly affect 12 suitable habitat features totaling 1.45 acres of habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp (Table 3.3.5-4 and Volume 2, Figure 3.3-2d). The direct impact acreage for Alternative C, Phase 1 includes construction of a bike trail north of SR 12W that is not part of the full build alternative, and the bike trail would cross one wetland not directly affected by the full build alternative (W-183) and indirectly affect another wetland (W-184). In addition, Alternative C, Phase 1 could indirectly affect seven suitable habitat features totaling 0.26 acre of habitat for these species.

Table 3.3.5-4. Direct and Indirect Impacts on Vernal Pool Fairy and Tadpole Shrimp under Alternative C, Phase 1

Pool Identification Number	Direct Impact	Indirect Impact
W-13 (Sheet 5)	0.28	
W-14 (Sheet 4)	0.08	
W-15 (Sheet 5)	0.19	
W-45a-2 (Sheet 17)	0.16	
W-45-3 (Sheet 17)	0.02	
W-63 (Sheet 8)	0.02	
W-128 (Sheet 33)		0.02
W-143 (Sheet 4)	0.09	
W-149 (Sheet 5)	0.16	
W-151 (Sheet 6)	0.04	
W-177 (Sheet 5)		0.07
W-182 (Sheet 6)		0.01
W-183 (Sheet 6)	0.37	
W-184 (Sheet 6)		0.06
W-185 (Sheet 6)		0.05
W-186 (Sheet 6)		0.01

Pool Identification Number	Direct Impact	Indirect Impact
W-187 (Sheet 6)	0.01	
W-188 (Sheet 6)		0.04
W-189 (Sheet 6)	0.03	
Total impact (acres)	**1.45**	**0.26**
Total combined impact	**1.71**	

Avoidance, Minimization, and/or Mitigation Measures

See avoidance, minimization and/or mitigation measure to protect water quality and prevent erosion and sedimentation in Section 3.2.2.1 and the measures below.

Avoid and Minimize Potential Indirect Disturbance of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat

To the extent possible, potential indirect disturbance of vernal pool fairy shrimp and vernal pool tadpole shrimp habitat will be avoided and minimized by implementing the following measures.

- The on-site biological monitor will be present during all ground-disturbing activities occurring within 250 feet of suitable habitat to ensure that habitat is avoided, will have the authority to stop all construction activities that may result in the destruction of habitat, and will immediately report any unauthorized impacts to the USFWS.
- Construction activities occurring within 250 feet of suitable habitat will be conducted between June 1 and October 15.
- Activities that are inconsistent with the maintenance of suitability of avoided habitat and associated watershed, including alteration of topography, dumping, burning, burying of garbage or fill materials, construction of access roads, killing or removal of existing native vegetation, placement of stormwater drains, and use of pesticides or other toxic chemicals, will be prohibited.

Compensate for Loss of Direct and Indirect Impacts on Vernal Pool Fairy Shrimp or Vernal Pool Tadpole Shrimp Habitat

Loss of all suitable habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp that occurs within 250 feet of the project area will be compensated for. Direct effects on habitat for vernal pool fairy and tadpole shrimp will be compensated for at a ratio of 3:1 because the effect is permanent. Temporary or indirect effects will be compensated for at a minimum ratio of 1.1:1.

However, actual compensation ratios will be determined through consultation with the USFWS. Compensation will be implemented through purchase of mitigation credits at a USFWS-approved bank. It may be possible to compensate for some or all of the impacts on fairy shrimp habitat through implementation of the mitigation measure to compensate for permanent loss of wetlands (in Section 3.3.2.3).

3.3.5.4 Valley Elderberry Longhorn Beetle (VELB)

VELB is federally listed as a threatened species (45 FR 52803). This species was first described in 1921 from specimens collected in Sacramento (U.S. Fish and Wildlife Service 1984). The

species' range extends throughout the associated foothills of the Central Valley in California, from Kern County in the south to Shasta County in the north (Jones & Stokes Associates 1985, 1986, 1987).

VELB is closely associated with elderberry, the host plant for beetle larvae. Elderberry is considered a typical riparian shrub (Roberts et al. 1977; Katibah et al. 1984; Warner 1984) in California. Blue elderberry is a hardy shrub that successfully grows in a variety of riparian habitat types. In a study of Sacramento Valley riparian vegetation, Conard et al. (1977) found that elderberry grows mainly at an intermediate elevation in the floodplain, in association with box elder and buttonbush. Where a source of water exists, elderberry shrubs grow in nonriparian habitats. However, most VELB occurrences are known from elderberry shrubs in or adjacent to riparian communities.

Affected Environment

Information on all elderberry shrubs in the study area is provided below in Table 3.3.5-5. The table also notes which alternative would affect each shrub.

Twenty-two shrubs were identified in the study area. Locations of all the shrubs are shown in Figure 3.3-2a, 2b, 2c, 2d - Sheets 7, 17, 18, and 21 in Volume 2. Shrubs 1–15 were located during field surveys in 2007. Shrubs 16–22 were located on the east side of Dan Wilson Creek during field surveys in 2004 conducted for the City of Fairfield Corporate Commons EIR (RBF Consulting 2005). No exit holes (which would indicate the presence of VELB) were observed in any elderberry stem measuring 1.0 inch or more in diameter at ground level within the project area.

In 2004, the seven elderberry shrubs (shrubs 16-22) adjacent to Dan Wilson Creek appeared to have been cut back to the ground in the preceding couple of years, as evidenced by the large amount of new growth that appeared to be growing from existing parent material, as well as the presence of large remnants of cut elderberry stems. Although only a few of the living elderberry stems on the seven shrubs measured at least one inch in diameter at the time of the 2004 field surveys, these shrubs appeared to be growing rapidly, and a number of additional stems are likely to have attained a diameter of one inch or more by the end of the 2010 growing season and in subsequent growing seasons.

Table 3.3.5-5. Summary of Stem Counts for All Elderberry Shrubs In the Study Area

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Comments
			One to Three Inches	Three to Five Inches	More than Five Inches	
1	No	Yes	3	4	1	South side of SR 12, northwest of I-80; clump with very old stems
2	Yes	Yes	2	1	1	North side of SR 12, northwest of I-80
3	Yes, old hole	Yes	0	0	1	North side of SR 12W, northwest of I-80; very large tree
4	No	Yes	3	1	1	North side of SR 12W, northwest of I-80; one shrub with several stems
5	No	Yes	2	1	2	North side of SR 12W, northwest of I-80
6	No	Yes	0	1	1	North side of SR 12W, northwest of I-80; small tree

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Comments
			One to Three Inches	Three to Five Inches	More than Five Inches	
7	No	Yes	2	0	1	South side of SR 12W, near a homeless encampment; small tree
8	No	Yes	0	0	3	South side of SR 12W
9	No	Yes	0	4	2	South side of SR 12W; clump is three meters in diameter
10	No	Yes	0	2	1	South side of SR 12W
11	No	Yes	3	2	2	North side of I-80 along frontage road; short shrub on roadside
12	No	Yes	15	0	0	North side of I-80 along frontage road; ~100 stems that are less than one inch
13	No	Yes	2	1	4	On Green Valley Road; large shrub in urban area, evidence of pruning
14	No	Yes	2	1	2	On Green Valley Road
15	No	Yes	2	0	0	On Green Valley Road
16	No	Yes	4	0	0	Numerous smaller stems that are almost one inch
17	No	Yes	1	0	0	New growth, with stems almost one inch
18	No	Yes	0	0	0	Abundant new growth from this year, and many stems may be 1 inch by end of growing season
19	No	Yes	0	0	0	Abundant new growth from this year, and many stems may be 1 inch by end of growing season
20	No	Yes	2	0	0	One large clump of stems and another smaller clump very close; many stems are almost one inch
21	No	Yes	1	0	0	Large shrub with numerous smaller stems that are almost one inch
22	No	Yes	0	0	0	Small shrub farther upland from other shrubs; stems are very small and appear to be growing slowly
Overall total			**44**	**18**	**22**	

Alternative B

Under Alternative B, 12 elderberry shrubs were identified in the following three locations. The number and size of stems present on each shrub and riparian habitat associations for each shrub are listed in Table 3.3.5-5 and illustrated in Figure 3.3-2a in Volume 2.

- Along Green Valley Creek north of I-80 (Sheet17 and 18).
- Adjacent to the east side of Dan Wilson Creek (Sheet 21).
- Along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek in the project area (Sheet 7).

Alternative B, Phase 1

In the project area for Alternative B, Phase 1, one elderberry shrub was identified in one location along Green Valley Creek north of I-80 (Volume 2, Figure 3.3-2b, Sheet 18).

Alternative C

In the Alternative C study area, 11 elderberry shrubs were identified in three locations, as illustrated in Figure 3.3-2c in Volume 2.

- Along Green Valley Creek north of I-80 (Sheet 17).
- Adjacent to the east side of Dan Wilson Creek (Sheet 21).

- Along the north and south sides of SR 12W in the vicinity of Jameson Canyon (Sheet 7).

Alternative C, Phase 1

Ten elderberry shrubs were identified in one location.

- Along the north and south sides of SR 12W in the vicinity of Jameson Canyon Creek in the project area (Volume 2, Figure 3.3-2d, Sheet 7).

Environmental Consequences

Potential Loss of VELB Habitat Resulting from Construction

Both build alternatives would directly affect (by removal or transplanting) VELB habitat (elderberry shrubs) although Alternative B, Phase 1 would only indirectly affect elderberry shrubs.

Possible indirect effects on VELB potentially occurring within 100 feet of the construction work area include increases in dust accumulation on shrubs from ground-disturbing activities and removal of associated woodland species. Tree and shrub removal activities within the study area would be minimized and would involve only the removal of trees and shrubs necessary to construct the proposed project; however, ground-disturbing activities occurring within 100 feet of an elderberry shrub could cause an accumulation of dust on elderberry shrubs, altering VELB habitat. Although implementation of the build alternatives would not change the hydrology of the existing habitat, excavation and grading in the vicinity of an elderberry shrub could damage the root system, resulting in death of the shrub.

Construction activities associated with Alternative B would directly affect 11 elderberry shrubs, as listed in Table 3.3.5-6. Shrub 16 is more than 20 feet but less than 100 feet from proposed construction activities for Alternative B, and could be indirectly affected by construction.

Table 3.3.5-6. Summary of Elderberry Shrub Effects under Alternative B

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Effect on Shrub (None, Direct, or Indirect)
			One to Three Inches	Three to Five Inches	More than Five Inches	
1	No	Yes	3	4	1	Direct
2	Yes	Yes	2	1	1	Direct
3	Yes, old hole	Yes	0	0	1	Direct
4	No	Yes	3	1	1	Direct
5	No	Yes	2	1	2	Direct
6	No	Yes	0	1	1	Direct
7	No	Yes	2	0	1	Direct
8	No	Yes	0	0	3	Direct
9	No	Yes	0	4	2	Direct
10	No	Yes	0	2	1	Direct
11	No	Yes	3	2	2	Direct
16	No	Yes	4	0	0	Indirect

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Effect on Shrub (None, Direct, or Indirect)
			One to Three Inches	Three to Five Inches	More than Five Inches	
No effect			25	2	6	
Indirect total			4	0	0	
Direct total			15	16	16	
Overall total			**44**	**18**	**22**	

Alternative B, Phase 1 would directly affect one shrub during construction, as listed in Table 3.3.5-7. Alternative B, Phase 1 would not indirectly affect any shrubs.

Table 3.3.5-7. Summary of Elderberry Shrub Effects under Alternative B, Phase 1

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Effect on Shrub (None, Direct, or Indirect)
			One to Three Inches	Three to Five Inches	More than Five Inches	
11	No	Yes	3	2	2	Direct
Indirect totals			0	0	0	
Direct totals			3	2	2	
Overall totals			**3**	**2**	**2**	

Alternative C would directly affect ten shrubs, as listed in Table 3.3.5-8. Shrub 16 is more than 20 feet and less than 100 feet from, proposed construction activities for Alternative C, and could be indirectly affected by construction.

Table 3.3.5-8. Summary of Elderberry Shrub Effects under Alternative C

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Effect on Shrub (None, Direct, or Indirect)
			One to Three Inches	Three to Five Inches	More than Five Inches	
1	No	Yes	3	4	1	Direct
2	Yes	Yes	2	1	1	Direct
3	Yes, old hole	Yes	0	0	1	Direct
4	No	Yes	3	1	1	Direct
5	No	Yes	2	1	2	Direct
6	No	Yes	0	1	1	Direct
7	No	Yes	2	0	1	Direct
8	No	Yes	0	0	3	Direct
9	No	Yes	0	4	2	Direct
10	No	Yes	0	2	1	Direct
16	No	Yes	4	0	0	Indirect
No effects			28	4	8	
Indirect totals			4	0	0	
Direct totals			12	14	14	
Overall totals			**44**	**18**	**22**	

Alternative C, Phase 1 would directly affect shrubs 1–10 during construction, as listed in Table 3.3.5-9. Shrub 11 is within 100 feet of construction but is separated by a road from construction activities and would not be affected.

Table 3.3.5-9. Summary of Elderberry Shrub Effects under Alternative C, Phase 1

Shrub	Presence of Exit Holes?	Riparian Habitat?	Number of Stems (by Diameter)			Effect on Shrub (None, Direct, or Indirect)
			One to Three Inches	Three to Five Inches	More than Five Inches	
1	No	Yes	3	4	1	Direct
2	Yes	Yes	2	1	1	Direct
3	Yes, old hole	Yes	0	0	1	Direct
4	No	Yes	3	1	1	Direct
5	No	Yes	2	1	2	Direct
6	No	Yes	0	1	1	Direct
7	No	Yes	2	0	1	Direct
8	No	Yes	0	0	3	Direct
9	No	Yes	0	4	2	Direct
10	No	Yes	0	2	1	Direct
Indirect total			0	0	0	
Direct total			12	14	14	
Overall total			**12**	**14**	**14**	

Under the No-Build Alternative, no construction activities would occur, and no impacts on VELB or its habitat would occur.

Avoidance, Minimization, and/or Mitigation Measures

See avoidance, minimization and/or mitigation measures in Section 3.3.1.1 and measures below. For the compensation measure below, minimization ratio tables are provided specific to each build alternative.

Establish a Minimum 20-Foot-Wide Buffer around All Elderberry Shrubs Where Feasible

Before any ground-disturbing activity, a minimum 4-foot-tall temporary, plastic mesh–type construction fence (Tensor Polygrid or equivalent) will be installed at least 20 feet from the driplines of elderberry shrubs that will be retained in the study area (shrub 16). This fencing is intended to prevent encroachment by construction vehicles and personnel, and to prevent inadvertent trimming of elderberry shrubs and associated riparian vegetation. The exact location of the fencing will be determined by a qualified biologist, with the goal of protecting habitat for VELB.

The fencing will be strung tightly on posts set at a maximum interval of ten feet. The fencing will be installed in a way that prevents equipment from enlarging the work area beyond the delineated work area. The fencing will be checked and maintained weekly until all construction is completed. This buffer zone will be marked by a sign stating, “This is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.”

No construction activity, including grading, will be allowed until this condition is satisfied. No grading, clearing, storage of equipment or machinery, or other disturbance or activity may occur

until a representative of the Department has inspected and approved all temporary construction fencing. The fencing and a note reflecting this condition will be shown on the construction plans.

Implement Dust Control Measures

Dust control measures will be implemented for all ground-disturbing activities in the project area. These measures may include application of water to graded and disturbed areas that are unvegetated. To avoid attracting Argentine ants, at no time will water be sprayed within the driplines of elderberry shrubs.

Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat

Direct effects on VELB will be compensated for through a combination of replacement plantings and transplantation. Compensation for impacts on VELB will include replacement plantings of elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio of new plantings to affected stems), depending on the diameter of the stem at ground level, the presence or absence of exit holes, and whether the shrub is located in riparian habitat (Table 3.3.5-10).

Table 3.3.5-10. USFWS-Approved Compensation Ratios for VELB Habitat

Location	Stems (diameter in inches at ground level)	Exit Holes?	Elderberry Seedling Ratio	Associated Native Plant Ratio[a]
Nonriparian	1–3	No: Yes:	1:1 2:1	1:1 2:1
Nonriparian	3–5	No: Yes:	2:1 4:1	1:1 2:1
Nonriparian	≥5	No: Yes:	3:1 6:1	1:1 2:1
Riparian	1–3	No: Yes:	2:1 4:1	1:1 2:1
Riparian	3–5	No: Yes:	3:1 6:1	1:1 2:1
Riparian	>5	No: Yes:	4:1 8:1	1:1 2:1

[a] Ratio of native trees/plants to each elderberry seedling.

Before construction begins, all elderberry shrubs that are directly affected will be transplanted to a conservation area according to USFWS-approved procedures outlined in the VELB Guidelines (U.S. Fish and Wildlife Service 1999). Some of the shrubs may be too large to transplant or their removal would destabilize creek banks; accordingly, additional compensation may be required. Elderberry seedlings or cuttings and associated native plant species will be planted in a USFWS-approved conservation area. A map and written details identifying the conservation area will be provided to the USFWS before initiation of the mitigation program in order to obtain USFWS approval that the conservation area is acceptable. Elderberry shrubs will be transplanted only during the plant's dormant phase (November through the first two weeks of February). A qualified biological monitor will remain on site while the shrubs are being transplanted. Evidence of VELB occurrence in the conservation area, the condition of the elderberry shrubs in the conservation area, and the general condition of the conservation area itself will be monitored and reported to the USFWS over a period of ten consecutive years, or for seven years over a 15-year period from the date of transplanting. As specified in the VELB Guidelines, the report will

include information on timing and rate of irrigation, growth rates, and survival rates and mortality. To meet the success criteria specified in the VELB Guidelines, a minimum survival rate of 60% of the original number of elderberry replacement plantings and associated native plants must be maintained throughout the monitoring period.

Alternative B

The minimum numbers of elderberry cuttings or seedlings and native plants required to compensate for effects under Alternative B are provided in Table 3.3.5-11.

Table 3.3.5-11. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative B

Location	Stems	Holes	Number of Stems	Elderberry Ratios (multiply number of stems by)	Elderberry Planting	Associated Native Planting	Native Ratios
Non-riparian	≥ 1 inch and ≤ 3 inches	No	0	1	0	0	1
		Yes	0	2	0	0	2
Non-riparian	> 3 inches and < 5 inches	No	0	2	0	0	1
		Yes	0	4	0	0	2
Non-riparian	≥ 5 inches	No	0	3	0	0	1
		Yes	0	6	0	0	2
Riparian	≥ 1 inch and ≤ 3 inches	No	13	2	26	26	1
		Yes	2	4	8	16	2
Riparian	> 3 inches and < 5 inches	No	15	3	45	45	1
		Yes	1	6	6	12	2
Riparian	≥ 5 inches	No	14	4	56	56	1
		Yes	2	8	16	32	2
Totals			**47**		**157**	**187**	
Total acres needed for compensation				**1.42**			

Alternative B, Phase 1

The minimum numbers of elderberry cuttings or seedlings and native plants required to compensate for proposed project effects are provided in Table 3.3.5-12.

Table 3.3.5-12. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative B, Phase 1

Location	Stems	Holes	Number of Stems	Elderberry Ratios (multiply number of stems by)	Elderberry Planting	Associated Native Planting	Native Ratios
Non-riparian	1–3	No	0	1	0	0	1
		Yes	0	2	0	0	2
Non-riparian	3–5	No	0	2	0	0	1
		Yes	0	4	0	0	2
Non-riparian	>5	No	0	3	0	0	1
		Yes	0	6	0	0	2
Riparian	1–3	No	3	2	6	6	1
		Yes	0	4	0	0	2
Riparian	3–5	No	2	3	6	6	1
		Yes	0	6	0	0	2
Riparian	>5	No	2	4	8	8	1
		Yes	0	8	0	0	2
Totals			**7**		**20**	**20**	
Total acres needed for compensation				**0.17**			

Alternative C

The minimum numbers of elderberry cuttings or seedlings and native plants required to compensate for proposed project effects under Alternative C are shown in Table 3.3.5-13.

Table 3.3.5-13. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative C

Location	Stems (diameter in inches at ground level)	Holes	Number of Stems	Elderberry Ratios (multiply number of stems by)	Elderberry Planting	Associated Native Planting	Native Ratios
Non-riparian	1–3	No	0	1	0	0	1
		Yes	0	2	0	0	2
Non-riparian	3–5	No	0	2	0	0	1
		Yes	0	4	0	0	2
Non-riparian	>5	No	0	3	0	0	1
		Yes	0	6	0	0	2
Riparian	1–3	No	10	2	20	20	1
		Yes	2	4	8	16	2
Riparian	3–5	No	13	3	39	39	1
		Yes	1	6	6	12	2
Riparian	>5	No	12	4	48	48	1
		Yes	2	8	16	32	2
Totals			**40**		**137**	**167**	
Total acres needed for compensation				**1.26**			

Alternative C, Phase 1

The minimum numbers of elderberry cuttings or seedlings and native plants required to compensate for effects under Alternative C, Phase 1 are provided in Table 3.3.5-14.

Table 3.3.5-14. Affected Elderberry Plant Minimization Ratios Based on Location, Stem Diameter, and Presence of Exit Holes under Alternative C, Phase 1

Location	Stems	Holes	Number of Stems	Elderberry Ratios (multiply number of stems by)	Elderberry Planting	Associated Native Planting	Native Ratios
Non-riparian	1–3	No	0	1	0	0	1
		Yes	0	2	0	0	2
Non-riparian	3–5	No	0	2	0	0	1
		Yes	0	4	0	0	2
Non-riparian	>5	No	0	3	0	0	1
		Yes	0	6	0	0	2
Riparian	1–3	No	10	2	20	20	1
		Yes	2	4	8	16	2
Riparian	3–5	No	13	3	39	39	1
		Yes	1	6	6	12	2
Riparian	>5	No	12	4	48	48	1
		Yes	2	8	16	32	2
Totals			**40**		**137**	**167**	
Total acres needed for compensation				**1.26**			

3.3.5.5 California Red-Legged Frog

CRLF is listed as threatened under FESA and is a state species of special concern. Historically, CRLF was common from Redding to Baja California, including the Sierra Nevada and Coast Ranges. Its current range is much reduced, and most remaining populations are found in central California along the coast, from Marin to Ventura Counties.

CRLFs breed in lowland and foothill streams and wetlands, including livestock ponds (Jennings and Hayes 1994). They may also be found in upland habitats near breeding areas and along intermittent drainages connecting wetlands. Adults may take refuge during dry periods in rodent holes or leaf litter in riparian habitats. Although CRLFs typically remain near streams or ponds, studies in Santa Cruz suggest that they are capable of moving one mile or more in upland habitat or through ephemeral drainages (Bulger 1999).

The CNDDB lists 15 records for CRLF within a 5-mile radius of the project area (California Natural Diversity Database 2010). The nearest records are on the Mangels property associated with a pond and intermittent drainage. The remaining 13 records are from one to five miles south and west of the project area (Volume 2, Figure 3.3-3).

The USFWS published a final rule to revise critical habitat for CRLF on March 17, 2010 (75 FR 12816). The designation of critical habitat requires federal agencies to consult with the USFWS regarding any action that could destroy or adversely modify critical habitat.

Affected Environment

ICF conducted a CRLF site assessment in 2007 within the study area and within 1 mile of the study area. The biologists assessed habitat suitability in 17 sites within the study area and in one creek and 14 ponds within 1 mile of the study area (Figure 3 from *Site Assessment for California*

Red-legged Frog for the Interstate 80/Interstate 680/State Route 12 Interchange Project, submitted to the U.S. Fish and Wildlife Service (USFWS) on March 3, 2009, for review (2009). No CRLFs were observed within or adjacent to the study area during the site assessment surveys. USFWS biologist John Cleckler (email, July 2, 2010) reviewed the 2009 site assessment and stated that the Service considers all undeveloped habitat north of I-80 as potential CRLF habitat.

Monk & Associates (2003a, 2003b; 2004a, 2004b) also conducted site assessments and protocol-level surveys in several locations within the current study area including in ponds, seasonal wetlands, and seasonal drainages on the Mangels property north of SR 12W and in Jameson Canyon Creek, Dan Wilson Creek, and Suisun Creek. They found CRLF adults and tadpoles in the pond (just north of W-150) and in an intermittent drainage (OW-161, which includes W-177 and W-178 on the Mangels property) (Volume 2, Figure 3.3-4a, Sheet 5).

Upland habitat was defined as suitable if it was within one mile of aquatic habitat and there were no substantial barriers to CRLF movement including heavily traveled roads, development, and railroads. Suitable upland habitat includes all alkali seasonal marsh, woodlands, annual grassland, riparian woodland, upland scrub, and seasonal wetlands that were too shallow and ephemeral to provide aquatic habitat.

Alternative B

Suitable aquatic habitat for CRLF occurs in the following locations of the Alternative B study area (Volume 2, Figure 3.3-4a).

- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18)
- Perennial marsh (W-150) (Sheet 5)
- Jameson Canyon Creek (OW-8) and its tributaries (OW-8a, OW-8b, OW-8d) (Sheets 4, 7)
- The unnamed drainage north of SR 12W (OW-161) (Sheet 5)
- Green Valley Creek (W-45)(Sheets 17, 18)
- Dan Wilson Creek (W-53 and OW-53) (Sheet 21)
- Suisun Creek (OW-56) (Sheet 22)

The portion of the study area in the realignment for Red Top Road north of SR 12W is within critical habitat for CRLF.

Alternative B, Phase 1

There are five locations for CRLF aquatic habitat under Alternative B, Phase 1: Green Valley Creek (W-45), an adjacent perennial marsh (W-45e-1), and Jameson Canyon Creek (OW-8), and Dan Wilson Creek (W-53 and OW-53), (Volume 2, Figure 3.3-4b, Sheets 7, 17, 18, and 21).

There is no critical habitat for CRLF in the footprint of this alternative.

Alternative C

Suitable habitat under Alternative C is the same as that described above for Alternative B

Alternative C, Phase 1

Suitable aquatic habitat for CRLF occurs in the following locations of the Alternative C, Phase 1 study area (Volume 2, Figure 3.3-4d).

- A perennial marsh north of SR 12W (W-150) (Sheet 5).
- A seasonal drainage west of SR 12-W (OW-8d) (Sheet 3).
- A seasonal drainage (OW-161) (Sheet 5).
- Green Valley Creek (Sheets 17 and 18).

The portion of the study area in the realignment for Red Top Road north of SR 12W is within critical habitat for CRLF.

Environmental Consequences

Potential Loss of CRLF and its Habitat Resulting from Construction

Both build alternatives could result in temporary and permanent effects to CRLF and its habitat from construction. In addition, both build alternatives are likely to adversely affect CRLF critical habitat.

Construction activities associated with road construction and bridge widening in potential CRLF habitat in the project area could result in indirect effects on water quality downstream from the construction work area. Increased sedimentation could reduce the suitability of CRLF habitat downstream of the construction area by filling in pools and smothering eggs. Accidental spills of toxic fluids also could result in the subsequent mortality of CRLFs if these substances flow downstream from the construction area and CRLFs are present. Under Alternative B, Alternative C, and Alternative C, Phase 1, construction of the project would fill in a portion of a drainage (OW-161) that is upstream from CRLF occurrences (W-177 and W-178) (Volume 2, Figures 3.3-4a, Sheet 5; 3.3-4c, Sheet 5; and 3.3-4d, Sheet 5). In addition, the road extension will reduce migration opportunities between critical habitat that encompasses the Mangels pond (where CRLF adults and tadpoles have been observed) and W-150 and currently contiguous critical habitat to the north, potentially resulting in substantial mortality to dispersing CRLFs. The federal lead agency must ensure that its activities do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery.

Under the No-Build Alternative, no construction activities would occur, and no impacts on CRLF or its habitat would occur.

Alternative B

Construction of Alternative B would result in both temporary disturbance and permanent loss of both aquatic and upland habitat for CRLF in the following locations within the project footprint (Volume 2, Figure 3.3-4a).

- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18), for a new off-ramp from westbound I-80 to Green Valley Road.
- Perennial marsh (W-150) (Sheet 5) for road widening on SR 12W.

- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (OW-8d) (Sheets 3 and 4).
- Grading and culverting of the unnamed drainage within the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Green Valley Creek for the Green Valley Creek bridge (W-45) (Sheets 17 and 18).
- Removal and replacement of the bridge over Dan Wilson Creek (W-53 and OW-53) (Sheet 21)).
- Suisun Creek for the widening of I-80 (OW-56) (Sheet 22).

Construction within the potential CRLF sites identified above would result in the temporary disturbance of 2.20 acres and the permanent loss of 1.25 acres of potential CRLF aquatic habitat. Additionally, Alternative B would result in the loss of 105.89 acres and temporary disturbance of 36.40 acres of upland habitat within one mile of suitable aquatic habitat. Most of this habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction in the portion of the study area in the extension of Red Top Road north of SR 12W is within critical habitat for CRLF (Volume 2, Figure 3.3-4a, Sheets 4–7). Approximately 16.47 acres of critical habitat would be permanently affected and 2.94 acres would be temporarily affected by construction. In addition, the new road would reduce migration opportunities and increase mortality for CRLF for the approximately 65 acres of critical habitat surrounding Mangels pond. There will be an undercrossing paralleling the creek to allow cattle access. Although this undercrossing will provide a movement corridor, because CRLFs do not travel in straightline movements, there could still be substantial mortality from the new road. CRLFs could be directly affected by construction activities occurring in or adjacent to all of the locations described above. If CRLFs are present within the construction work area, they could be inadvertently killed or wounded by construction vehicles, construction personnel, and accidental spill of toxic fluids (e.g., gasoline and other petroleum-based products). If CRLFs must be captured and relocated outside the construction work area, they could be exposed to increased risks of disease, predation, and competition that could result in increased mortality.

Alternative B, Phase 1

Construction of Alternative B, Phase 1 would affect CRLF aquatic habitat in the three locations described above in the affected environment (Volume 2, Figure 3.3-4b).

Potential upland habitat occurs within one mile of the aquatic habitat (Volume 2, Figure 3.3-4b, all sheets). Construction within the potential CRLF site identified above would result in the temporary disturbance of 1.45 acres and the permanent loss of 0.16 acre of potential CRLF aquatic habitat. Additionally, Alternative B, Phase 1 would result in the loss of 54.70 acres and temporary disturbance of 1.52 acres of upland habitat. This habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction effects under Alternative B, Phase 1 would be similar to those described for Alternative B.

Alternative C

Construction of Alternative C would result in temporary disturbance and permanent loss of both aquatic and upland habitat for CRLF in the following locations within the project footprint (Volume 2, Figure 3.3-4c).

- Perennial marsh (W-150) (Sheet 5) for road widening on SR 12W.
- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.
- Widening of SR 12W and construction of westbound on- and off-ramps for SR 12W (W-8d) (Sheets 3 and 4).
- Grading and culverting of the unnamed drainage for the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Green Valley Creek for the Green Valley Creek bridge (W-45) (Sheets 17 and 18).
- Removal and replacement of the bridge over Dan Wilson Creek (W-53 and OW-53) (Sheet 21).
- Suisun Creek for the widening of I-80 (OW-56) (Sheet 22).
- The perennial marsh mitigation area east of Green Valley Creek (W-45e-1) (Sheets 17 and 18) for a new off-ramp from westbound I-80 to Green Valley Road.

Construction in the potential CRLF sites identified above would result in the temporary disturbance of 0.36 acre and the permanent loss of 1.56 acres of potential CRLF aquatic habitat. Additionally, Alternative C would result in the loss of 126.57 acres and temporary disturbance of 30.99 acres of upland habitat for CRLF.

Construction on the extension of Red Top Road north of SR 12W would temporarily affect 1.51 acres and permanently affect 21.50 acres of critical habitat. In addition, approximately 65 acres of critical habitat would be isolated from critical habitat to the north of the road extension.

Construction effects under Alternative C would be similar to those described for Alternative B.

Alternative C, Phase 1

Construction of Alternative C, Phase 1 would result in project effects of CRLF habitat in the following locations within the project footprint (Volume 2, Figure 3.3-4d).

- Grading and culverting of the unnamed drainage for the extension of Red Top Road north of SR 12W (OW-161) (Sheet 5).
- Replacement and lengthening of culverts in Jameson Canyon Creek (OW-8) (Sheet 7) and its tributaries (OW-8a, OW-8b, W-8d) (Sheets 3 and 4) for the realignment of Red Top Road and construction of on- and off-ramps for SR 12W.

- Green Valley Creek (W-45) for the Green Valley Creek bridge (Sheets 17 and 18).

Construction in the potential CRLF habitat identified above would result in the temporary disturbance of 0.17 acre s and the permanent loss of 2.41 acre of potential CRLF aquatic habitat. Additionally, Alternative C, Phase 1 would result in the loss of 144.90 acres and temporary disturbance of 6.38 acres of upland habitat. Most of this habitat occurs within a highly disturbed area along I-80/I-680/SR 12W and SR 12E.

Construction on the extension of Red Top Road north of SR 12W would temporarily affect 0.48 acres and permanently affect 22.54 acres of critical habitat. In addition, approximately 65 acres of critical habitat would be isolated from critical habitat to the north of the road extension.

Construction effects under Alternative C, Phase 1 would be similar to those described for Alternative B.

Avoidance, Minimization, and/or Mitigation Measures

See avoidance, minimization, and/or mitigation measures in Section 3.3.1.1. Implementation of the USFWS standardized avoidance and minimization efforts for CRLF, construction BMPs, and the compensatory mitigation identified below would reduce effects on CRLF and potential habitat that could occur in the vicinity of the aquatic and upland habitat locations identified in the study area.

Conduct Preconstruction Surveys for California Red-Legged Frog

A preconstruction survey will be conducted immediately preceding any construction activity that occurs in CRLF habitat or any activity that may result in take of the species. A USFWS-approved biologist will carefully search all obvious potential hiding spots for CRLF, such as large downed woody debris, the perimeter of pond or wetland habitats, and the riparian corridors associated with streams and drainages. Any CRLFs found will be captured and held for the minimum amount of time necessary to release them in suitable habitat outside the study area. Suitable release sites will be identified by a qualified biologist approved by the USFWS before the start of construction activities.

Monitor Construction Occurring near Potential California Red-Legged Frog Habitat

A USFWS-approved biologist will monitor all ground-disturbing construction activity near potential CRLF habitat. After ground-disturbing activities are complete, the USFWS-approved biologist will train an individual to act as the on-site construction monitor. Both the USFWS-approved biologist and the construction monitor will have the authority to stop or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. If the USFWS-approved biologist or construction monitor has requested that work stop because of take of any listed species, the USFWS and the CDFG will be notified within one working day by email or telephone. The USFWS-approved biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.

- If a CRLF is encountered during construction work, activities will cease until the frog is removed and relocated by a USFWS-approved biologist.
- Any person capturing or handling CRLF will be a qualified biologist approved by the USFWS. A qualified biologist means any person who has completed at least four years of university training in wildlife biology or a related science, or has demonstrated field experience in the identification and life history of CRLF. Resumes of all biologists proposed to capture or handle CRLF will be submitted to the USFWS for approval no later than 30 days before the start of construction.
- If necessary, nets or bare hands may be used to capture red-legged frogs. The USFWS-approved biologist will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods in which they are capturing and relocating CRLFs. To avoid transferring disease or pathogens between aquatic habitats during the course of surveys or handling of CRLF, the USFWS-approved biologist will follow the Declining Amphibian Populations Task Force's Code of Practice. The USFWS-approved biologist will limit the duration of handling and captivity of CRLF. While in captivity, CRLF will be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge. Containers used for holding or transporting adults of this species will not contain any standing water.
- All construction areas will be flagged, and all activity will be confined to these areas.
- Because dusk and dawn are often the times when CRLFs are most actively foraging and dispersing, all construction activities should cease 30 minutes before sunset and should not begin before 30 minutes prior to sunrise.
- A representative will be appointed to be the contact source for any employee or contractor who might inadvertently kill or injure a CRLF, or who finds a dead, injured, or entrapped individual. The representative will be identified during the environmental awareness training and employee education program described in Section 3.3.1.1. The representative's name and telephone number will be provided to the USFWS before the initiation of ground-disturbing activities.
- Tightly woven fiber netting or similar material will be used for erosion control or other purposes at the project site to ensure that CRLF are not trapped. This limitation will be communicated to the contractor through use of special provisions included in the bid solicitation package. Coconut coir matting is an acceptable erosion control material. No plastic monofilament matting will be used for erosion control.
- A litter control program will be instituted at the entire project site. All workers will ensure that food scraps, paper wrappers, food containers, cans, bottles, and other trash from the study area are deposited in covered or closed trash containers. The trash containers will be removed from the study area at the end of each working day.
- After construction is complete, temporarily disturbed areas within the study area will be restored to pre-project conditions or enhanced to compensate for the removal of riparian vegetation.

- Requests for bids will include these avoidance and minimization efforts where applicable. Contractors involved in the project will be educated and informed about the requirements of applicable permits obtained for the project, including a BO.

Compensate for Loss and Disturbance of California Red-Legged Frog Habitat

Permanent loss and temporary disturbance of aquatic and upland habitat and critical habitat for CRLF in the study area will be compensated for by enhancement of an area of suitable acreage or by contribution to a mitigation bank for CRLF.

3.3.5.6 Swainson's Hawk

Swainson's hawk is listed as threatened under CESA and is protected under the MBTA and CFGC Section 3503.5. The MBTA and CFGC Section 3503.5 prohibit take of migratory birds, nests, and young. In the Central Valley, this species typically nests in oak or cottonwood trees in or near riparian habitats, in oak groves, in roadside trees, and in solitary trees. Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds (grasslands, irrigated pasture, alfalfa, hay, and row and grain crops). Swainson's hawks are migratory, wintering from Mexico to Argentina and breeding in California and elsewhere in the western United States. They generally arrive in the Central Valley in mid-March and begin courtship and nest construction immediately after arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August or early September.

Affected Environment

There is one Swainson's hawk nest site in the study area, approximately 0.5 mile southeast of the I-80/680 interchange (California Natural Diversity Database 2010). Large trees, suitable for nesting Swainson's hawks, are present in oak and riparian woodlands, and eucalyptus trees in the study area. However, it is unlikely that Swainson's hawks would nest in the study area because of the area's proximity to I-80, I-680, and SR 12W and 12E. Foraging habitat (row crops, ruderal, and nonnative annual grasslands) occurs in portions of the study area that would be affected by the proposed project.

Environmental Consequences

Potential Loss of Swainson's Hawk Nesting and Foraging Habitat Resulting from Construction

Both build alternatives would result in permanent and temporary effects to Swainson's hawk nesting habitat and permanent effects to foraging habitat. Temporary effects on foraging habitat are not considered because the habitat will return to baseline conditions once construction is complete.

Although there is a low likelihood that Swainson's hawks would nest adjacent to I-80/I-680/SR 12, tree removal or noise associated with construction activities could result in the disturbance of nesting Swainson's hawks if active nests are present in or near the construction area. These disturbances could cause nest abandonment and death of young or loss of reproductive potential at active nests located in or near the study area. Any of the build alternatives could result in a

substantial adverse effect, through loss of eggs or young, on a species listed as threatened under CESA.

Alternative B

Alternative B would result in a permanent loss of approximately 19.34 acres and temporary disturbance of 6.84 acre of potential nesting habitat including riparian woodland, eucalyptus, live oak woodland, other woodland, and valley oak woodland in and adjacent to the study area, which provides potential nesting habitat for Swainson's hawks.

Alternative B would result in a permanent loss of approximately 447.42 acres of foraging habitat that occurs in the study area: 123.70 acres within one mile of a known nest and 323.72 acres within one to five miles of a nest.

Alternative B, Phase 1

Alternative B, Phase 1 would result in a permanent loss of approximately 6.21 acre and temporary disturbance of 0.58 acre of potential nesting habitat for Swainson's hawks.

Alternative B, Phase 1 would result in a permanent loss of approximately 56.51 acres of foraging habitat that occur in portions of the study area: 33.90acres within one mile of a nest and 22.61 acres within one to five miles.

Alternative C

Alternative C would result in a permanent loss of approximately 27.49 acres and temporary disturbance of 6.62 acre of potential nesting habitat.

Alternative C would result in a permanent loss of approximately 230.92 acres of foraging habitat that occurs in the study area: 34.62 acres within one mile of a known nest, 196.06 acres within one to five miles of a nest, and 0.24 acre within five to ten miles of a known nest.

Alternative C, Phase 1

Alternative C, Phase 1 would result in a permanent loss of approximately 17.85 acre and temporary disturbance of 3.10 acre of potential nesting habitat.

Alternative C, Phase 1 would result in a permanent loss of approximately 183.10 acres of foraging habitat that occur in portions of the study area: 33.59 acres within one mile of a nest and 149.51 acres within one to five miles.

Loss of a substantial amount of foraging habitat within ten miles of a known Swainson's hawk nest is considered to be an adverse effect. This adverse effect can be offset through the acquisition of conservation lands that will preserve significant amounts of suitable foraging habitat for the species and the management and monitoring of these lands for Swainson's hawk habitat values.

Under the No-Build Alternative, no construction activities would occur, and no effects on Swainson's hawk would occur.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of avoidance, minimization measures in Section 3.3.1.1, the measure to conduct preconstruction nesting bird and raptor surveys in Section 3.3.4.2, and the measure listed below would reduce adverse effects on nesting Swainson's hawks.

Compensate for Loss of Swainson's Hawk Foraging Habitat

The CDFG requires that loss of foraging habitat for the species be replaced at different ratios depending on the habitat's distance from a known nest. Loss of foraging habitat within a 1-mile radius is to be compensated for at a ratio of 1:1, loss of habitat within one to five miles at a 0.75:1 ratio, and loss of habitat within five to ten miles at a ratio of 0.5:1 (California Department of Fish and Game 1994; Melissa Escaron, Staff Environmental Scientist at the California Department of Fish and Game, in December 29, 2008, e-mail to Stephanie Myers of ICF Jones & Stokes). Credits will be purchased at an approved mitigation bank.

3.3.5.7 Central California Coast Steelhead

Affected Environment

Review of available literature and data sources of species occurrence indicates that central California coast steelhead were both historically and recently present in several streams in the project area. A recent comprehensive review of existing steelhead occurrence within San Francisco Bay Estuary can be found in Leidy et al. (2005), which is the basis for some of the species occurrence information presented below. Hanson Environmental (2002) was also reviewed for information on Suisun Creek. On January 18, 2006, NMFS provided a list of threatened, endangered, and special-status fish species potentially found in the project area which included central California coast steelhead (Appendix F).

Dan Wilson Creek near the I-80 bridge has a modified channel bed and bank. Under the I-80 bridge, the channel bottom has natural substrates composed primarily of mud/silt. At the time of the survey (August 8, 2007), the channel was choked with cattails, and riparian and SRA cover vegetation was observed to be largely absent—with the exception of approximately 15 linear feet of SRA cover vegetation on the east bank downstream of the I-80 bridge. Stream flow was visually estimated to be 0.1 cfs or less. No suitable habitat for steelhead was observed in Dan Wilson Creek in the vicinity of the I-80 bridge crossing. The relatively small size and low elevation of the watershed, combined with the general lack of riparian vegetation, extensive emergent vegetative growth in the channel, and low stream flow, further suggest that this stream in the vicinity of the I-80 stream crossing does not support steelhead migration, spawning, and rearing habitat.

American Canyon Creek near the I-680 and Ramsey Road bridges also has a modified channel bed and bank. Overall, the channel is moderately incised and numerous cattails line the channel bottom. In the vicinity of the I-680 and Ramsey Road bridges, riparian and SRA cover vegetation is absent. Stream flow is conveyed under the I-680 and Ramsey Road bridges through concrete box culverts; presently, mud substrates line the bottom of both culverts. A concrete apron on the downstream side of the box culvert is perched above the adjacent, downstream channel bed, creating a vertical drop of approximately 0.75 foot. At the time of the survey (August 8, 2007), stream flows were visually estimated to be less than 0.1 cfs. A large beaver

dam was observed at the upstream end of the frontage road west of I-680 and was determined to be a barrier to fish passage at the observed stream flow conditions. No suitable habitat for steelhead was observed in American Canyon Creek in the vicinity of the I-680 bridge crossing. The relatively small size and low elevation of the watershed, combined with the general lack of riparian vegetation, extensive emergent vegetative growth in the channel, and low stream flow, further suggest that this stream in the vicinity of the I-680 stream crossing does not support suitable conditions for steelhead. Surveys conducted in 1981, 1997, and 2002 did not find any steelhead in American Canyon Creek (Leidy et al. 2005).

To the north of American Canyon Creek, Jameson Canyon Creek flows west to east and drains the adjacent watershed north of American Canyon. This creek channel is moderately incised with a high terrace floodplain and exhibits evidence of past disturbance, including channel straightening and levee construction. Substrate in the creek is predominantly sand, and gravel is present at isolated locations or in combination with sand. A stand of riparian vegetation consisting primarily of mature willows is present along both banks, creating a 50- to 75-foot-wide riparian corridor. Stream flow is conveyed under I-680 in box culverts. At the time of the survey (August 8, 2007), the creek was dry throughout the entire study area, which extends from immediately downstream of I-680 to near SR 12 upstream of the I-80 crossing. For the same reasons as those discussed for American Canyon Creek, habitat conditions in Jameson Canyon Creek in the vicinity of the I-680 stream crossing likely do not support steelhead.

Green Valley Creek flows north to south and drains the watershed area north of Cordelia. Green Valley Creek at the I-80 crossing has a concrete-lined bed and bank throughout the study area. The concrete-lined channel contains a low flow channel with concrete weirs every 20 feet for the entire length of the channel to facilitate fish passage. At the time of the surveys (July 5 and August 8, 2007), sediment deposits were observed over much of the length of channel under the I-80 bridges. Very little riparian vegetation occurs in the study area and is limited to vegetation that is growing in sediments deposited on the engineered channel. Leidy et al. (2005) indicated that steelhead were collected from Green Valley Creek from the 1950s to the present. Unpublished sampling data indicated that steelhead were collected about one mile upstream from I-80 in January 1997 (Leidy et al. 2005). Although data documenting specific occurrences of steelhead are lacking, Leidy et al. (2005) suggests that this creek's connection to the Suisun Marsh and its close proximity to the Suisun Creek drainage provides habitat opportunities for migratory steelhead. A fish passage assessment was conducted on the current channel configurations in Green Valley, Ledgewood, and Suisun Creeks, the results of which were compared to postproject conditions. This assessment concluded that, under existing conditions at low flows, the passage criteria related to minimum water depth for adult Chinook salmon and steelhead are not currently being met at the Green Valley Creek stream crossing because excessive sediments deposited in the constructed (i.e., concrete-lined) low-flow channel cause the water to spread out and become too shallow.

Suisun Creek flows north to south and drains the largest watershed area of any of the creeks in the study area. Although levees top the banks of Suisun Creek upstream and downstream of the I-80 crossing, riparian vegetation is dense in the study area up to the bridge. The Suisun Creek channel at the I-80 crossing is an earthen channel and consists of abutments on each bank of the creek. Two pier columns supporting the I-80 bridge spans intercept the channel at the interface between the creek and each bank. Historical evidence dating back as far as 1940 indicates that

steelhead were present throughout the Suisun Creek watershed. Following the construction of Gordon Valley Dam (Lake Curry) in 1926 and subsequent water developments, steelhead populations in the watershed declined. Although the distribution and abundance of steelhead throughout Suisun Creek and its tributaries may have fluctuated over the years, recent surveys found that both adult and juvenile steelhead are still present in this system. An adult steelhead (26.5 inches) was found approximately 0.25 mile downstream of the Wooden Valley Creek confluence in March 2001, while two other adult steelhead (20.9–25.2 inches) were observed in June and early July 2001 approximately six and 11 miles downstream of Lake Curry (Leidy et al. 2005); these locations are well upstream of the I-80 stream crossing. This same survey also noted the occurrence of juvenile steelhead (6.3–6.7 inches) downstream from the dam.

Historical evidence from 1965 (Leidy et al. 2005) suggested that Wooden Valley Creek, a tributary of Suisun Creek, contained the highest concentration of steelhead in the watershed. Surveys of Wooden Valley Creek conducted in 2002 indicated that juvenile steelhead were present at both headwater and various other survey locations along the creek (Leidy et al. 2005), suggesting the possibility of an existing steelhead population. Additionally, NOAA's NMFS believes that Suisun and Wooden Valley Creeks currently support a steelhead population and that sufficient migration, spawning, and rearing habitat exist (50 FR 52504, September 2, 2005). Hanson Environmental (2002) performed a more detailed analysis of steelhead habitat quality in Suisun Creek. The study surveyed approximately 95% of the stream from Cordelia Road to Lake Curry during summer low-flow period. Results of this study indicate that significant habitat constraints are present; these include migration barriers, limited spawning gravel availability, high summer water temperatures, and low habitat diversity. The study concluded that Suisun Creek was unlikely to consistently support self-sustaining steelhead populations. Instead, habitat would be best available during wet years when winter flows were high enough to allow upstream passage for adults and summer stream temperatures remained cool enough to support juvenile rearing. During dry years, summer rearing habitat would be constrained to upstream areas immediately below the reservoir, where temperatures would most likely remain suitable to support salmonids.

Ledgewood Creek at the SR 12E crossing is highly modified. Levees line both banks of the channel, and the channel has a trapezoidal cross section. Riparian and SRA cover vegetation is limited to areas downstream of the SR 12E bridge; no riparian or SRA cover vegetation is present in the immediate vicinity upstream of the bridge. SRA cover vegetation included six linear feet of willow on the west bank, and 15 linear feet of weeping willow and four feet of dying weeping willow along the east bank. Stream flow is conveyed through concrete-lined box culverts under the five-span bridge. At low flows, stream flow is conveyed through the second box culvert from the east bank. The concrete invert in this box culvert is notched and forms a V-shaped channel, which maximizes water depths at low flows. At the time of the survey (August 8, 2007), stream flow was measured at 0.67 cfs with a maximum depth of 0.4 foot. Based on the results of a fish passage assessment conducted as part of this proposed project, excessively shallow water depths in the box culvert under SR 12E create an impediment to migrating steelhead in Ledgewood Creek. Although specific data of steelhead occurrence in Ledgewood Creek are lacking, its connection to the Suisun Marsh and close proximity to Suisun Creek suggest that steelhead are potentially present in Ledgewood Creek.

The field survey and literature review results indicate that steelhead occur in Green Valley, Ledgewood, and Suisun Creeks. The effects discussion is limited to these creeks because they support special-status fish species in the project area.

Environmental Consequences

Potential Effects on Steelhead Resulting from Construction

Construction of either build alternative could affect water quality, fish habitat, channel morphology, water temperature, steelhead movement, and steelhead spawning habitat in streams containing steelhead. In addition, both build alternatives could result in disturbance and direct injury of steelhead. Alternatives B and C include construction of crossings over Green Valley, Suisun, and Ledgewood Creeks. Alternative B would additionally include construction of a second, new bridge over Ledgewood Creek. The fundable first phases of the alternatives would not include construction of crossings over Suisun Creek and would have potential impacts only on Green Valley and Ledgewood Creeks. Under the No-Build Alternative, no construction activities would occur, and no impacts on steelhead or its habitat would occur.

Water Quality

As described above in Section 3.3.4.10, the temporary effects of construction on water quality include increased sedimentation and turbidity and possible release of contaminants into Green Valley, Suisun, and Ledgewood Creeks from construction equipment. These water quality effects could increase steelhead mortality; reduce feeding opportunities, including those for rearing steelhead; and cause steelhead to avoid important habitat. Increased pollutant concentrations could limit steelhead reproduction, abundance, and distribution by direct mortality of steelhead or their prey. Steelhead in the study area require relatively clean, cold, well-oxygenated water for successful growth, reproduction, and survival and are not well adapted for survival in degraded aquatic habitats.

Implementation of the measure to prepare and implement a SWPPP in Section 3.2.3 and measures to prevent contaminants from entering streams and to restrict in-water work to avoid the migration and spawning seasons in Section 3.3.4.10 would address this impact.

Habitat and Channel Morphology

As described above in Section 3.3.4.10, project construction activities would affect fish habitat and could also change the channel morphology by disturbing the streambed substrate. However, revegetation would mitigate the loss of vegetation and SRA cover, and the channels would be restored to pre-project conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks. No permanent changes to channel morphology are expected.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would address this impact.

Water Temperature

Under existing conditions, habitat for juvenile steelhead rearing in the study area is likely marginal to unsuitable during summer (Hanson Environmental 2002). Water temperature is an important variable that determines the suitability of fish habitat for growth, reproduction,

survival, and migration. This is especially true for steelhead, which have relatively narrow temperature requirements for carrying out their life history. Any increase in water temperatures could further reduce the suitability of habitat for steelhead in the study area.

As described above in Section 3.3.4.10, the proposed project would have a minor effect on SRA cover. Revegetation of the disturbed areas, combined with the shading provided by the bridge extension, would be expected to maintain existing water temperatures in the study area, and the project would not adversely affect water temperature.

Implementation of the measure in Section 3.3.4.10 to minimize impacts on creek channels would ensure that there would be no adverse water temperature effects.

Interference with Movement

As described above in Section 3.3.4.10, construction activities associated with the project alternatives would require the use of cofferdams and pipelines, which could block the migration of adult and juvenile steelhead. However, the timing of construction activities to avoid the primary migration time of adult and juvenile steelhead and maintenance of fish passage through the construction site during stream dewatering activities would reduce the potential for impacts on fish movement. Therefore, temporary stream diversions associated with construction are not likely to adversely affect the migration of adult and juvenile steelhead.

Based on the fish passage assessment, modification of the bridge structures at Green Valley and Suisun Creeks along I-80 would not create new fish passage barriers or reduce existing fish passage conditions. The proposed modification of the bridge structure at Ledgewood Creek along SR-12 would exacerbate existing fish passage constraints associated with shallow water depths.

Implementation of measures in Section 3.3.4.10 to minimize impacts on creek channels and to maintain a migration corridor through creek channels would address this impact.

Disturbance to Potential Spawning Habitat

As described above in Section 3.3.4.11, a potential spawning gravel bed was observed in Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction under Alternatives B and C. It is anticipated that the gravel bed would not be disturbed by the proposed project. All construction equipment would access the construction site from the existing bridge and road. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions—using, to the extent practicable, gravel removed from the site.

Because no construction is proposed on Suisun Creek under the fundable first phase of either alternative or under the No-Build Alternative, there would be no effect on spawning habitat under these alternatives.

Implementation of measures listed in Section 3.3.4.10 to minimize impacts on creek channels and in Section 3.3.4.11 to avoid spawning habitat would address this impact.

Disturbance and Direct Injury

As described above in Section 3.3.4.10, noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, and cause injury or mortality. Under Alternative B, short-term noise disturbance caused by pile driving would occur within Ledgewood Creek. Potential direct effects of pile-driving activities include increased noise and turbidity. Researchers have suggested that salmonids can hear pile-driving noise approximately 2,000 feet from the source (Feist et al. 1992). Feist et al. (1992) observed that pile driving altered the distribution and behavior of juvenile pink and chum salmon. The potential impact on salmonids from pile-driving activities depends on the distance separating the noise-generating activity from fish and the duration of these activities. Evidence suggests that, although pile-driving noise may affect the distribution and behavior of juvenile pink and chum salmon, no significant changes occurred in their overall abundance (Feist et al. 1992).

Implementation of measures in Section 3.3.4.10 to restrict in-water activities to avoid spawning season and to minimize noise impacts on fish would address this impact.

Potential Effects on Steelhead Resulting from Operations

Water Quality

As described above in Section 3.3.4.10, all build alternatives would result in increased impervious surfaces and contaminated runoff. The potential increase in contaminated runoff entering the creeks could adversely affect steelhead that use the creeks for migration, spawning, and rearing. Pollutants could also cause mortality to and reduced growth of the egg, larval, and juvenile life stages of steelhead.

Implementation of the measure in Section 3.2.3 to prepare and implement a SWPPP and measures listed in Section 3.3.4.10 to prevent contaminants from entering the stream channel would address this impact.

Potential Interference with Movement

As described above in Section 3.3.4.11, the proposed extension of the culvert under SR 12E would exacerbate existing shallow water conditions at Ledgewood Creek during the migration season and would worsen fish passage conditions relative to current conditions. Bridge widening would occur under both build alternatives. Implementation of ‘Implement culvert retrofit at the SR12E crossing on Ledgewood Creek’ in Section 3.3.4.11 to address shallow water depths would improve fish passage conditions at Ledgewood Creek.

In summary, effects to central California coast steelhead could occur from construction and operation. Construction effects will be temporary and include change in water quality, habitat and channel morphology, and water temperature, interference with movement, disturbance of potential spawning habitat, and disturbance and direct injury. These temporary effects will occur during construction when steelhead are not in the study area. Operational effects which are permanent include a degradation in water quality and potential interference with movement on Ledgewood Creek. Implementation of measures to address water quality and fish passage will reduce the severity of this effect.

Avoidance, Minimization, and/or Mitigation Measures

See avoidance, minimization, and/or mitigation measures in Sections 3.3.4.10 and 3.3.4.11 to prevent contaminants from entering streams, restrict in-water work to avoid spawning season, minimize impacts on creek channels, maintain a migration corridor through creek channels, minimize noise impacts on fish, avoid spawning habitat, and retrofit the culvert at the SR 12E crossing over Ledgewood Creek.

3.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999, directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

More recently, FHWA has required use of the National Invasive Species Council's (NSIC's) invasive species databases (National Invasive Species Council 2009). The NSIC databases include both the CDFA noxious weed list (California Department of Food and Agriculture 2007) and the Cal-IPC Invasive Plant Inventory list (Cal-IPC 2007). Accordingly, the CDFA and Cal-IPC lists were used for the analysis of invasive species in the study area.

Affected Environment

Table 3.3.6-1 identifies the invasive plant species located in the study area. These species occur in areas mapped as annual grassland, landscaped, riparian woodland, drainage, and seasonal wetland. The infestation of the study area by these species is limited, occurring primarily on isolated patches of ruderal vegetation on the edges of roadways or scattered in the annual grassland.

Table 3.3.6-1. Invasive Plant Species Identified in the Study Area

Species	CDFA	Cal-IPC
Giant reed (*Arundo donax*)	B	High
Slender wild oat (*Avena barbata*)	–	Moderate
Wild oat (*Avena fatua*)	–	Moderate
Mediterranean linseed (*Bellardia trixago*)	–	Limited
Black mustard (*Brassica nigra*)	–	Moderate
Common mustard (*Brassica rapa*)	–	Limited
Rattlesnake grass (*Briza maxima*)	–	Limited
Ripgut brome (*Bromus diandrus*)	–	Moderate
Soft chess (*Bromus hordeaceus*)	–	Limited
Red brome (*Bromus madritensis* ssp. *rubens*)	–	High
Italian thistle (*Carduus pycnocephalus*)	C	Moderate
Iceplant (*Carpobrotus edulis*)	–	High
Purple star-thistle (*Centaurea calcitrapa*)	B	Moderate
Yellow star-thistle (*Centaurea solstitialis*)	C	High
Bull thistle (*Cirsium vulgare*)	C	Moderate
Poison hemlock (*Conium maculatum*)	–	Moderate
Bindweed (*Convolvulus arvensis*)	C	–
Pampas grass (*Cortaderia jubata*)	B	High
Silverleaf cotoneaster (*Cotoneaster pannosus*)	–	Moderate
Brass buttons (*Cotula coronopifolia*)	–	Limited
Artichoke thistle (*Cynara cardunculus*)	B	Moderate
Bermuda grass (*Cynodon dactylon*)	C	Moderate
Orchard grass (*Dactylis glomerata*)	–	Limited
Fuller's teasel (*Dipsacus sativus*)	–	Moderate
Red-stemmed filaree (*Erodium cicutarium*)	–	Limited
Fig (*Ficus carica*)	–	Moderate
Fennel (*Foeniculum vulgare*)	–	High
Mediterranean barley (*Hordeum marinum* var. *gussoneanum*)	–	Moderate
Hare barley (*Hordeum murinum* ssp. *leporinum*)	–	Moderate
Klamathweed (*Hypericum perforatum*)	C	Moderate
Smooth cat's ear (*Hypochaeris glabra*)	–	Limited
Broad-leaved pepper-grass (*Lepidium latifolium*)	B	High
Italian ryegrass (*Lolium multiflorum*)	–	High
Water primrose (*Ludwigia peploides*)	–	High
Hyssop loosestrife (*Lythrum hyssopifolium*)	–	Moderate
Alkali mallow (*Malvella leprosa*)	C	–
White horehound (*Marrubium vulgare*)	–	Limited
Bur-clover (*Medicago polymorpha*)	–	Limited
Pennyroyal (*Mentha pulegium*)	–	Moderate
Olive (*Olea europaea*)	–	Limited
Harding grass (*Phalaris aquatica)*	–	Moderate
Bristly ox-tongue (*Picris echioides*)	–	Limited
Smilo grass (*Piptatherum millaceum*)	–	Limited
Narrow-leaved plantain (*Plantago lanceolata*)	–	Limited
Rabbit-foot grass (*Polypogon monspeliensis*)	–	Limited
Firethorn (*Pyracantha angustifolia*)	–	Limited
Wild radish (*Raphanus sativus*)	–	Limited
Black locust (*Robinia pseudoacacia*)	–	Limited
Himalayan blackberry (*Rubus discolor*)	–	High
Sheep sorrel (*Rumex acetosella*)	–	Moderate

Species	CDFA	Cal-IPC
Curly dock (*Rumex crispus*)	–	Limited
Russian thistle (*Salsola tragus*)	C	Limited
Milk thistle (*Silybum marinum*)	–	Limited
Charlock (*Sinapis arvensis*)	–	Limited
Spanish broom (*Spartium junceum*)	–	High
Medusahead (*Taeniatherum caput-medusae*)	C	High
Saltcedar (*Tamarix ramosissima*)	B	High
Hedgeparsley (*Torilis arvensis*)	–	Moderate
Puncture vine (*Tribulus terrestris*)	C	–
Rose clover (*Trifolium hirtum*)	–	Moderate
Bigleaf periwinkle (*Vinca major*)	–	Moderate
Foxtail fescue (*Vulpia myuros*)	–	Moderate

Notes: The California Department of Agriculture (CDFA) and California Invasive Plant Council (Cal-IPC) lists assign ratings that reflect the CDFA and Cal-IPC views of the statewide importance of the pest, likelihood that eradication or control efforts would be successful, and 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 Cal-IPC species list is more inclusive than the CDFA list; however, FHWA requires adherence to Executive Order 13112, which requires the use of only the CDFA list.

The CDFA categories indicated in the table are defined as follows:

- **B:** Eradication, containment, control or other holding action at the discretion of the county agricultural commissioner.
- **C:** State-endorsed holding action and eradication only when found in a nursery; action to retard spread outside nurseries at the discretion of the county agricultural commissioner.

The Cal-IPC categories indicated in the table are defined as follows:

- **High:** Species with severe ecological impacts, high rates of dispersal and establishment, and usually widely distributed.
- **Moderate:** Species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution.
- **Limited:** Species with minor ecological impacts, low to moderate rates of invasion, limited distribution, and locally persistent and problematic.

Environmental Consequences

Potential Introduction and Spread of Invasive Plant Species Resulting from Construction

Invasive weed species in the study area are present along roadsides, which are routinely disturbed by shoulder maintenance and vegetation management activities. The proposed project would create additional disturbed area for a temporary period, but it would not substantially increase the area subject to repeated disturbance because the new road shoulders would replace existing road shoulders. Therefore, the project alternatives are not anticipated to increase or decrease the area currently occupied by invasive weeds or the potential for spreading invasive weed species.

Implementation of the measure to conduct environmental awareness training provided in Section 3.3.1.1 and the measure below would address this impact.

Under the No-Build Alternative, no construction activities would occur, and no effects associated with the spread of invasive species would occur.

Avoidance, Minimization, and/or Mitigation Measures

Avoid the Introduction and Spread of Invasive Plants

To avoid the introduction of new invasive plants and the spread of invasive plants previously documented in the study area, the following measures will be implemented during construction.

- Surface disturbance within the construction work area will be minimized to the greatest extent possible.
- All disturbed areas will be seeded with certified weed-free native mixes and mulched with certified weed-free mulch (rice straw may be used in upland areas).
- Native, noninvasive species will be used in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

3.3.7 Native Trees

Regulatory Setting

The City of Fairfield Tree Conservation ordinance (FCC 25.36) protects native trees, including native oaks, bay laurel, madrone, and California buckeye, that are greater than six inches in diameter at breast height (dbh). This ordinance protects native trees located inside the City Limit Line on public property or on private property developed or landscaped with City approval, but not those located within the Caltrans right-of-way. Solano County has no specific tree protection requirements outside of hillsides and visually sensitive areas.

Most native trees in the study area occur in or adjacent to riparian and oak woodland communities. These trees are still considered sensitive resources because they occur in natural communities of special concern and were discussed above in Sections 3.3.1.1 and 3.3.1.2.

Affected Environment

Mature native trees (dbh of six inches or more) that are not located within riparian or oak woodland were individually mapped in the study area. The sheet and tree numbers shown in parentheses below correspond to Figures 3.3-2a, 3.3-2b, 3.3-2c, and/or 3.3-2d in Volume 2. Information for each tree is listed in Appendix G. Individually mapped native trees occur at the following locations in and adjacent to the study area.

- Along Jameson Canyon Creek near the industrial area west of I-680 (three coast live oaks) (Trees 1–3 on Sheets 9 and 14).
- Near the I-80 EB on-ramp from NB I-680 (one coast live oak and three valley oaks) (Trees 4–7 on Sheets 16 and 17).
- The intersection of Green Valley Road and Business Center Drive (17 coast live oaks and two valley oaks) (Trees 8–24 on Sheet 17).

Native trees outside the City Limit Line and outside the Caltrans right-of-way occur at the following locations in the study area.

- Red Top Road extension (six interior live oaks) (Trees 100–105 on Sheets 2-3).
- South of SR 12W (seven coast live oaks) (Trees 27–33 on Sheet4).
- Between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (one interior live oak, one valley oak, and an undetermined number in the area replanted after construction of the new eastbound truck scales) (Trees 34 and 35 on Sheets 21 and 22).

Environmental Consequences

Native trees are not protected under any applicable federal statute. Impacts on native trees are discussed as CEQA impacts in Chapter 4.

3.3.8 Suisun Marsh Secondary Management Area

Regulatory Setting

Pursuant to the Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974, the San Francisco Bay Conservation and Development Commission (BCDC) and the CDFG prepared the Suisun Marsh Protection Plan. In 1977, the Suisun Marsh Preservation Act was enacted to incorporate the findings and policies contained in the plan into state law. The Suisun Marsh Preservation Act established two management areas within the marsh. The Primary Management Area includes tidal marshes, seasonal marshes, managed wetlands, and lowland grasslands. The Secondary Management Area is the adjacent upland grasslands and cultivated lands that serve as a buffer between the Primary Management Area and developed land. As required by the Suisun Marsh Protection Act, Solano County prepared the Suisun Marsh Local Protection Program (SMLPP), which includes policies, programs, and regulations to preserve and enhance wildlife habitat in the Suisun Marsh and retain adjacent upland areas in uses compatible with protection of the marsh. Solano County regulates uses in the Secondary Management Area through Marsh Development Permits to ensure that proposed uses are consistent with the SMLPP.

Affected Environment

The study area east of I-680 between the Gold Hill Road overpass and just south of Jameson Canyon Creek is within the Suisun Marsh Secondary Management Area. The location is shown in Figures 3.3-2a through 2d, Sheets 10–14 in Volume 2.

This part of the study area is primarily nonnative annual grassland, with stands of eucalyptus trees, several seasonal wetlands, seasonal drainages, and ruderal vegetation adjacent to I-680.

Environmental Consequences

The Suisun Marsh Secondary Management Area is not protected under any applicable federal statute. Effects on this resource are discussed per CEQA requirements in Chapter 4.

Table 3.3.3-1. Sensitive Plant Species with the Potential to Occur in the I-80/I-680/SR 12 Project Region

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Ferris' milk-vetch *Astragalus tener* var. *ferrisiae*	–/–/1B.1	Historical range included the Central Valley from Butte to Alameda County but currently only occurs in Butte, Glenn, Colusa, and Yolo Counties.	Seasonally wet areas in meadows and seeps, subalkaline flats in valley and foothill grassland; 16-245 feet	April–May	Yes	Suitable vegetation communities, soils, and hydrologic conditions are present in nonnative annual grasslands on alkali soils the study area, but study area is outside current known range and the species was not observed during blooming-period surveys.
Alkali milk-vetch *Astragalus tener* var. *tener*	–/–/1B.2	Merced, Solano, and Yolo Counties. Historically more widespread.	Grassy flats and vernal pool margins on alkali soils below 200 feet.	March–June	Yes	**Species is present in the study area.** Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E between Ledgewood Creek and Pennsylvania Avenue.
Heartscale *Atriplex cordulata*	–/–/1B.2	Western Central Valley and valleys of adjacent foothills.	Alkali grassland, alkali meadow, and alkali scrub below 650 feet.	April–October	Yes	Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali soils the study area, but the species was not observed during blooming-period surveys.
Brittlescale *Atriplex depressa*	–/–/1B.2	Western Central Valley and valleys of adjacent foothills on west side of Central Valley.	Alkali grassland, alkali meadow, alkali scrub, chenopod scrub, playas, and valley and foothill grasslands on alkaline or clay soils below 650 feet	May–October	Yes	Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali and clay soils the study area, but the species was not observed during blooming-period surveys.
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B.2	West edge of Central Valley from Glenn County to Tulare County.	Alkali grassland, alkali meadow, alkali scrub, and saltbush scrub below 1,000 feet.	April–October	Yes	Suitable vegetation communities and soils are present in nonnative annual grasslands on alkali soils the study area, but the species was not observed during blooming-period surveys.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Vernal pool smallscale *Atriplex persistens*	–/–/1B.2	Central Valley, from Glenn to Tulare County.	Dry beds of vernal pools on alkaline soils; 33-380 feet.	July–October	Yes	Suitable vernal pool habitat is present in the study area south of SR 12E, but species was not observed during blooming-period surveys.
Big-scale balsamroot *Balsamorhiza macrolepis* var. *macrolepis*	–/–/1B.2	Scattered occurrences in Coast Ranges and Sierra Nevada foothills.	Chaparral, cismontane woodland, valley and foothill grassland, sometimes on serpentine soils, at 300–4,600 feet.	March–June	Yes	Suitable habitat is present in oak woodlands and nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Sonoma sunshine *Blennosperma bakeri*	E/E/1B.1	Endemic to Sonoma County.	Vernal pools, mesic valley and foothill grassland; 33-360 feet.	March–May	No	Suitable habitat is present in nonnative annual grasslands and seasonal wetlands in the study area, but species occurs only in Sonoma County and was not observed during blooming-period surveys.
Big tarplant *Blepharizonia plumosa*	–/–/1B.1	San Francisco Bay area, with occurrences in Alameda, Contra Costa, San Joaquin[b], Stanislaus, and Solano Counties.	Valley and foothill grassland; 100-1,650 feet.	July–October	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Narrow-anthered California brodiaea *Brodiaea californica* var. *leptandra*	–/–/1B.2	Lake, Napa, and Sonoma Counties.	Broadleaved upland forest, chaparral, and lower montane coniferous forest at 300 to 3,000 feet.	May–July	No	No suitable vegetation communities are present in the study area.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	–/–/1B.2	Alameda, Contra Costa, and Solano Counties.	Cismontane woodland and chaparral, 100-2,750 feet.	April–June	Yes	Suitable habitat is present in undisturbed oak woodlands in the study area, but species was not observed during blooming-period surveys.
Tiburon Indian paintbrush *Castilleja affinis* ssp. *neglecta*	E/T/1B.2	San Francisco Bay Area. Marin, Napa, and Santa Clara Counties.	Serpentine grasslands, 200-1,300 feet.	April–June	No	No suitable vegetation communities or soils are present in the study area.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Holly-leaved ceanothus *Ceanothus purpureus*	–/–/1B.2	Inner north Coast Ranges. Napa and Solano Counties.	Chaparral on volcanic, rocky substrate, 400-2,100 feet.	February–April	No	No suitable vegetation communities or soils are present in the study area.
Congdon's tarplant *Centromadia [Hemizonia] parryi* ssp. *congdonii*	–/–/1B.2	East San Francisco Bay Area, Salinas Valley, Los Osos Valley.	Annual grassland, on lower slopes, flats, and swales, sometimes on alkaline or saline soils; below 750 feet.	June-November	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Pappose tarplant *Centromadia [Hemizonia] parryi* ssp. *parryi*	–/–/1B.2	Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma Counties.	Coastal prairie, meadows and seeps, coastal salt marshes and swamps, alkaline soils in vernally mesic valley and foothill grassland; 6-1,400 feet.	May–November	Yes	**Species is present in the study area.** Suitable vegetation communities and soils are present, and the species was observed in the area north and south of SR 12E, between Beck Avenue and Pennsylvania Avenue.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	–/–/2.1	Southern Sacramento Valley, Central Coast, South Coast.	Coastal, freshwater, or brackish marshes and swamps; below 660 feet.	July–September	Yes	Suitable habitat is present in perennial marsh in the study area, but species was not observed during blooming-period surveys.
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	E/–/1B.1	Suisun Marsh. Solano County.	Salt marsh, 0-3 feet.	July–September	No	No suitable vegetation communities are present in the study area.
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	–/–/1B.1	Central Valley. Alameda, Kern, Merced, Placer, and Solano Counties.	Meadow, grassland, and playa on alkaline soils below 500 feet.	June–September	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Soft bird's-beak *Cordylanthus mollis* ssp. *mollis*	E/R/1B.2	San Francisco Bay region and Suisun Marsh. Contra Costa, Marin,[b] Napa, Solano, Sacramento,[b] and Sonoma[b] Counties.	Tidal salt marsh, 0-10 feet.	July–September	No	No suitable vegetation communities or hydrologic conditions are present in the study area.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Subalpine cryptantha *Cryptantha crymophila*	–/–/1B.3	Alpine, Mono, and Tuolumne Counties.	Subalpine coniferous forest on volcanic, rocky substrates; 8,500-10,500 feet.	July–August	No	No suitable vegetation communities are present in the study area. Species is included in the Allendale quadrangle in the CNPS database (2010), but this is a high-elevation species unlikely to occur in the valley or Bay Area.
Recurved larkspur *Delphinium recurvatum*	–/–/1B.2	San Joaquin Valley and central valley of the south Coast Ranges. Contra Costa County to Kern County.	Subalkaline soils in annual grassland, saltbush scrub, cismontane woodland, and vernal pools at 100–2,000 feet.	March–May	Yes	Suitable habitat is present in nonnative annual grasslands and oak woodlands in the study area, but species was not observed during blooming-period surveys.
Western leatherwood *Dirca occidentalis*	–/–/1B.2	San Francisco Bay region, Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma Counties.	Moist areas in broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland; 165-1,300 feet.	January–April	No	Potentially suitable habitat is present in riparian woodland in the study area, but study area is below known elevation range and species was not observed during blooming-period surveys.
Dwarf downingia *Downingia pusilla*	–/–/2.2	Central Valley.	Vernal pools and valley and foothill grasslands; 3-1,500 feet.	March–May	Yes	Potentially suitable habitat is present in nonnative annual grasslands and seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Streamside daisy *Erigeron biolettii*	–/–/3	North Coast, from Humboldt County to Marin County, Solano County.	Moist, rocky areas in broadleaved upland forest, cismontane woodland, North Coast coniferous forest, and ledges along rivers; 100-3,600 feet.	June–October	Yes	**Species was present in the study area, but has been subsequently removed.** Suitable vegetation communities and soils are present, and the species was observed in the area north of I-80 and east of Dan Wilson Creek. This area has been graded for construction of a development project.
Greene's narrow-leaved daisy *Erigeron greenei*	–/–/1B.2	Lake, Napa, and Sonoma Counties.	On serpentinite or volcanic soils in chaparral; 260–950 feet.	May–Septembe r	No	No suitable plant communities or soils (serpentinite or volcanic) are present in the study area.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	–/–/1B.1	Central inner north Coast Range, northern Central coast, and northern San Francisco Bay area: Alameda, Colusa, Lake, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma[b] Counties.	On serpentinite in chaparral, coastal prairie, valley and foothill grassland; 0-2,300 feet.	June–September	No	No suitable soils (serpentinite) are present in the study area.
Mt. Diablo buckwheat *Eriogonum truncatum*	–/–/1B.1	Historically known from Alameda, Contra Costa, and Solano counties; recently rediscovered on Mt. Diablo.	Coarse, sandy soils in chaparral, coastal scrub, valley and foothill grassland; elevation 10-1,150 feet.	April–September	No	CNDDB includes an historic record from 1888 near Suisun City, but no suitable undisturbed nonnative annual grassland or coarse, sandy soils are present in the study area.
Fragrant fritillary *Fritillaria liliacea*	–/–/1B.2	Coast Ranges from Marin County to San Benito County.	Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentinite; 10-1,345 feet.	February–April	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, and heavy clay soils may occur in the study area, but species was not observed during blooming-period surveys.
Adobe lily *Fritillaria pluriflora*	–/–/1B.2	Northern Sierra Nevada foothills, inner Coast Ranges foothills, and Sacramento Valley. Butte, Colusa, Glenn, Lake, Napa, Plumas, Solano, Tehama, and Yolo Counties.	Chaparral, cismontane woodland, valley and foothill grassland, often on adobe soils; 200-2,300 feet.	February–April	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, and heavy clay soils may occur in the study area, but species was not observed during blooming-period surveys.
Woolly-headed gilia *Gilia capitata* ssp. *tomentosa*	–/–/1B.1	Coastal California: Sonoma and Marin Counties.	Coastal bluff scrub; 50-510 feet.	May–July	No	No suitable vegetation communities are present in the study area.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–/E/1B.2	Inner north Coast Ranges, Central Sierra Nevada foothills, Sacramento Valley and Modoc Plateau: Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, and Tehama Counties; also Oregon.	Clay soils in areas of shallow water, lake margins and vernal pool margins, 330-7,800 feet.	April–August	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species generally occurs in large vernal pools, which do not occur in the study area. Species was not observed during blooming-period surveys.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Diablo helianthella *Helianthella castanea*	–/–/1B.2	San Francisco Bay area: Alameda, Contra Costa, Marin [b], San Francisco [b], and San Mateo Counties; also reported from San Diego County.	At chaparral/oak woodland ecotone, often in partial shade, on rocky soils, also coastal scrub, riparian woodland, grassland; 200-4,300 feet.	March–June	Yes	Marginally suitable habitat is present in riparian woodland in the study area, but species is not known from Solano County. Species was not observed during blooming-period surveys.
Pale yellow hayfield tarplant *Hemizonia congesta* ssp. *congesta*	–/–/1B.2	Coastal California: Mendocino, Sonoma and Marin Counties.	Coastal scrub, valley and foothill grassland, often in fallow fields; 82-1,500 feet.	April–October	Yes	Suitable habitat is present in nonnative annual grasslands and fallow row crop fields in the study area, but species was not observed during blooming-period surveys.
Brewer's western flax *Hesperolinon breweri*	–/–/1B.2	Southern north inner Coast Ranges, northeast San Francisco Bay region, and Mt. Diablo. Contra Costa, Napa, and Solano Counties.	Serpentine slopes in chaparral and grasslands at 100–2,000 feet.	May–July	No	No suitable soils (serpentine) are present in the study area.
Napa western flax *Hesperolinon serpentinum*	–/–/1B.1	Alameda, Lake, Napa, and Stanislaus Counties.	Chaparral on serpentinite; 164-2,600 feet.	May–July	No	No suitable vegetation communities or soils (serpentinite) are present in the study area.
Santa Cruz tarplant *Holocarpha macradenia*	T/E/1B.1	Coastal slope of the Santa Cruz Mountains, Monterey and Santa Cruz Counties.	Coastal terrace grasslands, coastal scrub, often on light sandy to sandy clay soils, 30- 720 feet.	June–October	No	No suitable vegetation communities or soils (sandy or sandy clay) are present in the study area.
Carquinez goldenbush *Isocoma arguta*	–/–/1B.1	Deltaic Sacramento Valley and Suisun Slough. Contra Costa and Solano Counties.	Annual grassland on alkaline soils and flats generally below 70 feet.	August–December	Yes	Suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Northern California black walnut *Juglans hindsii*	–/–/1B.1	Last two native stands in Napa and Contra Costa Counties; historically more widespread through southern north inner Coast Range, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay region.	Riparian forest, riparian woodland, 0-1,450 feet.	April–May	Yes	No native stands present in study area.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Contra Costa goldfields *Lasthenia conjugens*	E/–/1B.1	Napa and Solano Counties.	Alkaline or saline vernal pools and swales, below 1,550 feet.	March–June	Yes	**Species is present in the study area.** Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E, west and east of Pennsylvania Avenue.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	–/–/1B.2	Central Valley and 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.	May–September	No	No suitable vegetation communities are present in the study area.
Legenere *Legenere limosa*	–/–/1B.1	Central Valley.	Vernal pools.	April–June	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	–/–/1B.2	Southern Sacramento Valley, Glenn, Solano, and Yolo Counties.	On margins of alkali scalds in annual grassland; below 656 feet.	March–May	No	No suitable soil conditions (alkali scalds) present in annual grasslands in the study area.
Jepson's leptosiphon *Leptosiphon jepsonii*	–/–/1B.2	Lake, Napa, and Sonoma Counties.	Chaparral and cismontane woodland, typically in volcanic soils, 320–1,640 feet.	March–May	No	No suitable soils (volcanic) are present in the study area.
Woolly-headed lessingia *Lessingia hololeuca*	–/–/3	Southern north Coast Ranges, southern Sacramento Valley, northern San Francisco Bay region, Alameda, Monterey, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo Counties.	Clay or serpentinite soils of coastal scrub, lower montane coniferous forest, valley and foothill grassland; 49-1,000 feet.	June–October	Yes	Suitable habitat is present in nonnative annual grasslands on clay soils in the study area, but species was not observed during blooming-period surveys.
Mason's lilaeopsis *Lilaeopsis masonii*	–/R/1B.1	Southern Sacramento Valley, Sacramento River–San Joaquin River Delta, and northeast San Francisco Bay Area. Alameda, Contra Costa, Marin,[b] Napa, Sacramento, San Joaquin, and Solano Counties.	Freshwater or brackish marsh, in tidal zone, generally at sea level.	April–November	No	No suitable hydrologic conditions (tidal areas) are present in the study area.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Sebastopol meadowfoam *Limnanthes vinculans*	E/E/1B.1	Napa? and Sonoma Counties.	Vernal pools, vernally mesic grasslands and wet meadows; 50-1,000 feet.	April–May	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Delta mudwort *Limosella subulata*	–/–/2.1	Deltiac 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; 0-10 feet.	May–August	No	No suitable hydrologic conditions (tidal areas) are present in the study area.
Mt. Diablo cottonweed *Micropus amphibolus*	–/–/3.2	Coast Ranges from Lake County to Santa Barbara County.	Rocky sites in broadleafed upland forest, mixed evergreen forest, oak woodland, chaparral, Valley and foothill grasslands; 150-2,700 feet.	March–May	No	No suitable soils are present in the study area, and study area is outside known range.
Robust monardella *Monardella villosa* ssp. *globosa*	–/–/1B.2	North Coast Ranges and Eastern San Francisco Bay Area: Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma Counties.	Grassy openings in oak woodland and chaparral, coastal scrub and grassland, 330-3,000 feet	June–July	No	Study area is below known elevational range for species. Not observed during blooming-period surveys.
Little mousetail *Myosurus minimus* ssp. *apus*	–/–/3.1	Central Valley and South Coast from Butte County south to San Diego County; Baja California, Oregon.	Valley and foothill grassland, alkaline vernal pools at 66-2,100 feet.	March–June	Yes	Suitable vegetation communities and soils are present in seasonal wetlands on alkali soils the study area, but the species was not observed during blooming-period surveys.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	–/–/1B.1	Inner North Coast Range, western Sacramento Valley: Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Tehama, and Yolo Counties.	Vernal pools and swales in woodland, lower montane coniferous forest, mesic meadows, and grassland; generally below 5,740 feet.	May–July	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Colusa grass *Neostapfia colusana*	T/E/1B.1	Central Valley. Colusa,[b] Glenn,[b] Merced, Solano, Stanislaus, and Yolo Counties.	Adobe soils of vernal pools generally below 660 feet.	May–September	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, and heavy clay soils may occur in the study area, but species was not observed during blooming-period surveys.
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	E/E/1B.1	Northeast San Francisco Bay region, known from 3 native occurrences; Contra Costa and Sacramento Counties.	Inland dunes generally below 100 feet.	March–September	No	No suitable vegetation communities or soils are present in the study area.
San Joaquin Valley orcutt grass *Orcuttia inaequalis*	T/E/1B.1	Scattered locations along east edge of the San Joaquin Valley and adjacent foothills, from Stanislaus County to Tulare County.	Vernal pools, 30-2,500 feet.	April–September	Yes	Potentially suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.
Bearded popcorn-flower *Plagiobothrys hystriculus*	–/–/1B.1	Endemic to Solano[b] County. Last recorded in 1892 (California Natural Diversity Database 2005); rediscovered in 2005.	Mesic grasslands and vernal pools, 30-165 feet.	April–May	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Marin knotweed *Polygonum marinense*	–/–/3.1	Coastal Marin, Marin, Napa, Solano, and Sonoma Counties.	Coastal salt marsh, brackish marsh; 0-30 feet.	April–October	Yes	Suitable marsh habitat is present on south side of SR 12E, but not observed during blooming-period surveys.
Slender-leaved pondweed *Potamogeton filiformis*	–/–/2.2	Scattered locations in California: Contra Costa, El Dorado, Lassen, Merced, Mono, Modoc, Mariposa, Placer, Santa Clara*, and Sierra Counties; Arizona, Nevada, Oregon, Washington.	Freshwater marsh, shallow emergent wetlands and freshwater lakes, drainage channels; 980-7,050 feet.	May–July	Yes	Potentially suitable habitat is present in perennial marshes in the study area, but study area is below the known elevation range and the species was not observed during blooming-period surveys.
California beaked-rush *Rhynchospora californica*	–/–/1B.1	Scattered occurrences in northern California. Butte, Mariposa, Marin, and Sonoma Counties.	Freshwater marshes and seeps, bogs and fens, and lower montane coniferous forest, 131-3,310 feet.	May–July	Yes	Potentially suitable habitat is present in perennial marshes in the study area, but species was not observed during blooming-period surveys.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Rayless ragwort *Senecio aphanactis*	–/–/2.2	Scattered locations in central western and southwestern California, from Alameda County to San Diego County.	Oak woodland, coastal scrub, open sandy or rocky areas, on alkaline soils; 50-2,600 feet.	January–April	Yes	Suitable habitat is present in undisturbed oak woodlands in the study area, but species was not observed during blooming-period surveys.
Napa checkerbloom *Sidalcea hickmanii* ssp. *napensis*	–/–/1B.1	Napa county	Rhyolitic soils in chaparral; 1,360-2,000 feet.	April-June	No	No suitable vegetation communities or soils are present in the study area, and study area is below the known elevation range.
Marin checkerbloom *Sidalcea hickmanii* ssp. *viridis*	–/–/1B.3	Sonoma County to San Mateo County.	Openings in chaparral on volcanic or serpentinite substrates, 165-1,410 feet.	May–June	No	No suitable vegetation communities or soils are present in the study area.
Keck's checkerbloom *Sidalcea keckii*	E/–/1B.1	Fresno and Tulare Counties.	Serpentine clay soils in cismontane woodland, valley and foothill grassland; 400-1,400 feet.	April-May	No	No suitable soils are present in the study area, and study area is below the known elevation range.
Suisun marsh aster *Symphyotrichum lentum* [*Aster lentus*]	–/–/1B.2	Sacramento River–San Joaquin River Delta, Suisun Marsh, and Suisun Bay. Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties.	Tidal brackish and freshwater marsh below 500 feet.	May–November	No	No suitable hydrologic conditions (tidal areas) are present in the study area.
Napa bluecurls *Trichostema ruygtii*	–/–/1B.2	Lake and Napa Counties.	Cismontane woodland, lower montane coniferous forest, valley and foothill grassland, vernal pools; 100-200 feet.	June-October	Yes	Potentially suitable habitat is present in nonnative annual grasslands and seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Showy Indian clover *Trifolium amoenum*	E/–/1B.1	Coast Range foothills in the San Francisco Bay region, currently known from Marin County.	Low elevation grasslands, including swales and disturbed areas, sometimes on serpentinite soils; 13-1,360 feet.	April–June	Yes	Potentially suitable habitat is present in nonnative annual grasslands in the study area, but species was not observed during blooming-period surveys.

Common Name *Scientific Name*	Legal Status[a] Federal/State/ CNPS	Geographic Distribution	Habitat Requirements	Blooming Period	Habitat Present in Study Area?	Rationale
Saline clover *Trifolium depauperatum* var. *hydrophilum*	–/–/1B.2	Alameda, Monterey, Napa, San Benito, Santa Clara, San Luis Obispo, San Mateo, Solano, and Sonoma Counties.	Salt marsh, mesic alkaline areas in grasslands, vernal pools; 0-1,000 feet.	April–June	Yes	**Species is present in the study area.** Suitable vegetation communities and soils are present, and the species was observed in the area south of SR 12E, west and east of Pennsylvania Avenue.
Greene's tuctoria *Tuctoria greenei*	E/R/1B.1	Scattered distribution along eastern Central Valley and foothills from Shasta County to Tulare County.	Dry vernal pools at 100-3,510 feet.	May–September	Yes	Potentially suitable habitat is present in seasonal wetlands in the study area, but species was not observed during blooming-period surveys.
Oval-leaved viburnum *Viburnum ellipticum*	–/–/2.3	Northwest California, San Francisco Bay Area, and north and central Sierra Nevada foothills. Contra Costa, Fresno, El Dorado, Glenn, Humboldt, Mendocino, Napa, Shasta, and Sonoma Counties, as well as Oregon and Washington.	Chaparral, cismontane woodland, and lower montane coniferous forest; 705-4,600 feet.	May–June	No	No suitable habitat in the study area, and study area is below elevational range for the species.

Sources: California Natural Diversity Database (CNDDB) 2010; CNPS 2010; Huffman-Broadway Group, Inc. 2007; Jones & Stokes study area surveys 2004 and 2007.

[a] Status explanations:

– = no listing.

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

R = listed as rare under the California Native Plant Protection Act; 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.

3 = List 3 species: plants about which more information is needed to determine their status.

CNPS Code Extensions:

.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = fairly endangered in California (20- 80% of occurrences threatened)

.3 = not very endangered in California (<20% of occurrences threatened or not current threats known)

[b] Known populations believed extirpated from that county.

Table 3.3.4-1. Special-Status Wildlife and Fish Species with the Potential to Occur in the I-80/I-680/SR-12 Project Region

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Invertebrates						
Conservancy fairy shrimp *Branchinecta conservatio*	E	–	Disjunct occurrences in Solano, Merced, Tehama, Ventura, Butte, and Glenn Counties.	Large deep vernal pools in annual grasslands.	Absent	Suitable habitat (large, deep vernal pools) is not present in or near the study area.
Vernal pool fairy shrimp *Branchinecta lynchi*	T	–	Central Valley and central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	Common in vernal pools. Also found in sandstone rock outcrop pools.	Present	Suitable habitat (vernal pools) is present in or near the study area.
Vernal pool tadpole shrimp *Lepidurus packardi*	E	–	Shasta County to Merced County.	Vernal pools and ephemeral stock ponds.	Present	Suitable habitat (vernal pools) is present in or near the study area.
Delta green ground beetle *Elaphrus viridus*	T	–	Restricted to Olcott Lake and other vernal pools at Jepson Prairie Preserve in central Solano County.	Sparsely vegetated edges of vernal lakes and pools, occurring up to 250 feetfrom pools.	Absent	Outside known range of the species. Closest record occurs approximately 13 miles east of the study area at Jepson Prairie Preserve.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–	Streamside habitats below 915 meters (3,000 feet) above sea level throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs and streamside habitats below 915 meters (3,000 feet) above sea level. Elderberries are the host plant.	Present	Twenty-two elderberry shrubs are present in the study area.
Callippe silverspot butterfly *Speyeria callippe callippe*	E	–	San Bruno Mountains, San Mateo County, and a single location in Alameda County.	Open hillsides where wild pansy (*Viola pendunculata*) grows. Larvae feed on Johnny jump-up plants, whereas adults feed on native mints and non-native thistles.	Present	Two distinct populations of Johnny jump-up plants were located in the study area during March 2004 floristic surveys (Monk & Associates 2004).

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Amphibians						
California red-legged frog *Rana aurora draytonii*	T	SSC	Along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods.	Present	Perennial and seasonal drainages and ponds and adjacent habitat in the study area provide potential aquatic and upland habitat. Species found in Mangels pond and a nearby intermittent drainage (North Connector EIR 2007).
California tiger salamander *Ambystoma californiense*	T	T	Central Valley, including Sierra Nevada foothills, up to approximately 305 meters (1,000 feet) above sea level and coastal region from Butte County to northeastern San Luis Obispo County	Valley floor grasslands or low (below 1,500 feetabove sea level) foothill elevations where lowland aquatic sites like large vernal pools, playa pools, sag ponds, and stock ponds are available for breeding. Upland habitat consists of small mammal burrows within approximately 2,200 feetof breeding habitat.	Absent	The study area is outside the range of the California tiger salamander (Escaron and Cleckler pers. comms.)
Reptiles						
Giant garter snake *Thamnophis gigas*	T	T	Central Valley from the vicinity of Burrel in Fresno County to near Chico in Butte County. Extirpated from areas south of Fresno.	Sloughs, canals, low-gradient streams, and freshwater marshes where there is a prey base of small fish and amphibians. Also irrigation ditches and rice fields. Requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Absent	Study area is on the edge of the species' range. No suitable habitat (perennial marsh and slough) that is hydrologically connected to GGS populations is present in the study area.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Western pond turtle *Actinemys marmorata*	–	SSC	Occurs from the Oregon border of Del Norte and Siskiyou Counties along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of the Sierra Nevada.	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Present	Suitable aquatic habitat is present within the study area. The species is present within the Dan Wilson Creek/Green Valley Creek watershed (Solano County Water Agency 2005). Western pond turtles have been observed in a pond north of SR 12W (CNDDB 2008) and in Ledgewood Creek during a swallow nest survey in March 2008 for the I-80 HOV project (Ref).
Birds						
Northern harrier *Circus cyaneus*	–	SSC	Throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Present	Suitable nesting and foraging habitat is present in the study area. A northern harrier was observed in grassland habitat north of SR 12W (North Connector EIR 2007).
White-tailed kite *Elanus leucurus*	–	FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills, to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Present	Riparian habitat along the perennial and seasonal drainages provides potential nesting habitat in the study area.
Swainson's hawk *Buteo swainsoni*	–	T	Lower Sacramento and San Joaquin Valleys, Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields.	Present	Riparian habitat throughout the study area provides potential nesting habitat. Annual grassland, row crops, and ruderal vegetation provides suitable foraging habitat.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Western burrowing owl *Athene cunicularia hypugea*	–	SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows. Also occurs along ag ditches and abandoned lots.	Present	Suitable nesting habitat is present in the study area. Burrowing owls were observed in grassland habitat north of SR 12W (North Connector EIR 2007).
Loggerhead shrike *Lanius ludovicianus*	–	SSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter.	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Present	Suitable nesting habitat is present in the study area.
California clapper rail *Rallus longirostris oboletus*	E	FP	Marshes around San Francisco Bay and east through the Sacramento River–San Joaquin River Delta to Suisun Marsh.	Restricted to salt marshes and tidal sloughs. Usually associated with heavy growth of pickleweed. Feeds on mollusks removed from the mud in sloughs.	Absent	No suitable habitat (marsh and slough) is present in the study area.
California black rail *Laterallus jamaicensis coturniculus*	_	T, FP	Known from the San Francisco Bay area and the delta of the Sacramento and San Joaquin rivers south along the coast to northern Baja California and in Yuba County.	Inhabits saltwater, brackish, and freshwater marshes.	Absent	No suitable habitat is present in the study area.
California least tern *Sterna antillarum*	E	E	Nests on beaches along San Francisco Bay and along the southern California coast from southern San Luis Obispo County to San Diego County.	Nests on sandy, upper ocean beaches, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or the open ocean.	Absent	No suitable habitat (sandy beaches and mudflats) is present in the study area.
Western Snowy plover *Charadrius alexandrines nivosus*	T	SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County.	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent	Absent	No suitable habitat (sandy beaches) present in the study area.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	–	SSC	The breeding range of salt marsh common yellowthroat as described by Grinnell and Miller (1944) is bounded by Tomales Bay on the north, Carquinez Strait on the east, and Santa Cruz County on the south.	In California, yellowthroats are found in freshwater marshes, coastal swales, swampy riparian thickets, brackish marshes, salt marshes, and the edges of disturbed weed fields and grasslands that border soggy habitats (Shuford 1993).	Absent	No suitable habitat is present in the study area.
Suisun song sparrow *Melospiza melodia maxillaris*	–	SSC	The Suisun song sparrow is a distinct subspecies completely endemic to Suisun Bay.	Intermixed stands of bulrush, cattail, and other emergent vegetation provide ideal habitat.	Absent	No suitable habitat is present in the study area.
Tricolored blackbird *Agelaius tricolor*	–	SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony	Present	Suitable nesting habitat is present in the study area.
Mammals						
Suisun shrew *Sorex ornatus sinuosus*	–	SSC	Found in the tidal marshes of the northern shores of San Pablo and Suisun bays, as far east as Grizzly Island, and as far west as Sonoma Creek and Tubbís Island. Also observed near Petaluma and north of San Rafael.	Occupies tidal marshes that provide dense cover, abundant food (primarily invertebrates), suitable nesting sites, and fairly continuous ground moisture.	Absent	No suitable saltmarsh habitat occurs on site.
Salt marsh harvest mouse *Reithrodontomys raviventris*	E	E, FP	Vicinity of San Francisco, San Pablo, and Suisun Bays and the Sacramento River–San Joaquin River Delta.	Salt marshes with a dense plant cover of pickleweed and fat hen. Adjacent to an upland site.	Absent	No suitable habitat (saltmarsh) is present in the study area based on survey by Phil Leitner (Appendix C
Pallid bat *Antrozous pallidus*	–	SSC	Throughout California.	Day roosts include rock outcrops, mines, caves, hollow trees, buildings and bridges. Recent research suggests high reliance on tree roosts.	Present	Bridges and trees in study area provide potential roosting sites.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Western red bat *Lasiurus blossevillii*	–	SSC	Scattered throughout much of California at lower elevations	Found primarily in riparian and wooded habitats. Occurs at least seasonally in urban areas. Day roosts in trees within the foliage. Found in fruit orchards and sycamore riparian habitats in the central valley	Present	Suitable roosting habitat in riparian woodlands and orchards.
Long-eared bat *Myotis evotis*		WBWG: Medium priority	Found throughout California.	Day roosts in hollow trees under exfoliating bark, and crevices in rock outcrops. Found roosting under bark of small black oaks in northern California.	Present	Suitable roosting habitat occurs in trees.
Fringed myotis bat *Myotis thysanodes*		WBWG: High priority	Found throughout most of California.	Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.	Present	Suitable roosting habitat occurs in trees. .
Yuma myotis *Myotis yumanensis*	–	WBWG:Low-medium priority	Considered common and widespread in northern California up to 5,000 feet above sea level. Colonies known from Marin and San Francisco Counties.	Found in desert scrub, pinyon-juniper woodlands, and other open woodlands and forests. Open water is a key habitat element for this species. Roosts colonially in a variety of natural and artificial sites, including caves, mines, buildings, bridges, and trees.	Present	Bridges and trees in study area provide potential roosting sites.
Fish						
Delta smelt *Hypomesus transpacificus*	T	T	Sacramento River–San Joaquin River Delta	Euryhaline estuary channels.	Absent	Ledgewood Creek in the project area connects to Peytonia Slough which does not support delta smelt (Schroeter 2005).

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
Central California coast steelhead distinct population segment (DPS) *Oncorhynchus mykiss*	T	–	Coastal streams from Russian River to Aptos Creek; tributaries to San Francisco, San Pablo, and Suisun Bays; Suisun Marsh; and coastal marine waters off California.	Coldwater anadromous streams.	Present	The project is located in inland freshwater stream habitats draining to Suisun Marsh. Species occurrence documented in Suisun, Green Valley and Ledgewood Creeks. Study area is not included in critical habitat.
Central Valley steelhead DPS *Oncorhynchus mykiss*	T	–	Sacramento River and tributary Central Valley rivers	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18°C (Moyle 2002). Habitat types are riffles, runs, and pools.	Absent	Outside of species range.
Central California coast coho *Oncorhynchus kisutch*	E	E	Includes naturally spawned populations from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system	Occur in coastal streams with water temperatures < 15°C. Need cool, clear water with instream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean (Moyle 2002).	Absent	Outside of species range.
Sacramento River winter-run Chinook salmon *Oncorhynchus tshawytscha*	E	E	Mainstem Sacramento River below Keswick Dam (Moyle 2002)	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5°C. Habitat types are riffles, runs, and pools. (Moyle 2002.)	Absent	Outside of species range.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T	T	Upper Sacramento River and Feather River	Have the same general habitat requirements as winter-run Chinook salmon. Coldwater pools are needed for holding adults (Moyle 2002).	Absent	Outside of species range.

Common Name, *Scientific Name*	Legal Status[a]		Geographic Distribution	Habitat Requirements	Habitat Present in Study Area?	Comments
	Federal	State				
River lamprey *Lampetra ayresi*	–	SSC	Exact range unknown, but includes coastal streams from Alaska to San Francisco Bay. In California, within lower Sacramento and San Joaquin Rivers, Napa River, Sonoma Creek, Alameda Creek, Salmon Creek, Russian River tributaries, and tributaries to San Francisco Bay.	Habitat requirements poorly understood, but include anadromous streams with gravel riffle for spawning and soft-bottomed areas for rearing.	Present	The project is located in inland freshwater anadromous stream habitats draining within the range of the species.
Sacramento splittail *Pogonichthys macrolepidotus*	–	SSC	Largely confined to Sacramento River–San Joaquin River Delta, Napa River, Petaluma River, Sacramento River, and Suisun Marsh.	Shallow-water, low-salinity habitats throughout slow areas of rivers and sloughs; areas of flooded vegetation for spawning and rearing.	Present	Ledgewood Creek in the project area connects to Peytonia Slough which supports splittail (Schroeter et al 2005).
Green sturgeon *Acipenser medirostris*	T	SSC	In marine waters of the Pacific Ocean from the Bering Sea to Ensenada, Mexico. In rivers from British Columbia south to the Sacramento River, primarily in the Klamath/Trinity and Sacramento Rivers.	Primarily marine, using large anadromous freshwater rivers and associated estuaries for spawning and rearing.	Absent	The project area does not include large rivers and is not within the primary range of the species.
Central Valley fall/late fall–run Chinook salmon *Oncorhynchus tshawytscha*	SC	–	Sacramento and San Joaquin Rivers and their tributaries, as well as some tributaries to San Francisco Bay.	Lower-elevation coldwater anadromous streams.	Present	The project is located in inland freshwater anadromous stream habitats draining to Suisun Marsh, designated essential fish habitat. Species occurrence documented in Suisun, Green Valley and Ledgewood Creeks.

[a] Status explanations:
– = no listing.

Federal
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
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.
P = officially proposed (in the Federal Register) for listing as endangered or threatened.
C = candidate to become a proposed species.

State

E	=	listed as endangered under the California Endangered Species Act.
T	=	listed as threatened under the California Endangered Species Act.
FP	=	fully protected under the California Fish and Game Code.
C	=	formally designated as a candidate for threatened or endangered status; extending its legal protection for 1 year (until February 2010).
SSC	=	species of special concern in California.
WBWG	=	Western Bat Working Group (http://www.wbwg.org/spp_matrix.html)

High priority	=	species are imperiled or at high risk of imperilment
Moderate priority	=	This designation indicates a level of concern that should warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat
Low priority	=	While there may be localized concerns, the overall status of the species is believed to be secure.

3.4 Relationship between Local Short-Term Uses of the Human Environment and the Maintenance of Long-Term Productivity

Implementation of either of the project alternatives (and their fundable first phases) will result in attainment of short-term and long-term transportation, safety, and economic objectives at the expense of some long-term social, aesthetic, biological, noise, parkland, and other land use impacts. Implementation of Alternative B or Alternative C would further address the objectives as well as long-term inspection and enforcement objectives with the construction of the improved westbound truck scales facility. The attainment of these objectives (long-term productivity) comes at the expense of some short-term costs that would be incurred during construction and some long-term term losses of valuable uses of the environment. These long-term losses include impacts on biological resources, agricultural and community land uses, air quality, and noise.

3.4.1 Build Alternatives

The build alternatives would have similar impacts. Because of the magnitude of the proposed project, the fundable first phase of the alternatives would have similar impacts and the full build alternatives would have similar impacts.

Alternative B, Phase 1 and Alternative C, Phase 1

The fundable first phase of the alternatives would have similar impacts.

- **Short-term losses would include**: economic losses experienced by businesses that relocate; construction impacts such as noise, traffic detours or delays; access inconveniences; temporary disturbance to biological resources; visual impacts during construction.
- **Short-term benefits would include:** increase in jobs and revenue due to construction.
- **Long-term losses would include:** permanent loss of plant and wildlife resources; loss of agricultural land; noise increase; displaced businesses and a displaced residence; use of construction materials and energy; possible decreased air quality or increase in greenhouse gas emissions.
- **Long-term gains would include:** improvement of transportation network in the vicinity; reduction of congestion on local roads and highways.

Alternative B and Alternative C

These alternatives would have similar impacts.

- **Short-term losses would include:** economic losses experienced by businesses that relocate; construction impacts such as noise, traffic detours or delays; access inconveniences; temporary disturbance to biological resources; visual impacts during construction.
- **Short-term benefits would include:** increase in jobs and revenue due to construction.

- **Long-term losses would include:** permanent loss of plant and wildlife resources; loss of agricultural land; noise increase; displaced businesses and a displaced residence; use of construction materials and energy; possible decreased air quality or increase in greenhouse gas emissions.
- **Long-term gains would include:** improved truck weight and safety inspection and enforcement system; improvement of transportation network in the vicinity; reduction of congestion on local roads and highways; encouragement of use of HOV lanes.

3.4.2 No-Build Alternative

This alternative would not result in any of the gains or losses listed under the above alternatives. It would not address the issues of worsening traffic and truck congestion, increasingly unreliable freight transport, or worsening traffic safety.

3.5 Irreversible and Irretrievable Commitments of Resources

Irretrievable commitments of resources would occur as a result of implementing any of the proposed project alternatives because all of the project alternatives involve a commitment of natural, physical, human, and fiscal resources. Land converted from its present uses to a transportation facility is considered an irreversible commitment. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material would be expended in the construction of any of the alternatives. Additional building materials would be used in the construction of the westbound truck scales facility under both Alternative B and C. Additionally, extensive expenditure of labor and natural resources (e.g., woodlands, wetlands, and other natural habitat) are used in the production of construction and building materials. These materials are typically not retrievable. However, they are generally not in short supply and their use would not have an adverse effect on continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable. In addition to the costs of construction and right-of-way, costs for roadway maintenance, including pavement maintenance and resurfacing, roadside, litter/sweeping, signs and markers, electrical and storm maintenance would be incurred. However, savings in energy use, travel time, and a reduction of accidents would offset these costs.

The commitment of these resources is based on the concept that the residents in the immediate area, region, and state, as well as commuters would benefit from the improved quality of the transportation system. In the case of the ultimate alternatives, the safety of the nation would benefit from the improved security and enforcement at the new westbound truck scales facility. These benefits would consist of improved accessibility, functioning, safety, and homeland security, which are expected to outweigh the commitment of these resources.

3.6 Cumulative Impacts

3.6.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and the introduction or promotion of predators. They also can contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

3.6.2 Approach to Cumulative Impact Analysis

The cumulative analysis for the proposed project takes into consideration the other ongoing projects in the same geographic area as the proposed project, as well as planned land uses and transportation and circulation projections identified in city and county general plan and policy documents.

The existing and proposed transportation projects listed below in order of anticipated completion have been included in this analysis because they either are close to the project area or could affect regional resources. This information represents the most up-to-date information available as of the date of publication of this document.

- **North Connector Project:** The North Connector Project would construct a parallel route to the north of I-80 between Abernathy Road at I-80 on the east and SR 12 at Red Top Road on the west. This project would provide increased east/west capacity and provide an alternative to I-80 for local traffic. Construction of the first phase of the North Connector Project started in summer 2009, with completion anticipated by December 2010.

- **Interstate 80 High-Occupancy Vehicle Lanes Project:** Eastbound and westbound high-occupancy vehicle (HOV) lanes have been constructed along an approximately 8.5-mile-long segment of I-80 from the Red Top Road interchange in Solano County to approximately 0.5 mile east of the Air Base Parkway interchange in Fairfield. This project (EA-04-0A5304) increases the overall carrying capacity of I-80 in the project area and facilitates the already high demand for ridesharing on I-80. Construction of this project was completed in late 2009.
- **Jepson Parkway:** This project would provide a route for local Vacaville-Fairfield traffic to bypass I-80 in Fairfield and instead enter Fairfield from the east on Air Base Parkway or from the south on State Route 12. The project would include widening of existing roads, and could include construction of new roadway through an existing area of grassland and wetlands.
- **2010 State Highway Operation and Protection Program (SHOPP) Projects:** These projects include two collision reduction projects scheduled for construction in program year 2010/11 and one mobility project scheduled for construction in program year 2012/2013. One collision reduction project is to construct a concrete barrier on I-80 in Vallejo between the Redwood Street on-ramp and the Route 37 connector. The other collision reduction project is to widen the shoulder on SR 12 near Rio Vista between Azevedo Road and Liberty Island Road. The mobility project includes lengthening an on-ramp and widening a bridge on I-80 in Vacaville, from west of the Alamo Creek Bridge to the Alamo west-bound on-ramp.
- **I-80 Eastbound Cordelia Truck Scales Relocation Project:** The I-80 Eastbound Cordelia Truck Scales Relocation Project (EA-04-0A5350) would include the construction of a larger, more efficient truck scales facility on eastbound I-80, approximately 2,500 feet east of the existing facility. The project would also include the construction of on- and off-ramps to both I-80 and eastbound SR 12E. The environmental document for the project was approved in fall 2009. Construction is expected to begin in 2011and be completed in 2013.
- **Jameson Canyon (SR 12) Widening from I-80 to SR 29:** This project would provide a continuous four-lane expressway between I-80 and SR 29. The project is currently in the final design phase and construction is planned to begin in late 2011, with completion in 2013.
- **I-80 Express Lanes Projects:** Two projects are planned as part the construction of the I-80 express lanes. The I-80 Express Lanes (HOV Conversion) Project would convert the existing HOV lanes between Red Top Road and Airbase Parkway Project to express lanes. The I-80 Express Lanes (New Lanes) Project would construct new express lanes between Airbase Parkway and I-505. These improvements are in the early planning phase. No construction date has been determined.
- **I-80 Improvements through Fairfield:** Several projects are planned between SR 12W and Air Base Parkway. They include the removal of existing hook ramps at Auto Mall Parkway and construction of westbound auxiliary lanes on I-80 between Green Valley Road and SR 12W, Waterman Boulevard and Travis Boulevard, and West Texas Street and Abernathy Road. These improvements are in the early planning phases. No construction date has been determined.
- **Transit Improvements:** To support increased transit ridership and expanded bus routes in the county, the *I-80/I-680/I-780 Transit Corridor Study* identifies numerous potential locations for park-and-ride lots in these major corridors, four of which could be located in the

project area: Red Top Road at I-80, a surface lot at Abernathy Road between I-80 and SR 12 or an expanded parking structure at the Fairfield Multimodal Transportation Center, and Gold Hill Road at I-680. These potential lots are expected to be constructed between 2010 and 2015.

Additionally, local non-transportation projects currently planned and underway in the general project area are provided in Tables 3.1.1-1 and 3.1.1-2. These projects represent development covered in county and city planning documents and approved under building permits. The cumulative analysis for the individual resource areas are based on analysis of different geographic boundaries or resource study areas. The resource study area and pertinent projects are identified under each resource area.

3.6.3 Assessment of Cumulative Impacts

The project alternatives would not contribute to a cumulative impact in the following resource areas because the resources are in generally good health and the project alternatives would result in either beneficial impacts, no impacts, or minor impacts that would be fully mitigated (to a less than significant level) and the alternatives' contribution to the cumulative impact would not be considerable.

- Land Use
- Growth
- Community Impacts
- Utilities and Emergency Services
- Visual and Aesthetic Resources
- Cultural Resources
- Hydrology and Floodplain
- Water Quality and Stormwater Runoff
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Air Quality
- Noise
- Energy
- Biological Resources (Plant Species and Animal Species)

3.6.3.1 Human Environment

Farmlands

Farmland resources are most commonly managed at the County and Statewide level. For the proposed project the study area for cumulative farmlands effects is Solano County. As discussed in Chapter 3.1.3, Solano County had a total of 360,562 acres of land under cultivation in 2006. Of this total, 139,536 acres were designated as Prime Farmland, 7,164 acres were designated as Farmland of Statewide Importance, 11,036 acres were designated as Unique Farmland, and 202,826 acres were used for grazing purposes (California Department of Conservation 2006). Between 1984 and 2006, 40,537 acres (1,843 acres per year) of agricultural land was converted to non-agricultural uses in Solano County. This conversion included 23,221 acres of Important Farmland at a rate of 1,056 acres per year. Approximately half of the converted acreage, or 12,689 acres, was considered Prime Farmland (California Department of Conservation 2006). During this same period, about 13,000 acres inside the cities' (Fairfield and Suisun City) spheres of influence were converted to non-agricultural uses. This trend has caused local and regional governments to implement measures to preserve farmland (see discussion in Section 3.1.3, County of Solano).

As discussed in Section 3.1.3, the project alternatives would result in the conversion of farmlands to non-farm uses. Alternative B would convert roughly 140 acres of agricultural land to roadway, while Alternative B, Phase 1 would not affect agricultural land. Alternative C would convert roughly 122 acres of agricultural land, while Alternative C, Phase 1 would convert roughly 77 acres of agricultural land.

The direct impact of the project alternatives is not considered adverse, as measured by its LESA score (see discussion at page 3.1.3-8).

The project alternatives in combination with other ongoing and reasonably foreseeable projects in the study area (see discussion under 3.6.2 above and Tables 3.1.1-1 and 3.1.1-2) would contribute to additional conversion of farmland to non-farm uses. The amount of farmland conversion could cause a cumulatively adverse effect. However, farmland conversion in the County of Solano is governed by the County General Plan which has strong policies and guidelines for the protection and mitigation of impacts to farmland including the following implementation measure:

"AG.I-1: Create and adopt a farmland conversion mitigation program and ordinance."

Implementation of this measure will limit the cumulative impact on farmlands on a county wide basis. The project alternatives would also be required to mitigate farmland impacts (see discussion at page 3.1.3-9).

Given the strong policies of the Solano County General Plan to limit and mitigate impacts to farmlands and the project alternatives would also include mitigation that would preserve additional farmland within the County, the long-term health of the resource would be preserved and maintained and therefore no cumulative effect to farmlands would occur.

Traffic and Transportation/Pedestrian and Bicycle Facilities

The resource study area for cumulative traffic and transportation impacts is the same as that used for the traffic analysis. Projects that would contribute to potential cumulative impacts include all the transportation projects listed in section 3.6.2 and development projects included in local planning documents. These impacts are analyzed in Section 3.1.6 for each alternative in 2035. Because the project alternatives, to varying degrees, would result in net beneficial effects on traffic and transportation, they would not contribute to a cumulative impact on traffic and transportation.

The resource study area for cumulative impact to pedestrian and bicycle facilities includes those facilities within the project area and the local planning areas. Projects that may contribute to a potential cumulative impact would include the development projects in Section 3.1.1 and the transportation projects listed in Section 3.6.2. Pedestrian and bicycle facilities in the area are accounted for in local planning documents. Effects to bicycle and pedestrian facilities during construction of the project would be temporary. Project design will ensure that existing facilities can be maintained or replaced and that planned facilities can be provided. The proposed project would not contribute to a cumulative impact on pedestrian and bicycle facilities.

3.6.3.2 Biological Environment

Natural Communities

Implementation of the project alternatives would directly impact riparian woodlands and native trees, and in combination with other local and regional projects, would contribute to the cumulative loss of riparian woodland and native trees in the project vicinity. Historic loss of riparian vegetation and native trees in Solano County has occurred from conversion of riparian and native tree habitat for agriculture and development. Although riparian vegetation and native trees remains along some of the major streams in the county and in isolated areas, including Suisun Creek, these riparian corridors are substantially narrower than historically because of development. The project alternatives would contribute incrementally to cumulative impacts on riparian woodland and native trees in Solano County by directly impacting less than two acres of riparian habitat. Other existing and reasonably foreseeable projects within the county, such as Fairfield Corporate Commons, Green Valley Corporate Park, and other business and residential projects in the area, have the potential to contribute to the cumulative loss of riparian habitat (Table 3-6.1).

Avoidance, minimization, and/or mitigation measures identified in Section 3.3.1.1 to avoid and minimize disturbance and to compensate for loss of riparian vegetation and native trees that would be impacted by the project alternatives would reduce this impact. However, to fully address the cumulative impact to the resource other agencies such as Solano County, City of Fairfield and Suisun City would need to require and implement similar mitigation to protect and restore riparian woodlands impacted by other existing and reasonably foreseeable projects in the study area.

Wetlands and Other Waters

Implementation of the proposed project, in combination with other local and regional projects, without mitigation, would contribute to the cumulative loss of wetlands and drainages that are waters of the United States within the Suisun Bay hydrologic unit (HUC 18050001). Most

drainages that historically occurred in the rivers in the Solano County have been modified over the last century or more to improve water transport, flood protection, and agricultural development (Solano County Water Agency 2009). Wetlands and drainages have been filled for development and agricultural improvements, including features that are waters of the United States.

California now has approximately 2.9 million acres of wetlands, which is approximately 10% of the wetland area that was present two hundred years ago. Around the San Francisco Estuary, almost 200,000 acres of tidal marshes existed historically, much of which were large marshes of 50,000 acres or more in Suisun, North Bay, and South Bay. Approximately half of the grasslands above the tidal marshes were seasonally moist. By the 1950s, there were only about 50,000 acres of tidal marshes in the entire estuary, about 25% of the historical amount. Loss has continued more slowly since then. Currently, less than 1% of the non-saline historic wetlands and about 15% of the historic salt marsh in the San Francisco Estuary remain due to direct conversion of wetlands to other land uses and changes in watershed land use that indirectly result in wetland loss. Since the mid-1800s, moist grasslands in the Estuary have declined from about 60,000 acres to about 7,000 acres, and moist grassland/vernal pool habitat has declined from about 24,000 acres to about 15,000 acres, as a result of farming and urban uses.

In the eastern part of Suisun Marsh, wetlands were first diked in 1865 to be used for livestock grazing, and by the early 1900s, these areas were also farmed to produce various crops. Natural marsh ponds in the western portion of the marsh were established as duck clubs in the 1870s and 1880s. Today, Suisun Marsh is the largest contiguous protected area in the San Francisco Estuary, and includes a primary management area (89,000 acres of wetlands, channels, and bays) and a secondary management area (22,500 acres of adjacent uplands). (California Natural Resources Agency 2009; Goals Project 1999.)

Direct loss of waters of the United States in drainages and wetlands would be caused by the proposed project, and indirect effects on waters of the United States due to sedimentation could also occur. Additional projects proposed within the hydrologic unit, such as Fairfield Corporate Commons, Green Valley Corporate Park, and other business and residential projects in the area, have the potential to cause cumulative direct and indirect impacts on wetlands and drainages. Direct impacts can result from the placement of fill within a wetland or drainage. Indirect impacts can be caused by the accumulation of sediment in wetlands and drainages resulting from adjacent disturbances. Both direct and indirect impacts have the potential to add to the cumulative loss of wetland and drainage habitat.

The project alternatives would result in the direct and indirect loss of up to 22 acres of wetland habitat and 3.7 acres of drainage habitat. However, the proposed project, as well as all other existing and reasonably foreseeable projects in the project area, are required by Section 404 of the Clean Water Act, to result in no net loss of wetlands. Indirect impacts would be minimized through avoidance and minimization measures and BMPs also required under Section 404 permit conditions. The no net loss requirement under Section 404 of the Clean Water Act is implemented by the U.S. Army Corps of Engineers through their Section 404 permitting process. As such the cumulative impacts of the proposed project in combination with other existing and reasonably foreseeable projects on wetland resources would be reduced to a less than significant

level through implementation and compliance with the no net loss requirements under Section 404 of the Clean Water Act.

3.6.3.3 Threatened and Endangered Species

Eight threatened or endangered species occur or have the potential to occur within the project area. These species include:

- Contra Costa goldfields
- Callippe silverspot butterfly
- Vernal pool fairy shrimp
- Vernal pool tadpole shrimp
- Valley elderberry longhorn beetle
- California red-legged frog
- Swainson's hawk
- Central California coastal steelhead

Project alternatives would result in both direct and indirect impacts to these species. Avoidance, minimization and/or mitigation measures have been identified in Chapter 3.3. In addition, consultation under Section 7 of the Endangered Species Act and issuance of a Biological Opinion will be required prior to project approval. It is anticipated that avoidance, minimization and/or mitigation measures identified in Chapter 3.3 for these species, along with consultation under Section 7 will result in reducing and/or mitigating project impacts so that no long term impact to the health or stability of these species, or cumulative impact, would occur from project implementation.

Chapter 4 California Environmental Quality Act (CEQA) Evaluation

4.1 Determining Significance under CEQA

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

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

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

4.2 Discussion of Significance of Impacts

Table 4-1 presents a summary of impact determinations under CEQA by resource area for the build alternatives. The impact determination shown reflects the most severe impact for each resource area; lesser impacts may also occur, and these are discussed in the appropriate section of this chapter.

Table 4-1. Summary of Impact Determinations under CEQA

Corresponding NEPA Section	Topic	Impact Determination
3.1.7	Aesthetics	Less than significant
3.1.3	Agriculture Resources	Significant
3.2.6	Air Quality	Less than significant
3.3	Biological Resources	Significant
3.1.8, 3.2.4	Cultural Resources	Less than significant
3.2.3	Geology and Soils	Less than significant
3.2.5	Hazards and Hazardous Materials	Less than significant
3.2.1, 3.2.2	Hydrology and Water Quality	Less than significant
3.1.1	Land Use and Planning	Less than significant
3.2.3	Mineral Resources	No impact
3.2.7	Noise	Less than significant
3.1.2, 3.1.4	Population and Housing	Less than significant
3.1.5	Public Services	Less than significant
3.1.1	Recreation	Less than significant
3.1.6	Transportation/ Traffic	Unavoidable significant
3.1.5	Utilities and Service Systems	Less than significant

Different agencies may 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 and State CEQA Guidelines requirements only. The following significance conclusions are made in this chapter.

- **No impact:** This level of significance is used for impacts where there is clearly no impact.
- **Less than significant:** This level of significance is used for impacts where there would be an impact, but the degree of the impact would not meet or exceed the identified thresholds.
- **Significant:** This level of significance is used for impacts that would meet or exceed the identified thresholds but would be reduced to a less-than-significant level through the implementation of mitigation measures.
- **Unavoidable Significant:** This level of significance describes significant impacts for which mitigation to reduce the significant impact to a less-than-significant level is not available or feasible.

The thresholds for determining significance of impacts for the various resource areas are derived from the State CEQA Guidelines and professional practice and the CEQA checklist provided in Appendix A of this document. Those project effects that are considered impacts under CEQA only are fully discussed here. CEQA impacts addressed in Chapter 3 (e.g., effects on state-listed and federally listed plant and wildlife species) are summarized in this chapter. However, measures presented in Chapter 3 are considered to be incorporated into the project description, and CEQA impacts are assessed accordingly.

4.2.1 Less-than-Significant Effects of the Proposed Project

4.2.1.1 Aesthetics

Would the project have a substantial adverse effect on a scenic vista?

The project area is already developed with the major highway interchange of I-80, I-680, and SR 12. The surrounding visual environment includes a diverse array of industrial, commercial, and residential development as well as farmland and grazing land. The buildings around the existing interchange vary in height, color, size, and age. In general, the built elements around the existing interchange appear randomly placed and do not appear unified. Farmland and grazing land is dispersed between these artificial elements.

Although there are vistas of agricultural lands and rolling hills from portions of the affected roadways, in general these views would not change under any of the build alternatives. Localized views might be either obstructed or improved, depending on the site-specific changes associated with the location and the alternative. Nevertheless, considering the proposed project as a whole, there would be a less-than-significant impact on scenic vistas under all build alternatives.

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

The project area is already developed with the major highway interchange of I-80, I-680, and SR 12. The surrounding visual environment includes a diverse array of industrial, commercial, and residential development as well as farmland and grazing land. The buildings around the existing interchange vary in height, color, size, and age. In general, the built elements around the existing interchange appear randomly placed and do not appear unified. Farmland and grazing land is dispersed between these artificial elements.

The build alternatives would result in several adverse and beneficial localized changes to visual character. As depicted in many of the visual simulations, the extent of paved surface would increase. Similarly, in the vicinity of new overpasses, on- and off-ramps, utility towers, and interchange components, specific long-distance views would be obstructed. However, because the project alternatives would improve an existing interchange, as a whole they would not be out of character with the existing major highway interchange. With the incorporation of measures pertaining to landscaping, lighting, the selection of materials for the westbound truck scales, and aesthetic treatment in the design of freeway-related structures, this would be a less-than-significant impact.

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Under both build alternatives, new lighting would be incorporated into portions of the proposed project. This could constitute a significant effect. However, such lighting would be consistent with existing freeway lighting, and adjoining land uses in areas where new lighting would be installed currently include lighting fixtures. Moreover, implementation of measures described in

Section 3.1.7—incorporation of appropriate light and glare screen measures into all new lighting facilities—will reduce this effect to a less-than-significant level.

4.2.1.2 Agricultural Resources

Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

There are four Williamson Act parcels within the project area. Alternative C, Phase 1 would not be able to avoid the conversion of land held in Williamson Act contracts in the vicinity of the extension of Red Top Road to Business Center Drive. Alternatives B and C would affect Williamson Act parcels north of I-80 immediately east of Suisun Creek (Valine) and east of Abernathy Road. The affected portion of the Williamson Act parcels would be removed from the Williamson Act contract by cancellation upon acquisition by the Department. The remainder of the parcels would be unaffected. This impact would be less than significant.

4.2.1.3 Air Quality

Would the project conflict with or obstruct implementation of the applicable air quality plan?

The nine-county region under the jurisdiction of the BAAQMD is currently in non-attainment for both federal and state ozone standards as well as for state PM10 and PM2.5 standards. The proposed project is listed in the most recent 2035 RTP and 2009 TIP, which were found to conform with the applicable air quality plans. In addition, the project includes measures, such as limits to diesel idling and the use of cool paving surfaces, that are consistent with the control strategies described in 2005 Ozone Strategy and proposed 2009 Clean Air Plan. These strategies as well as the Department's Standard Specification to control dust and exhaust emissions during construction are described in Section 3.2.6. The project alternatives therefore meet the regional test and conform with the SIP. This impact is less than significant.

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction emissions would result from grubbing and land clearing, grading and excavation, drainage/utilities/subgrade activities, paving activities, and construction workers commuting to and from the job site. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and weather conditions. Construction emissions are of short duration. The design and scope of the project alternatives are the same as those described in the most recent RTP and TIP, which were found to satisfy regional conformity requirements and are consistent with the most recent regional air quality plans. Moreover, the project alternatives are consistent at the project-level conformity analysis, as none of the project alternatives would generate elevated hot spot concentrations of CO, PM10, or PM2.5. Accordingly, the project alternatives would not violate or contribute to an existing air quality violation. Implementation of standard specifications and measures to control dust and exhaust emissions during construction and measures to reduce MSAT and criteria pollutant emissions, as described in Section 3.2.6, would reduce this impact to a less-than-significant level.

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

The design and scope of the project alternatives are the same as those in the most recent RTP and TIP, both of which were found to conform with regional air quality plans. Therefore, emissions from construction and operation of the project alternatives are consistent with for regional air quality plans, and the net increase in pollutants is considered less than significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

The project alternatives would not create hotspots of CO or particulate matter and consequently would not expose sensitive receptors to substantial pollutant concentration. This impact is less than significant.

Would the project create objectionable odors affecting a substantial number of people?

Project construction and operation would not generate substantial pollutant concentrations. Consequently, the project alternatives are not expected to generate objectionable odors that would affect a substantial number of people. This impact is less than significant.

4.2.1.4 Biological Resources

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

Special-Status Plant Species

Five sensitive plant species and/or their habitat could be affected by project construction: alkali milk-vetch, pappose tarplant, Contra Costa goldfields, streamside daisy, and saline clover. Impacts on the federally listed Contra Costa goldfields are discussed in Section 3.3.5, and impacts on other non-listed special status plant species are discussed in this section.

Alkali milk-vetch and streamside daisy plants are outside the temporary and permanent impact areas for both alternatives and the fundable first phases. However, the project would not be constructed in the area of occurrences of these species for many years and updated surveys will be needed to document the extent and number of the plants. It will be necessary to update surveys for the remaining species Implementation of avoidance and minimization measures in Section 3.3.3.1, to conduct preconstruction surveys, would reduce this impact to a less-than-significant level.

Alternative B, Alternative C, and Alternative C, Phase 1 would result in direct and indirect impacts to pappose tarplant. Section 3.3.3.2 discusses these impacts in detail. Implementation of measures designed to protect sensitive natural communities and to protect water quality and prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1 would

protect pappose tarplant and wetland habitat from indirect impacts. Implementation of mitigation measures to conduct preconstruction surveys and to compensate for loss of special-status plants described in Section 3.3.3.1 would reduce this impact to a less-than-significant level.

Alternative B would result in temporary and permanent impacts to saline clover plants, and Alternative C would result in permanent impacts. The impacts are discussed in detail in Section 3.3.3.4. With implementation of measures designed to protect sensitive natural communities, to protect water quality, to prevent erosion and sedimentation in drainages and wetlands described in Section 3.3.2.1, to conduct preconstruction surveys, and to compensate for loss of special-status plants described in Section 3.3.3.1, impacts on saline clover would be less than significant.

Special-Status Animal Species

All proposed build alternatives would result in impacts on the following special-status animal species and/or their habitat: western pond turtle, white-tailed kite, western burrowing owl, northern harrier, loggerhead shrike, tricolored blackbird, nesting and migratory birds and raptors, nesting swallows, roosting bats, callippe silverspot butterfly, vernal pool fairy shrimp/vernal pool tadpole shrimp, valley elderberry longhorn beetle, Swainson's hawk, and California red-legged frog. Impacts on the state- and federally listed species are discussed in Section 3.3.5, and impacts on other non-listed special status animal species are discussed below.

Impacts on western pond turtles under all build alternatives may include the loss or disturbance of individuals during project construction. Section 3.3.4.1 discusses this impact in detail. Implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and the measure to conduct preconstruction surveys for western pond turtles and stop work if the species is present in Section 3.3.4.1 would reduce this impact to a less-than-significant level.

All build alternatives may result in the disturbance of nesting white-tailed kites, loggerhead shrikes, tricolored blackbirds, and migratory birds and raptors during project construction. These impacts are discussed in detail in Sections 3.3.4.2, 3.3.4.5, 3.3.4.6, and 3.3.4.7. Implementation of avoidance and minimization measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for nesting birds and raptors and stop work if the species are present in Section 3.3.4.2 would ensure that this impact would be less than significant.

Impacts on western burrowing owls as a result of all the build alternatives may include the permanent loss and temporary disturbance of their habitat, as well as disturbance to individuals, if they are present during project construction. This impact is discussed in detail in Section 3.3.4.3. Implementation of avoidance and minimization measures in Section 3.3.1.1 and the measure to conduct preconstruction surveys for burrowing owls and stop work if the species is present and to compensate for loss of nesting habitat in Section 3.3.4.3 would ensure that this impact would be less than significant.

Impacts on nesting northern harriers are possible in the area north of SR 12W. Because there is no construction proposed for that area under Alternative B, Phase 1, there would be no impact under that alternative. This impact is discussed in detail in Section 3.3.4.4. This potentially significant impact under Alternative B, Alternative C, and Alternative C, Phase 1 would be reduced to a less-than-significant level with implementation of the avoidance and minimization

measure to conduct preconstruction surveys (including stopping work if the species is present) described in Section 3.3.4.4.

Bridge construction associated with all build alternatives could result in disturbance to nesting swallows. Impacts on swallows are discussed in detail in Section 3.3.4.8. This potentially significant impact would be reduced to a less-than-significant level with implementation of a measure to prevent swallows from nesting adjacent to new bridge construction, described in Section 3.3.4.8.

All build alternative have the potential to disturb roosting bats as discussed in Section 3.3.4.9. This effect would be reduced to a less-than-significant level with implementation of a measure to conduct preconstruction surveys for roosting bats, described in Section 3.3.4.9.

Special-Status Fish Species

Four special-status fish species occur in the project area: river lamprey, Sacramento splittail, fall/late fall–run Chinook salmon, and central California coast steelhead. Construction activities associated with all build alternatives could affect special-status fish species and their habitat. Additionally, water quality impacts may result from project operations. Impacts on special-status fish species and their habitat are summarized below and discussed in detail in Sections 3.3.4.10, 3.3.4.11, 3.3.4.12, and 3.3.5.7.

Impacts of construction activities on water quality could result from sediment and contaminants entering the stream. With implementation of measures to prevent discharge of contaminants into stream channels as discussed in Section 3.3.4.10, this would be a less-than-significant impact.

Direct impacts on fish habitat include removal of vegetation and shaded riverine aquatic (SRA) cover. With implementation of measures to protect riparian communities discussed in Section 3.3.1.1, this would be a less-than-significant impact.

Elements of the build alternatives could also change channel morphology and disrupt the migration corridor. However, because the channels would be restored to preproject conditions based on fish passage assessments for Suisun, Green Valley, and Ledgewood Creeks, no long-term changes to channel morphology are expected. Moreover, with implementation of measures to minimize impacts on creek channels as described in Section 3.3.4.10, this would be a less-than-significant impact

Under Alternatives B and C, a new single-span bridge would replace the existing bridge on Suisun Creek, and a new single-span bridge would be constructed downstream of the existing bridge. A potential spawning gravel bed was observed on Suisun Creek approximately 20 feet downstream of the existing bridge, which is proposed for removal and reconstruction. If the gravel cannot be avoided, it would be temporarily removed and replaced to preconstruction conditions, using, to the extent practicable, gravel removed from the site. With implementation of measures to avoid potential fish spawning habitat discussed in Section 3.3.4.11, this would be a less-than-significant impact.

Under Alternative B, a new bridge requiring piles driven into the channel would be constructed on Ledgewood Creek. With implementation of measures to minimize noise impacts on special-status fish species discussed in Section 3.3.4.10, this would be a less-than-significant impact.

The increase in new impervious surfaces combined with runoff from petroleum products and other contaminants from automobiles could potentially result in an increase of contaminated runoff. With implementation of measures to prevent discharge of contaminants into stream channels as discussed in Section 3.3.4.10, this would be a less-than-significant impact.

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Oak Woodland

Both alternatives and the fundable first phases would result in permanent loss of and temporary effects on oak woodlands. Additionally, indirect impacts on oak woodland vegetation outside the temporary impact zone might occur. These impacts are discussed in detail in Section 3.3.1.2. CDFG would recommend avoidance, minimization, and compensatory mitigation for the loss of native oak trees and oak woodland habitat. The loss or disturbance of oak woodland vegetation is considered significant because the habitat is declining and provides important wildlife habitat and other ecological functions and values. With implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1, this impact would be less than significant.

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Jurisdictional Drainages and Wetlands

Effects on jurisdictional, i.e., federally protected, drainages and wetlands are discussed in Chapter 3, and a summary of significance under CEQA for these impacts is summarized as follows.

- Permanent and temporary impacts on jurisdictional perennial drainages would occur during project construction under all build alternatives. Section 3.3.2.1 discusses this impact in detail. These effects would be considered significant. However, implementation of avoidance and minimization measures in Section 3.3.1.1 and measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands would reduce this impact to a less-than-significant level.
- Permanent and temporary impacts on jurisdictional seasonal drainages would occur during project construction under all build alternatives. Section 3.3.2.2 discusses this impact in detail. These effects would be considered significant. However, implementation of avoidance and minimization measures in Section 3.3.1.1 and measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands would reduce this impact to a less-than-significant level.

- Permanent and temporary impacts on jurisdictional perennial marsh would occur during project construction under all build alternatives. Section 3.3.2.3 discusses this impact in detail. These effects would be significant. However, implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to restore temporarily disturbed perennial marsh and compensate for permanent loss of wetlands would reduce this impact to a less-than-significant level.
- Permanent and temporary impacts on jurisdictional alkali seasonal wetlands would occur during project construction under Alternative B, Alternative C, and Alternative C, Phase 1, but not Alternative B, Phase 1. Section 3.3.2.4 discusses this impact in detail. These effects would be considered significant. However, implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to compensate for permanent loss of wetlands would reduce this impact to a less-than-significant level.
- Permanent and temporary impacts on jurisdictional seasonal wetlands would occur during project construction under all build alternatives. Section 3.3.2.5 discusses this impact in detail. These effects would be significant. However, implementation of avoidance and minimization measures in Section 3.3.1.1, measures in Section 3.3.2.1 to protect water quality and prevent erosion and sedimentation in drainages and wetlands, and measures in Section 3.3.2.3 to compensate for permanent loss of wetlands would reduce this impact to a less-than-significant level.

Nonjurisdictional Wetlands and Water Features

Effects on nonjurisdictional wetland and waters are discussed in detail in Section 3.3.2.6. Effects on constructed seasonal drainages (or ditches) would occur under Alternative B, Alternative C, and Alternative C, Phase 1. Temporary and permanent impacts on nonjurisdictional perennial marsh would occur under Alternative B and Alternative B, Phase 1. Temporary and permanent impacts on nonjurisdictional seasonal wetlands would occur under Alternative C and Alternative C, Phase 1.

With implementation of measures to protect sensitive natural communities described in Section 3.3.1.1, and measures designed to protect, restore, and compensate for loss of wetland and drainage habitats described in Section 3.3.2, these impacts would be less than significant.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Construction activities associated with the build alternatives would require temporary redirection of the flow of water through the use of cofferdams and pipelines. These devices could block the migration of Chinook salmon and steelhead. However, construction activities would be avoided during the primary migration time of Chinook salmon and steelhead. Moreover, maintenance of fish passage through the construction site during stream dewatering activities would further reduce the potential for impacts on fish movement. The pipeline would be checked every few

hours (or more often depending on conditions) to clear any debris buildup that may occur during construction. Implementation of measures discussed in Section 3.3.4.10 would reduce this impact to a less-than-significant level.

A fish passage assessment was conducted on the current channel configurations in Green Valley, Ledgewood, and Suisun Creeks, the results of which were compared to post-project conditions. This assessment concluded that, under existing conditions, adult Chinook salmon and steelhead passage criteria related to minimum water depth are exceeded at the Green Valley Creek stream crossing due to excessive sediment in the constructed low-flow channel. Modification of the bridge structures at Green Valley Creek under all build alternatives would improve conditions for fish passage. The proposed modification of the Ledgewood Creek crossing along SR-12 under all build alternatives would create fish passage constraints associated with shallow water depths. With the implementation of the measures to improve the Ledgewood Creek channel downstream of the crossing discussed in Section 3.3.4.11, this impact would be less than significant.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Although the City of Fairfield has a tree ordinance that protects native oaks and several other native tree species, the ordinance does not apply to lands within the Caltrans right-of-way. No other local policies or ordinances pertain to the project. However, native trees do occur within the project area, although they are outside areas that have been mapped as sensitive community types, including riparian and oak woodlands. SCR 17 (1989) requires all state agencies to assess effects of their projects on oak woodlands that contain blue oak (*Quercus douglasii*), Engelmann oak (*Q. engelmannii*), valley oak (*Q. lobata*), or coast live oak (*Q. agrifolia*). Oak woodlands protected under this resolution must encompass at least five acres and contain five or more oak trees per acre. State agencies must preserve and protect oak woodlands to the extent feasible and mitigate loss with replacement plantings where the protected oak species are removed. Impacts on native oak trees that occur outside the mapped sensitive community types are addressed here for each project alternative.

Construction of Alternative B would remove native trees throughout the project area. Impacts on native trees that occur in riparian and oak woodlands are addressed under the impacts for those community types. Loss of 15 mature native oak trees located outside riparian or oak woodlands would occur due to construction in these areas:

- Red Top Road extension north of I-80 (Trees 100 and 105 in Volume 2, Figure 3.3-2a, Sheets 2–3).
- Widening of SR 12W (Trees 27–33 in Volume 2, Figure 3.3-2a, Sheet 4).
- The new I-80 EB on-ramp from NB I-680 (Trees 4–7 in Volume 2, Figure 3.3-2a, Sheets 16 and 17).
- Widening of I-80 between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (Trees 34 and 35 in Volume 2, Figure 3.3-2a, Sheet 21).

Nine of the 15 affected trees (Trees 27–35)—seven coast live oaks, one interior live oak, and one valley oak—are mapped in upland scrub and ruderal habitats, but are adjacent to a more extensive area of live oak woodland, and protection under SCR 17 would apply. Implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1 would reduce this impact to a less-than-significant level.

Two other affected trees (Trees 101 and 105) are interior live oaks in an area mapped as upland scrub and surrounded by nonnative annual grassland and development. Constructed seasonal drainages cross this area of upland scrub, so the scrub essentially functions as riparian habitat adjacent to the drainages. Because these two trees are associated with drainages, their loss can be considered an impact on riparian habitat. Implementation of measures designed to compensate for loss of sensitive natural communities described in Section 3.3.1.1 would reduce this impact to a less-than-significant level.

The remaining three affected trees are two valley oaks and one coast live oak (Trees 4–7) in a developed area near buildings and are not associated with any protected habitat. These trees will be within the Caltrans right-of-way acquired for project construction, and no regulations protect them. Due to the low quality of the potential wildlife habitat and the lack of surrounding natural habitat, loss of these trees is not considered a significant impact. Impacts on migratory birds that could nest in these trees are addressed in Section 3.3.4.7.

Construction of Alternative B, Phase 1 would result in the loss of six mature native trees located outside riparian or oak woodlands (Trees 4–7 in Sheets 16 and 17; and Trees 34 and 35 in Volume 2, Figure 3.3-2b, Sheet 21). Mitigation for these trees is as described for Alternative B.

Construction of Alternative C would result in the loss of 13 mature native oak trees outside riparian or oak woodlands due to construction in the following areas:

- Red Top Road extension north of I-80 (Trees 100 and 105 in Volume 2, Figure 3.3-2c, Sheets 2 and 3).
- Widening of SR 12W (Trees 27–33 in Volume 2, Figure 3.3-2c, Sheet 4).
- The new I-680 SB on-ramp from EB I-80 along Jameson Canyon Creek (Trees 2 and 3 in Volume 2, Figure 3.3-2c, Sheets 9 and 14).
- Widening of I-80 between Dan Wilson Creek and the previous site of the I-80 eastbound Cordelia truck scales (Trees 34 and 35 in Volume 2, Figure 3.3-2c, Sheet 21).

Of these 13 trees, two coast live oaks (Trees 2 and 3) are within nonnative annual grassland adjacent to riparian habitat along Jameson Canyon Creek. Because these two trees are adjacent to riparian habitat, their loss can be considered an impact on riparian habitat. Implementation of measures to avoid and minimize disturbance and compensate for loss of riparian areas described in Section 3.3.1.1 would reduce this impact to a less-than-significant level. Avoidance and compensatory measures for the other 11 trees would be as described in Section 3.3.1.1.

Construction of Alternative C, Phase 1 would result in the loss of four mature native oak trees located outside riparian or oak woodlands (Trees 100 and 105 on Sheets 2 and 3, and Trees 2 and

3 in Figure 3.3-2d, Sheets 9 and 14). Mitigation for these trees is as described above for Alternatives B and C.

Native trees provide important habitat for wildlife and other ecological functions and values. The loss or disturbance of native trees, particularly oaks, is of concern to local and state agencies. With implementation of measures to avoid and minimize disturbance of riparian communities and compensate for losses as described in Section 3.3.1.1, this impact would be less than significant.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction of Alternative B, Alternative C, or Alternative C, Phase 1 would involve installation of culverts and placement of fill for construction of the Red Top Road/I-680 interchange, resulting in direct disturbance of jurisdictional seasonal drainages in the Suisun Marsh Secondary Management Area (SMA). Construction in this area would also remove nonnative annual grassland in the SMA.

Alternative B, Phase 1 would have no impact on habitat in the SMA.

The Suisun Marsh Preservation Act established the SMA to serve as a buffer between the Suisun Marsh Primary Management Area and developed land. Solano County regulates uses in the SMA through Marsh Development Permits to ensure that proposed uses are consistent with the SMLPP.

Implementation of measures to protect sensitive natural communities; to protect water quality and restore wetland habitats; and to compensate for loss of Swainson's hawk foraging habitat as described in Sections 3.3.1.1, 3.3.2.1, and 3.3.5.6 would reduce this impact to a less-than-significant level.

Cumulative impacts associated with Alternative B, Alternative C, and Alternative C, Phase 1 on the SMA would result from construction of roads and rail lines within the water-related industrial reserve area at Collinsville and possible future expansion of SR 12 in Solano County, as identified in the Solano County General Plan (Solano County 2008). Construction of the project alternatives would add to the cumulative effects on the SMA. However, with implementation of the avoidance and minimization efforts and compensation for remaining impacts, the contribution of build alternatives would not be cumulatively considerable. Further discussion of this issue is presented in Section 4.2.1.9.

4.2.1.5 Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

There are three historical resources located that may be affected by the build alternatives: the Suisun City Train Depot (parcel 0032-020-240), the Village of Cordelia Historic District, and the

Suisun City Historic District. The Suisun City Train Depot Village and the Cordelia Historic District are listed in the NRHP, and the Suisun City Historic District is eligible for listing in the NRHP and the CRHR. All three properties are historical resources for the purposes of CEQA.

Under Alternative B, construction would occur in the southern portion of parcel 0032-020-240 (Suisun City Train Depot), in the vicinity of the Village of Cordelia Historic District, and near and within the boundary of the recommended Suisun City Historic District. Alternative B would not lead to the physical demolition, destruction, relocation, or alteration of the historical resources or their immediate surroundings, and character-defining features of each resource would remain intact. Moreover, proposed construction would not affect the overall setting of the resources because it would be located away from and outside the district (Suisun City Historic District) or because the setting has already been compromised by modern construction. Accordingly, this alternative would result in a less-than-significant impact.

Alternative B, Phase 1 would result in construction in the vicinity of the Village of Cordelia Historic District only. The impact to the district would be less than significant because construction would not occur on a parcel that contained a contributing resource.

Alternative C would include construction in the vicinity of the Suisun City Train Depot and the Suisun City Historic District. Like Alternative B, impacts to these resources would be less than significant.

Please refer to Section 3.1.8 for additional discussion on potential effects on cultural resources.

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Two known archaeological resources that could not be found have been reported within or adjacent to the project APE. CA-Sol-262 is located within the project footprint for Alternative C and Alternative C, Phase 1. CA-Sol-242 has two mapped locations, which are entirely or partially within the footprint for Alternative B and Alternative B, Phase 1. It is possible that these sites may be rediscovered during project construction and that they may be eligible for listing in the NRHP or the CRHR. Additionally, there is the possibility that buried archaeological resources that would be eligible for listing in the NRHP or the CRHR are located within the footprint of any of the build alternatives. Project construction could result in the disturbance or destruction of these resources, which would be considered a significant impact. However, implementation of the Department's standard procedures for unanticipated discovery and the implementation of measures to conduct further research and enter into a Programmatic Agreement (PA) (discussed in Section 3.1.8) would reduce these impacts to a less-than-significant level under CEQA. The execution of the project PA will also signify completed compliance with Section 106 of the NHPA.

Would the project disturb any human remains, including those interred outside of formal cemeteries?

No known human remains are located within the project area. However, there is the possibility that construction of any of the build alternatives may result in the disturbance of human remains.

This would be considered a significant impact. However, implementation of the Department's standard procedures and compliance with PRC 5097.98 and Section 7050.5[c] of the California Health and Safety Code to protect human remains in case of accidental discovery during construction (discussed in Section 3.1.8) would reduce this impact to a less-than-significant level.

4.2.1.6 Paleontology

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction of Alternative B could cause damage to paleontological resources. Several units are sensitive for paleontological resources and fossils could be present in the project area. Figure 3.2.4-2, Figure 3.2.4-3a, and Figure 3.2.4-3b show the locations of the following sensitive units.

- Relatively shallow Pleistocene sediments that could be sensitive underlying Holocene alluvial fan deposits (Qhf), which range in depth from approximately 0 to 25 feet, in the central and eastern portions of the project area—the likelihood of encountering sensitive deposits increases with depth and with proximity to surficial exposures of sensitive deposits.
- Late Pleistocene alluvial fan (Qpf) deposits that are highly sensitive in the western portion of the project area—although there are no known fossils records from this deposit within Solano County, diverse vertebrate faunas have been collected from similar Pleistocene alluvial units in other parts of northern California. These deposits are sensitive for paleontological resources because they tend to contain vertebrate fossils.
- Outcrops of Sonoma volcanics (Tsvt and Tsva) that are highly sensitive in the western portion of the project area, west of Suisun Creek, and in the vicinity of the I-80/SR 12W interchange—of the 69 records of vertebrate fossils in Solano County (University of California Museum of Paleontology 2007a), 29 of them are from the Sonoma volcanics unit, including horse, deer, and unidentified mammals (Table 3.2.4-2).

If fossils are present in the project area, they could be damaged during project construction. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995) would represent an impact.

The level of impact under Alternative C, would be the same as under Alternative B but to a greater extent (Figure 3.2.4-2, Figure 3.2.4-4a, and Figure 3.2.4-4b). Table 3.2.4-3 compares the impacts of major excavation areas for Alternatives B and C on paleontological resources based on depth and extent of excavation and the paleontological sensitivity of the unit. Only project components that differ between alternatives are included. It should be noted, however, that both alternatives involve extensive, deep grading associated with the Red Top Road expansion in the paleontologically sensitive Markley Sandstone (Eocene), Sonoma Volcanics (Pliocene and late Miocene), and alluvial fan deposits (Late Pleistocene).

The level of impact under the fundable first phase of either alternative would be the same as under full build alternative, but to a lesser extent.

For all build alternatives, implementation of avoidance, minimization, and/or mitigation measures identified in Section 3.2.4, "Paleontology," would reduce these impacts to a less-than-significant level.

4.2.1.7 Geology and Soils

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

As discussed in Section 3.2.3, the risk of surface fault rupture in the project area is generally high because of its proximity to active faults. There is the potential for impacts related to fault rupture, particularly under Alternative C and Alternative C, Phase 1, as structures under these alternatives are located in the vicinity of the Green Valley fault. These impacts could be significant. However, compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards in addition to implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3 would reduce this impact to a less-than-significant level.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

As discussed in detail in Section 3.2.3, the possibility of the project area experiencing strong ground shaking may be considered moderate to high because of its proximity to active faults. There is the potential for all build alternatives to result in significant impacts involving ground shaking. However, compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards, in addition to implementation of the recommendations from the Draft Geotechnical report noted in the avoidance, minimization, and/or mitigation measures in Section 3.2.3, would reduce this impact to a less-than-significant level.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The liquefaction potential in the project area corridor is considered moderate, with the exception of areas along the eastern portion of Jameson Canyon Creek, Suisun Creek, Green Valley Creek, Ledgewood Creek, and in the eastern segment of the project area, where it is considered high. This impact is discussed in detail in Section 3.2.3.

Impacts of the proposed build alternatives related to potential structural damage and injury from development on materials prone to ground failure, including materials subject to liquefaction, would be reduced to a less-than-significant level with the implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3.

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

As discussed in Section 3.2.2, there are landslide deposits, elevated landslide potential, and some debris-flow potential in the southwestern portion of the project area. Impacts of the build alternatives related to potential structural damage and injury from landslides or other slope failures would be reduced to a less-than-significant level with implementation of avoidance, minimization, and/or mitigation measures described in Section 3.2.3.

Would the project result in substantial soil erosion or the loss of topsoil?

Construction activities associated with the build alternatives could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the construction sites and staging areas. See Section 3.2.3 for a detailed discussion of this potentially significant impact. The development and implementation of a SWPPP (see avoidance, minimization, and/or mitigation measures in Section 3.2.2) and compliance with the County's Grading Ordinance would reduce this impact to a less-than-significant level.

Most of the project area has already been disturbed by previous road-building activities, agricultural operations, and other development. Future ground-disturbing activities such as grading, excavation, removal of vegetation cover, and loading are not expected to result in any significant removal or significant loss of topsoil in the project area.

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

As discussed in Section 3.2.3, in general, short-term and long-term consolidation settlements do not appear to be a reason for concern in the project area, except near Suisun Valley Road and Dan Wilson Creek, where soft clays are indicated in test borings. Consolidation settlements may pose a significant hazard to structures in the immediate area of these soils. This potentially significant impact would be reduced to a less-than-significant level with implementation of avoidance, minimization, and/or mitigation measures in Section 3.2.3.

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

As discussed in Section 3.2.3, soils in the project area have been identified as having moderate to high shrink-swell potential. This could result in a significant impact. However, compliance with the UBC Seismic Hazard Zone 4/CBSC, Department, and County General Plan standards, in addition to avoidance, minimization, and/or mitigation measures to implement recommendations from the Draft Geotechnical Report as described in Section 3.2.3 would reduce this impact to a less-than-significant level.

4.2.1.8 Hazards and Hazardous Materials

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

All potential hazardous waste (e.g., naturally occurring asbestos, contaminated groundwater, aerially deposited lead) generated during project construction would be transported and disposed of in accordance with existing state and federal laws pertaining to the handling and disposal of hazardous materials; accordingly, this would be a less-than-significant impact.

Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Activities related to construction of the project alternatives could release hazardous materials into the environment. During the construction phase of the project alternatives, ground disturbance could release aerially deposited lead in surface soils adjacent to the edge of the existing pavement, as well as lead and other potentially toxic substances found in the yellow traffic striping and/or pavement markings. These hazardous materials, as well as contaminated groundwater from dewatering activities, would be transported for proper disposal. In the event of an accident, the materials could be released into the environment. Without proper precautions, exposure to these hazardous materials could become human health hazards. Implementation of the avoidance and minimization measures discussed in Section 3.2.5, including compliance with existing state and federal laws pertaining to the handling and disposal of hazardous materials, would reduce these impacts to a less-than-significant level.

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Three schools are located within 0.25 mile of the project area: Solano Community College at 4000 Suisun Valley Road, Rodriguez High School at 5000 Red Top Road, and Green Valley Middle School at 3630 Ritchie Road, all in Fairfield. Although construction activities would be roadway related, there is the potential for a hazardous spill or accident during construction. Implementation of the avoidance and minimization measures discussed in Section 3.2.5, including compliance with existing state and federal laws pertaining to the handling and disposal of hazardous materials, would reduce these impacts to a less-than-significant level.

Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

According to the ISA completed in April 2009, there are 49 known or suspected areas of contamination within or adjacent to the project footprint. Disturbance of these areas could result in exposure to environmental contamination that could adversely affect humans and the environment. For areas proposed for acquisition, the Department would prepare, during the design phase, site-specific Phase I environmental site assessments in accordance with the requirements of the All Appropriate Inquiries Final Rule promulgated as an amendment to Community Environmental Response, Compensation, and Liability Act. A Phase I environmental site assessment will provide information to determine if there is a reasonable expectation that the site is contaminated. If the Phase I environmental site assessment reveals that it is reasonable to expect that some contamination would be encountered, the potentially affected sites would be further investigated and sampled, the constituents of concern identified,

and potential impacts delineated in a Phase II environmental site assessment. The Department would make every effort to have the property owner or responsible party investigate and clean up the contamination prior to acquisition. For those sites not proposed for acquisition where environmental contamination may occur as determined by the ISA, the construction contracts for the project alternatives would require the development and implementation of plans to safeguard human health and the environment. These plans are stipulated in existing hazardous materials regulations and include a waste management and disposal plan, a health and safety plan, and a SWPPP. Given the existence of plans and regulations to avoid or reduce hazardous materials exposure and health risks, the impact of hazardous materials exposures is considered to be less than significant.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Potential short-term impacts on emergency service providers due to by congestion during project construction and temporary lane closures may result from construction-related activities under all build alternatives. The Department would coordinate with emergency service providers (e.g., police, fire, hospital) in developing a traffic management plan to ensure that no disruptions occur to vital emergency services during project construction. Implementation of the traffic management plan would reduce potentially significant impacts to a less-than-significant level. On completion, the build alternatives would not impair but would rather improve the efficiency of emergency response by alleviating congestion through the I-80/I-680/SR 12 interchange complex, enabling greater maneuverability for emergency vehicle route, and improving safety conditions. Consequently, potential impacts on emergency response plans would be beneficial. Section 3.1.6 presents more information on this topic.

Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Wildland fires are a seasonal hazard in northern California, accounting for more than half the fires in unincorporated areas. According to the California Department of Forestry and Fire Protection (CAL FIRE) Solano County Natural Hazard Disclosure (Fire) map (California Department of Forestry and Fire Protection 2000); the majority of the project area is not located in a fire hazard region. However, the western segment of SR 12 to its junction with I-80 is in an area identified as a “wildland area that may contain substantial forest fire risks and hazards.”

The primary risks of potential fire hazards associated with the build alternatives involve the use of vehicles and equipment during construction. Heat or sparks emitted from equipment in the area could ignite dry vegetation and cause a fire. Construction crews would use existing roads along most of the alignment corridor. In addition, the Department follows a standard practice of developing and implementing a fire risk management plan that addresses fire-suppression equipment and procedures to be used during construction and training of construction and maintenance crews. Implementation of the avoidance and minimization measures discussed in Section 3.2.5 would ensure that any potentially significant impacts would be reduced to a less-than-significant level.

4.2.1.9 Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements?

The build alternatives would result in up to 470 acres of soil disturbance. Disturbed soil could cause potential erosion and sediment control impacts during construction. Construction of the project alternatives would involve the use of construction equipment and associated fuels, solvents, lubricants, and other pollutants. These substances may be released into the environment during construction and could result in adverse effects on water quality. In addition, operation of the project alternatives could affect water quality as a result of stormwater carrying potential pollutants from the roadway surfaces and shoulders. Implementation of measures specified in Section 3.2.2 would reduce this potential impact to a less-than-significant level.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

The build alternatives entail major reconstruction over multiple waterways. Specifically, the drainage pattern of Raines Drain could be affected by placement of fill material in the floodplain. Avoidance, minimization, and/or mitigation measures described in Section 3.2.1 specify construction of an upstream inlet and stable cavities that would allow flows to pass despite the reduction in size of the floodplain. In addition, implementation of measures described in Section 3.2.2 (i.e., preparation and implementation of a SWPPP) would protect water quality from erosion and siltation impacts. The SWPPP would also address operations-related water quality impact through permanent treatment BMPs. This impact would be less than significant.

Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

The build alternatives entail major reconstruction over multiple waterways. Specifically, the drainage pattern of Raines Drain could be affected by placement of fill material in the floodplain. In addition, the build alternatives would increase the amount of impervious surface. However, BMPs identified in the Storm Water Data Report would be sized adequately to drain to appropriate locations. In addition, implementation of measures specified in Section 3.2.2 would ensure that flooding on or off the site would not result from project implementation. This impact would be less than significant.

Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The build alternatives would all increase the amount of impervious surface, although to varying degrees. However, BMPs identified in the Storm Water Data Report would be sized adequately to drain to appropriate locations. In addition, each build alternative has the potential to increase discharges of polluted runoff to local waterways. However, implementation of operational BMPs

identified and other measures specified in Sections 3.2.1 and 3.2.2 ensure that this would be a less-than-significant impact.

Would the project otherwise substantially degrade water quality?

In accordance with the Department's NPDES permit and the Construction General Permit, BMPs incorporated into the project alternatives would reduce the discharge of pollutants during construction, as well as permanently to the maximum extent practicable. These BMPs fall into three categories: temporary construction site BMPs, design pollution prevention BMPs, and permanent treatment BMPs. Moreover, measures specified in Section 3.2.2 (i.e., implementation of BMPs and a SWPPP) would ensure that this impact remain less than significant.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

None of the build alternatives would place any housing or structure within the 100-year flood hazard area. However, the fill that will be used for the truck scales has the potential to redirect flows. Construction of an upstream inlet structure and stable cavities as described in Section 3.2.1 would ensure that this is a less-than-significant impact.

The proposed inlet structure and storage mitigation (through additional basins or below ground storage) at Raines Drain crossing of I-80 will mitigate for the increase in pavement elevation and the loss of storage in the floodplain. These facilities would be designed to allow flooding up to the existing overtopping elevation of I-80 and prevent an increase in flood elevation upstream of I-80 and would minimize impacts to downstream areas.

4.2.1.10 Land Use and Planning

Would the project physically divide an established community?

The established communities in the project area—Cordelia and the Cities of Fairfield and Suisun City—are currently divided by the existing I-80, I-680, and SR 12 facilities. The build alternatives would result in widening the footprint of the existing facilities, but because the existing facilities already divide the community, the build alternatives would have a less-than-significant impact.

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

The Department is the agency with jurisdiction over project land use by virtue of its authority to build the project alternatives. As a state agency, the Department (and properties under its control) is not subject to local land use plans and regulations of local jurisdictions. Consequently, with one exception, local land use plans and regulations are not applicable to the build alternatives.

As discussed in Section 3.1.1.1, the Suisun Marsh Protection Act delegates to Solano County the responsibility for establishing policies, regulations, programs, and operating procedures that conform to the provisions of the Act and its accompanying Suisun Marsh Protection Plan. The Department is subject to these requirements. Solano County's Suisun Marsh Policy Addendum recognizes the need to expand SR 12, and the County's Zoning Ordinance establishes the marsh development permit process by which an expansion would be considered and approved.

Alternative B, Alternative C, and Alternative C, Phase 1 would potentially encroach into the secondary zone of the Suisun Marsh, particularly along I-680. However, the Department would apply to Solano County for a marsh development permit, pursuant to County ordinance. Approval of the permit will be consistent with the Solano County General Plan's Suisun Marsh policies and policy addendum, as determined by the County. No construction would occur prior to issuance of a permit. Permit approval would include the key performance standards listed below.

- Public roadway construction and improvement will be subject to restrictions permitting the natural water movement necessary to sustain the marsh environment.
- All designated scenic roadways should be subject to a combination of specific policies based on the composition of each visual unit along the route. The combination of policies associated with the foreground and distant components of each visual unit (and with any special features) as noted on the plan diagram apply to all development that falls within view of the designated scenic roadway.
- Development shall minimize any impacts of earth disturbance, erosion, and water pollution.
- Riparian vegetation along significant County waterways shall be preserved in order to maintain water quality and wildlife habitat values.
- Development shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh and surrounding upland areas to maintain these unique wildlife resources.
- Development shall protect marsh waterways, managed and natural wetlands, tidal marshes, seasonal marshes and lowland grasslands which are critical habitats for marsh-related wildlife.

In view of these conditions, this impact would be less than significant.

4.2.1.11 Noise

Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Traffic Noise

Traffic noise levels are predicted to exceed Department noise standards under all build alternatives at residential and recreational outdoor use areas (NAC for Activity Category B land use under the Protocol). However, because the project alternatives are not predicted to result in a

substantial increase in noise (i.e., 12 dB over existing noise levels), this impact is considered to be less than significant.

Construction Noise

Construction would be conducted in accordance with the Department's Standard Specifications Section 14-8 and applicable local noise standards. Construction noise would be short-term, intermittent, and masked by local traffic noise. In addition, Department's Standard Specification 14-8.03, following measures may be implemented to further reduce noise effects from construction.

- Use of equipment with sound-control devices that are no less effective than those provided on the original equipment.
- Prohibition of the use of any equipment with an unmuffled exhaust.
- Changing the location of stationary construction equipment to maximize the distance to noise-sensitive uses.
- Turning off idling equipment.
- Rescheduling construction activity to non-sensitive hours of the day.
- Notifying adjacent residents in advance of construction work.
- Installing acoustic barriers around stationary construction noise sources.

This impact is expected to be less than significant. No mitigation is required.

Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration and noise. However, vibration from non-impact construction activity is typically below the threshold of perception when the activity is more than about 50 feet from the receiver. Moreover, vibration from such activities is a short-term effect that ends when construction is completed. This impact is expected to be less than significant. No mitigation is required.

Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Traffic noise levels are expected to increase by a maximum of 8 dB under design-year with-project conditions under all alternatives, compared to existing conditions. This increase is not considered substantial under the Protocol, which defines a substantial increase as a 12 dB increase over existing traffic noise levels. Based on this, traffic noise under design year with-project conditions is not expected to result in a substantial permanent increase in noise. This impact is considered to be less than significant. No mitigation is required.

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction activities would result in a temporary increase in noise. However, as discussed above, construction activities would be conducted in accordance with the Department's Standard Specifications Section 14-8 and applicable local noise standards. Consequently, this impact is considered less than significant. No mitigation is required.

4.2.1.12 Population and Housing

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

Because the project alternatives would only improve existing highway facilities, it would accommodate growth but would not be growth inducing. Accordingly, this is a less-than-significant impact.

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Alternatives B and C would result in a single residential displacement associated with the relocation of the westbound truck scales. Because comparable replacement housing would be made available to the residents of the single property to be displaced, and because construction of replacement housing would not be necessary to accommodate a single displacement, this would be a less-than-significant impact.

Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Alternatives B and C would result in a single residential displacement associated with the relocation of the westbound truck scales. Because comparable replacement housing would be made available to the residents of the single property to be displaced, and because construction of replacement housing would not be necessary to accommodate a single displacement, this would be a less-than-significant impact.

4.2.1.13 Public Services

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection or police protection?

Potential short-term impacts on police, fire, and emergency service providers may result from construction-related activities under all build alternatives. Potential impacts may include increased emergency response times within the project area caused by congestion during project construction and temporary lane closures. Lane closures are expected to be of short-term and occur in off-peak hours. The effect is expected to be minimal. In addition, as part of its standard procedure, the Department will prepare a Transportation Management Plan (TMP). Before

initiating construction, this TMP will be provided to all emergency service providers in the area. The TMP will serve to notify all emergency service providers in the project area of the project construction schedule and the time and location of lane closures. The TMP will identify anticipated dates and hours of construction, as well as any anticipated limits on access. Notice will be provided at least one week before construction begins. To the extent possible, emergency vehicles will be allowed through roadway segments temporarily closed for construction purposes. Accordingly, this will be a less-than-significant impact.

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

A small portion of Rodriguez High School would be affected under Alternative C and Alternative C, Phase 1. The realignment of Lopes Road under these alternatives would affect a small landscaped area beyond the outfield fence of the school's softball field. However, because this area is small and located outside a fence, its loss would not affect the function of the school. This would be a less-than-significant impact.

Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be affected. As part of the project, the facility would be relocated prior to construction onto agricultural land that is currently under a Williamson Act contract. This impact is addressed in greater detail in Section 4.2.3.1. The portion of the alternatives that would encroach upon Williamson Act land is a relatively small subset of the overall project effects, and would constitute a less-than-significant impact.

4.2.1.14 Recreation

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

Under Alternatives B and C, a portion of the Fairfield Linear Park east of Abernathy Road would be affected.. As part of the project, the facility would be relocated prior to construction onto agricultural land. This would be a less-than-significant impact.

4.2.1.15 Traffic and Transportation/Pedestrian and Bicycle Facilities

Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Alternatives B and C would clear all mainline sections of deficiencies experienced in the No-Project condition in 2035 in the AM peak period. Some deficiencies would remain in the PM peak period, although these deficiencies are due to the downstream bottleneck at Air Base Parkway, outside the project limits. This impact would be less than significant.

4.2.1.16 Utilities and Service Systems

Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As discussed in Section 3.2.2, the build alternatives would increase the amount of stormwater runoff within the state right-of-way. To manage the stormwater runoff, the on-site drainage facilities would be reconfigured within the proposed right-of-way as part of the project design. The associated watersheds would be only minimally affected. Because facilities would be reconfigured in the same general area as existing facilities, there would be no entirely new facilities outside the project footprint. Preparing and implementing a SWPPP and implementing BMPs would reduce this impact to a less-than-significant level.

4.2.2 Significant Environmental Effects of the Proposed Project

4.2.2.1 Agriculture Resources

Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use?

Despite permanent protections, Solano County has had a steady erosion of its agricultural base, particularly along the I-80 corridor. Substantial amounts of prime agricultural land continue to be taken out of production every year. For example, according to statistics compiled by the Department of Conservation's Farmland Mapping and Monitoring Program, during the period between 2004 and 2008, 5,840 acres of prime farmland were taken out of production county-wide. While most of this loss consisted of conversion to grazing land, relegating prime soils to grazing rather than the production of crops is an indicator of an adverse change in the agricultural economy.

The build alternatives would result in the direct conversion of agricultural land within their boundaries, through the widening of access-controlled freeway segments. Although the federal LESA analysis indicates that this is a less-than-significant impact, there are other considerations that lead to a different conclusion for purposes of CEQA. The project alternatives will result in the conversion of a substantial portion of the Valine Conservation Easement. The purpose of that easement is the permanent protection of farmland within the Suisun Valley, consistent with the Solano County General Plan's emphasis on preserving the Suisun Valley Strategic Plan area for continued agricultural use. As such, it is a foundation of the County's efforts to halt conversion of agricultural lands in the area. Loss of most of the remaining easement south of the route of the North Connector conflicts with this objective. Further, the proposed project would result in the direct conversion of from 122 (Alternative C) to 140 (Alternative B) acres of existing farmland to non-agricultural use. This further erodes the agricultural base within the Suisun Valley Strategic Plan area and conflicts with the County's efforts to preserve the area for continued agricultural use.

This change in the environment would not likely result in the conversion of farmland outside the project boundaries, because it would not change the existing access to this thoroughfare from agricultural lands or otherwise encourage conversions.

This individual impact will be reduced below the level of significance by implementation of the mitigation measure to compensate for the conversion of important farmland.

Would the project contribute to the cumulative conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The project alternatives would contribute to the steady loss of agricultural land within Solano County. While the project alternatives' contribution to this impact is relatively small in the context of Solano County that does not mean that it is not considerable in the context of agricultural land preservation in the Suisun Valley. The project alternatives are located in a visible portion of the county where conversions have already occurred and which Solano County has identified as one of ten areas to be strategically planned in order to preserve their agricultural character. The conversion of from 122 to 140 acres of farmland within the Suisun Valley Strategic Plan area will reduce the amount of land available to maintain the stable agricultural economy necessary to support continued agricultural use.

Agricultural land is a finite resource. However, the project mitigation will require the conservation of an equal amount of agricultural land and acquisition of a larger conservation easement; this mitigation would replace the land that is lost. For CEQA purposes, therefore, the proposed project's contribution to cumulative impacts on farmland is less than considerable.

4.2.3 Unavoidable Significant Effects of the Proposed Project

4.2.3.1 Traffic and Transportation/Pedestrian and Bicycle Facilities

Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Under the fundable first phases of the alternatives, certain segments would operate below STA's standard of LOS E, because the fundable first phase would not provide the full project's traffic carrying capacity. Under Alternative B, Phase 1 in 2015, the westbound SR 12E on-ramp from Jackson Street would continue to operate unacceptably during the a.m. peak hour, but this is due to the queue backup from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, eastbound SR 12E between the truck scales and Beck Avenue would continue to operate unacceptably.

Under Alternative C, Phase 1 in 2015, westbound SR 12E from east of Main Street to Pennsylvania Avenue would continue to operate unacceptably during the a.m. peak hour, due to the spillback from the SR 12E/Pennsylvania Avenue intersection. During the p.m. peak hour, in the eastbound direction, queue spillback from the Beck Avenue and Pennsylvania Avenue

intersections on SR 12E would still extend back to I-680, but the extent of queue would be less than under no-project conditions.

These impacts are considered significant and no mitigation to reduce them to a less-than-significant level is available, therefore these impacts to traffic under the fundable first phases of the alternatives are significant and unavoidable.

4.2.4 Significant Irreversible Environmental Changes

There would be no significant irreversible environmental changes other than those typically associated with a roadway improvement project. For a detailed discussion of irreversible and irretrievable commitments of resources, refer to Section 3.5.

4.2.5 Growth-Inducing Impacts

Both build alternatives, in varying degrees, would add capacity to the I-80/I-680/SR 12 interchange complex to accommodate existing and future projected increases in traffic. By doing so, the project alternatives would, to some extent, accommodate growth both locally and regionally. This growth in traffic is the result of local and regional land use plans, which, in turn, have been considered in regional transportation plans. Locally, the proposed project could indirectly lead to the development and intensification of land uses in the study area by improving access and roadway capacity. However, this development and intensification would most likely occur in areas already planned for such development by the County, the City of Fairfield, and Suisun City. Accordingly, growth-inducing impacts would be less than significant.

4.2.6 Climate Change

Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHG related to human activity that include carbon dioxide (CO_2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (1, 1, 1, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. However, in order to enact the standards California needed a waiver from the U.S. Environmental Protection Agency (EPA). The waiver was denied by EPA in December

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

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

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

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

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

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)--in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing EPA's proposed greenhouse gas emission

standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009.[1] On May 7, 2010 the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.[2]

The final combined EPA and National Highway Traffic Safety Administration (NHTSA) standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require that these vehicles meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 mpg if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

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

As part of its supporting documentation for the Draft Scoping Plan, CARB recently released an updated version of the GHG inventory for California (June 26, 2008). Figure 4-1 below is a graph from that update that shows the total GHG emissions for California for 1990, 2002–2004 average, and 2020 projected if no action is taken.

[1] http://www.epa.gov/climatechange/endangerment.html.

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

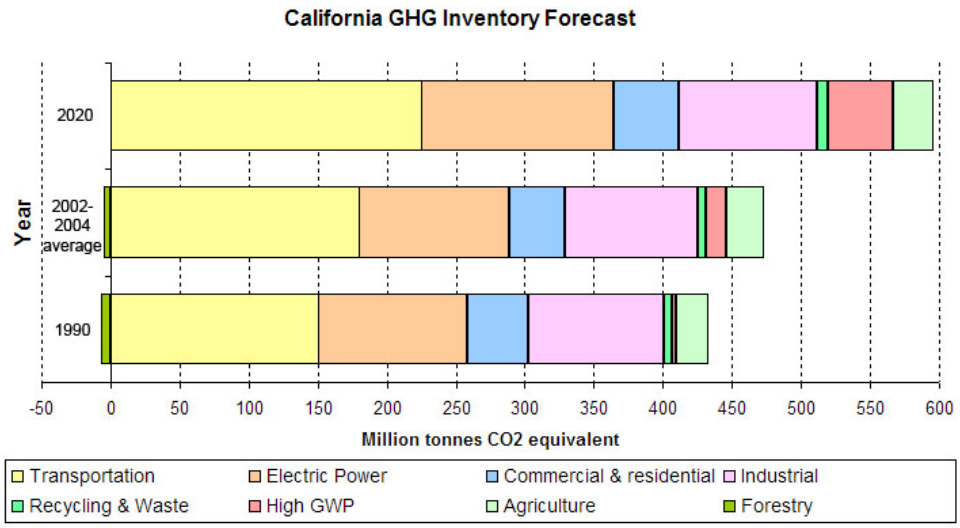
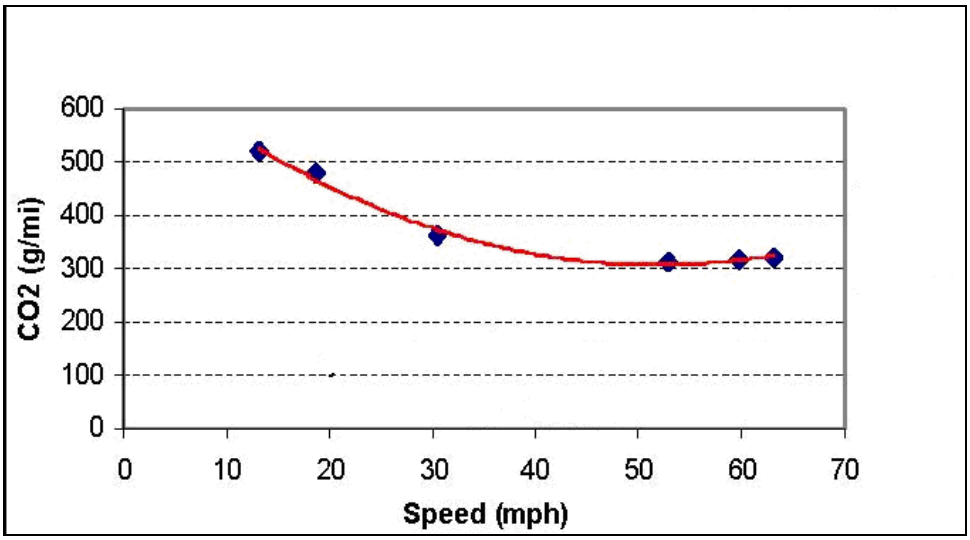


Figure 4-1. California Greenhouse Gas Inventory
Taken from: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

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

Project Analysis

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 mph) and at speeds over 55 mph. The most severe emissions occur from 0 to 25 mph (see Figure 4-2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.



Source: Center for Clean Air Policy— http://www.ccap.org

Figure 4-2. Changes in CO_2 Emissions and Vehicle Speeds

The purpose of the proposed project is to reduce congestion through the I-80/I-680/SR 12 interchange complex, encourage HOV and ridesharing, improve safety, reduce cut-through traffic on local roads, and accommodate current and future truck volumes in the project area.

For a discussion of purposes, the MTC Regional Transportation Plan EIR and subsequent findings are referenced. The Department as CEQA lead agency is responsible for determining the significance of the project's environmental impacts, including climate change. The Department has not adopted MTC's thresholds and will use its own independent judgment in determining CEQA significance.

Operational Emissions

Future-year GHG emissions associated with implementation of the proposed project were obtained by comparing future with-project emissions to future no-project emissions for both the interim (2015) and design (2035) years. It is important to note that CO_2 emissions are useful only for a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true CO_2 emissions will be because CO_2 emissions are dependent on factors that are not part of the emissions model, such as the fuel mix[3], rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Future year GHG emissions associated with implementation of the project alternatives were obtained by comparing future with-project emissions to future no-project emissions for both the interim (2015) and design (2035) years. Table 4-2 presents project-level emissions and indicates that under 2015 and 2035 conditions, implementation of the build alternatives is anticipated to result in increases in CO_2 emissions, when compared to the future no-project conditions. These increases are directly attributed to increases in VMT between the no-project and with project conditions.

[3] EMFAC model emission rates are only for direct engine-out CO_2 emissions, not for full fuel cycle. In addition, fuel cycle emission rates can vary dramatically depending on the amount of additives, such as ethanol, and the source of the fuel components.

Table 4-2. Project-Related Operational VMT (vehicle miles traveled per day) and GHG Emissions (metric tons per year)

Scenario	VMT	CO_2
Existing (2004)	2,929,304	493,410
2015 No Project	4,186,260	694,836
2015 Alt B Scenario 1	4,422,276	870,093
2015 Alt C Scenario 1	4,339,525	857,141
2035 No Project	4,286,723	908,948
2035 Alt B Scenario 1	5,131,890	1,014,343
2035 Alt C Scenario 1	4,619,496	915,991
2035 Alt B	5,560,155	1,093,767
2035 Alt C	5,571,158	1,079,032
Comparison of Alternatives to Existing		
2015 Alt B Scenario 1 to Existing	1,492,972	376,683
2015 Alt C Scenario 1 to Existing	1,410,221	363,731
2035 Alt B Scenario 1 to Existing	2,202,586	520,932
2035 Alt C Scenario 1 to Existing	1,690,192	422,581
2035 Alt B - Existing	2,630,851	600,357
2035 Alt C - Existing	2,641,853	585,621
Comparison of Alternatives to No Project		
2015 Alt B Scenario 1 to 2015 No Project	236,016	175,257
2015 Alt C Scenario 1 to 2015 No Project	153,265	162,305
2035 Alt B Scenario 1 to 2035 No Project	845,167	105,395
2035 Alt C Scenario 1 to 2035 No Project	332,773	7,043
2035 Alt B - 2035 No Project	1,273,433	184,819
2035 Alt C - 2035 No Project	1,284,435	170,084

Note: Emissions calculations based on CT-EMFAC.

MTC's 2035 RTP includes performance objectives to reduce per-capita delay while improving roadway safety. As indicated in Chapter 3 of this EIR, the proposed project would help to reduce congestion by reducing vehicle hours of delay and increasing average network speed. The proposed project also includes various mitigation measures, detailed below, that will reduce the project's GHG's emissions.

Transportation accounts for 40% of the Bay Area's GHG emissions. The MTC understands the urgent need to address climate change. The MTC coordinates regional planning efforts with the BAAQMD, Association of Bay Area Governments (ABAG), the Bay Conservation and Development Commission (BCDC), as part of the Joint Policy Committee (JPC). The Transportation Climate Action Campaign within the JPC seeks to enable climate-friendly behaviors, reduce the Bay Area's carbon footprint, and lay the groundwork for ongoing future climate change initiatives (Metropolitan Transportation Commission 2009).

The EIR for MTC's 2035 RTP states that while increases in VMT over the planning period are contributing somewhat to the significant cumulative impact of global climate change, the proposed project's contribution to the significant cumulative impact of global climate change is not cumulatively considerable. MTC's RTP identifies that despite feasible mitigation, this overall cumulative impact is expected to remain significant and unavoidable because of regional growth. However, the proposed project's contribution to the overall significant cumulative impact is not cumulatively considerable.

Within the RTP are various funded regional policy efforts that address the Bay Area's contribution to global climate change, including the Bay Area Regional Agency Climate Protection Program, the Transportation Climate Action Campaign, and the Bay Area 2009 Clean Air Plan.

MTC, as part of their mitigation, commits to working with the ABAG, BCDC, and the BAAQMD, through the JPC, to develop green construction policies and best management practices that will reduce impacts related to GHG emissions. Individual projects carried out as part of the RTP shall consider adopting appropriate measures that would minimize or eliminate cumulatively considerable impacts related to climate change. These measures may include, but are not limited to, the following:

- Adopt and implement "green building" standards for any public buildings (transit stations, ferry buildings, maintenance facilities, etc) funded by MTC to achieve a U.S Green Building Council LEED Green Building rating of Silver or better or equivalent certification.
- Use light-colored pavement for solar reflectivity and reduced heat island effects wherever construction costs are no higher than 5%–10% of the least cost alternative paving material.
- Install solar photovoltaic systems or use of renewable sources of energy for transportation buildings and maintenance facilities, wherever "feasible," as the term is defined in CEQA.
- Plant shade trees as part of specified types of construction projects or wherever construction results in loss of tree cover, because trees have carbon sequestration capacity.
- Establish or update minimum standards for construction management, including specifying minimum content for recycled products in aggregate, concrete, etc. and construction waste management.
- Establish standards or incentives for light pollution reduction related to street lighting and lighting of transportation and parking facilities to promote low energy use for permanent as well as temporary fixtures (Metropolitan Transportation Commission 2009).

As part of the Department's Climate Action Program to reduce GHG emissions, measures outlined within the Transportation and Air Quality chapters of this EIR further reduce GHG emissions from transportation projects.

There were 12 initial interchange alternatives considered. Project alternatives were screened based on the ability of each alternative to meet the proposed project's defined purpose and need, potential for environmental impacts, cost, and ability to provide adequate traffic operation improvements. Transit-oriented and non-traditional alternatives were considered, but were determined insufficient to meet the proposed project's purpose and need. A detailed description of project alternatives in discussed in Chapter 2, Project Alternatives.

In addition, there are a variety of transit services within the project study area, including intra- and inter-city bus service provided by Fairfield and Suisun Transit (FAST), Rio Vista Delta Breeze, and BayLink. Amtrak provides passenger rail service and the Capital Corridor provides commuter rail service in the study area, and FAST and the Rio Vista Delta Breeze provide transit access to and from the Suisun-Fairfield Amtrak Station. There are also existing and planned bicycle facilities within the study area, including Class I, II, and III Bikeways. Pedestrian

circulation consists primarily of sidewalks along streets and crosswalks at major intersections. These transit bicycle/pedestrian facilities serve to reduce VMT and automobile trips within the region, which help to reduce GHG emissions.

A detailed description of the transit system within the project study area is discussed in Section 3.1.6, "Traffic and Transportation/Pedestrian and Bicycle Facilities Traffic."Limitations and Uncertainties with Modeling

EMFAC

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

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

> REVISION: Both the EMFAC and OFFROAD Models develop CO_2 and CH_4 [methane] emission estimates; however, they are not currently used as the basis for [CARB's] official [greenhouse gas] inventory which is based on fuel usage information. . . However, [CARB] is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables

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

First, vehicle fuel economy is increasing. EPA's annual report, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008 (http://www.epa.gov/oms/fetrends.htm)*, which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now the highest since 1993. Most of the increase since 2004 is due to

higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52% in 2004 with projections at 48% in 2008.Table 4.3 shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway Traffic Safety Administration in its Draft EIS for New Corporate Average Fuel Economy (CAFE) Standards (June 2008).

Table 4-3. National Highway Traffic Safety Administration Model year 2015 Required Miles Per Gallon by Alternative

No Action		25% Below Optimized	Optimized (Preferred)	25% Above Optimized	50% Above Optimized	Total Costs Equal Total Benefits	Technology Exhaustion
Cars	27.5	33.9	35.7	37.5	39.5	43.3	52.6
Trucks	23.5	27.5	28.6	29.8	30.9	33.1	34.7

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

> "Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California—several in the hands of the general public—with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.
>
> "A number of the U.S. DOE 2010 milestones for FCV development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. DOE suggest that 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles."[4]

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

Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, *Effects of Gasoline Prices on Driving Behavior and Vehicle Market*, (http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf) the Congressional Budget Office found the following results based on data collected from California:

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

1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly;

2) the market share of sports utility vehicles is declining; and

3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

Limitations and Uncertainties with Impact Assessment

Taken from pages 3-48 and 3-49 of the National Highway Traffic Safety Administration Draft EIS for New CAFE Standards (June 2008), Figure 4-3 illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

> Cascade of uncertainties typical in impact assessments showing the "uncertainty explosion" as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.

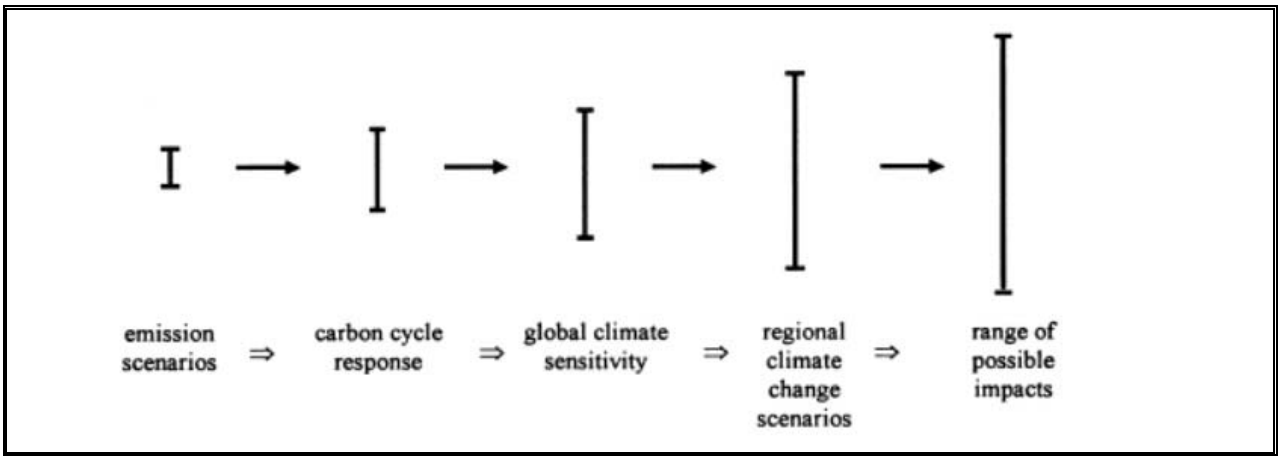


Figure 4-3. Cascade of Uncertainties

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what the modeled 7,043 to 184,819 metric ton increase in design-year CO_2 emissions, relative to no-build conditions, would mean for climate change given the overall California GHG emissions inventory of approximately 430 million tons of CO_2 equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce GHG emissions. Non-mitigation IPCC scenarios project an

increase in global GHG emissions by 9.7 up to 36.7 billion metric tons CO_2 from 2000 to 2030, which represents an increase of between 25% and 90%.[5]

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of GHGs, rather than causing "new" GHG emissions. For example, the EMFAC model runs for this project were based on Solano County data. It is difficult to assess whether some of the trip increases on I-80 and I-680 are new versus whether they are transferred from surrounding areas such as Sacramento County. Although some of the emission increases might be new, the extent to which the modeled 7,043 to 184,819 metric ton increase in design-year CO_2 emissions, relative to no-build conditions represents a net global increase, reduction, or no change, is uncertain and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project-level impact analysis are further borne out in the recently released Draft EIS for New CAFE Standards, completed by the National Highway Traffic Safety Administration June 2008. As the text quoted below shows, even when dealing with GHG emission scenarios on a national scale for the entire passenger car and light truck fleet, the numerical differences between alternatives is very small and well within the error sensitivity of the model.

> In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the MY 2011-2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO_2, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all greenhouse gases in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO_2 emissions from the United States light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions). [NHTSA Draft EIS for New CAFE Standards, June 2008, pp.3-77 to 3-78]

Construction Emissions

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

[5] Intergovernmental Panel on Climate Change (IPCC). February 2007. Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. http://www.ipcc.ch/SPM2feb07.pdf.

pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures to reduce particulate, exhaust, and fugitive dust emissions described in Section 3.2.6 would reduce the severity of this impact. Table 4-4 presents the maximum emissions for each phase of construction. Total emissions per year for each phase represents the potential maximum annual emissions, while the total emissions provides an estimate of total maximum emissions associated with construction of the proposed project.

Table 4-4. Worst-Case Construction GHG Emission Estimates (Metric Tons per Year)

Construction Phase	CO_2
Grubbing/land clearing	7,019.0
Grading/excavation	6,659.8
Drainage/utilities/sub-grade	3,153.4
Paving	2,320.5
Total	19,152.7

Note: Emissions calculations based on Road Construction Emissions Model (Version 6.3.1).

CEQA Conclusion

It is Caltrans determination that, in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

AB 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Governor's Executive Orders and help achieve the targets set forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $238.6 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding through 20166. As shown in Figure 4-4, the Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

As part of the Climate Action Program at Caltrans (California Department of Transportation 2006), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented

[6] Governor's Strategic Growth Plan, Fig. 1 (http://gov.ca.gov/pdf/gov/CSGP.pdf).

communities, and high density housing along transit corridors. While Caltrans is working closely with local jurisdictions on planning activities, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by EPA and CARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the UC Davis.

Table 4-5 summarizes agency and statewide efforts that Caltrans is implementing in order to reduce GHG emissions. For more detailed information about each strategy, please see California Department of Transportation 2006.

Table 4-5. Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	The Department	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	The Department	Local and regional agencies and other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	The Department	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	The Department	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					**2.72**	**18.67**

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

- The project will incorporate the use of energy-efficient lighting, such as LED traffic signals. LED bulbs—or balls, in the industry vernacular—cost $60 to $70 apiece but last 5–6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10% of the electricity of traditional lights, an additional reduction of the project's CO_2 emissions.
- According to the Department's Standard Specification Provisions, idling time for lane closure during construction is restricted to ten minutes in each direction; in addition, the contractor must comply with BAAQMD rules, ordinances, and regulations regarding air quality restrictions.
- The project will incorporate the use of reclaimed water whenever feasible. Currently, 30% of the electricity used in California is used for the treatment and delivery of water. Use of reclaimed water helps conserve this energy, reducing GHG emissions from electricity production.
- The use of lighter color surfaces, such as Portland cement, helps to reduce the albedo effect and cool the surface; in addition, the Department has been a leader in the effort to add fly ash to concrete mixes. Adding fly ash reduces the GHG emissions associated with concrete production; it also can make the pavement stronger.

Adaptation Strategies

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

Climate change adaption must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

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

The California Resources Agency (now the Natural Resources Agency [Resources Agency]), through the interagency Climate Action Team, was directed to coordinate with local, regional, state and federal public and private entities to develop a state Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts and then outline solutions that can be implemented within and across state agencies to promote resiliency.

As part of its development of the Climate Adaptation Strategy, Resources Agency was directed to request the National Academy of Science to prepare a *Sea Level Rise Assessment Report* by December 2010 to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise for California.

Furthermore, Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or have funds programmed for construction in the next five years (through 2013), or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. (Executive Order S-13-08 allows some exceptions to this planning requirement.)

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted as part of Governor's Schwarzenegger's Executive Order on Sea Level Rise and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment, which is due to be released by December 2010.

On August 3, 2009, the Natural Resources Agency, in cooperation and partnership with multiple state agencies, released the 2009 California Climate Adaptation Strategy Discussion Draft, which summarizes the best known science on climate change impacts in seven specific sectors and provides recommendations on how to manage against those threats. The release of the draft document set in motion a 45-day public comment period. Led by the California Natural Resources Agency, numerous other state agencies were involved in the creation of discussion draft, including Environmental Protection; Business, Transportation and Housing; Health and

Human Services; and the Department of Agriculture. The discussion draft focuses on sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. The strategy is in direct response to Gov. Schwarzenegger's November 2008 Executive Order S-13-08 that specifically asked the Natural Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings. A revised version of the report was posted on the Natural Resource Agency website on December 2, 2009; it can be viewed at http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

The proposed project had a Notice of Preparation filed and has funds programmed for construction in the next five years (through 2013). Therefore, no further analysis is mandated.

4.2.7 Mitigation Measures for Significant Impacts under CEQA

Table 4-6 summarizes mitigation measures for significant impacts under CEQA. Although mitigation is presented for conversion of farmland to non-agricultural use, these measures would not reduce the impact to a less-than-significant level.

Table 4-6. Significant Impacts and Mitigation Measures under CEQA

Potentially Significant Impacts	Mitigation Measures
Conversion of farmland to non-agricultural use Conflict with existing agricultural zoning or a Williamson Act contract	To mitigate impact to important farmland (those lands classified as "prime farmlands"), long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County at a 1:1 ratio (1 acre protected for every one acre directly affected). Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area. As such, the mitigation for the loss of lands under easement will be implemented at a higher ratio of 1.25:1.
Adverse physical effects on the environment associated with construction or expansion of recreational facilities	Refer to mitigation presented above for conversion of agricultural land to non-agricultural uses.

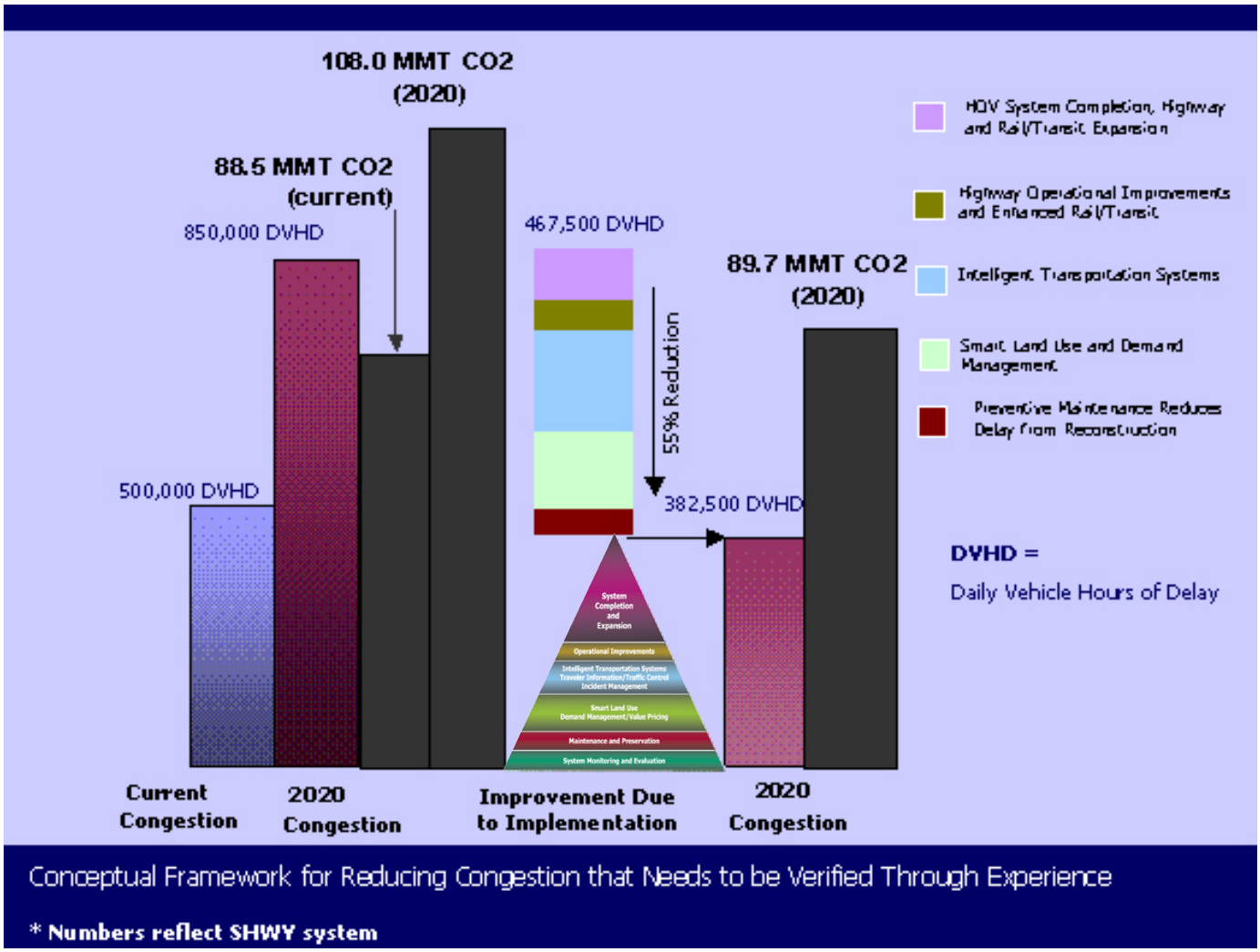


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Figure 4-4
Outcome of Strategic Growth Plan

Chapter 5 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for the proposed project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings, the NEPA/404 Integration process, and a public scoping meeting. This chapter summarizes the results of Caltrans efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

5.1 Scoping Process

NEPA requires the federal lead agency to consult with federal agencies that have jurisdiction over the proposed action by law or special expertise and 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 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 combined with other aspects of the federal agency planning process. As part of the scoping process, NEPA and FHWA regulations require that a Notice of Intent (NOI) to prepare an EIS be filed with the EPA and appear in the Federal Register.

CEQA 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 (State CEQ 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.

5.1.1 Notice of Intent/Notice of Preparation

The NOI for the proposed project was published in the Federal Register on May 9, 2003 and the NOP for the proposed project was published on April 28, 2003. The NOP was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties.

5.1.2 NOP Scoping Meeting

A scoping meeting for the NOP was held on May 12, 2003 from 6 to 8:30 pm at Rodriguez High School, located at 5000 Red Top Road in Fairfield. Map and graphics were available for viewing and a formal presentation explaining the proposed project was given. Prior to scoping, an informational open house was held March 6, 2003 to provide the public with an opportunity to

learn about the I-80/I-68-/I-780 Major Investment Study in advance of the May Scoping Meeting.

A number of means were used to inform the public of the scoping process and the scoping meeting. A public notice was distributed to the project mailing list, which included the property owners, elected officials, city staff, special interest organizations, and neighborhood groups. The Department and STA mailed a letter to agency representatives and elected officials.

5.2 NEPA/404 Integration

To streamline, standardize, and facilitate the integration of the NEPA and Clean Water Act, Section 404 processes, FHWA, the Department, the EPA, USACE, USFWS, and NOAA's NMFS entered into the *Memorandum of Understanding – National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada* (NEPA/404 MOU) in April 2006. This MOU establishes a process for early coordination among departments of transportation and federal resource agencies in defining the purpose and need, establishing the criteria for evaluating and selecting alternatives, and setting the range of alternatives to be studied for surface transportation projects.

The NEPA/404 MOU applies to federal aid surface transportation projects that have five or more acres of permanent impacts to water of the U.S. and that require a NEPA EIS. The proposed project meets those criteria and complies with the NEPA/404 MOU.

The NEPA/404 MOU process was initiated with the first checkpoint meeting held on March 15, 2007. Participants invited to this process included the Department, FHWA, NOAA's NMFS, USACE, USFWS, EPA, RWQCB, and DFG. Meeting materials and correspondence with agencies are provided in Appendix H.

The *Preliminary Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project* was prepared and submitted to the USACE in August 2008. A field verification was conducted in January 2009 and the final verification of the revised map occurred on July 9, 2009. Figures 3.3-2a through 3.3-2d in Volume 2 of this document reflect the results of the verified map.

The first formal checkpoint conducted on March 15, 2007 was held at the Solano County Administrative offices in Fairfield. The purpose of the March 15, 2007 meeting was to present an overview of the proposed project, discuss the purpose and need, screening criteria, and preliminary alternatives, and seek input from the signatory agencies. The summary of the meeting and request for concurrence was sent to the participating agencies on March 22, 2007 and responses were received from the RWQCB and USACE (Appendix H). No negative comments or disagreement was received from the agencies.

The second formal checkpoint meeting was conducted on February 10, 2009 at the STA offices in Suisun City. The purpose of the meeting was to present an overview of project alternatives to be addressed in the environmental document, discuss the purpose and need, present expected impacts to biological and aquatic resources, and seek input on from the signatory agencies. A

table showing preliminary acreages of wetland impacts and expected impacts to biological resources, along with maps showing biological resources in the project vicinity were provided. A summary letter and request for concurrence was sent to the participating agencies on May 20, 2009. The EPA requested more information regarding potential impacts to the Green Valley Corporate wetlands mitigation site. Upon receipt of that information, both USACE and the EPA agreed with the range of alternatives in letters dated August 6, 2009 and September 2, 2009, respectively (Appendix H).

A third Checkpoint meeting will be held among the signatory agencies after the close of the comment period on the draft EIR/EIS but before the final EIR/EIS is circulated for public review. The purpose of the third checkpoint meeting will be to select a LEDPA after considering the public and agency comments received on the draft EIR/EIS.

5.3 Consultation and Coordination with Public Agencies

The following public agencies have been consulted regarding the proposed project to date. Contacts and consultation with agencies are included in Appendix H.

- U.S. Environmental Protection Agency.
- U.S. Fish and Wildlife Service.
- U.S. Department of Agriculture, Natural Resources Conservation Service.
- National Marine Fisheries Service.
- U. S. Army Corps of Engineers.
- California Department of Fish and Game.
- California Department of Conservation.
- Regional Water Quality Control Board.
- Office of Historic Preservation.
- The City of Fairfield.
- Suisun City.
- Solano County.
- California Highway Patrol.
- Bay Area Air Quality Management District.

The EPA and USACE were invited to be cooperating agencies. The EPA declined, but will continue to be a Responsible Agency. USACE accepted in a letter dated December 31, 2009 (Appendix H). As a cooperating agency, USACE has participated in the preparation of this document as part of their responsibility to assist the Department in this process.

Consultation with the U.S. Fish and Wildlife Service and NOAA, NMFS is summarized in Chapter 3.3. The Department has consulted with USFWS regarding the CRLF site assessment and potential mitigation strategies and approaches. Consultation with the USACE has included field visits and verification for the wetland delineation in 2009, as well as involvement in the NEPA/404 process. The Department contacted the Office of Historic Preservation and requested concurrence with eligibility recommendations made in the Historic Properties Survey Report. OHP concurred with the recommendations in a letter dated March 20, 2010 (Appendix H).

Starting in 2003 Federal Highway Administration (FHWA) has been a key partner in the development and evaluation of the alternatives. The Department will work with FHWA to gain Engineering and Operational Acceptability once a Preferred Alternative has been identified.

The Department and STA have consulted with local agencies regarding pertinent issues. The CHP has been consulted regarding public safety issues. The BCDC has been consulted regarding marsh management issues. MTC has been consulted regarding air quality conformity and general transportation planning issues. The Department and STA have consulted with the City of Fairfield, Suisun City, and Solano County regarding the overall project and the needs and desires of the public they serve.

5.4 Public Participation

5.4.1 Project Outreach Meetings

There have been several previous public meetings and open houses providing information on the project including the following:

- March 2003 – Informational Open House to update the community on the status of various projects in the I-80/I-680/SR 12 interchange area. This meeting also provided details from the Major Investment Study (MIS) and the Transit Corridor Studies that STA, in conjunction with Caltrans, prepared for the I-80/680/780 freeway corridors. Approximately 100 people attended the informational open house meeting.
- May 2003 – Scoping meeting to receive input on the scope of the environmental studies. For the Interchange project, scoping was conducted to assist federal, state and local agencies involved in project in identifying a range of alternatives, potentially significant environmental effects and possible mitigation measures. There were 52 people who signed the sign-in sheet at the scoping meeting. There were 10 handwritten comments that were submitted at the meeting, and seven letters were either mailed or faxed to the STA.
- April 2007 – Property owner meeting for owners and tenants of properties and businesses in the vicinity of Alternative C (Cordelia Industrial Park). Ten people signed the sign-in sheet at the home / business-owners' meeting.
- April 2007 – Informational Open House to provide an update on the alternatives development and screening process and plan to carry two alternatives forward into detailed technical studies (Alternatives B & C). There were 81 people who signed the sign-in sheet at the Open House meeting. There were seven written comments submitted during and

following the Open House. Numerous verbal comments were expressed, and are summarized in the meeting summary report.

- March 2009 – Informational Open House to present information about the Phase 1 alternatives for each Build Alternative B and C. The Phase 1 alternatives represented the fundable first phase of each of the Build Alternatives. Sixteen people signed the sign-in sheet at the informational open house meeting. One written comment was submitted during and a second submitted after the Open House. There were numerous verbal comments, summarized in the meeting summary report.

5.4.2 Related Projects

Additional meetings where information about the Interchange Project was provided include the following:

- December 2006 – North Connector Project Public Hearing
- October 2007 – North Connector Project Public Hearing
- February 2008 – North Connector Project Public Hearing
- May 2008 – I-80 Eastbound Cordelia Truck Scales Relocation Project Scoping Meeting

5.4.3 Project Newsletter

As part of the public outreach, a 4-page newsletter regarding the I-80/I-680/SR12 Interchange Project was distributed with project information, updates, milestones, meeting opportunities and how to learn more about the project. The newsletter has been timed to coincide with milestones, meetings or other related project milestones and as an additional means for the public to stay informed about the project's progress. To date, six newsletters have been distributed, conveying the following information.

- February 2004: Environmental scoping for the Interchange Project began in May 2003, and the Truck Scale Relocation Study was initiated as part of the Interchange Project to identify problem areas and possible solutions. In addition, traffic forecasting to the year 2030 will be developed using Solano County's new travel demand model and data on existing conditions.
- October 2004: Data was collected on traffic studies to help the project team evaluate operational issues, and a number of preliminary alternatives for improving the I-80/I-680/SR 12 Interchange were developed and refined based on public input and new technical information. Initial technical studies were also conducted to determine existing conditions in the project area.
- April 2006: The truck scales relocation study that recommends building replacement scales and inspection facilities was completed, and STA developed a more expansive and accountable traffic model that uses the latest land use and road network information to project traffic and travel trips through 2035. And in December of 2004, the two-lane connector from I-680 to I-80 and an additional lane on eastbound I-80 from I-680 to SR 12 east were completed.

- June 2007: In February, the Board approved $7 million in funding for SR 12 Jameson Canyon, which also received $74 million from the infrastructure bonds approved by voters in November 2006. I-80 HOV Lanes Project received $56 million from voter-approved infrastructure bonds. In March, Caltrans and STA approved the CEQA document for the I-80 HOV Lanes Project, and the Board approved preparation of the Environmental Impact Report for the North Connector Project and recommended two alternatives for the I-80/I-680/SR 12 Interchange Project to be move forward to detailed environmental study.
- May 2008: On May 14, the STA Board approved the Final Environmental Impact Report for the North Connector Project, with construction scheduled to begin on the East End in 2009.
- March 2009: The truck climbing lane on westbound SR 12, extending from I-80 to west of Red Top Road, opened on Dec. 4, 2008, and allows westbound motorists to pass slower vehicles in the truck climbing lane. The construction of the 8.7-mile segment of HOV lanes between Red Top Road and Air Base Parkway are projected to decrease morning and evening commutes for carpoolers by 39 percent and 47 percent respectively, and bids for the project came in 45 percent under budget. In January 2009, Caltrans in cooperation with STA, released the Draft Environmental Impact Report for public comment for the I-80 Eastbound Truck Scales Relocation Project, with construction expecting to start in 2011. Construction for the North Connector project began with work on the I-80 / Abernathy Road ramps.

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Chapters 5–8

There are no references in these chapters.

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Appendix A CEQA Environmental Checklist

Appendix A CEQA Environmental Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 3 of this Environmental Impact Report/Environmental Impact Statement. Documentation of "No Impact" determinations is provided at the beginning of Chapter 3. Discussion of all impacts, avoidance, minimization, and/or compensation measures is under the appropriate topic headings in Chapter 3.

04-SOL-80	**10.8/17.0**	
04-SOL-680	**10.0/13.1**	
04-SOL-12W	**1.7/2.8**	
04-SOL-12E	**1.8/4.8**	**04-0A5300**
Dist.-Co.-Rte.	P.M/P.M.	E.A.

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included in Section VI following the checklist. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				
Alternative B	☐	☒	☐	☐
Alternative C	☐	☒	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				
Alternative B	☐	☒	☐	☐
Alternative C	☐	☒	☐	☐
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				
Alternative B	☐	☒	☐	☐
Alternative C	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				
Alternative B	☐	☒	☐	☐
Alternative C	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
ii) Strong seismic ground shaking?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
iv) Landslides?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

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

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
Police protection?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
Schools?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
Parks?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
Other public facilities?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

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

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?				
Alternative B	☐	☐	☐	☒
Alternative C	☐	☐	☐	☒
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
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)?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				
Alternative B	☐	☐	☒	☐
Alternative C	☐	☐	☒	☐

Appendix B Resources Evaluated Relative to the Requirements of Section 4(f)

Appendix B Resources Evaluated Relative to the Requirements of Section 4(f)

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

Additional guidance has been obtained from the following sources.

- The Department's EIR/EIS annotated outline (June 2009).
- The FHWA's *Section 4(f) Policy Paper* (2005).
- Maryland Department of Transportation; State Highway Administration Section 4(f) interactive Training (2006).

B.1 Other Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, 4) the project does not permanently use the property and does not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

B.1.1 Parks, Recreational Facilities, and Wildlife Refuges

Section 4(f) applies to publicly owned land of a park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance. A summary of all the parks, recreation facilities (including trails and Class I bikeways), and wildlife refuges located within 0.5 mile of the proposed project that do not trigger Section 4(f) protection are listed in Table B-1. The public parks and recreation areas considered in this evaluation include any neighborhood, city, regional, state, and/or federal resources in the project study area.

Table B-1. Other Parks, Recreational Resources, and Wildlife Refuges Evaluated Relative to the Requirements of Section 4(f)

Resource/Address	Description/Location
Parks	
Allen Witt Park; 1811 W Texas Street, Fairfield, CA	A 48-acre park owned and maintained by the City of Fairfield. Facilities include tennis courts, recreation building, picnic areas, ball fields, skate park, basketball courts, volleyball courts and horseshoe pits.[b] The park is located approximately 1,200 feet north of the project construction activities along SR 12E between Beck and Pennsylvania Ave.
Vintage Green Valley Park; Mangels Boulevard and Vintage Valley Drive, Fairfield, CA	A 6-acre park owned and maintained by the City of Fairfield. Facilities include a play apparatus, picnic areas, and basketball courts.[b] The park is located approximately 1,200 feet northeast the construction activities occurring at the Green Valley Road and Business Center Drive intersection.
Ridgeview Park; Intersection of Silver Creek Road and Oakbrook Drive, Fairfield, CA	An 8.42-acre park owned and maintained by the City of Fairfield. Facilities include a play apparatus, tennis courts, picnic area, ball fields and basketball courts.[b] The park is located approximately 500 feet west of the construction activities occurring along I-680, north of Gold Hill Road.
Cordelia Community Park Gold Hill Road; Adjacent to Gold Hill Road, Fairfield, CA	The first phase of the park, 3 acres in size, opened in 2002, and is owned and maintained by the City of Fairfield. Current facilities include baseball fields and an open turf area. At buildout, the park will encompass 48 acres, and will include a multipurpose sports field, soccer fields, roller skate arena, tennis courts, dog park, Frisbee field, horseshoe field, volleyball field, bocce ball courts, and skateboard park.[b] The park is located approximately 1,200 feet west of the construction activities occurring along I-680.
Reverend Clay Bon Senior Park; Josiah Circle, Suisun City, CA	A 1-acre park owned and maintained by Suisun City. Facilities include a turf area, picnic area and benches.[a] The park is located south of SR 12E, approximately 2,000 feet northeast of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2).
Mike Day Park; 701 Civic Center Boulevard, Suisun City, CA	A 3-acre park owned and maintained by Suisun City. Facilities include a playground, and picnic and turf areas.[a] The park is located south of SR 12E, approximately 800 feet east of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2).
Harbor Park; Along Breakwater Circle and Civic Center Boulevard, Suisun City, CA	A 1-acre park owned and maintained by owned and maintained by Suisun City. Facilities include a turf area, pathway, and benches.[a] The park is located south of SR 12E, approximately 1,500 feet southeast of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2 only).
Old Town Plaza; Intersection of Main and Solano Street, Suisun City, CA	A 1.1-acre park owned and maintained by owned and maintained by Suisun City. Facilities include a grass/turf area, gazebo, “singing rocks”, and a waterfront parkway.[a] The park is located south of SR 12E, approximately 400 feet southeast of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2 only).
Sheldon Plaza; Adjacent to the Old Town Waterfront, between Main Street and Civic Center Boulevard, along Driftwood Drive, Suisun City, CA	A 0.8-acre park owned and maintained by owned and maintained by Suisun City. Facilities include an open turf area for casual use.[a] The park is located approximately 750 feet northeast of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2 only).
Suisun Marsh Primary and Secondary Management Area; n/a, Solano County, CA	Directly east of I-680, the Suisun Marsh Primary and Secondary Management Areas are comprised of approximately 85,000 acres of tidal marsh, managed wetlands, and waterways. The Solano County General Plan designates lands within the Suisun Marsh as “Marsh,” with a “Resource Conservation” overlay. The Marsh designation “provides for protection of marsh and wetland areas. [It] permits aquatic and wildlife habitat, marsh-oriented recreational uses (duck hunting, fishing and wildlife observation), agricultural activities compatible with the marsh environment and marsh habitat, educational and scientific research, educational facilities supportive of and compatible with marsh functions, and restoration of historic tidal wetlands.”

Resource/Address	Description/Location
Public School Playgrounds and Athletic Fields	
Angelo Rodriguez High School	This school is owned and maintained by the Fairfield-Suisun Unified School District. Approximately 18 acres of the school's grounds are available to the public for recreational use throughout the year. These available facilities include baseball fields, tennis courts, basketball courts, and a track and field. The school id located west of I-680 at the intersection of Red Top and Lopes Roads.
Armijo High School; 824 Washington Street, Fairfield, CA 94533[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. 14.05 acres of the school's grounds are available to the public for recreational use throughout the year. These available recreation facilities include a swimming pool, tennis and basketball courts, and baseball and football fields (all-weather field).[d] The school is located approximately 1,500 feet north of SR 12E and Civic Center Boulevard.
Fairview Elementary School; 830 First Street, Fairfield, CA 94533[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. 2.78 acres of the school's grounds are available to the public for recreational use throughout the year. These available recreation facilities include a basketball court, baseball field, and an open turf area used for soccer.[d] The school is located approximately 2,000 feet north of the SR 12E/Pennsylvania Ave interchange.
E Ruth Sheldon Elementary School; 1901 Woolner Avenue, Fairfield, CA[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. 1.6 acres of the school's grounds are available to the public for recreational use. These available recreation facilities include a turf area.[d] The school is located approximately 1,500 feet northeast of the SR 12E/Beck Ave interchange.
Nelda Mundy Elementary; 570 Vintage Valley Drive, Fairfield, CA[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. 1.57 acres of the school's grounds are available to the public for recreational use. These available recreation facilities include a turf area and baseball fields.[d] The school is located approximately 1,500 feet northwest of the I-80/680 interchange.
Oakbrook Elementary; 700 Oakbrook Drive, Fairfield, CA 94534[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. The existing baseball field located adjacent to the school is considered part of Ridgeview Park, and is maintained by the City of Fairfield.[d] The school does not have other athletic fields available for public use. The school is located approximately 1100 feet west of the I-680.
Green Valley Middle School; 1350 Gold Hill Road, Fairfield, CA 94534[c]	Owned and maintained by the Fairfield-Suisun Unified School District, 6.5 acres of the school's grounds are available to the public for recreational use. These available recreation facilities include football and baseball fields.[d] The school is located approximately 2,000 feet southwest of the I-680 and Gold Hill Road interchange.
Solano Community College; 4000 Suisun Valley Road Solano County, CA	Owned and maintained by the California Community Colleges Office, 38.77 acres of the school's grounds are available to the public for recreational use throughout the year. These available recreation facilities include a swimming pool and soccer and baseball fields. The school is located approximately 1,500 feet north of the I-680/Suisun Valley Road interchange.
Crystal Middle School; 400 Whispering Bay Lane, Suisun City, CA 94585[c]	This school is owned and maintained by the Fairfield-Suisun Unified School District. 5.48 acres of the school's grounds are available to the public for recreational use throughout the year. These available recreation facilities include football and baseball fields, and a basketball court.[d] The school is located south of SR 12E, approximately 2,000 feet east of the project activities occurring on Sacramento Street in Suisun City (under Alternative 2 only).
Wildlife Refuge/Area	
Grizzly Island Wildlife Complex-Gold Hills Unit; 2548 Grizzly Island Road Solano County, CA[e]	Part of the larger 84,000-acre DFG-owned and maintained Grizzly Island Wildlife area, this 50-acre unit provides seasonal recreational hunting. It also serves as nesting habitat for waterfowl and birds, and provides for plant and food growth for wildlife in the area.[f] It is located 50 feet east of the I-680/Gold Hills Road interchange.
Suisun Marsh Primary and Secondary Management Area; n/a, Solano County, CA	Directly east of I-680, the Suisun Marsh Primary and Secondary Management Areas are comprised of approximately 85,000 acres of tidal marsh, managed wetlands, and waterways. It provides wintering habitat for waterfowl of the Pacific Flyway and, because of its size and estuarine location, supports a diversity of plant communities, which in turn provides habitat for a variety of fish and wildlife, including several rare and endangered species.

Resource/Address	Description/Location
Trails and Bikeways	
American Canyon Creek Trail; Fairfield, CA[g]	A 6.87-acre-long recreational trail owned and maintained by the City of Fairfield.[b] The trail is adjacent to Ridgeview Park and runs between on Oakbrook Drive and Lopes Road, 100 feet west of I-680.
Green Valley Trail; Fairfield, CA[g]	An approximately 2-mile-long recreational trail owned and maintained by the City of Fairfield. The trail is a dedicated segment of the Bay Area Ridge Trail, and is located between Rockville Hills Park and Mangels Boulevard.[b] The southernmost portion of this trail is approximately 1,500 feet north of I-80/I-680 interchange.
Green Valley Creek Trail; Fairfield, CA[h]	Approximately 2.5 miles long, this recreational trail owned and maintained by the City of Fairfield.[i] The trail is located along the western side of Green Valley Creek from Rockville Road to Mangels Boulevard.[j] The southernmost portion of this trail is approximately 1,500 feet north of I-80/I-680 interchange.
Suisun Parkway Trail; Fairfield, CA	This recreational trail is owned and maintained by Solano County, and connects two segments of the Fairfield Linear Park. It begins in the west at Suisun Creek and extends to the west along the north side of the North Connector. It terminates where it meets the Fairfield Linear Park again at Abernathy Road.
Cordelia Villages Trail; Fairfield, CA	This recreational trail is owned and maintained by the City of Fairfield, and extends behind the housing subdivision, approximately 1,500 feet west of I-680. The trail is divided into two sections, and is approximately 2 miles in length. The first portion runs from Silverbrook/Oakbrook Drive intersection and terminates at Gold Hill Road. The second portion begins at Highland Circle and terminates at South Ridgefield Way.[b]
Caltrans I-80 Pathway; Fairfield CA	This Class I bikeway facility is owned and maintained by the Department and extends 1.2 miles. Approximately 50 feet north of I-80, it parallels westbound I-80, between Red Top Road and Green Valley Road.
Bay Area Ridge Trail; Fairfield CA, Solano County	No completed and opened segments of the Bay Area Ridge Trail are located within the project area. Completed and opened segments of the Bay Area Ridge Trail are located to the north and south of the project area. The closest completed and open segment of the trail is located approximately 1.5 miles south of the project area. A proposed trail corridor passes through the project area in the vicinity of Red Top Road at State Route 12 West and follows McGary Road which parallels eastbound I-80.
I-80/680/SR 12 Interchange Project—Cordelia to Napa (Proposed); Solano County	This 3-mile-long bike path will run from the SR 12W/Red Top Road intersection to the Napa County line. Under the two alternatives, this bike path will be either a Class I (following along the California Northern Railroad Roadway) or Class III bike path. CEQA clearance still needs to be obtained to move forward with design. As such, a construction date for this bike path is not currently known.
Waterfront Promenade; Suisun City, CA[g]	A 2.2-acre-long waterfront walkway owned and maintained by Suisun City. This lighted walkway is adjacent to the entire Old Town Waterfront, which connects Old Town Plaza to City Hall.[a] Located approximately 700 feet south of SR 12E, it is used for recreational activities such as walking, running, biking, and fishing.[k]
Central County Bikeway; Suisun City, CA	This Class I bikeway is owned and maintained by the City of Suisun, and is primarily used for walking, running, and biking.[k] It is located north of SR 12E, extending from Marina Boulevard to Walters Road. 2.7 miles in length, this bikeway's westerly terminus is approximately 2,000 feet east of the Suisun City Train Depot.[k]
Central County Bikeway Gap Closure Trail; Suisun City, CA	Located north and south of SR 12E this Class I bikeway follows Main Street from Marina Boulevard to the Suisun City Train Depot. Used for walking, running, and biking, it is owned and maintained by the City of Suisun and is approximately 1 mile long.[k]
Marina Extension Trail (Proposed); Suisun City, CA	This proposed Class I paved trail will be owned and maintained by the City of Suisun. Approximately 2,000 feet east of the Suisun City Train Depot, the trail will be located on the north side of SR 12E, along Marina Boulevard and Buena Vista Avenue and will serve recreational and transit purposes.[k] It will be 0.25 mile long and 10 feet wide. Funding sources for this trail are not yet known.[k]
Grizzly Island Trail (Proposed); Suisun City, CA	This proposed 0.75-mile-long, 10-foot wide, Class I paved recreation trail will be owned and maintained by the City of Suisun. The trail will be located on the south side of SR 12E and will run from Marina Boulevard to Grizzly Island Road. The western portion of this trail, beginning along Marina Boulevard, is approximately 2,000 feet east of Suisun City Train Depot. Partial funding for the trail has been obtained and construction is estimated to begin in the summer of 2011.[k]

Sources:
[a] Jessop pers. comm.
[b] Binner pers. comm.
[c] Fairfield-Suisun Unified School District 2009.
[d] Swearengin pers. comm.
[e] California Department of Fish and Game 2009.
[f] Pera pers. comm.
[g] City of Fairfield 1998.
[h] Jones & Stokes 2001.
[I] Hancock pers. comm.
[j] Solano Transportation Authority 2009.
[k] Majer pers. comm.

B.1.1.1 City of Fairfield

Construction activities related to the project alternatives may include traffic delays on city roads, where proposed improvements would occur, but all existing main access points to the areas discussed in this section of the document would be maintained. A TMP would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses would be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of CO NAAQS, is not considered a POAQC for PM10, would not exceed operational thresholds for ROG, NO_x, CO, and PM10 emissions, and would result in decreases (not increases) in all MSAT emissions. For PM2.5 it has not been determined if the project is a POAQC. Interagency consultation is currently underway for the project. With implementation of measures outlined in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the project would not result in a significant increase in ROG, NO_x, CO, and particulate matter emissions. Thus, no air quality-related effects on the Section 4(f) resources within the City of Fairfield discussed here would occur as a result of the proposed project.

Within the Section 4(f) resources discussed here, the project alternatives could affect potential nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures outlined in Section 3.3, “Biological Resources,” in the EIR/EIS would minimize these potential effects.

No planned project improvements would occur on the Section 4(f) properties within the City of Fairfield and listed here, no effects to existing natural communities or special-status plant or animal species would occur. A SWPPP would be prepared and implemented as part of the project and best management practices would be implemented to ensure that no adverse impacts related to water quality affect these Section 4(f) resources as a result of project construction (see Section 3.2-2, “Water Quality,” in the EIR/EIS for additional information). Therefore, no adverse impacts related to biological resources or water quality would affect Section 4(f) resources within the City of Fairfield as a result of the proposed project.

Parks

The project alternatives include highway mainline, freeway-to-freeway interchange, interchange, and local roadway improvements within the City of Fairfield. As shown in Table B-1, four public parks (Allen Witt Park, Vintage Green Valley Park, Ridgeview Park, and Cordelia Community Park) within the City of Fairfield are located within 0.5 mile of the project alternatives. Ridgeview Park is the closest at approximately 500 feet. Given the distance of these four parks from the project alternatives, there would be no proximity impacts attributable to noise or visual impacts because homes, commercial buildings, and/or businesses act as a buffer. Additionally, as already noted, there would be no proximity impacts related to air quality, biological resources, or water quality on these parks as a result of the project alternatives. Consequently, the project alternatives would not cause a constructive use of Allen Witt Park, Vintage Green Valley Park, Ridgeview Park, or Cordelia Community Park because the proximity impacts would not substantially impair the protected activities, features, or attributes of these parks.

Public School Playgrounds and Athletic Fields

Seven Fairfield public schools are located within 0.5 mile of the project alternatives. Angelo Rodriguez High School is located immediately adjacent to the project area. The public ownership, public availability, and use of the school's athletic field areas qualify this property as a potential Section 4(f) resource. A small area of landscaping located beyond the outfield fence of the school's softball field would be affected by the realignment of Lopes Road under Alternative C and Alternative C, Phase 1. Because the area affected consists of landscaping, is outside the fenced areas of the school and is not used for recreational purposes, it is not considered a Section 4(f) resource.

Of the seven public schools located within 0.5 mile of the project alternatives, Angelo Rodriguez High School is the closest at ten feet away. Based on the traffic noise modeling study, noise levels taken from one prediction site located in the outfield of the softball field discussed above were calculated for existing and future conditions with and without the project alternatives. The existing traffic noise level at the loudest hour was estimated to be 53 dBA. The future levels (2035) at the noise prediction site were predicted to be 57 dBA with the project alternatives and 55 dBA under the No-Build alternative (ICF Jones & Stokes 2009). Although the alternatives would be two dBA higher under design-year conditions compared to design-year no-build conditions, noise level does not approach or exceed the NAC for the land use (67 dBA) under 23 CFR 772 (ICF Jones & Stokes 2009). Therefore, there would be no impacts due to noise.

Additionally, the Department has determined that a constructive use does not occur when the proximity impacts do not substantially impair the characteristics that qualify the property for protection under Section 4(f). The proximity of the realigned road to the softball field would not preclude the use of this area for public recreational activities. It also would not affect the function of the school and the softball field would remain intact; recreation facilities would not be interrupted. Moreover, because the main entrance to the school and associated playfields is from Red Top Road and not Lopes Road, access to the school and associated fields would not change as a result of the roadway realignment. Additionally, as already noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this school's athletic fields as a result of the project alternatives. The project alternatives would not cause a

constructive use of Angelo Rodriguez High School because proximity impacts would not substantially impair the protected activities, features, or attributes of the school's athletic fields.

The other schools offer their playgrounds and athletic fields to the public for recreational use outside of school hours, and are considered potential Section 4(f) resources. Of these six schools, Oakbrook Elementary, at 1,100 feet away, is the closest school to the project alternatives. Because these six schools are approximately 0.25 mile or more away from the project alternatives and are separated from the project alternatives by homes, commercial buildings, and/or businesses, there would be no associated noise or visual impacts from the construction activities. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on the athletic grounds of these schools as a result of the project alternatives. The project alternatives would not cause a constructive use of Armijo High School, Fairview Elementary School, E. Ruth Sheldon Elementary School, Nelda Mundy Elementary School, Oakbrook Elementary School, or Green Valley Middle School because proximity impacts would not substantially impair the protected activities, features, or attributes of these playgrounds and athletic fields.

Trails and Bikeways

A review of the City of Fairfield's Trails Master Plan (1998) and other resources identified six off-road trails within 0.5 mile of the project alternatives. All of these were evaluated as potential Section 4(f) resources. The Caltrans I-80 Pathway is believed to be used equally for transportation and recreation. Consequently, it will not be considered a Section 4(f) resource at this time, unless it is designated as a recreational resource in a plan by an organization such as the Bay Area Ridge Trail Council. The provisions of Section 4(f) are not triggered. The American Canyon Creek Trail is closest to the project alternatives at 50 feet away from proposed improvements. This trail terminates on Lopes Road, a frontage road alongside southbound I-680. At the easterly terminus of the American Canyon Creek Trail, trail users would be exposed to construction noise associated with the project alternatives. However, given its proximity to I-680 (approximately 100 feet), trail users are already exposed to noise levels of 67 dBA at this location. The increase in noise would be temporary in nature, and would not disrupt use, or alteration of, the trail. The future levels (2035) noise levels were predicted to be at 69 dBA with the buildout of the project alternatives and 68 dBA under the no-build alternative. While the projected noise level with the project alternatives would exceed the NAC for the land use (67 dBA), the increase in the projected noise levels, compared to the projected noise levels under no-build conditions, is barely perceptible (i.e., one dBA or less).

There would be some minor visual effects for trail users during construction. However, these effects would be temporary in nature and would occur only during the construction period. This temporary change in view would not affect access or the use of the American Canyon Creek Trail. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the proposed project. The project alternatives would not cause a constructive use of the American Canyon Creek Trail because the proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

The remaining three off-road recreational trails within 0.5 mile of the project alternatives are at least 1,500 feet away from any proposed improvements. Furthermore, these trails would be

separated from the project alternatives by homes, commercial buildings, and/or businesses. Also, as noted, no proximity impacts relating to air quality, biological resources, or water quality would occur on these trails as a result of the project alternatives. The project alternatives would not cause a constructive use of the Green Valley Trail, the Green Valley Creek Trail, or the Cordelia Villages Trail because the proximity impacts would not substantially impair the protected activities, features, or attributes of these trails.

Additionally, a proposed trail corridor for the Bay Area Ridge Trail is located within the City of Fairfield and passes through the project area in the vicinity of Red Top Road at SR 12W and follows McGary Road, which parallels eastbound I-80. This proposed corridor does not exist today. This planned corridor was proposed by the Bay Area Ridge Trail Council, which is a nonprofit organization that plans, acquires, builds, maintains, and promotes the trail. While more than half of the anticipated 550-mile Bay Area Ridge trail is already open and dedicated for public use in perpetuity, some gaps remain in areas where the Bay Area Ridge Trail Council has been unable to arrange a route. The project area is one of the gaps in the current Bay Area Ridge Trail system (Bay Area Ridge Trail Council 2010, Solano Transportation Authority 2004). However, this proposed segment of the Bay Area Ridge Trail has not been formally designated as part of the Bay Area Ridge Trail by the official with jurisdiction, the City of Fairfield, (Miller pers. comm.). As this proposed trail is not formally designated by the City of Fairfield or within their General Plan, it is not considered a Section 4(f) resource. Thus, the provisions of Section 4(f) are not triggered.

Furthermore, there are no completed and opened segments of the Bay Area Ridge Trail within the I-80/680/SR 12 interchange project area. The closest segments of the Bay Area Ridge Trail that are complete and open are a segment of trail from the Rockville Hills Regional Park to near Reservoir Road at Green Valley Road; a segment from the Hiddenbrooke Open Space Preserve to McGary Road at the I-80/American Canyon overcrossing; and a segment from the Lynch Canyon Open Space Preserve to Lynch Road at McGary Road. No direct or indirect effects to completed and open segments of the Bay Area Ridge Trail would occur with any of the project alternatives. The closest completed and open segment of the Bay Area Ridge Trail is located approximately 1.5 miles south of the project area.

Bay Area Ridge Trail users currently traverse the project area and use existing on-street bike and pedestrian facilities located along Green Valley Road and I-80 to reach Red Top Road and McGary Road to access completed and open segments of the Bay Area Ridge trail to the north and south. None of these existing, on-street bicycle and pedestrian facilities is designated or planned to be part of the Bay Area Ridge Trail. However, project alternatives could indirectly affect Bay Area Ridge Trail users if access through the project area was impeded during construction or if the project alternatives would impede or create a barrier to completing and opening new segments of the Bay Area Ridge Trail through the project area. Specifically, Alternative B, Alternative C, and Alternative C, Phase 1 include improvements that would involve widening I-80 and constructing new connector ramps to SR 12W as well as construction of a new road that would connect the I-80/Red Top Road interchange with Business Center Drive. Between I-80 and SR 12W, Red Top Road would be realigned to cross over the UPRR tracks and SR 12W approximately 0.25 mile west of the existing SR 12W/Red Top Road intersection. From SR 12W to Business Center Drive, the new road would be an extension of Business Center Drive, originally proposed as part of the North Connector project.

These improvements would affect the existing Caltrans I-80 Pathway, which connects Green Valley Road to Red Top Road at SR 12W, and would be realigned and/or relocated to the extension of Business Center Drive. As a result the Caltrans I-80 Pathway, which could be used by Bay Area Ridge Trail users to access completed and open segments of the Bay Area Ridge trail to the north and south of the project area, might be closed for several months during project construction.

To minimize potential impacts to bicycle and pedestrian users of the Caltrans I-80 Pathway, the project shall implement a bike and pedestrian bridge (i.e., van service) during construction to transport bicyclists and pedestrians traveling between Green Valley Road at I-80 and Red Top Road at McGary Road. After construction is complete, trail users would be able to traverse the project area utilizing the new extension of Business Center Drive to cross over SR 12W, the UPRR tracks and connect with Red Top and McGary Road. The project alternatives, once completed, would not impede access nor create a barrier to completing and opening segments of the planned Bay Area Ridge Trail in the project area. Thus, the provisions of Section 4(f) are not triggered.

B.1.1.2 Suisun City

Construction-related activities may include traffic delays on city roads, where project improvements would occur, but all existing main access points to the areas within Suisun City discussed here would be maintained. A TMP would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses would also be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of CO NAAQS, would not exceed operational thresholds for ROG, NO_x, CO, and PM10 emissions, and would result in decreases (not increases) in all MSAT emissions. With implementation of measures outlined in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the proposed project would not result in significant increases in ROG, NO_x, CO, and particulate matter emissions. No air quality-related impacts on the Section 4(f) resources within Suisun City listed below would occur as a result of the project alternatives.

Within the Section 4(f) resources located in the Suisun City portion of the project vicinity, the project alternatives could have effects on potential nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures in Section 3.3, “Biological Resources,” of the EIR/EIS would minimize these potential effects. Also, because no planned project improvements would occur on the Section 4(f) properties located within Suisun City listed below, no affects to existing natural communities or special-status plant species would occur. A SWPPP would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality would occur on these Section 4(f) resources as a result of project construction (see Section 3.2-2 “Water Quality” in the EIR/EIS for additional information). Therefore, there would be no impacts related to biological resources or water quality on the Section 4(f) resources located in the Suisun City portion of the project vicinity as a result of the project alternatives.

Parks

In Suisun City the project alternatives includes highway mainline, interchange, and local roadway improvements. As shown in Table B-1, five public parks within Suisun City are located within 0.5 mile of the project alternatives. Old Town Plaza is the closest in proximity, approximately 400 feet away from the project alternatives. The other parks range from 750 to 2,000 feet away from the project alternatives, and are separated from the project alternatives by homes and businesses. At such proximity, there would be no associated noise or visual impacts from construction activities on these five public parks. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on these parks as a result of the project alternatives. The project alternatives would not cause a constructive use of Reverend Clay Bon Senior Park, Mike Day Park, Harbor Park, Old Town Plaza, or Sheldon Plaza because the proximity impacts would not substantially impair the protected activities, features, or attributes of these parks.

Public School Playgrounds and Athletic Fields

One public school, Crystal Middle School, is located within 0.5 mile of the project area. Located 2,000 feet away from the project alternatives, this school offers its playgrounds and athletic fields to the public for recreational use outside of school hours. Thus, it is considered a potential Section 4(f) resource. However, because this school is almost 0.5 mile away from the project alternatives and is separated from the project alternatives by homes, commercial buildings, and/or businesses, there would be no associated noise or visual impacts from construction activities. Additionally, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on Crystal Middle School as a result of the project alternatives. The project alternatives would not cause a constructive use of Crystal Middle School because the proximity impacts would not substantially impair the protected activities, features, or attributes of the playgrounds and athletic fields.

Trails and Bikeways

Five off-road Class I bikeways are located within 0.5 mile of the project alternatives within Suisun City. They are all considered potential Section 4(f) resources. Three of these trails are currently in use and two are future planned facilities (Majer pers. comm.). The Central County Bikeway Gap Closure Trail is the closest at approximately 200 feet away from the project alternatives. Vegetation and commercial buildings separate this trail from the project area. Trail users could be exposed to construction noise associated with the project alternatives, but because this trail follows and travels underneath SR 12E, trail users would already be exposed to noise levels of 61 dBA at this location. The increase in noise due to construction of the project alternatives would be temporary in nature and would not disrupt use or alteration of the trail.

Although both full-build alternatives would be one to two dBA higher under design-year conditions compared to design-year no-build conditions, noise levels would not approach or exceed the NAC for the land use (67 dBA) under 23 CFR 772 (ICF Jones & Stokes 2009). There would be no impacts attributable to noise. Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. Therefore, the project alternatives would not cause a constructive use of the Central County Bikeway Gap Closure Trail because proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

The remaining four (two existing and two proposed) off-road recreational trails within 0.5 mile of the project alternatives range from approximately 700 to 2,000 feet away from any proposed improvements. Furthermore, these trails would be separated from the project alternatives by homes, commercial buildings, and/or businesses. Additionally, as noted above, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. The project alternatives would not cause a constructive use of the Waterfront Promenade, the Central County Bikeway, the Marina Extension Trail (Proposed), or the Grizzly Island Trail (Proposed) because the proximity impacts would not substantially impair the protected activities, features, or attributes of these trails.

B.1.1.3 Solano County

Construction-related activities may include traffic delays on county roads, where project alternatives would occur, but all existing main access points to the areas discussed below would be maintained. A TMP would be prepared to address any short-term disruptions in existing circulation patterns during construction in order to facilitate local traffic circulation and through-traffic requirements during the construction period. Residents and businesses would be notified in advance concerning construction activities before construction begins near homes and businesses.

The project alternatives would not result in any violations of CO NAAQS, would not exceed operational thresholds for ROG, NO_x, CO, and PM10 emissions, and would result in decreases (not increases) in all MSAT emissions. With implementation of measures described in Section 3.2-6, “Air Quality,” of the EIR/EIS, construction of the project would not result in a significant increase in ROG, NO_x, CO, and particulate matter emissions. No air quality-related effects on the Section 4(f) resources within Solano County would occur as a result of the proposed project.

With regard to the Section 4(f) resources discussed here, the project alternatives have the potential to affect nesting habitat for western burrowing owl, Swainson’s hawk, migratory birds, and raptors. However, implementation of the measures in Section 3.3, “Biological Resources,” of the EIR/EIS would minimize these potential effects. Because no planned project improvements would occur on the Section 4(f) properties located within Solano County, no affects to existing natural communities or special-status plant species would occur. A SWPPP would be prepared and implemented as part of the project and best management practices would be implemented to ensure no adverse effects to water quality would occur on these Section 4(f) resources as a result of project construction (see Section 3.2-2, “Water Quality,” of the EIR/EIS for additional information). There would be no adverse impacts related to biological resources, or water quality on the Section 4(f) resources within Solano County as a result of the proposed project.

Public School Playgrounds and Athletic Fields

The project alternatives include highway mainline, interchange, and local roadway improvements within unincorporated portions in Solano County. As shown in Table B-1, one public school is within 0.5 mile of the proposed project. Solano Community College is located 1,500 feet north of the project alternatives. Because the college offers its athletic fields to the public for recreational use outside of school hours, it is considered a potential Section 4(f) resource. However, the college is further than 0.25 mile away from the project alternatives and is separated from the project alternatives improvements by commercial buildings and/or

businesses. There would be no associated noise or visual impacts from construction activities. Additionally, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on Solano Community College as a result of the proposed project. The project alternatives would not cause a constructive use of Solano Community College because proximity impacts would not substantially impair the protected activities, features, or attributes of the playgrounds and athletic fields.

Trails and Bikeways

A review of the Solano Transportation Authority's Solano Countywide Bicycle Plan (2004) and other resources identified one proposed and one existing bikeway within 0.5 mile of the project alternatives. The proposed bikeway, known as the 80/680/SR 12 Interchange Project—Cordelia to Napa, would parallel SR 12W from Red Top Road into Napa County. This bike path will be a Class II facility, is expected to be used for transportation equally as for recreation, and will not be considered a Section 4(f) resource. The provisions of Section 4(f) are not triggered.

The Suisun Parkway Trail, which is being constructed as part of the Suisun Parkway project, connects two segments of the Fairfield Linear Park Trail between Suisun Creek and Abernathy Road. The trail is owned and operated by Solano County and extends along the north side of the Suisun Parkway (formerly referred to as the North Connector) north of I-80. The Suisun Parkway Trail connects with the Fairfield Linear Park trail at Suisun Creek on the west and Abernathy Road on the east. The Suisun Parkway Trail is a Class I trail that would not be used primarily for transportation or part of a local transportation system. As such, it would be considered a Section 4(f) resource.

The trail is located on the north side of Suisun Parkway. Trail users would not be exposed to construction or long-term operational noise associated with the project alternatives because the trail is separated from the project area by Suisun Parkway (a four-lane roadway). Furthermore, as noted, there would be no proximity impacts related to air quality, biological resources, or water quality on this trail as a result of the project alternatives. Therefore, the project alternatives would not cause a constructive use of the Suisun Parkway Trail because proximity impacts would not substantially impair the protected activities, features, or attributes of the trail.

Wildlife Refuge/Area

Grizzly Island Wildlife Complex—Gold Hills Unit

Maintained by the California Department of Fish and Game (DFG), the 50-acre Gold Hills Unit of the Grizzly Island Wildlife Complex serves as a refuge area and nesting habitat for waterfowl and birds, and provides for plant and food growth for wildlife in the area (California Department of Fish and Game 2009). As such, the unit meets the criteria for a Section 4(f) resource. As shown in Table B-1, the unit is 50 feet east of the project alternatives. Although proposed construction activities would occur adjacent to the wildlife area, the activities would be minor and temporary in nature, and would not disrupt use, or alteration of, the refuge area. The future noise levels (2035) with the full-build alternatives would be only one dBA higher than the design-year no-build conditions (ICF Jones & Stokes 2009). This increase in noise level would be barely perceptible. Waterfowl, migratory birds, and other wildlife which are present within the Gold Hills Unit are already exposed to the existing noise volumes along I-680. As wildlife species generally become accustomed to steady and constant noise volumes, the one dba (1.5%)

increase in noise levels from the project alternatives would not likely preclude any existing wildlife species present to continue to inhabit the site. Thus, there would be no noise-related impacts on this Section 4(f) resource due to implementation of project alternatives. Additionally, as noted above, there would be no air quality, vegetation, wildlife or water quality related proximity impacts on this refuge as a result of the project alternatives. Consequently, the project alternatives would not cause a constructive use of the Gold Hills Unit because the proximity impacts would not substantially impair the protected activities, features, or attributes of the refuge area.

Suisun Marsh Management Area

Lands within the Suisun Marsh, to the south of the City of Fairfield and east of I-680, are protected by strict limitations on development within the primary and secondary management areas of the Suisun Marsh Protection Plan under the Solano County General Plan (Solano County 2008). Specifically, portions of the Suisun Marsh Secondary Management Area are located east of I-680 from the Gold Hill Road overpass and north to Jameson Canyon Creek. Although, the Suisun Marsh Secondary Management Area provides habitat for marsh-related wildlife and insulates the habitats in the primary management area, only those portions of the secondary management area that are publicly owned qualify as a Section 4(f) resource. Construction of Alternative B, Alternative C, and Alternative C, Phase 1 would involve improvements within the Suisun Marsh Secondary Management Area. However, as these improvements occur on land which is privately owned, this portion of the management area is not a Section 4(f) resource. Therefore, the provisions of Section (f) are not triggered.

Other publicly owned portions of the Suisun Marsh Primary and Secondary Management Areas are located in the vicinity of the proposed project. Although proposed construction activities would occur near the Suisun Marsh Primary and Secondary Management Areas, the activities would be minor and temporary in nature, and would not disrupt use or alteration of the management areas. The future noise levels (2035) with the project alternatives would be only one dBA higher than no-build conditions within this portion of the project site (ICF Jones & Stokes 2009). This increase in noise level would be barely perceptible. Wildlife species present within the management areas are already exposed to the existing noise volumes along I-680. As wildlife species generally become accustomed to steady and constant noise volumes, the one dba (1.5%) increase in noise levels from buildout of proposed project would not likely preclude any existing wildlife species present to continue to inhabit the site. There would be no noise-related impacts on this Section 4(f) resource due to implementation of project alternatives. As noted, there would also be no proximity impacts related to air quality, biological resources, or water quality on the management areas as a result of the project alternatives. Consequently, the project alternatives would not cause a constructive use of the Suisun Marsh Primary and Secondary Management Areas because proximity impacts would not substantially impair the protected activities, features, or attributes of the refuge area.

B.1.2 Historic and Archaeological Sites

Section 4(f) applies to lands of a historic site of national, state, or local significance. The Neitzel Farm parcel, which originally contained NRHP-eligible structures, is located within the APE for the project alternatives. Both alternatives (Alternative B and Alternative C) include improvements occurring within the boundaries of the Neitzel Farm parcel.

However, the historic Neitzel Farm has been removed by the Fairfield Corporate Commons project, which is currently under construction and will be complete prior to the construction of the proposed project. As noted, if the historic or archaeological site is not listed on or eligible for listing on the NRHP, the provisions of Section 4(f) do not apply (23 CFR 774.11[e]). Summaries of the proposed non-eligible historic and archaeological sites located within the APE for the proposed project are provided in Tables B-2 and B-3, respectively. Furthermore, 29 bridges were evaluated through the Department's historic bridge inventory and did not require formal Section 4(f) evaluation for the proposed project. Table B-4 lists these bridges. In all, 42 non-eligible historic properties, two non-eligible archaeological sites, and 29 bridges are located within the proposed project's APE.

Table B-2. Non-Eligible Historic Sites within the APE

APN	Address	Year Built	Map Reference No.
148270010 148260010	No Address, Cordelia/Mangels Ranch	ca.1920	1
148260040	No Address, Fairfield	ca.1930	2
180010100	117 Red Top Road	ca 1900	3
46050180	3360 Ramsay	ca. 1930	4
180120100	Railroad	ca.1866	5
45081290	3607 Ritchie Road, Cordelia	1925	43
45081310	3605 Thompson Court	ca.1935	44
45300310	3617 Ritchie Road	1959	45
45300330	3621 Ritchie Road	1950	46
45300030	No Address	ca.1950	47
14827034	3537 and 3539 Mangels Road	ca. 1880/ca. 1960	48
27260120	No Address	1958	49
27350010	No Address	1958	50
27271060 27251330	4018 Russell Road/4004 Russell Road	1992/1942	52
27272080	2543, 2547 Cordelia, Cordelia	ca.1915	53
N/A	Canal	ca.1955	54
27251310 27251370	4012 Russell Road	1950	55
27272180	2621 Cordelia Road, Cordelia	ca.1940	56
27252080	4015 Hale Ranch	ca.1915	57
27510040	4974 Russell Road	ca.1950	58
150270050	2814 Rockville Road, Fairfield	ca.1905	59
150270060	2818 Rockville Road, Fairfield	ca.1900	60
32081310	260 Benton	ca. 1960	62
32081190	212 Sacramento Street, Suisun City	1916	65
32081180	216 Sacramento Street, Suisun City	1910	66
32081230	520 School Street, Suisun City	1961	67

APN	Address	Year Built	Map Reference No.
32081170	302, 304 Sacramento Street, Suisun City	ca. 1945	68
32081240	515 Suisun Street, Suisun City	1959	69
32081300	306 Sacramento Street, Suisun City	ca. 1907	70
32112060	701 West Street, Suisun City	1958	111
32112080	705 West Street, Suisun City	ca.1960	112
32151010	201 California Street, Suisun City	1944	141
32151020	205 California Street, Suisun City	ca.1945	142
32151150	806 West Street, Suisun City	1982	143
32151140	808 West Street, Suisun City	1960	144
32151130	206 Morgan Street, Suisun City	1916	145
32158140	1012 Suisun Street, Suisun City	1946	196
32158110	1009 Main Street, Suisun City	1916	199
32158050	1013 Main Street, Suisun City	ca. 1907	200
32171080	510 Cordelia Road, Suisun City	1910	206
32171070	516 Cordelia Road	1958	209
32171050	519 Line Street, Suisun City	ca.1945	210

Table B-3. Non-Eligible Archaeological Sites within the APE

Resource Number	Description	APE Location	Section 4(f) Use
CA-SOL-242 and CA-SOL-242S	Site record missing	Recorded within the project APE near the intersection of I-80 and Green Valley Road/Creek.	No site records exist for this site at either location, and it has not been relocated during the ASR for this project, or several previous surveys. It has long been assumed that this site was mislocated or was a duplicate of CA-SOL-18—a site about 1,000 feet north along Green Valley Creek, and outside of the APE. Therefore, this site is not eligible for the NRHP, and the provisions of Section 4(f) are not triggered.
CA-SOL-262	Scatter of obsidian and chert flake tools	Recorded within the project APE west of southbound I-680, south of Fulton Drive.	The ASR for the proposed project, previous studies, and a survey by the Department in the 1980s failed to locate evidence of these deposits. It has not been relocated during this study or several previous surveys. Because the general area is now within an urbanized area of light industrial buildings, it has been posited that this site no longer exists. Therefore, this site is not eligible for the NRHP, and the provisions of Section 4(f) are not triggered.

Table B-4. Bridges within the APE

Route	Post Mile	Bridge #	Name	Year Built
SR 12	1.80	23-0199F	West-12/West-80 Connector	1987
SR 12	2.22	23-0200	Chadbourne Road Undercrossing	1987
SR 12	2.76	23-0016L	Route 12/I-80 Separation	1968
SR 12	2.94	23-0228	Alonzo Drain	unknown
SR 12	3.41	23-0229	Ledgewood Creek	unknown
SR 12	4.47	23-0197	Webster Street Undercrossing	1984
SR 12	4.47	23-0197K	Webster Street Undercrossing	1984
SR 12	4.57	23-0196	Fairfield Overhead	1984
I-80	11.39	23-0165	Red Top Road Undercrossing	1969
I-80	11.92	23-0025	Cordelia Underpass	1968
I-80	12.74	23-0138	Green Valley Road Overcrossing	1961
I-80	12.90	23-0135E	Green Valley Creek	1961
I-80	12.91	23-0004L	Green Valley Creek	1928
I-80	12.91	23-0004R	Green Valley Creek	1951
I-80	13.49	23-0140	Suisun Valley Road Overcrossing	1961
I-80	13.92	23-0006L	Dan Wilson Creek	1951
I-80	13.92	23-0006R	Dan Wilson Creek	1951
I-80	14.55	23-0007	Suisun Creek	1932
I-80	16.17	23-0141	Abernathy Road Overcrossing	1987
I-680	10.02	23-0163	Gold Hill Road Overcrossing	1966
I-680	10.67	23-0166	American Canyon Creek	1966
I-680	12.63	23-0142L	Cordelia Overhead	1961
I-680	12.63	23-0142R	Cordelia Overhead	1961
I-680	13.09	23-0139E	Route 680/80 Separation	1961
I-680	13.14	23-0004G	North-680/East-80 Connector	1961
Local	n/a	23C0070	Lopes Road at American Canyon Creek	1982
Local	n/a	23C0071	Lopes Road at Jameson Canyon Creek	1915
Local	n/a	23C0108	Beck Avenue at Alonzo Drain	1985
Local	n/a	23C0150	Central Way at Green Valley Creek	1970

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B.3 Personal Communications

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Miller, Brian. City Planner, Community Development Department, City of Fairfield. Telephone conversation with Beth Eggerts of ICF International on February 17, 2010, regarding the designation of the Bay Area Ridge Trail within the City of Fairfield.

Appendix C Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

August 25, 2009

TITLE VI
POLICY STATEMENT

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

RANDELL H. IWASAKI
Director

Appendix D Summary of Relocation Benefits

California Department of Transportation Relocation Assistance Program

RELOCATION ASSISTANCE ADVISORY SERVICES

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

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

ADDITIONAL INFORMATION

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

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

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

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

IMPORTANT NOTICE

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

State of California
Department of Transportation, District 04
111 Grand Avenue
Oakland, CA 94623-0660

Your Rights and Benefits as a Displacee Under the Uniform Relocation Assistance Program (Residential) 2007

Caltrans

California Department of Transportation

Introduction

In building a modern transportation system, the displacement of a small percentage of the population is often necessary. However, it is the policy of Caltrans that displaced persons shall not suffer unnecessarily as a result of programs designed to benefit the public as a whole.

Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and payments.

This brochure provides information about available relocation services and payments. If you are required to move as the result of a Caltrans transportation project, a Relocation Agent will contact you. The Relocation Agent will be able to answer your specific questions and provide additional information.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 As Amended "The Uniform Act"

The purpose of this Act is to provide for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs and to establish uniform and equitable land acquisition policies for federal and federally assisted programs.

49 Code of Federal Regulations Part 24 implements the "Uniform Act" in accordance with the following relocation assistance objective:

> To ensure that persons displaced as a direct result of federal or federally-assisted projects are treated fairly, consistently and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

While every effort has been made to assure the accuracy of this booklet, it should be understood that it does not have the force and effect of law, rule, or regulation governing the payment of benefits. Should any difference or error occur, the law will take precedence.

Some Important Definitions...

Your relocation benefits can be better understood if you become familiar with the following terms:

Comparable Replacement: means a dwelling which is:

(1) Decent, safe, and sanitary. (See definition below)

(2) Functionally equivalent to the displaced dwelling.

(3) Adequate in size to accommodate the family being relocated.

(4) In an area not subject to unreasonable adverse environmental conditions.

(5) In a location generally not less desirable than the location of your displacement dwelling with respect to public utilities and commercial and public facilities, and reasonably accessible to the place of-employment.

(6) On land that is typical in size for residential development with typical improvements.

Decent, Safe and Sanitary (DS&S): Replacement housing must be decent, safe, and sanitary...which means it meets all of the minimum requirements established by federal regulations and conforms to applicable housing and occupancy codes. The dwelling shall:

(1) Be structurally sound, weather tight, and in good repair.

(2) Contain a safe electrical wiring system adequate for lighting and other devices.

(3) Contain a heating system capable of sustaining a healthful temperature (of approximately 70 degrees) for a displaced person, except in those areas where local climatic conditions do not require such a system.

(4) Be adequate in size with respect to the number of rooms and area of living space needed to accommodate the displaced person. The Caltrans policy is that there will be no more than 2 persons per room unless the room is of adequate size to accommodate the normal bedroom furnishings for the occupants.

(5) Have a separate, well-lighted and ventilated bathroom that provides privacy to the user and contains a sink, bathtub or shower stall, and a toilet, all in good working order and properly connected to appropriate sources of water and to a sewage drainage system.

Note: In the case of a housekeeping dwelling, there shall be a kitchen area that contains a fully usable sink, properly connected to potable hot and cold water and to a sewage drainage system, and adequate space and utility service connections for a stove and refrigerator.

(6) Contains unobstructed egress to safe, open space at ground level. If the replacement dwelling unit is on the second story or above, with access directly from or through a common corridor, the common corridor must have at least two means of egress.

(7) *For a displaced person who is handicapped,* be free of any barriers which would preclude reasonable ingress, egress, or use of the dwelling by *such displaced person.*

Displaced Person or Displacee: Any person who moves from real property or moves personal property from real property as a result of the acquisition of the real property, in whole or in part, or as the result of a written notice from the agency to vacate the real property needed for a transportation project. In the case of a partial acquisition, Caltrans shall determine if a person is displaced as a direct result of the acquisition.

Residents **not lawfully present** in the United States are not eligible to receive relocation payments and assistance

Relocation benefits will vary, depending upon the type and length of occupancy. As a residential displacee, you will be classified as either a:

- An owner occupant of a residential property (includes mobile homes)
- A tenant occupant of a residential property (includes mobile homes and sleeping rooms)

Dwelling: The place of permanent or customary and usual residence of a person, according to local custom or law, including a single family house; a single family unit in a two-family, multi-family, or multi-purpose property; a unit of a condominium or cooperative housing project; a non-housekeeping unit; a mobile home; or any other residential unit.

Owner: A person is considered to have met the requirement to own a dwelling if the person purchases or holds any of the following interests in real property:

(1) Fee title, a life estate, a land contract, a 99-year lease, oral lease including any options for extension with at least 50 years to run from the date of acquisition; or

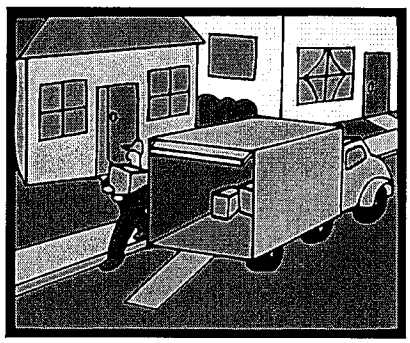
(2) An interest in a cooperative housing project which includes the right to occupy a dwelling; or

(3) A contract to purchase any interests or estates; or

(4) Any other interests, including a partial interest, which in the judgment of the agency warrants consideration as ownership.

Tenant: A person who has the temporary use and occupancy of real property owned by another.

Moving Expenses



If you qualify as a displaced person, you are entitled to reimbursement of your moving costs and certain related expenses incurred in moving. The methods of moving and the various types of moving cost payments are explained. Below.

Displaced individuals and families may choose to be paid on the basis of actual, reasonable moving costs and related expenses, or according to a fixed moving cost schedule. However, to ensure your eligibility and prompt payment of moving expenses, you should contact your Relocation Agent before you move.

You Can Choose Either:

Actual Reasonable Moving Costs - You may be paid for your actual reasonable moving costs and related expenses when a commercial mover performs the move. Reimbursement will be limited to a move of 50 miles or less. Related expenses <u>may</u> include:

- Transportation
- Packing and unpacking personal property.
- Disconnecting and reconnecting household appliances.
- Temporary storage of personal property.
- Insurance while property is in storage or transit.

OR

Fixed Moving Cost Schedule - You may be paid on the basis of a fixed moving cost schedule. Under this option, you will not be eligible for reimbursement of related expenses listed above. The fixed schedule is designed to cover such expenses.

Examples (Year 2005 Rate):
4 Rooms - $ 950
7 Rooms - $1,550

If the furniture is moved with the mobile home, the amount of the fixed payment is based on Schedule B.

Examples (Year 200 Rate):
4 Rooms - $1,175
7 Rooms - $1,900

Under the Fixed Move Schedule for a furnished unit (e.g. you are a tenant of an apartment that is furnished by your landlord) is based on Schedule B.

Example (Year 2005 Rate):
1 Room - $400

Under the Fixed Move Schedule, you will not receive any additional payments for temporary storage, lodging, transportation or utility hook-ups.

Replacement Housing Payments

The type of Replacement Housing Payment (RHP) depends on whether you are an owner or a tenant, and the length of occupancy in the property being acquired.

If you are a qualified **owner occupant** of more than 180 days prior to the initiation of negotiations for the acquisition of your property, you may be entitled to a RHP that consists of:

Price Differential, and

Mortgage Differential, and

Incidental Expenses;

OR

Rent Differential

If you are a qualified **owner occupant** of more than 90 days but less than 180 days, OR you are a qualified **tenant occupant** of at least 90 days, you may be entitled to a RHP as follows:

Rent Differential

OR

Downpayment Option

Length of occupancy simply means counting the number of days that you actually occupied a dwelling before the date of initiation of negotiations by Caltrans for the purchase of the property. The term "initiation of negotiations" means the date Caltrans makes the first personal contact with the owner of real property, or his/ her representative, to give him/her a written offer for the property to be acquired.

Note: If you have been in occupancy less than 90 days before the initiation of negotiations and the property is subsequently acquired, or if you move onto the property after the initiation of negotiations and you are still in occupancy on the date of acquisition, you may or may not be eligible for a Replacement Housing Payment. Check with your Relocation Agent before you make any decision to vacate your property.

For Owner Occupants of 180 Days or More

If you qualify as a 180-day owner occupant, you may be eligible -- in addition to the fair market value of your property -- for a Replacement Housing Payment that consists of a Price Differential, Mortgage Differential and/or Incidental Expenses.

The **Price Differential** payment is the amount by which the cost of a replacement dwelling exceeds the acquisition cost of the displacement dwelling. This payment will assist you in purchasing a comparable decent, safe, and sanitary (DS&S) replacement dwelling. Caltrans will compute the maximum payment you may be eligible to receive.

In order to receive the full amount of the calculated price differential, you must spend at least the amount calculated by Caltrans on a replacement property

The **Mortgage Differential** payment will reimburse your for any increased mortgage interest costs you might incur because the interest rate on your new mortgage exceeds the interest rate on the property acquired by Caltrans The payment computation is complex as it is based on prevailing rates, your existing loan and your new loan. Also, a part of this payment may be prorated such as reimbursement for a portion of your loan origination fees and mortgage points.

To be eligible to receive this payment, the acquired property must have been encumbered by a bona fide mortgage which was a valid lien for at least 180 days prior to the initiation of negotiations.

You may also be reimbursed for any actual and necessary **Incidental Expenses** that you incur in relation to the purchase of your replacement property. These expenses may be those costs for title search, recording fees, credit report, appraisal report, and certain other closing costs associated with the purchase of property. You will not be reimbursed for any recurring costs such as prepaid real estate taxes and property insurance.

If the total amount of your **Replacement Housing Payment** (Price Differential, Mortgage Differential and Incidental Expenses) exceeds $22,500, the payment must be deposited directly into an escrow account or paid directly to the mortgage company.

EXAMPLES OF PRICE DIFFERENTIAL PAYMENT COMPUTATION:

Assume that Caltrans purchases your property for $98,000. After a thorough study of available, decent, safe and sanitary dwellings on the open market, Caltrans determines that a comparable replacement property will cost you $100,000. If your purchase price is $100,000, you will receive $2,000 *(see Example A).*

If your actual purchase price is more than $100,000, you pay the difference (see *Example B).* If your purchase price is less than $100,000, the differential payment will be based on actual costs *(see Example C).*

How much of a differential payment you receive depends on how much you actually spend on a replacement dwelling as shown in these examples:

Caltrans' Computation

Comparable Replacement Property and Mobile Home	$100,000
Acquisition Price of Your Property and Mobile Home	-$ 98,000
Maximum Price Differential	$ 2,000

Example A

Purchase Price of Replacement	$100,000
Comparable Replacement Property	$100,000
Acquisition Price of Your Property	-$ 98,000
Maximum Price Differential	$ 2,000

Example B

Purchase Price of Replacement Property	$105,000
Comparable Replacement Property	$100,000
Acquisition Price of Your Property	$ 98,000
Maximum Price Differential	$ 2,000
You Must Pay the Additional	$ 5,000

Example C

Comparable Replacement Property	$100,000
Purchase Price of Replacement	$ 99,000
Acquisition Price of Your Property	$ 98,000
Price Differential	$ 1,000

In Example C you will only receive $1,000 - not the full amount of the Caltrans "Comparable Replacement Property" because of the "Spend to Get" requirements.

IN ORDER FOR A "180 DAY OWNER OCCUPANT" TO RECEIVE THE FULL AMOUNT OF THEIR REPLACEMENT HOUSING *PAYMENT* *(Price Differential, Mortgage Differential and Incidental Expenses)*, **you must:**

A) Purchase and occupy a DS&S replacement dwelling within one year after the later of:

(1) The date you first receive a notification of an available replacement house, **OR**

(2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the closing of escrow on State's acquisition),

AND

B) Spend at least the amount of the Caltrans "Comparable Replacement Property" for a replacement property,

AND

C) File a claim for relocation payments within 18 months of the later:

(1) The date you vacate the property acquired by Caltrans, **OR**

(2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the close of escrow on State's acquisition)

You will not be eligible to receive any relocation payments until the State has actually made the first written offer to purchase the property. Also, you will also receive at least 90 days' written notice before you must move.

For Owner Occupants and Tenants of 90 Days or More

If you qualify as a 90-day occupant (either as an owner or tenant), you may be eligible for a Replacement Housing Payment in the form of a Rent Differential.

The **Rent Differential** payment is designed to assist you in renting a comparable decent, safe and sanitary replacement dwelling. The payment is based on the difference between the base monthly Rent for the property acquired by Caltrans (including average monthly cost for utilities) and the lesser of:

a) The monthly rent and estimated average monthly cost of utilities for a comparable replacement dwelling as determined by Caltrans, **OR**

b) The monthly rent and estimated average monthly cost of utilities for the decent, safe and sanitary dwelling that you actually rent as a replacement dwelling.

Utility costs are those expenses you incur for heat, lights, water and sewer - regardless of the source (e.g. electricity, propane, and septic system). It does not include garbage, cable, telephone, or security. The utilities at your property are the average costs over the last 12 months. The utilities at the comparable replacement property are the estimated costs for the last 12 months for the type of dwelling and area used in the calculation.

This difference is multiplied by 42 months and may be paid to you in a lump sum payment or in periodic installments in accordance with policy and regulations.

In order to receive the full amount of the calculated Rent Differential, you must spend at least the amount calculated by Caltrans on a replacement property.

This payment may - with certain limitations - be converted to a **Downpayment Option** to assist you in purchasing a replacement property.

Example of Rent Differential Payment Computation:

After a thorough study of comparable, decent, safe and sanitary dwellings that are available for rent, Caltrans determines that a comparable replacement property will rent for $325.00 per month.

Caltrans Computation (rates are per month)

Rental Rate for Comparable Replacement Property	$ 325
PLUS average estimated utilities costs	+ 100
TOTAL Cost to Rent Comparable Replacement Property	= $ 425
Rental Rate for Your Current Property	$ 300
PLUS average utilities costs	+ 90
TOTAL Cost to Rent Current Property	= $ 390
Comparable Replacement Property including utilities	$ 425
Cost you pay to rent your property including utilities	+ 390
Difference	= $ 35

Multiplied by 42 months = $1,470 Rent Differential

Example A:

Rental Rate for a Replacement Property including Estimated average utilities costs	$ 525
Comparable Replacement Property including utilities	$ 425
Cost you pay to rent your property including utilities	$ 390

Since $425 is less than $525, the Rent Differential is based on the difference between $390 and $425.

Rent Differential ($35 x 42 months = $1,470)

In this case you spent "at least" the amount of the Comparable Replacement Property on the replacement property and will receive the full amount.

Example B:

Rental Rate for a Replacement Property including Estimated average utilities costs	$ 400
Comparable Replacement Property including utilities	$ 425
Cost you pay to rent your property including utilities	$ 390

Since $400 is less than $525, the Rent Differential is based on the difference between $400 and $390.

Rent Differential ($10 x 42 months = $420)

In this case you spent "less than" the amount of the Comparable Replacement Property on the replacement property and will not receive the full amount.

IN ORDER FOR A "90 DAY OWNER OCCUPANT" TO RECEIVE THE FULL AMOUNT OF THEIR REPLACEMENT HOUSING PAYMENT *(Rent Differential)*, **you must:**

A) Rent and occupy a DS&S replacement dwelling within one year after the later of:

(1) The date you first receive a notification of an available replacement house, **OR**

(2) The day you vacate the property acquired by Caltrans.

AND

B) Spend at least the amount of the Caltrans "Comparable Replacement Property" to rent a replacement property,

AND

C) File a claim for relocation payments within 18 months of the later of:

(1) The date you vacate the property acquired by Caltrans, **OR**

(2) The date that Caltrans has paid the acquisition cost of your current dwelling (usually the close of escrow on State's acquisition)

You will not be eligible to receive any relocation payments until the State has actually made the first written offer to purchase the property. And, you will also receive at least 90 days' written notice before you must move.

Note1: The time periods for a 90-day owner occupant are different than a 180-day owner occupant.

Note 2: If the Rent Differential is converted to a Downpayment Option, there is no "spend-to-get" requirement.

DOWN PAYMENT OPTION

The Rent Differential payment may - with certain limitations - be converted to a **Down Payment Option** to assist you in purchasing a replacement property. The down payment option is a direct conversion of the Rent Differential payment.

If the Caltrans calculated Rent Differential is between $0 and $5,250, your down payment option will be $5,250, which can be used towards the purchase of a replacement decent, safe and sanitary dwelling.

If the Rent Differential is over $5,250, you may be able to convert the entire amount of the Rent Differential to a downpayment option.

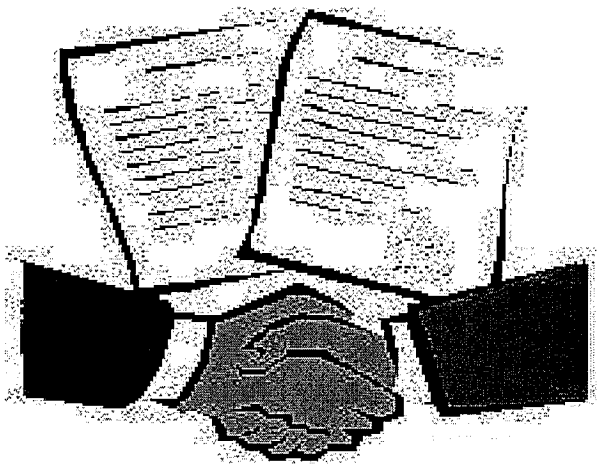
The down payment option must be used for the acquisition of the replacement dwelling, plus any eligible incidental expenses (see "180-day Owner Occupants Incidental Expenses") related to the purchase of the property. You must work closely with your Relocation Agent to ensure you can utilize the full amount of your down payment option towards the purchase.

If any portion of the Rent Differential was used prior to the decision to convert to a down payment option, those advance payments will be deducted from the entire benefit.

LAST RESORT HOUSING

On most projects, an adequate supply of housing will be available for sale and for rent, and the benefits provided will be sufficient to enable you to relocate to comparable housing. However, there may be projects in certain locations where the supply of available housing is insufficient to provide the necessary housing for those persons being displaced. In such cases, Caltrans will utilize a method called Last Resort Housing. Last Resort Housing allows Caltrans to construct, rehabilitate or modify housing in order to meet the needs of the people displaced from a project. Caltrans can also pay above the statutory limits of $5,250 and $22,500 in order to make available housing affordable.

Relocation Advisory Assistance



Any individual, family, business or farm displaced by Caltrans shall be offered relocation advisory assistance for the purpose of locating a replacement property. Relocation services are provided by qualified personnel employed by Caltrans. It is their goal and desire to be of service to you and assist in any way possible to help you successfully relocate.

A Relocation Agent from Caltrans will contact you personally. Relocation services and payments will be explained to you in accordance with your eligibility. During the initial interview with you, your housing needs and desires will be determined as well as your need for assistance. You cannot be required to move unless at least one comparable replacement dwelling is made available to you.

You can expect to receive the following services, advice and assistance from your Relocation Agent who will:

- Explain the relocation benefits and eligibility requirements.
- Provide the amount of the replacement housing payments in writing.
- Assure the availability of a comparable property before you move.
- Inspect possible replacement residential units for DS&S compliance.
- Provide information on counseling you can obtain to help minimize hardships in adjusting to your new location.
- Assist you in completing loan documents, rental applications or Relocation Claims Forms.

AND provide information on:

- Security deposits
- Interest rates and terms
- Typical down payments
- VA and FHA loan requirements
- Real property taxes.
- Consumer education literature on housing

If you desire, your Relocation Agent will give you current listings of other available replacement housing. Transportation will be provided to inspect available housing, especially if you are elderly or handicapped. Though you may use the services of a real estate broker, Caltrans cannot provide a referral.

Your Relocation Agent is familiar with the services provided by others in your community and will provide information on other federal, state, and local housing programs offering assistance to displaced persons. If you have special problems, your Relocation Agent will make every effort to secure the services of those agencies with trained personnel who have the expertise to help you.

If the highway project will require a considerable number of people to be relocated, Caltrans will establish a temporary Relocation Field Office on or near the project. Project relocation offices will be open during convenient hours and evening hours if necessary.

In addition to these services, Caltrans is required to coordinate its relocation activities with other agencies causing displacements to ensure that all persons displaced receive fair and consistent relocation benefits.

Remember - YOUR RELOCATION AGENT is there to offer advice and assistance. Do not hesitate to ask questions. And be sure you fully understand all of your rights and available benefits.

YOUR RIGHTS AS A DISPLACEE

All eligible displacees have a freedom of choice in the selection of replacement housing, and Caltrans will not require any displaced person to accept a replacement dwelling provided by Caltrans. If you decide not to accept the replacement housing offered by Caltrans, you may secure a replacement dwelling of your choice, providing it meets DS&S housing standards. Caltrans will not pay more than your calculated benefits on any replacement property.

The most important thing to remember is that the replacement dwelling you select must meet the basic "decent, safe, and sanitary" standards. Do not execute a purchase agreement or a rental agreement until a representative from Caltrans has inspected and certified in writing that the dwelling you propose to occupy meets the basic standards. **DO NOT jeopardize** your right to receive a replacement housing payment by moving into a substandard dwelling.

It is important to remember that your relocation benefits will not have an adverse affect on your:

- Social Security Eligibility
- Welfare Eligibility
- Income Taxes

In addition, the Title VIII of the Civil Rights Act of 1968 and later acts and amendments make discriminatory practices in the purchase and rental of most residential units illegal if based on race, color, religion, sex, or national origin.

Whenever possible, minority persons shall be given reasonable opportunities to relocate to decent, safe, and sanitary replacement dwellings, not located in an area of minority concentration, and that is within their financial means. This policy, however, does not require Caltrans to provide a person a larger payment than is necessary to enable a person to relocate to a comparable replacement dwelling.

Caltrans' Non-Discrimination Policy ensures that all services and/or benefits will be administered to the general public without regard to race, color, national origin, or sex in compliance with Title VI of the 1964 Civil Rights Act (42 USC 2000d. et seq.).

And you always have the Right to Appeal any decision by Caltrans regarding your relocation benefits and eligibility.

Your Right of Appeal is guaranteed in the "Uniform Act" which states that any person may file an appeal with the head of the responsible agency if that person believes that the agency has failed to properly determine the person's eligibility or the amount of a payment authorized by the Act.

If you indicate your dissatisfaction, either verbally or in writing, Caltrans will assist you in filing an appeal and explain the procedures to be followed. You will be given a prompt and full opportunity to be heard. You have the right to be represented by legal counsel or other representative in connection with the appeal (but solely at your own expense).

Caltrans will consider all pertinent justifications and materials submitted by you and other available information needed to ensure a fair review. Caltrans will provide you with a written determination resulting from the appeal with an explanation of the basis for the decision. If you are still dissatisfied with the relief granted, Caltrans will advise you that you may seek judicial review.

NOTES

Sus Derechos y Beneficios Como Una Persona Desplazada Bajo el Programa Uniforme De Asistencia Para Reubicación (Residencial)

Introducción

En la construcción de un sistema moderno de transportación, el desplazamiento de un pequeño porcentaje de la población es a menudo necesario. Sin embargo, la política de Caltrans es que las personas desalojadas no tengan que sufrir innecesariamente como resultado de los programas diseñados para el beneficio del público en general.

Los individuos y familias desplazadas pueden ser elegibles para recibir servicios de asesoramiento y pagos de reubicación.

Este folleto provee información acerca de los servicios y pagos de reubicación disponibles. Si usted es requerido a mudarse como resultado de un proyecto de transportación, un Agente de Reubicación se comunicará con usted. El Agente de Reubicación le contestará preguntas específicas y le proveerá información adicional.

Ley de Procedimiento Uniforme de Asistencia para Rubicación y Adquisición de Bienes Raíces de 1970, Enmendada “La Ley Uniforme”

El propósito de esta Ley es proveer tratamiento igual y uniforme para las personas que son desplazadas de sus hogares, negocios, u operaciones agrícolas por programas federales o programas que son asistidos con fondos federales y para establecer uniformidad e igualdad en la política de adquisición de tierras por programas federales y programas asistidos con fondos federales.

La ley trata de asegurar que las personas desplazadas directamente como resultado de proyectos federales o proyectos asistidos con fondos federales sean tratados con igualdad, consistencia y equidad para que esas personas no sufran

daños desproporcionados como resultado de proyectos designados para el beneficio del público en general.

Aunque se ha hecho un esfuerzo para asegurar la precisión de este folleto, debe de ser entendido que no tiene la fuerza o efectos de la ley, regla, o regulación que gobierna el pago de los beneficios. Si hay diferencias o error, la ley tomará precedencia.

Algunas Definiciones Importantes…

Sus beneficios de reubicación pueden ser entendidos mejor si usted entiende los siguientes términos:

Vivienda de Restitución comparable: significa una propiedad que es:

(1) Decente, segura y sanitaria. (Vea la definición abajo.)
(2) Equivalente funcionalmente a la propiedad desplazada.
(3) Adecuada en tamaño para acomodar a la familia que esta siendo reubicada.
(4) En un área que no esté sujeta a condiciones irrazonablemente adversas.
(5) En una localidad generalmente no menos deseable que la localidad de su propiedad desplazada con respecto a servicios públicos, y acceso razonable al lugar de empleo.
(6) En una parcela de tamaño típico para el desarrollo de una residencia de tamaño normal.

Decente, Segura y Sanitaria (DS&S): La vivienda de restitución debe de ser decente, segura y sanitaria … que significa que llena todos los requisítos mínimos establecidos por las regulaciones federales y conforme a los códigos de ocupación de viviendas aplicables. La propiedad será:

(1) Buena estructuralmente, cerrada a las condiciones climáticas y en buen estado de reparación.

(2) Contiene un sistema eléctrico adecuado para iluminación y otros aparatos.

(3) Contiene un sistema de calefacción capáz de mantener una temperatura saludable (de aproximadamente 70 grados) para la persona desplazada,

con excepción en aquellas áreas donde las condiciones climáticas no requieren dicho sistema.

(4) Debe de ser adecuada en tamaño con respecto al número de cuartos y áreas para vivir necesarias para acomodar a las personas desplazadas. Es política de Caltrans que más de dos personas no deben de estar en un solo cuarto, a menos que que el tamaño del cuarto sea suficientemente adecuado para acomodar los muebles de dormitorios necesarios de los ocupantes.

(5) Tener un baño separado, bien iluminado y ventilado que sea privado a los usuarios y que contenga un lavamanos, una tina o regadera, y un excusado, todos en buenas condiciones y apropiadamente conectados a los sistemas de aguas negras y aguas potables.

Nota: *En el caso de una propiedad residencial, debe de haber una área de cocina que contenga un lavatrastos usable, propiamente conectado a agua caliente y agua fría, y al sistema de drenaje, y con espacio adecuado para utilizar los servicios y connecciones para una estufa y un refrigerador.*

(6) Que contenga salidas sin obstrucción y seguros espacio abierto al nivel del suelo. Si la propiedad de restitución está en el segundo piso o más arriba, que tenga acceso directamente desde o a travéz de un corredor, y que éste corredor común debe de tener al menos dos salidas.

(7) Si la persona desplazada es incapacitada físicamente, debe de ser libre de cualquier barrera que le impidan la entrada o salida, o uso razonable de la propiedad por dicha persona incapacitada.

Persona Desplazada: Cualquier individuo o familia que se mueva de una propiedad o mueva sus bienes personales de una propiedad como resultado de la adquisición de bienes raíces, en todo o en parte, o como resultado de una notificación escrita de una agencia pidiéndole que desocupe la propiedad que se necesita para un proyecto de transportación. En el caso de una adquisición parcial, Caltrans debe de determinar si la persona es desplazada directamente como resultado de esta adquisición.

Los residentes **que no están legalmente** en los Estados Unidos no son elegibles para recibir pagos y asistencia de reubicación.

Los beneficios de reubicación van a variar dependiendo del tipo y tiempo de ocupación. Como una persona desplazada de una unidad residencial usted puede ser clasificado como:

- Un dueño ocupante de una propiedad residencial (incluyendo casas movibles)
- Un inquilino ocupante de una propiedad residencial (incluyendo casas movibles y cuartos para dormir)

Vivienda: El lugar de permanencia o residencia regular y usual de una persona, de acuerdo a las costumbres locales o la ley, incluyendo una unidad familiar, una unidad familiar en un complejo doble o multi-familiar, o una propiedad de uso múltiple, una unidad de condominio o proyecto de vivienda en cooperativa, una unidad libre de mantenimiento doméstico, una casa movible, o cualquier otra unidad residencial.

Dueño: Una persona es considerada que llena los requisitos de dueño de una casa, si esta persona compra, tiene título o tiene algunos de los siguientes intereses en una propiedad:

(1) Una escritura de propiedad, un interés de por vida en una propiedad, un contrato de renta por 99 años, un contrato oral de renta incluyendo una opción para extensión con al menos 50 años que queden después de la fecha de adquisición; o

(2) El interés en un proyecto de vivienda en cooperativa que incluya el derecho de ocupar una vivienda; o

(3) Un contrato de compra de interés, o bienes raíces.

(4) Algún otro interés, incluyendo intereses parciales, qua a juicio de la agencia garanticen los pagos como dueño.

Inquilino: Una persona que tiene el uso y la ocupación temporal de una propiedad de la que otro es dueño.

Gastos de Mudanza

Si usted califica como persona desplazada, usted tiene derecho a reembolso de sus gastos de mudanza y a ciertos gastos relacionados incurridos durante el traslado. Los métodos de traslado y los distintos tipos de pagos para gastos de mudanza son explicados abajo.

Los individuos y familias desplazadas pueden escoger un pago basado en los gastos reales, razonables y los gastos relacionados, o de acuerdo a una lista de costos fijos de mudanza. Sin embargo, para asegurar su elegibilidad y el pago rápido de sus gastos de mudanza, usted debe de ponerse en contacto con su Agente de Rubicación antes de mudarse.

Usted Puede Elegir Entre:

Los Gastos Razonables de Mudanza – A usted se le puede pagar por los gastos razonables de mudanza y gastos relacionados cuando una compañia comercial de mudanza hace la mudanza. Los reembolsos deberán ser limitados a una mudanza de 50 millas o menos. Los gastos relacionados pueden incluir:

- Transportación.
- Empaque y desempaque de propiedades personales.
- Desconexión y reconexión de aparatos eléctricos.
- Almacenaje temporal de propiedades personales.
- Seguros cuando la propiedad está almacenada o en tránsito.

Ó

Lista de Costos Fijos de Mudanza – A usted se le puede pagar basado en una lista de costos fijos de mudanza. Bajo esta opción, usted no puede ser elegible para reembolsos de gastos relacionados incluídos en la lista de arriba. Esta lista de gastos fijos está designada a cubrir todos esos gastos.

Por ejemplo (Tarifa para el año 2001)

4 Cuartos - $ 950
7 Cuartos - $1,550

Los costos fijos de mudanza para una unidad amueblada (ejemplo, usted es inquilino en un apartamento donde los muebles pertenecen al dueño de la vivienda) estan basados en la Tabla de Honorarios B.

Ejemplos (Taza en el año 2001):

4 Cuartos - $475
7 Cuartos - $625

Bajo la lista de Pago Fijos de Mudanza, usted no puede recibir ningun pago adicional por almacenamiento temporario, vivienda temporaria, transportación o conexiones de servicios públicos.

Pagos Para Vivienda de Restitución

El tipo de Pago Para Vivienda de Restitución (RHP) depende de si usted es dueño o un inquilino, y en el tiempo de ocupación que tiene de la propiedad que será adquirida.

Si usted es calificado **como dueño ocupante** de más de 180 días antes de la iniciación de negociaciones para la adquisición de su propiedad, usted puede tener derecho a recibir RHP que consiste en:

Diferencia de Precio, y

Diferencia para Hipoteca, y

Gastos Incidentales

O

Diferencia Para Rentar

Si usted es calificado como **dueño ocupante** de más de 90 días, pero menos de 180 días, O si usted es calificado como **inquilino ocupante** de al menos 90 días, usted puede tener derecho a recibir RHP así:

Diferencia Para Rentar

U

Opción para Enganche

Tiempo de ocupación simplemente significa contar el número de días que usted actualmente ocupó la vivienda antes de la fecha de iniación de negociaciones por Caltrans para la compra de la propiedad. El término “iniciación de negociaciones” significa la fecha que Caltrans hizo el primer contacto personal con el dueño de bienes raíces, o su representante, para darle a el/ella una oferta escrita para la adquisición de la propiedad.

*Nota: Si usted ocupó una vivienda por **menos de 90 días** antes de la iniciación de negociaciones y la propiedad es posteriormente adquirida, o si usted se mudó a la propiedad después de la iniciación de negociaciones y usted todavía*

ocupaba la propiedad a la fecha de adquisición, usted puede ser elegible para un Pago para Restitución de Vivienda, basado en una guía de elegibilidad establecida. Consulte con su Agente de Reubicación antes de que haga cualquier decisión de mudarse de su propiedad.

Para Ocupantes de 180 Días o Más

Si usted califica como dueño ocupante de 180 días, puede ser elegible – además del valor equitativo en el mercado de su propiedad – para un Pago de Restitución de Vivienda que consiste en un pago de Diferencia de Precio y/o Gastos Incidentales.

El Pago de **Diferencia de Precio** es la cantidad por la que el costo de una vivienda de restitución excede el costo de adquisición de la vivienda desplazada. Este pago le asistirá en la compra de una vivienda decente, segura, y sanitaria (DS&S). Caltrans computará el pago máximo que usted puede ser elegible para recibir. (Vea un ejemplo en la página 15.)

Para recibir la cantidad total de la diferencia de precio calculadas, usted debe de gastar al menos la cantidad calculada por Caltrans en la propiedad de restitución.

El pago de **Diferencia de Hipoteca** le será reembolsado por cualquier aumento del costo de interés en la hipoteca que usted haya incurrido porque la taza de interés en su nueva hipoteca excede la taza de interés de la propiedad adquirida por Caltrans. La computación del pago es complicada ya que está basada en las tazas típicas entre su préstamo anterior y su préstamo nuevo. También, una parte de los pagos pueden ser prorrateado como reembolso por una porción de los honorarios de su préstamo y los puntos (intereses) de la hipoteca.

Para ser elegible para recibir este pago, la propiedad adquirida debe de ser hipotecada con una hipoteca de buena fé, la cual fue un crédito válido de por lo menos 180 días antes de la iniciación de negociaciones.

Usted también puede ser reembolsado por cualquier **Gasto Incidental** actual y necesario que usted incurra en relación con la compra de su propiedad de restitución. Estos gastos pueden ser los costos por búsqueda de título, honorarios de copia en el Registro, reporte de crédito, reporte de evaluación, y ciertos otros gastos de cierre de escritura. Usted no puede ser reembolsado por ningún gasto frequente como pre-pagos de impuesto de bienes raíces y seguro de propiedad.

Si la cantidad total de su **Pago de Vivienda de Restitución** (Diferencia de Precio, Diferencia Para Hipoteca y Gastos Incidentales) excede $22,500, el pago debe de ser depositado directamente en una cuenta fiduciaria o ser pagado directamente a la compañía financiera.

EJEMPLO DE COMO SE CALCULA LA DIFERENCIA DE PAGO:

Suponga que Caltrans compra su propiedad por $98,000. Después de un estudio completo de viviendas disponibles en el mercado, que sean decentes, seguras y sanitarias, Caltrans determina que la propiedad de restitución comparable en el mercado abierto le costará $100,000. Si su precio de compra es $100,000 usted recibirá $2,000 (*Vea el Ejemplo A)*

Si su precio de compra es de más de $100,000, usted paga la diferencia (vea el *Ejemplo B*). Si su precio de compra es menos de $100,000, el pago se basará en los costos actuales (vea el *Ejemplo C).*

La cantidad que usted recibe en un pago diferencial dependerá de cuanto usted realmente gasta en una vivienda de restitución, como se muestra en estos ejemplos.

Computación de Caltrans

Precio Comparable de la Propiedad de Restitución	$100,000
Precio de Adquisición de su Propiedad	– $ 98,000
Diferencia Máxima de Precio	$ 2,000

Ejemplo A

Precio de Compra de Restitución	$100,000
Propiedad Comparable de Restitución	$100,000
Precio de Adquisición de su Propiedad	– $ 98,000
Diferencia Máxima de Precio	$ 2,000

Ejemplo B

Precio de Compra de Restitución	$105,000
Propiedad Comparable de Restitución	$100,000
Precio de Adquisición de su Propiedad	– $ 98,000
Diferencia Máxima de Precio	$ 2,000
Usted Debe de Pagar el Precio Adicional de	$ 5,000

Ejemplo C

Propiedad Comparable de Restitución	$100,000
Precio de Compra de Restitución	$ 99,000
Precio de Adquisición de su Propiedad	– $ 98,000
Diferencia de Precio	$ 1,000

En el ejemplo C usted solo recibirá $1,000 – no la cantidad completa de "La propiedad Comparable de Restitución" por los requisítos de "Gastar para Obtener" de Caltrans.

PARA QUE UN "DUENO OCUPANTE DE 180 DÍAS" RECIBA LA CANTIDAD TOTAL DE SUS BENEFICIOS DE PAGOS PARA VIVIENDA (*Diferencia de Precio, Diferencia de Hipoteca y Gastos Incidentales), usted debe:*

A) Comprar y ocupar una vivienda de restitución que sea DS&S dentro de al menos un año desde la fecha más tarde de:

(1) La fecha en que recibió la primera notificación de una casa de restitución, **O**

(2) La fecha que Caltrans pagó los costos de adquisición de su vivienda actual (usualmente los gastos de cierre de escritura en la adquisición del Estado.)

Y

B) Haber gastado al menos la cantidad que Caltrans estableció para "La Propiedad Comparable de Restitución" para la propiedad de restitución.

Y

C) Reportar un reclamo para pago para reubicación dentro de los 18 meses de la fecha más tarde de:

(1) La fecha en que se mudó de la propiedad adquirida por Caltrans, **O**

(2) La fecha en que Caltrans le pagó los costos de adquisición de su vivienda actual (usualmente al cierre de escritura en la adquisición del Estado.)

Usted no será elegible para recibir ningún pago de reubicación hasta que el Estado haya hecho la primera oferta por escrito de la compra de la propiedad. Usted también recibirá una notificación escrita por lo menos 90 días antes de tener que mudarse.

Para Dueños Ocupantes e Inquilinos de 90 Días o Más

Si usted califica como un ocupante (ya sea como dueño o inquilino) de 90 días, usted puede ser elegible para un Pago de Vivienda de Restitución en la forma de Diferencia para Rentar.

El pago de la **Diferencia para Rentar** es designado para asistirle en la renta de una vivienda comparable que sea decente, segura y sanitaria. El pago será basado en la diferencia entre la renta básica mensual por la propiedad adquirida por Caltrans (incluyendo el promedio del costo mensual de servicios públicos) y el menor de:

a) La renta mensual y el promedio del costo mensual estimado de los servicios públicos para una vivienda comparable de restitución determinada por Caltrans, **O**

b) La renta mensual y el promedio del costo mensual estimado de los servicios públicos para una vivienda decente, segura y sanitaria que usted rente como vivienda de restitución.

Gastos de servicios públicos son esos gastos que usted incurre por calefacción, luz, agua, aguas negras y basura – sin importar quien los provea (ejemplo, electricidad, gas propano, y sistema séptico.) No incluye cable de televisión, teléfono, o seguridad. Los servicios públicos en su propiedad de restitución será el estimado del promedio de costos por los 3 últimos meses para el tipo de vivienda y área usados en los cálculos.

Esta diferencia es multiplicada por 42 meses y le puede ser pagado en una sola suma o en pagos periódicos de acuerdo con la política y regulaciones. (Vea un ejemplo en la página 21.)

Para recibir la cantidad calculada total de la diferencia para rentar, usted debe gastar al menos la cantidad calculada por Caltrans en la propiedad de restitución.

Este pago puede – con ciertas limitaciones – ser convertido en una **Opción para Enganche** para asistirle en la compra de una propiedad de restitución (Vea la página 25 para una explicación completa.)

EJEMPLO DE LA COMPUTACIÓN DEL PAGO DE LA DIFERENCIA PARA RENTAR:

Después de hacer un estudio completo de viviendas comparables, decentes, seguras y sanitarias que estén disponibles para rentar, Caltrans determina que una propiedad comparable de restitución podría ser rentada por $325 al mes.

Computación de Caltrans

Renta por una Propiedad Comparable de Restitución	$ 325 al mes
MÁS: estimado de costos de servicios públicos	100 al mes
TOTAL Costo de renta por una Propiedad Comparable de Restitución	$ 425 al mes
Renta por su Propiedad Actual	$ 300 al mes
MÁS: costos de servicios públicos	90 al mes
TOTAL Costo para pagar la renta de su propiedad actual	$ 390 al mes
Propiedad Comparable de Restitución incluyendo servicios públicos	$ 425 al mes
Costo para pagar la renta de su propiedad incluyendo servicios públicos	390 al mes
Diferencia	$ 35 al mes

Multiplicado por 42 meses = $1,470 Diferencia para Rentar

Ejemplo A:

Renta para una Propiedad de Restitución, incluyendo los costos estimados de servicios públicos	$ 525 al mes
Propiedad Comparable de Restitución incluyendo servicios públicos	$ 425 al mes
Costos de pago de la renta de su propiedad incluyendo servicios públicos	$ 390 al mes

Ya que $425 es menos que $525, la diferencia para rentar está basada en la diferencia entre $390 y $425.

Diferencia para Rentar ($35 x 42 meses = $1,470)

En este caso usted gasta “al menos” la cantidad de la Propiedad de Restitución Comparable en la propiedad de restitución y así recibirá la cantidad total.

Ejemplo B:

Renta por una Propiedad de Restitución, incluyendo los costos estimados de servicios públicos	$ 400 al mes
Propiedad Comparable de Restitución incluyendo servicios públicos	$ 425 al mes
Costos de pago de la renta de su propiedad incluyendo servicios públicos	$ 390 al mes

Ya que $400 es menos que $525, la diferencia para rentar está basada en la diferencia entre $400 y $390.

Diferencia para Rentar ($10x 42 meses = $420)

En este caso usted va a gastar “menos que” la cantidad de Propiedad de Restitución Comparable en la restitución de la vivienda y usted no recibirá la cantidad total.

PARA QUE UN “DUENO OCUPANTE DE 90 DÍAS” RECIBA LA CANTIDAD TOTAL DE PAGO PARA SU VIVIENDA DE RESTITUCION (Diferencia para Rentar), **usted debe de:**

A) Rentar y ocupar una vivienda de restitución DS&S dentro de un año después de la última fecha de:

(1) La fecha en que usted recibió la primera notificación de una casa de restitución disponible, **O**

(2) El día en que usted su mudó de la propiedad adquirida por Caltrans.

Y

B) Gastar al menos la cantidad de la “Propiedad Comparable de Restitución” de Caltrans para rentar una vivienda de restitución.

Y

C) Reportar un reclamo para pagos de reubicación dentro de los 18 meses de la fecha más tarde:

(1) La fecha en que usted se mudó de la propiedad adquirida por Caltrans, **O**

(2) La fecha en que Caltrans le pagó los costos de adquisición de su propiedad actual (usualmente al cierre de escritura de la adquisición del Estado.)

Usted no será elegible para recibir ningún pago de reubicación hasta que haya hecho la primera oferta escrita para comprar la propiedad. Además, usted recibirá al menos una noticia por escrito 90 días antes de tener que mudarse.

OPCIÓN PARA ENGANCHE

El pago de Diferencia para Rentar puede – con ciertas limitaciones – ser convertido en una **Opción para Enganche** para asistirle en la compra de una propiedad de restitución. La Opción para Enganche es una conversión directa del pago de la diferencia para rentar.

Si la diferencia para rentar es calculada entre $0 y $5,250, su Opción Para Enganche será de $5,250 la cual puede ser usada para la compra de una vivienda de restitución decente, segura y sanitaria.

Si la diferencia para rentar es más de $5,250 usted podrá convertir la cantidad completa de diferencia para rentar a una Opción Para Enganche.

La Opción Para Enganche debe de ser usada para el enganche requerido, la cual usualmente es un porcentage del precio total de compra, más cualquier gasto incidental elegible (vea la página 14, “Gastos Incidentales para Dueños Ocupantes de 180 días”) relacionado con la compra de la propiedad. Usted debe trabajar junto con su Agente de Reubicación para asegurarse de que puede utilizar la cantidad total de su Opción Para Enganche en su compra.

Si alguna porción de la diferencia para rentar fue usada antes de su decisión de convertirla a una Opción Para Enganche, los pagos avanzados serán deducidos de los beneficios completos.

CASA DEL ÚLTIMO RECURSO

En la mayoría de los proyectos de Caltrans, existe una cantidad adecuada de viviendas de venta y alquiler, y los beneficios serán suficientes para que usted pueda reubicarse a una vivienda comparable. Sin embargo, en ciertas localidades pueden haber proyectos donde el número de viviendas disponibles no son suficientes para proveer viviendas a todas las personas desplazadas. En estos casos, Caltrans utiliza un método llamado Casa del Último Recurso. La Casa del Último Recurso permite a Caltrans construir, rehabilitar, o modificar viviendas para cumplir con las necesidades de las personas desplazadas por un proyecto. Caltrans puede también pagar arriba de los límites legales de $5,250 y $22,500 para hacer posible viviendas con precios razonables.

Asistencia de Consulta Para Reubicación

A cualquier individuo, familia, negocio u operación agrícola desplazada por Caltrans deberá ofrecérsele servicios de asistencia con el propósito de localizar una propiedad de restitución. Los servicios de reubicación son proveídos por empleados calificados de Caltrans. Es la meta de ellos y el deseo de estos empleados de servirle y asistirle de cualquier manera posible para ayudarle a reubicarse exitosamente.

Un Agente de Reubicación de Caltrans se pondrá en contacto con usted personalmente. Los servicios de reubicación y pagos se le explicarán de acuerdo con su elegibilidad. Durante la entrevista inicial, sus necesidades de vivienda y deseos se determinarán así como sus necesidades de asistencia. No se le puede pedir que se mude a menos que una vivienda comparable de restitución le sea disponible.

Usted puede esperar recibir los siguientes servicios, consejos y asistencia de su Agente de Reubicación quien le:

- Explicará los beneficios de reubicación y los requesitos de elegibilidad.
- Proveerá por escrito la cantidad de pago por su vivienda de restitución.
- Asegurará la disposición de una propiedad comparable antes de que se mude.
- Inspeccionará las posibles unidades residenciales de restitución para el cumplimiento de DS&S.

- Proveerá información y aconsejará como puede obtener ayuda para minimizar las adversidades en ajustarse a su nueva localidad.
- Ayudará en completar los documentos de préstamos, aplicaciones de rentas o las Formas de Reclamo para Reubicación.

Y proveerle información de:

- Seguro de Depósitos
- Taza de intereses y términos
- Pagos típicos de enganches
- Requisitos de préstamos de la Administración de Veteranos (VA) y la Administración de Vivienda Federal (FHA)
- Impuestos sobre bienes raíces
- Literatura de educación en viviendas para el consumidor

Si usted lo desea, el Agente de Reubicación le dará una lista actual de otras viviendas de restitución disponibles.

Se proveerá transportación para inspeccionar viviendas disponibles, especialmente si usted es mayor de edad o con impedimiento físico. Aunque usted puede utilizar los servicios de un agente de bienes raíces, Caltrans no lo podrá referir.

Su Agente de Reubicación está familiarizado con los servicios proveídos por otras agencias de su comunidad y le proveerá información de otros programas de viviendas federales, estatales y locales que ofrecen programas de asistencia para personas desplazadas. Si usted tiene algun problema especial, su Agente de Reubicación hará su mejor esfuerzo para asegurarle los servicios de esas agencias con personal capacitado y con experiencia que le ayudarán.

Si el proyecto de transportación requiere un número considerable de personas que sean reubicados, Caltrans establecerá una Oficina Temporal de Reubicación en, o cerca del proyecto. Las oficinas de proyectos de reubicación deberán de abrirse durante horas convenientes y en horas tempranas de la noche, si es necesario.

Además de estos servicios, Caltrans es requirido que coordine las actividades de otras agencias que causen desplazamientos para asegurar que todas esas personas desplazadas reciban beneficios de reubicación equitativos y consistentes.

Recuerde – SU AGENTE DE REUBICACIÓN está para aconsejarle y asistirle. No vacile en hacer preguntas, y asegúrese de que entiende completamente sus derechos y beneficios de reubicación disponibles.

SUS DERECHOS COMO UNA PERSONA DESPLAZADA

Todas las personas elegibles como personas desplazadas tienen la libertad de escoger dentro de la selección de viviendas de restitución, y Caltrans no requerirá a ninguna persona que sea desplazada que acepte una vivienda de restitución proveída por Caltrans. Si usted decide no aceptar la vivienda de restitución ofrecida por Caltrans, usted puede elegir una vivienda de restitución de su propia selección, mientras que cumple con los requisítos de DS&S. Caltrans no pagará más que los beneficios calculados por una vivienda de restitución.

Lo más importante que usted debe de recordar es que la vivienda de restitución que usted seleccione debe de llenar los requisítos básicos de "decente, segura y sanitaria". No ejecute los documentos de compra o el contrato de renta hasta que un representante de Caltrans haya inspeccionado y certificado por escrito que la vivienda que usted se propone ocupar cumple con los requisítos básicos. **NO ARRIESGUE** su derecho de recibir los pagos de vivienda de restitución por mudarse a una vivienda que no sea "decente, segura y sanitaria."

Es importante recordar que sus beneficios de reubicación no van a tener ningún efecto adverso en su:

- Elegibilidad para Seguro Social
- Elegibilidad para Asistencia Social
- Impuestos sobre ingresos

Además, el Título VIII de los Derechos Civiles, Ley de 1968 y luego otras leyes y enmiendas hacen descriminatoria la práctica de compra y renta de unidades de vivienda si es basada ilegalmente en la raza, color, religión, sexo u origen nacional.

Cuando sea posible, a personas de minorías se les debe de dar oportunidades razonables para reubicarse a viviendas de restitución que sean decentes, seguras y sanitarias, no localizadas en áreas de concentración de minorías, y que estén dentro de sus recursos económicos. Esta política, sin embargo, no requiere que Caltrans provea a una persona pagos más grandes de lo que sean necesarios para permitir que la persona sea reubicada a una vivienda de restitución comparable.

La política No-Descriminatoria de Caltrans asegura que todos los servicios y/o los beneficios deben de ser administrados al público en general sin importar la raza, color, origen nacional, o sexo en cumplimiento con el Título VI de la Ley de Derechos Civiles de 1964 (42 USC 2000 d. et seq.)

Usted siempre tendrá el Derecho de Apelar cualquier decisión hecha por Caltrans relacionada a los beneficios de reubicación y elegibilidad.

Su Derecho de Apelar está garantizado en la “Ley Uniforme” la cual establece que una persona puede apelar al jefe de la agencia responsable, si ella cree que la agencia ha fallado en determinar correctamente su elegibilidad, o la cifra del pago autorizado por la Ley.

Si usted indica su disatisfacción, ya sea verbalmente o por escrito, Caltrans le asistirá en hacer su demanda de apelación y le explicará el procedimiento que debe de seguir. Usted tiene derecho de ser representado por un asesor legal u otro representante en conexión con su apelación (pero solamente por su propia cuenta.)

Caltrans considerará toda justificación y materia pertinente que usted entregue u otra información disponible, necesaria para asegurar una audiencia equitativa. Caltrans le proveerá una determinación por escrito del resultado de su apelación, con una explicación sobre la base de la decisión. Si usted aún no está satisfecho con la decisión otorgada, Caltrans le aconsejará que usted puede pedir una audiencia judicial.

Noticiero de la Ley para Americanos con Incapacidades Físicas (ADA):

> **Para personas con incapacidades físicas, este documento es disponible en formatos alternativos. Para Información llame al número (916) 654-5413 Voz, CRS: 1-800-735-2929, o escriba a Derecho de Vía, MS 37, 1120 N Street, Sacramento, CA 95814.**

NOTAS

Appendix E Farmlands Documentation

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 12/8/08
Name Of Project 4-Sol-80, I-80, I-680, SR12 Interchange Project	Federal Agency Involved Federal Highway Administration
Proposed Land Use New Highway Right of Way	County And State Solano County, California
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 12/8/08

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form)*	Yes ☑	No ☐	Acres Irrigated 171,000 / Average Farm Size 351
Major Crop(s) Pasture, Orchard, Row Crop	Farmable Land In Govt. Jurisdiction Acres: 233,000 % 40		Amount Of Farmland As Defined In FPPA Acres: 101 Available %
Name Of Land Evaluation System Used CA. Storie	Name Of Local Site Assessment System None		Date Land Evaluation Returned By NRCS 1/9/09

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	136.9	118.8		
B. Total Acres To Be Converted Indirectly	0	0		
C. Total Acres In Site	~~0.0~~ 136.9	~~0.0~~ 118.8	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	101.4	96.9		
B. Total Acres Statewide And Local Important Farmland	38.8	15.7		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.00057	0.00061		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	9			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0 63.3	0 66.7	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b))*	Maximum Points				
1. Area In Nonurban Use		6	6		
2. Perimeter In Nonurban Use		4	4		
3. Percent Of Site Being Farmed		2	2		
4. Protection Provided By State And Local Government		20	20		
5. Distance From Urban Builtup Area		N/A	N/A		
6. Distance To Urban Support Services		N/A	N/A		
7. Size Of Present Farm Unit Compared To Average		0	0		
8. Creation Of Nonfarmable Farmland		10	10		
9. Availability Of Farm Support Services		5	5		
10. On-Farm Investments		18	18		
11. Effects Of Conversion On Farm Support Services		1	1		
12. Compatibility With Existing Agricultural Use		5	5		
TOTAL SITE ASSESSMENT POINTS	160	0 71	0 71	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0 63.3	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0 71	0 71	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0 134.3	0 137.7	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5231
FAX (510) 286-5600
TTY 711

Flex your power!
Be energy efficient!

May 20, 2009

Mr. Dennis J. O'Bryant, Program Manager
California Department of Conservation
c/o Division of Land Resource Management
801 K Street, MS 18-01
Sacramento, CA 95814

Subject: Notification of the I-80/I-680/SR 12 Interchange Project

Dear Mr. O'Bryant:

In accordance with Government Code Section 51291(b), this letter serves as notification of the possible acquisition of a portion of a conservation easement for the proposed I-80/I-680/SR 12 Interchange Project in Solano County. The purpose and need of this project is to reduce existing and future traffic congestion by increasing capacity of the facility from two lanes to four lanes and by either constructing ramps on SR 12E to serve Beck Avenue and Pennsylvania Avenue, or by re-aligning I-680 to the west to connect with the I-80/SR 12W interchange. The western boundary of the proposed project is on Jameson Canyon Road, just west of Red Top Road in the city of Fairfield. The eastern boundary exists to the east of Pennsylvania Avenue in Suisun City. This boundary reaches the railroad track used for Amtrak in Suisun City. The enclosed exhibits, Attachment A and Attachment B, show the project location and project area respectively. For a detailed project description please refer to Attachment C of this letter.

There are two alternatives being considered, Alternative B and Alternative C (see Attachment D and Attachment E). Both alternatives would require the acquisition of land from 4 parcels currently under the Williamson Act contracts (Table 1, Attachment F). These four parcels amount to 406 acres. Caltrans proposes to acquire 96.8 acres from these parcels to be converted into permanent transportation use.

Table 1: Williamson Act Contracts in the Project Area

Contract Number	APN	Total Acres in Contract	Acres Removed from Contract
739	0027-251-330	78.9	61.9
	0027-271-060		18.0
97	0148-260-010	268.8	9
	0148-270-010		0.2
1100	0148-270-340	42.2	
2	0150-270-050	16.1	7.7
Total		406	96.8

Source: Solano Land Trust, 2007.

Although design refinements may further reduce the project footprint, impacts to Williamson Act contract lands cannot be completely avoided because of the scale of needed improvements on the I-80/I-680/SR 12 Interchange Project. Based on this consideration, Caltrans has determined that use of other non-contract land is not reasonably foreseeable for the proposed public improvement.

Due to the small size of the proposed acquisitions in each alternative, production on the Williamson Act parcels would not be significantly affected. Furthermore, affected areas are generally on the periphery of the agricultural properties; therefore, no significant acreage of farmland would become non-productive because of interference with land patterns. The project design is taking steps to accommodate the need of landowners for ingress and egress to their properties, both during construction and long-term.

Caltrans requests you review of this notification and your comments. If you have questions or comments on this notification, please contact Howell Chan of my staff at (510) 286-5623, howell_chan@dot.ca.gov, or me at (510) 286-5231, Melanie_brent@dot.ca.gov.

Sincerely,

Melanie Brent

MELANIE BRENT
District Office Chief
Office of Environmental Analysis

Enclosures:

Attachment A: Project Location Map
Attachment B: Project Area Map
Attachment C: Project Description
Attachment D: Alternative B Map
Attachment E: Alternative C Map
Attachment F: Williamson Act Contract Map

DEPARTMENT OF CONSERVATION

DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • **FAX** 916 / 327-3430 • **TDD** 916 / 324-2555 • **WEBSITE** conservation.ca.gov

TO: Melanie Brent, District Office Chief
Department of Transportation
Office of Environmental Analysis

FROM: Dan Otis, Program Manager
Williamson Act Program
Division of Land Resource Protection
Department of Conservation

DATE: July 8, 2009

SUBJECT: Notification of the I-80/I-680/State Route (SR) Interchange Project

Thank you for your letter notifying the Department of Conservation (Department) of the Department of Transportation's (Caltrans) possible acquisition of portions of six parcels of land restricted by a Williamson Act contract for the construction of a state highway interchange project to reduce existing and future traffic congestion in Solano County. This project will involve the following contracted parcels:

Williamson Act Contracts in the Project Area

Contract Number	Parcel Number	Total Acres	Acres to be Removed from Contract
739	0027-251-330	78.9	61.9
739	0027-271-060		18.0
97	0148-260-010	268.8	9
97	0148-270-010		0.2
1100	0148-270-340	42.2	
2	0150-270-050	16.1	7.7
	TOTAL	**406**	**96.8**

Project Location

The project area is divided into three segments: western, central, and eastern. The western segment begins just west of the I-80/Red Top Road interchange and ends at the I-80/ Suisun Valley Road interchange. The central segment begins at the I-80 Suisun Valley Road interchange and ends at the SR12E/Chadbourne Road interchange. The eastern segment begins at the SR12E Chadbourne Road interchange and ends at the Fairfield Overhead where SR12E crosses over the Union Pacific Railroad (UPRR) tracks just west of Suisun City. The western boundary of the proposed project is on Jameson Canyon Road, just west of Red Top Road in the City of Fairfield. The eastern boundary exists to the east of Pennsylvania Avenue in Suisun City. This boundary reaches the railroad track used for Amtrak in Suisun City.

Project Description

Caltrans proposes to acquire 96.8 acres from several parcels to be converted into permanent transportation use. The project would construct an interchange to reduce existing and future traffic congestion by constructing ramps on SR 12E to serve Beck Avenue and Pennsylvania Avenue, or by re-aligning I-680 to the west to connect with I-80/SR 12W interchange. Caltrans is considering two full-build alternatives (Alternatives B and C) for the construction of the project. Both projects require the acquisition of land from four parcels.

The Williamson Act requires that public agencies shall not locate public improvements in agricultural preserves unless the following specific findings can be made (Government Code § 51292):

- *"The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve* (§51292(a))."
- *"If the land is agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement* (§51292(b))."

One of the limited exceptions to required findings is for "…All state highways on routes as described in Sections 301 to 622, inclusive, of the Streets and Highways Code…" (Gov. Code §51293, subd. (3)(g).). The information in your notice appears to indicate that this project qualifies for this exception. Therefore, the Department has determined that the findings required by Government Code §51292 do not apply in this case.

Please be advised that, pursuant to Government Code §51291(d), the Department must be notified of any proposed, significant changes to the project. The Department must also be notified when the property is actually acquired (Gov. Code §51291(c)). If Caltrans determines not to locate the proposed public improvement on the purchased subject property, before returning the land to private ownership, it must notify the Department. The land shall be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Gov. Code §51295). The local jurisdiction administering the preserve should also be notified, when notice is provided to the State. If you have any questions, please contact Jacquelyn Ramsey, Environmental Planner, at (916) 323-2379.

cc: The Honorable Skip Thomson
Solano County Assessor
600 Texas Street
Fairfield, CA 94533-6386

Solano County Board of Supervisors
Old County Courthouse
580 Texas Street
Fairfield, CA 94533

Appendix F Threatened and Endangered Species List

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

March 26, 2010

Document Number: 100326104404

Stephanie Myers
ICF International
630 K Street
Suite 400
Sacramento, CA 95814

Subject: Species List for Interstate 80/Interstate 680/State Route 12 Interchange Project

Dear: Ms. Myers

We are sending this official species list in response to your March 26, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 24, 2010.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 100326104404

Database Last Updated: December 1, 2009

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio

Conservancy fairy shrimp (E)

Critical habitat, Conservancy fairy shrimp (X)

Branchinecta lynchi

Critical habitat, vernal pool fairy shrimp (X)

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Elaphrus viridis

Critical habitat, delta green ground beetle (X)

delta green ground beetle (T)

Lepidurus packardi

Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Speyeria callippe callippe

callippe silverspot butterfly (E)

Speyeria zerene myrtleae

Myrtle's silverspot butterfly (E)

Syncaris pacifica

California freshwater shrimp (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Eucyclogobius newberryi

tidewater goby (E)

Hypomesus transpacificus

Critical habitat, delta smelt (X)

delta smelt (T)

Oncorhynchus kisutch

coho salmon - central CA coast (E) (NMFS)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)

Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana aurora draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Strix occidentalis caurina
northern spotted owl (T)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Plants

Blennosperma bakeri
Baker's stickyseed [=Sonoma Sunshine] (E)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Cirsium hydrophilum var. hydrophilum
Suisun thistle (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Lasthenia conjugens

Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)

Orcuttia inaequalis
San Joaquin Valley Orcutt grass (T)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Tuctoria mucronata
Solano grass (=Crampton's tuctoria) (E)

Proposed Species

Amphibians

Rana aurora draytonii
Critical habitat, California red-legged frog (PX)

Plants

Cirsium hydrophilum var. hydrophilum
Critical habitat, Suisun thistle (PX)

Cordylanthus mollis ssp. mollis
Critical habitat, soft bird's-beak (PX)

Quads Containing Listed, Proposed or Candidate Species:

BIRDS LANDING (481A)
DENVERTON (481B)
HONKER BAY (481C)
FAIRFIELD SOUTH (482A)
CORDELIA (482B)
BENICIA (482C)
VINE HILL (482D)
CUTTINGS WHARF (483A)
SEARS POINT (483B)
MARE ISLAND (483D)
ALLENDALE (498B)
ELMIRA (498C)
DOZIER (498D)
MT. VACA (499A)
MT. GEORGE (499C)
FAIRFIELD NORTH (499D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed 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.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding,

feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined

by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be June 24, 2010.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Sacramento Area Office
650 Capitol Mall, Suite 8-300
Sacramento, California 95814-4706

January 18, 2006 In response refer to:
151422SWR2005SA00822:JCB

Martin Koenig
Jones & Stokes
2600 V Street
Sacramento, California 95818-1914

Dear Mr. Koenig:

Thank you for your letter of November 6, 2005, requesting that NOAA's National Marine Fisheries Service (NMFS) provide a list of threatened, endangered, or special status species that may be affected by the proposed California Department of Transportation (CALTRANS) Interstate 80 (I-80) High Occupancy Vehicle (HOV) project. The proposed action is to install HOV lanes on I-80 between State Route 12 West and Airbase Parkway in central Solano County, California.

The following is a list of species under the jurisdiction of NMFS that are presently listed under the Federal Endangered Species Act (Act), as well as those that are proposed for listing, candidate species and species of concern which are likely to be present in the CALTRANS I-80 HOV project area:

Endangered: None

Threatened: California Central Coast steelhead (*Oncorhynchus mykiss)*

Candidate: None

Species of Concern: Central Valley fall/late fall-run Chinook salmon (*O. tshawytscha)*

Designated Critical Habitat: None

While the candidates and Species of Concern presently have no legal protection under the Act, it is within the spirit of the Act to consider project impacts to potentially sensitive species of concern.

Also, we wish to make you aware the Pacific Fisheries Management Council has identified Essential Fish Habitat (EFH) for the Pacific salmon fishery in Amendment 14 to the Pacific Coast Salmon Fishery Management Plan. This EFH designation includes habitat found in the Suisun Bay Hydrologic Unit (18050001).

Please contact John Baker at (916) 930-3616, or via e-mail at john.baker@noaa.gov if you have any questions about this project or need additional information.

Sincerely,

Michael E. Aceituno
Supervisor, Sacramento Area Office

Appendix G Native Trees Mapped in the Study Area

Native Trees Mapped in the Study Area

ID*	Species	TOTAL DBH (from multiple stems)	DBH1_in	DBH2_in	DBH3_in	DBH4_in	DBH5_in	DBH6_in	DBH7_in	DBH8_in	Drip_diam_	Height_ft	Vigor
1	Coast Live Oak	8	8	0	0	0	0	0	0	0	15	20	Good
2	Coast Live Oak	12	12	0	0	0	0	0	0	0	15	25	Good
3	Coast Live Oak	43	18	25	0	0	0	0	0	0	25	35	Good
4	Valley Oak	14	6	8	0	0	0	0	0	0	12	22	Good
5	Valley Oak	8	8	0	0	0	0	0	0	0	8	20	Good
6	Coast Live Oak	17	17	0	0	0	0	0	0	0	20	32	Good
7	Valley Oak	7	7	0	0	0	0	0	0	0	7	21	Good
8	Valley Oak	26	26	0	0	0	0	0	0	0	18	35	Good
9	Coast Live Oak	16	16	0	0	0	0	0	0	0	15	30	Good
10	Coast Live Oak	27	27	0	0	0	0	0	0	0	20	35	Good
11	Coast Live Oak	15	15	0	0	0	0	0	0	0	18	30	Good
12	Coast Live Oak	18	8	10	0	0	0	0	0	0	18	28	Good
13	Coast Live Oak	11	11	0	0	0	0	0	0	0	15	25	Good
14	Coast Live Oak	17	7	10	0	0	0	0	0	0	18	25	Good
15	Coast Live Oak	29	29	0	0	0	0	0	0	0	22	35	Good
16	Coast Live Oak	32	32	0	0	0	0	0	0	0	25	35	Good
17	Coast Live Oak	30	30	0	0	0	0	0	0	0	25	35	Good
18	Coast Live Oak	27	27	0	0	0	0	0	0	0	25	35	Good
19	Coast Live Oak	28	6	4	4	5	5	4	0	0	20	22	Good
20	Coast Live Oak	18	9	3	6	0	0	0	0	0	15	22	Good
21	Coast Live Oak	20	20	0	0	0	0	0	0	0	17	30	Good
22	Coast Live Oak	19	19	0	0	0	0	0	0	0	17	30	Good
23	Coast Live Oak	30	22	4	4	0	0	0	0	0	17	30	Good
24	Coast Live Oak	32	32	0	0	0	0	0	0	0	17	32	Good
25	Valley Oak	80	80	0	0	0	0	0	0	0	45	60	Good
26	Coast Live Oak	42	10	29	3	0	0	0	0	0	18	30	Good
27	Coast Live Oak	29	6	14	9	0	0	0	0	0	18	30	Good
28	Coast Live Oak	10	10	0	0	0	0	0	0	0	12	25	Good
29	Coast Live Oak	9	9	0	0	0	0	0	0	0	12	20	Good
30	Coast Live Oak	82	32	20	30	0	0	0	0	0	25	35	Good
31	Coast Live Oak	38	15	8	15	0	0	0	0	0	17	35	Good
32	Coast Live Oak	6	6	0	0	0	0	0	0	0	12	28	Good
33	Coast Live Oak	9	9	0	0	0	0	0	0	0	12	19	Good
34	Interior Live Oak	21	16	5	0	0	0	0	0	0	20	30	Good

Native Trees Mapped in the Study Area

ID*	Species	TOTAL DBH (from multiple stems)	DBH1_in	DBH2_in	DBH3_in	DBH4_in	DBH5_in	DBH6_in	DBH7_in	DBH8_in	Drip_diam_	Height_ft	Vigor
35	Valley Oak	27	9	10	8	0	0	0	0	0	18	25	Good
36	Coast Live Oak	59	29	30	0	0	0	0	0	0	22	33	Good
37	Coast Live Oak	62	29	33	0	0	0	0	0	0	25	35	Good
38	Coast Live Oak	17	17	0	0	0	0	0	0	0	16	30	Good
39	Coast Live Oak	6	6	0	0	0	0	0	0	0	10	25	Good
40	Coast Live Oak	6	6	0	0	0	0	0	0	0	10	20	Good
41	Coast Live Oak	12	5	7	0	0	0	0	0	0	10	20	Good
42	Coast Live Oak	40	40	0	0	0	0	0	0	0	25	35	Good
43	Coast Live Oak	23	23	0	0	0	0	0	0	0	19	28	Good
44	Coast Live Oak	23	5	5	6	7	0	0	0	0	15	20	Good
45	Coast Live Oak	17	17	0	0	0	0	0	0	0	12	22	Good
46	Valley Oak	28	28	0	0	0	0	0	0	0	20	30	Good
47	Valley Oak	19	13	6	0	0	0	0	0	0	16	25	Good
48	Coast Live Oak	20	14	6	0	0	0	0	0	0	16	25	Good
49	Interior Live Oak	60	22	38	0	0	0	0	0	0	20	33	Good
50	Valley Oak	52	22	30	0	0	0	0	0	0	20	35	Good
51	Valley Oak	78	25	20	17	7	9	0	0	0	25	35	Good
52	Interior Live Oak	85	32	10	27	7	9	0	0	0	30	40	Good
53	Valley Oak	79	35	44	0	0	0	0	0	0	30	40	Good
54	Interior Live Oak	65	50	15	0	0	0	0	0	0	30	45	Good
55	Interior Live Oak	100	50	50	0	0	0	0	0	0	30	45	Good
56	Valley Oak	39	39	0	0	0	0	0	0	0	32	44	Good
57	Interior Live Oak	14	14	0	0	0	0	0	0	0	18	30	Good
58	Interior Live Oak	18	18	0	0	0	0	0	0	0	15	30	Good
59	Interior Live Oak	16	16	0	0	0	0	0	0	0	15	30	Good
60	Interior Live Oak	20	20	0	0	0	0	0	0	0	20	30	Good
61	Interior Live Oak	22	22	0	0	0	0	0	0	0	21	32	Good
62	Interior Live Oak	59	59	0	0	0	0	0	0	0	30	50	Good
63	Interior Live Oak	79	20	15	14	21	9	0	0	0	32	40	Good
64	Valley Oak	65	65	0	0	0	0	0	0	0	30	50	Good
65	Interior Live Oak	18	18	0	0	0	0	0	0	0	22	35	Good
66	Valley Oak	35	35	0	0	0	0	0	0	0	25	40	Good
67	Valley Oak	30	30	0	0	0	0	0	0	0	25	40	Good
68	Valley Oak	7	7	0	0	0	0	0	0	0	6	24	Good

Native Trees Mapped in the Study Area

ID*	Species	TOTAL DBH (from multiple stems)	DBH1_in	DBH2_in	DBH3_in	DBH4_in	DBH5_in	DBH6_in	DBH7_in	DBH8_in	Drip_diam_	Height_ft	Vigor
69	Interior Live Oak	29	7	22	0	0	0	0	0	0	15	30	Good
70	Valley Oak	18	18	0	0	0	0	0	0	0	15	30	Good
71	Valley Oak	40	40	0	0	0	0	0	0	0	22	36	Good
72	Interior Live Oak	159	51	72	36	0	0	0	0	0	30	50	Good
73	Valley Oak	6	6	0	0	0	0	0	0	0	6	18	Good
74	Valley Oak	10	10	0	0	0	0	0	0	0	6	22	Good
75	Interior Live Oak	5	5	0	0	0	0	0	0	0	6	19	Good
76	Valley Oak	5	5	0	0	0	0	0	0	0	6	15	Good
77	Valley Oak	18	18	0	0	0	0	0	0	0	20	30	Good
78	Valley Oak	18	18	0	0	0	0	0	0	0	20	30	Good
100	Interior Live Oak	10	10	0	0	0	0	0	0	0	12	20	Fair
101	Interior Live Oak	7	7	0	0	0	0	0	0	0	12	17	Fair
102	Interior Live Oak	5	5	0	0	0	0	0	0	0	4	9	Fair
103	Interior Live Oak	7	4	3	0	0	0	0	0	0	4	9	Fair
104	Interior Live Oak	8	8	0	0	0	0	0	0	0	15	30	Fair
105	Interior Live Oak	11	11	0	0	0	0	0	0	0	15	35	Fair

*ID refers to tree numbers shown on Figures 3-1 and 3-2.

Removed for the eastbound Cordelia truck scales project.

Appendix H Agency Consultation

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO

JUL 09 2009

Regulatory Division

SUBJECT: File Number SPN-2007-400401 N

Mr. Jeffery Jensen
Division of Biological Sciences and Permits
California Department of Transportation
Post Office Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This letter is written in response to your submittal of March 20, 2008, requesting confirmation of the extent of Corps of Engineers jurisdiction for the Interstate 80/Interstate 680/State Route 12 Interchange Project in Solano County, California.

Enclosed are maps showing the extent and location of Corps of Engineers jurisdiction. We have based this jurisdictional delineation on the current conditions on the site as verified during site visits performed by our staff on January 6, 2009, January 7, 2009, and April 1, 2009. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

ORIGINAL SIGNED
BY Jameson Johnson
~~ACTING~~ CHIEF, REG. DIV., SOUTH BR.
FOR
Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies furnished (with wetland delineation maps to follow via email):

CA RWQCB, Oakland, CA
CA SWRCB, Sacramento, CA
US EPA, San Francisco, CA
US FWS, Sacramento, CA

CF:

CESPN-R (Rdg File)

AM
MEIER
CESPN-R
-6798
06/24/09

MARTEL
CESPN-R

JOHNSON
CESPN-R-S 7/2/09

HICKS
CESPN-R
JUL 09 2009

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

Regulatory Division

DEC 31 2009

SUBJECT: File Number SPN-2007-400401 S

Ms. Melanie Brent
Office of Environmental Analysis
California Department of Transportation, District 4
PO Box 23660
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your invitation to become a cooperating agency for the preparation of an environmental impact statement (EIS) for the Interstate 80/Interstate 680/State Route 12 Interchange Project in accordance with the SAFETEA-LU authority. We would like to accept your invitation to become a cooperating agency during the development of the EIS for this project.

We would like to take this opportunity to emphasize that one of our greatest concerns is cumulative impacts to waters of the U.S. in the I-80/I-680/SR-12 corridor from transportation projects, residential development, and commercial/industrial development. As a cooperating agency, we will be encouraging a thorough evaluation of cumulative impacts to waters of the U.S. in this area, that we hope will include those areas of concern presented in our August 6, 2009 letter.

As a part of your standard permit application package, we will require that you provide information to perform an alternatives analysis to satisfy our requirements in the Clean Water Act Section 404(b)(1) Guidelines. The information and analysis needed can be incorporated into your EIS or it can be completed as a separate document. We look forward to assisting you in guiding your collection of pertinent information and guiding you through the 404(b)(1) analysis for the project.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798 or email her at andrea.j.meier@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Chief, Regulatory Division

Copy Furnished:

US EPA, San Francisco, CA

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5618
FAX (510) 286-5600
TTY (800) 735-2929

Flex your power!
Be energy efficient!

October 14, 2009

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
1416 Ninth Street, Room 1442-7
Sacramento, CA 95814

RE: Historic Property Survey Report for the I-80/I-680/SR-12 interchange project in Solano County (EA 0A5300)

Dear Mr. Donaldson:

The California Department of Transportation (Caltrans), under the authority of the Federal Highway Administration (FHWA), is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the I-80/I-680/SR-12 interchange project in Solano County. This consultation is undertaken in accordance with the January 1, 2004 *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* (PA).

Caltrans is initiating this consultation as a federal agency, following the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation concerning the state of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6004 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which allows the Secretary of Transportation to assign, and the State of California to Assume, responsibility for compliance with federal environmental laws with respect to some highway projects in California. For those projects, the state may also be assigned FHWA's responsibilities for environmental consultation and coordination under other federal environmental laws. By statute, the state is deemed to be a federal agency for these assigned responsibilities. In that this project is covered by the above referenced MOU, FHWA has assigned, and Caltrans has assumed, FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to Caltrans.

The undertaking includes improvements to the I-80/I-680/SR-12 interchange, widening of all three highways, and the relocation and expansion of the westbound truck scales on I-80.

Two full-build alternatives are being considered (alternatives B and C). Alternative B retains the current alignments for I-80 and I-680, while alternative C would realign I-680 to the west to connect directly with the I-80/SR-12W interchange. Completion of construction for the full-build alternatives is anticipated to take approximately 30 years to complete. Each of the two alternatives has a phase I component that represents a funded phase with logical termini and independent utility. The alignments and construction footprints for each full-build alternative and the phase I component of each alternative are shown on the Area of Potential Effect (APE) maps in the Historic Property Survey Report (HPSR).

Enclosed is an HPSR for this undertaking, with attached Historic Resource Evaluation Report (HRER) and Archaeological Survey Report (ASR). The HRER includes DPR forms for 210 properties, including the Village of Cordelia Historic District and 11 individual properties in Suisun City that have previously been determined eligible for inclusion on the National Register of Historic Places. The HRER concludes that five properties that were previously determined to be contributors to the Cordelia Historic District are no longer contributors. Three of these (Map Reference Numbers 7, 8, and 11) have been demolished in recent years and two (Map Ref. Nos. 26 and 31) have lost integrity due to recent alterations. The HRER also concludes that two additional properties are eligible for National Register listing:

- Neitzel Farm at 3936 Suisun Valley Road, Map Reference Number 51
- Suisun City Historic District, including most of the properties from Map Reference Number 63 through 208. The district includes 95 contributing and 36 non-contributing properties. The district boundary, with contributing and non-contributing properties indicated, is shown on Sheet 14a of the APE map.

We are consulting with you under Stipulation VIII.C.5 of the PA, and request your concurrence on the following:

- Properties 26 and 31 are no longer contributors to the Cordelia Historic District
- Property 51 and the Suisun City Historic District are eligible for inclusion on the National Register of Historic Places.
- The remaining properties that have not previously been evaluated are ineligible for National Register listing.

As discussed in the Archaeological Survey Report, two archaeological resources were identified within the APE through archival research. The included sensitivity assessment identified large areas of the APE as highly sensitive for buried resources. Because the recorded sites and sensitive zones are located in areas covered by pavement and sidewalks, the presence of the two known resources and any buried resources within the project footprint cannot be determined at this time. Limited access to these areas, the high potential for buried archaeological resources, the number of alternatives under consideration, and long timeframe for the ultimate build-out pose formidable challenges to completing the identification of potential archaeological properties within the APE. We propose that identification and evaluation of archaeological properties within the APE, and any necessary resolution of adverse effects upon those properties, be provided for in a programmatic agreement specific to this undertaking.

It is anticipated that a Historic Properties Treatment Plan (HPTP), including a detailed protocol for

identification, evaluation, and treatment of any affected historic properties, will be developed and attached to the programmatic agreement. The HPTP will also include protocols for archaeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking.

If you have any questions or need any additional information, please do not hesitate to contact architectural historian Andrew Hope at (916) 654-5611 or archaeologist Brett Rushing at (510) 286-6336.

Sincerely,

JENNIFER DARCANGELO For
Chief, Office of Cultural Resource Studies
California Department of Transportation
District 4

Enclosure: HPSR with HRER and ASR

c: Jill Hupp, Cultural and Community Studies Office, Caltrans Headquarters

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

March 20, 2010 Reply To: FHWA091021B

Jennifer Darcangelo
Chief, Office of Cultural Resource Studies
Caltrans District 4
PO Box 23660
Oakland, CA 94623-0660

Re: Determinations of Eligibility for the Proposed I-80/I-680/SR-12 Interchange Project in Solano, CA

Dear Ms. Darcangelo:

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):

- Claus & Henry Mangels Sheep Barn and Ranch, Fairfield, CA
- Utility Buildings, 0148260040, Fairfield, CA
- 3360 Ramsey Road, Fairfield, CA
- 2172 Bridgeport Avenue, Cordelia, CA
- 3607 Ritchie Road, Fairfield, CA
- 3605 Thompson Court, Fairfield, CA
- 3617 Ritchie Road, Fairfield, CA
- 3621 Ritchie Road, Fairfield, CA
- Utility Building, 004-530-0030, Fairfield, CA
- Cordelia Truck Scales, Fairfield, CA
- 2543/2547 Cordelia Road, Cordelia, CA
- Irrigation Ditch adjacent to APN 0027272180
- 4012 Russel Road, Fairfield, CA
- 2621 Cordelia Road, Cordelia, CA
- 4015 Hale Ranch Road, Fairfield, CA
- 2814 Rockville Road, Fairfield, CA
- 2818 Rockville Road, Fairfield, CA
- 260 Benton Court, Suisun City, CA
- 212 Sacramento Street, Suisun City, CA
- 216 Sacramento Street, Suisun City, CA
- 520 School Street, Suisun City, CA
- 302, 304 Sacramento Street, Suisun City, CA
- 515 Suisun Street, Suisun City, CA
- 306 Sacramento Street, Suisun City, CA
- 701 West Street, Suisun City, CA
- 705 West Street, Suisun City, CA
- 201 California Street, Suisun City, CA
- 205 California Street, Suisun City, CA
- 806 West Street, Suisun City, CA
- 808 West Street, Suisun City, CA
- 206 Morgan Street, Suisun City, CA
- 1012 Suisun Street, Suisun City, CA
- 1009 Main Street, Suisun City, CA
- 1013 Main Street, Suisun City, CA
- 510 Cordelia Road, Suisun City, CA
- 516 Cordelia Road, Suisun City, CA
- 519 Line Street, Suisun City, CA

Based on my review of the submitted documentation, I concur with the above determinations.

Caltrans is also requesting my concurrence that 2100 Bridgeport Avenue and 2124 Bridgeport Avenue no longer contribute to the *Village Cordelia Historic District* due to substantial alterations that have diminished the historic integrity of the buildings. I concur.

Caltrans determined that the property located at 3936 Suisun Valley Road is eligible for the NRHP. I cannot concur with this determination based on additional information that the buildings on the property are no longer extant.

Caltrans is also requesting my concurrence that the Suisun City Historic District is eligible for the NRHP under criterion A, at the local level of significance, in the area of community development during the period of 1880-1934, and under Criterion C in the area of architecture. The district reflects distinctive examples of late nineteenth and early twentieth century architecture. I concur.

Caltrans also proposes that identification and evaluation of archeological properties within the APE, and any resolution of adverse effects on those properties, be provided for in a programmatic agreement (PA) specific to this undertaking. An attachment to the PA will include a Historic Properties Treatment Plan (HPTP) to be developed that will include a detailed protocol for identification, evaluation and treatment of any affected historic properties. The HPTP will also include protocols for archeological monitoring, and evaluation and treatment of unanticipated discoveries that may be encountered during implementation of the undertaking. I agree that the PA and HPTP are appropriate for this situation.

Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist of my staff at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov or Dwight Dutschke at (916) 653-9134 or e-mail at ddutschke@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
CALIFORNIA DIVISION
980 Ninth Street, Suite 400
Sacramento, CA 95814-2724

ARIZONA
CALIFORNIA
NEVADA
HAWAI'I
GUAM
AMERICAN SAMOA
N. MARIANA IS.

April 13, 1998

IN REPLY REFER TO
HA-CA
File #: 540-General Hydraulics
Document #: S19056

Mr. James W. van Loben Sels, Director
CALTRANS, 1120 N Street
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500
for Mr. Robert L. Buckley

Dear Mr. van Loben Sels:

SUBJECT: FLOODING ON MAJOR FACILITIES

The Federal Highway Administration (FHWA) is concerned with recent partial and full closures of major facilities during this year's winter storms in that storm intensities did not appear great enough, yet caused flooding and closures on some major facilities including the Interstate System which should be capable of passing a 50-year flood event without encroachment of through lanes.

FHWA sees this as an opportunity to focus on those facilities which experienced this type of flooding by performing engineering studies to determine the need for improvements to meet current capacity standards and to repair the conditions that contributed to closures. Some examples of impacted facilities include I-680 near Marina Vista, State Route 4 near Loveridge, I-80 at Redtop Road Slide, State Route 101 at Lucky Drive in Marin County, Interstate 80 between the West Texas Street and Abernathy Road exits in Fairfield, and State Route 37. Again, FHWA sees this as a great opportunity to provide solutions with construction projects that would prevent future closures during heavy winter rain periods. A good example is a recent project using lightweight fill on the I-680 undulations near the Benicia-Martinez Bridge where the facility has experienced many closures in past years.

Mr. Arlo Waddoups, our Regional Hydraulic Engineer, and the California Division Office can offer technical assistance on this matter. Should you have any questions, please call Brett Jackson at (916) 498-5852.

Sincerely,

/s/ Bradley D. Keazer

For
Jeffrey A. Lindley
Division Administrator

NEPA/404 Documentation and Correspondence

Memorandum

Flex your power!
Be energy efficient!

To: NEPA/404 Integration Participants
(See attached distribution list.)

Date: March 22, 2007

File: 04-Sol-80
EA-04-0A5300
I-80/I-680/SR 12 Interchange

From: MELANIE BRENT
Senior Environmental Planner
Office of Environmental Planning

Subject: Summary of NEPA/404 Integration MOU Checkpoint Meeting and Request for Response

I-80/I-680/SR 12 Interchange Project

NEPA/404 Integration Participants
Thursday March 15, 2007, 10 am –1:30 pm

The California Department of Transportation (Caltrans), on behalf of the Federal Highway Administration (FHWA), held a Checkpoint Meeting for the above referenced project on Thursday, March 15, 2007 at the Solano County Government Center in the City of Fairfield, from 10 am to 1:30 pm, to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of the National Environmental Policy Act (NEPA) and the Clean Water Act (CWA) Section 404, consistent with the memorandum of understanding (MOU) signed into effect in May 2006. Invitations to the meeting along with information packets were sent out on February 23, 2007.

Project History

FHWA, Caltrans, and the Solano Transportation Authority (STA) published a notice of intent (NOI) and notice of preparation (NOP) in May 2003, describing the preliminary alternatives and potential environmental effects of the project and soliciting input from agencies on the scope of the environmental impact report/environmental impact statement (EIR/EIS). A public scoping meeting was also held on May 12, 2003 to seek additional input from agencies and the public on the Draft EIR/EIS. Since that time, FHWA, Caltrans, and STA have conducted numerous field studies of the project's existing conditions and prepared maps of various constraints in the project area. The lead agencies have also prepared a detailed traffic study, a purpose and need statement, developed screening criteria, and have considered a number of preliminary alternatives.

Meeting Participants

The distribution list below shows the agencies invited to attend the Checkpoint Meeting. The following individuals attended the March 15, 2007 meeting:

1. Mike Monroe, U.S. EPA
2. Carolyn Muhlvihill, U.S. EPA
3. Hal Durio, U.S. Army Corps of Engineers
4. Brendan Thompson, San Francisco Bay Regional Water Quality Control Board
5. Leland Dong, FHWA
6. Dale Jones, Caltrans Headquarters
7. Melanie Brent, Caltrans District 4
8. Nicolas Endrawos, Caltrans District 4
9. Joe Douglas, Caltrans District 4
10. Ahmad Hashemi, Caltrans District 4
11. Janet Adams, Solano Transportation Authority
12. Dale Dennis, Solano Transportation Authority
13. Mike Lohman, Mark Thomas & Company
14. Andrea Glerum, Nolte Associates
15. Matt Henry, Fehr & Peers
16. Scott Steinwert, Circle Point
17. Chris Colwick, Circle Point
18. Maggie Townsley, Jones & Stokes
19. Lisa Webber, Jones & Stokes

A summary of the meeting is provided below. For agencies that could not attend, additional materials (i.e., hand-outs from the March 15 meeting) are enclosed in this meeting summary and request for comments.

Request for Response

Pursuant to Item 11 in Section III, *The NEPA/404 Integration Process,* in the signed NEPA/404 MOU, Caltrans is requesting the signatory federal agencies' response to:

- the Purpose and Need, and
- the alternatives proposed for inclusion in the Draft EIR/EIS.

The type of response currently requested depends on the agency and the Checkpoint—as shown below (and identified in Table 1 of the signed MOU for the *NEPA and Clean Water Act Integration Process for Federal Aid Surface Transportation Projects in California* [signed 2006]). In addition, the non-federal agencies invited to participate (i.e., the Regional Water Quality Control Board and the California Department of Fish and Game) are encouraged to provide comments on the Purpose and Need Statement and the alternatives proposed for inclusion in the Draft EIR/EIS. Table 1 summarizes the only types of response an agency may give at a checkpoint.

Table 1. Types of Response by Agency and Checkpoint

Agency	Purpose and Need	Alternatives
U.S. Corps of Engineers*	Agree/Disagree	Agree/Disagree
U.S. EPA*	Agree/Disagree	Agree/Disagree
USFWS*	Comment	Agree/Disagree
NMFS*	Comment	Comment
RWQCB	Comment	Comment
CDFG	Comment	Comment
*Identifies signatory agency.		

Next Steps

Per the NEPA/404 MOU, each agency has 30 days (i.e., by April 23, 2007) to review and provide written responses to this Request for Response. Within 90 days of April 23, 2007, Caltrans will send each agency a letter identifying the status of any issue that received a negative comment or disagreement from the agencies.

Please call me at 510.286.5231 if you have any questions. We look forward to receiving your comments by Monday, April 23. Thank you!

Distribution List

Project Sponsors

Federal Highway Administration
California Division Office
650 Capitol Mall, #4-100
Sacramento, CA 95814
Attention: Mr. Leland Dong, 916.498.5860

Federal Highway Administration
California Division Office
650 Capitol Mall, #4-100
Sacramento, CA 95814
Attention: Larry Vinzant, 916.498.5040

Caltrans District 4
111 Grand Avenue
P. O. BOX 23660
Oakland, CA 94623-0660
Attention: Melanie Brent, Office Chief, Environmental Branch, 510.286.5231

Federal Agencies

National Oceanic and Atmospheric Administration
National Marine Fisheries
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404
Attention: Gary Stern, San Francisco Bay Team Leader, 707.575.6060

U.S. Army Corps of Engineers
1455 Market Street, Regulatory Branch
San Francisco, CA 94103-1398
Attention: Jane Hicks, Project Manager, 415.977.8438

U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, CA 94103-1398
Attention: Hal Durio, Caltrans Liaison, 415.503.6785

U.S. Fish and Wildlife Service
2800 Cottage Way, Room 2605
Sacramento, CA 95825
Attention: Cay Goude, 916.414.6600

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Mail Code CED-2
Attention: Connell Dunning, Environmental Review Office, 415.947.4161

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Mail code WTR-8
Attention: Mike Monroe, Wetlands, 415.972.3453

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105
Mail code CED-2
Attention: Carolyn Mulvihill, NEPA Review, 415.972.3597

State Agencies

Regional Water Quality Control Board
SF Bay Regional Water Quality Control Board
1515 Clay St, Suite 1400
Oakland, CA 94612
Attention: Brendan Thompson, Environmental Specialist, 510.622.2506

California Department of Fish and Game
DFG, Central Coast-Region 3
P.O. Box 47
Yountville, CA 94599
Attention: Robert W. Floerke, Regional Manager, 707.944.5517

I-80/I-680/SR 12 Interchange Project

NEPA 404 MOU Checkpoint Meeting
March 15, 2007
Summary of Discussion

Caltrans, on behalf of the FHWA, hosted a Checkpoint meeting to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of NEPA, as well as CWA Section 404, consistent with the MOU signed into effect in May 2006.

The purpose of the March 15, 2007 meeting was to present an overview of the project, discuss the purpose and need, screening criteria, and preliminary alternatives, and seek input from the signatory agencies on the NEPA/404 MOU process.

This meeting summary below is intended to provide an overview of the comments and questions discussed at the meeting grouped by topic.

I. Project Background

Janet Adams of the STA provided an overview of the project background, including the project's origination in the context of the STA's Comprehensive Transportation Plan and the I-80/I0680/I-780 Major Investment and Corridor Study.

Discussion Questions:
No discussion questions.

II. Purpose and Need

Scott Steinwert of CirclePoint provided an overview of the development of the Purpose and Need statement including current and future traffic demands, deficient levels of service, traffic diversion to local roads, and accident data in the project area. Mr. Steinwert also provided an overview of the public participation during the Scoping process.

Discussion Questions:

- What are the biological differences between the primary and secondary marsh? There is no specific biological difference, but in most instances, the secondary marsh is not wet and is more of an upland environment.
- Where are potential Steelhead runs? Rivers or creeks include Suisun, Jameson, Ledgewood, and American Canyon.
- Have you found vernal pools? There are some areas that could be classified as vernal pools.

- Could you find Vernal Shrimp? Yes.

III. Alternatives Development and Screening

Maggie Townsley, of Jones & Stokes, reviewed the environmental constraints with the project area and explained how these were considered in the evaluation of alternatives. Dale Dennis of STA provided details of the alternatives development and screening process including eight (8) alternatives considered but withdrawn from further study as part of the Tier 1 analysis.

Discussion Questions

- Where is the most/greatest environmental impacts? North of I-80 there is a biological mitigation site that was created as part of a local development project, and in the area of SR 12 East there are Contra Costa goldfields as well as a large wetlands area.
- Where are the riparian sections? Riparian habitat is located along the creeks in the area. The riparian zone along each creek is very narrow due to the surrounding agricultural and suburban development patterns.
- Are any of the habitat areas in the screening matrix overlapping? Yes, some habitat may overlap such as riparian areas overlap waters of the US.
- How did you calculate the delineated acreage? The waters of the US and wetlands that have been mapped were done so through field surveys, using aerial photos and from prior delineations done in the project area for other projects. A formal delineation will be done as part of the EIS/EIR, but the approach used to-date should provide a conservative estimate.
- In the matrix, you should include vernal pools and seasonal wetlands under regulated habitat as these are under Corps jurisdiction.
- How certain are you SR 12 East will be part of the final project? In developing the project scope, it became clear that improvements would be needed on SR 12 East to ensure that traffic would not back up on SR 12 East to a point that it would affect I-80 and the Interchange. So improvements on SR 12 East have been included as part of the project. The project will most likely be built in phases, and improvements on SR 12 East would probably be built as a separate phase of the overall interchange improvements.
- Will SR 12 East eliminate the signalized intersection at Pennsylvania and the railroad? Yes.
- Suisun Creek is essential habitat for the Chinook salmon. Yes, it was inadvertently left out of the matrix.

IV. Recommended Alternatives

Mike Lohman of Mark Thomas & Company presented the four (4) Alternatives A-D, studied in the Tier 2 screening and the two (2) options for SR 12 East. Maggie Townsley reviewed the Tier 2 Screening Matrix.

Discussion Questions

- How will Alt. C affect traffic operations and how will phasing work? Alt C provides the most improvement and allows for more effective phasing due to realigning the interchange.
- What is the public's reaction to Alt B? The public has expressed concern about possibly losing the connection from 680 to SR 12 west.
- How and why are you looking at ways to connect Fairfield and Suisun City? Suisun City has expressed concern that a direct connection with Fairfield is vital for economic reasons.
- What will happen to the ramp area if Webster/Jackson ramps are removed? The existing ramps would be removed and this area would be excess right-of-way that could be used for mitigation.
- How flexible is your design for taking Meyer Way through the Goldfields? There is some flexibility in the precise alignment of Meyer Way. The alignment would need to consider potential land use changes in this area and try to support the locally planned land-use pattern.
- What is the difference in Option 1 and Option 2 for SR 12 East regarding impacts to I-80 mainline? No discernable difference.
- What is the cost difference between Option 1 and Option 2? We currently only have rough estimates; the costs are equivalent.
- What about having Goldfields between the roadways? It may be possible to design the interchange area on SR 12 East to avoid direct impacts to the Goldfields; however, there still may be some indirect effect on the plants.
- What is the status of the Goldfields? They are a federally listed endangered species.
- What is your design year? 2035.
- Clarification on the no-build option: This would still include planned or necessary improvements to the highway system. These improvements, however, are very limited within the planning horizon.
- What will happen to the portion of I-680 that is no longer used as freeway in Alt C? It will be retained for use as a local road, but will not connect to I-80.
- What is the difference in effects that the alternatives have on the primary marsh? None of the alternatives would directly affect the primary marsh.
- Which alternatives provide for greater stormwater treatment such as biostrips? We haven't looked at that in great detail, but Alt C could have greater opportunities to address water quality. Consideration will be given to groundwater levels, swales, and other related issues.
- In the matrix, what does Objective ED3 and Policy ED 2.1 and 2.2 refer to? These are the General Plan objectives and policies regarding economic development and land use for the city and county.

- Do your cost estimates include mitigation? We have included allowances for mitigation.
- The intent of NEPA 404 MOU Checkpoint meetings is to get the resource agencies involved early on in the process of developing a Purpose and Need and alternatives. Resource agencies would have preferred this meeting 6-12 months ago. With that said, the recommendation to drop Alternatives A and D seems to be well thought out.
- Concerned about marsh impacts, but current alternatives seem to minimize or eliminate impacts to marsh.
- Regional Water Quality Control Board is concerned with riparian impacts. Can you identify restoration of creeks as possible mitigation? Restoration of riparian areas along local creeks could be included as a mitigation requirement to reduce project-specific impacts. There may be several locations within the project area where this approach could be feasible.
- Would like to see an addition to the Purpose and Need: Avoid/minimize environmental impacts to sensitive habitat, including the Suisun Marsh. (Noted, and will be included.)
- For conceptual mitigation plans, please talk to the resource agencies early in the process of considering possible mitigation sites.

Next Steps

Resource agencies will have approximately 4 weeks to review the materials and request additional information. On March 22, Caltrans will send a letter to the resource agencies, requesting comments on the Purpose and Need and on the recommended alternatives by April 23, 2007.

California Regional Water Quality Control Board

San Francisco Bay Region

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

Date: JUN 0 5 2007
File No.: 2128.04 (BT)

MB

Ms. Melanie Brent
California Department of Transportation
PO Box 23660
Oakland, CA. 94623-0660

SUBJECT: Comments Relating to the I-80/I-680/SR 12 Interchange Project NEPA/404 Integration MOU Checkpoint Meeting

Dear Ms. Brent:

The Regional Water Quality Control Board (Water Board) would like to thank the California Department of Transportation (Department) and the Solano Transportation Authority (STA) for giving staff the opportunity to participate in the I-80/I-680/SR 12 Interchange Project (Project) NEPA/404 meeting held on March 15, 2007. We look forward to participating in future meetings and offer the following comments.

As you know, there is a significant amount of new and redevelopment either occurring or planned to occur in the vicinity of the Project. It is the Water Board's intent to ensure that the beneficial uses of Suisun, Green Valley, Dan Wilson and Ledgewood Creeks, and Suisun Marsh and Bay are protected as development projects in the area move forward. The proposed Project has the potential to impact beneficial uses through permanent impacts to federal and state jurisdictional wetlands and waters, as well as through the introduction of new and impervious surfaces.

At the meeting, three "preferred-build" alternatives were presented that included permanent impacts to federal jurisdictional wetlands and other jurisdictional waters between 6.3 and 10.2 acres. It is staff's understanding that the majority of the impacts will be to riparian waters. After the Department and STA demonstrate full avoidance and minimization of potential impacts to wetland and waters, the Water Board will consider mitigation options. Currently, there are not mitigation banks in the Project's service area offering riparian mitigation credits acceptable to the Water Board. As such, the Department and the STA should evaluate mitigation opportunities from a watershed perspective and identify riparian restoration needs within the local area. Staff recommends working with either the Solano County Resource Conservation District or another local agency, such as the Solano Land Trust, to identify potential mitigation projects. Please note that the Water Board primarily evaluates impacts to riparian waters and the associated compensatory mitigation in terms of linear feet, as opposed to acres. Impacts to such waters

should be characterized in both areal and linear extents in the Project's application for Water Quality Certification.

The Water Board requires that projects within the Department's right-of-way provide appropriate treatment of stormwater runoff from the entirety of the area of new and any redeveloped impervious surface. The Water Board recommends the Department identify on-site treatment options for roadway runoff as soon as possible, in the early phases of Project design.

If you have any questions, please contact Brendan Thompson of my staff at (510) 622-2506, or via e-mail to BThompson@waterboards.ca.gov.

Sincerely,

Keith H. Lichten, P.E.
Senior Engineer

cc: Mr. Mike Monroe, USEPA, San Francisco
Mr. Hal Durio, U.S. Army Corps of Engineers, San Francisco
Ms. Anna Holmes, California Department of Fish and Game, Stockton
Mr. John Cleckler, U.S. Fish and Wildlife Service, Cottage Way, Sacramento
Ms. Jodie Salz, Solano County Resource Conservation District, 1170 N. Lincoln St., Suite 110 • Dixon, California 95620
Ms. Janet Adams, Solano Transportation Authority, One Harbor Center, Suite 130, Suisun City, CA 94585
Mr. Dale Dennis, Solano Transportation Authority
Mr. Rob Goldstein, Solano Land Trust, 1001 Texas St., Suite C, Fairfield, CA 94533
Mr. Hardeep Takhar, California Department of Transportation, Oakland

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO

APR 11 2007

Regulatory Branch

SUBJECT: File Number 400401N

Melanie Brent
Department of Environmental Planning
California Department of Transportation
111 Grand Avenue
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your memorandum of March 22, 2007 requesting the U.S. Army Corps of Engineers' (USACE) signatory response to the purpose and need and proposed alternatives of the I-80/I-680/SR12 Interchange Project in Solano County for inclusion in the Draft EIR/EIS pursuant to Item 11 in Section III, NEPA/404 Integration Process, defined in the signed NEPA/404 MOU. This project and the issues were discussed at the Checkpoint Meeting held on March 25, 2007 in Fairfield, California.

The USACE appreciates the opportunity to make comments on the purpose and need and the alternative studies that were demonstrated at the meeting. The USACE at this time however is unable to respond in agreement or disagreement until there is a USACE verified jurisdictional determination of the waters of the U.S. and wetlands that fall within the proposed boundaries of the project.

The USACE acknowledges the hard work you demonstrated in your well organized and informative meeting. The purpose and need was clearly demonstrated and the alternative analysis seemed inclusive. The USACE looks forward to working with you in the near future on the jurisdictional verification process.

Should you have any questions regarding this matter, please call Hal Durio of our Regulatory Branch at 415-503-6785. Please address all correspondence to the Regulatory Branch and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Chief, Regulatory Branch

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5231
FAX (510) 286-5600
TTY 711

Flex your power!
Be energy efficient!

20 May 2009

Ms. Andrea Meier, Regulatory Project Manager
U. S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, CA 94103-1398

Dear Ms. Meier,

The California Department of Transportation (Caltrans), under its assignment of NEPA responsibilities from the Federal Highway Administration (FHWA) per 23 U. S. C. 237, held a second checkpoint meeting for the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR 12) Interchange Project at the offices of the Solano Transportation Authority in Suisun City, on Tuesday, 10 February 2009, from 2:00 to 4:00 pm. The purpose of the meeting was to present the alternatives for inclusion in the Draft Environmental Impact Statement for the project and the criteria for the selection of the alternatives.

Meeting Participants

Appendix A lists the participants at the meeting.

Meeting Summary

A summary of the meeting is provided as Appendix B. For agencies that did not attend, additional materials (hand-outs from the February 10 meeting) are enclosed.

Request for Response

Pursuant to Item 11 in Section III, *The NEPA/404 Integration Process,* in the signed NEPA/404 MOU, Caltrans is requesting the signatory federal agencies' response to:

- the alternatives proposed for inclusion in the Draft EIR/EIS.

The type of response currently requested depends on the agency and the Checkpoint—as shown below (and identified in Table 1 of the signed MOU for the *NEPA and Clean Water Act Integration Process for Federal Aid Surface Transportation Projects in California*

[signed 2006]). In addition, the non-federal agencies invited to participate (i.e., the Regional Water Quality Control Board and the California Department of Fish and Game) are encouraged to provide comments on the alternatives proposed for inclusion in the Draft EIR/EIS. Table 1 summarizes the only types of response an agency may give at a checkpoint.

Table 1. Types of Response by Agency and Checkpoint

Agency	Purpose and Need	Alternatives
U.S. Army Corps of Engineers*	Agree/Disagree	Agree/Disagree
U.S. EPA*	Agree/Disagree	Agree/Disagree
USFWS*	Comment	Agree/Disagree
NMFS*	Comment	Comment
RWQCB	Comment	Comment
CDFG	Comment	Comment
*Identifies signatory agency.		

Next Steps

Per the NEPA/404 MOU, each agency has 30 days (by 22 June 2009) to review and provide written responses to this Request for Response. Within ninety days of 22 August 2009, Caltrans will send each agency a letter identifying the status of any issue that received a negative comment or disagreement from the agencies.

Please call me at 510.286.5231 if you have any questions. We look forward to receiving your comments by 22 June. Thank you!

Sincerely,

Melanie Brent

MELANIE BRENT
District Office Chief
Office of Environmental Analysis

Distribution List

Project Sponsors

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Caltrans Headquarters
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Sacramento, CA 95814
Attention: Dale Jones, Environmental Coordinator (Districts 4 and 7), 916.531.0058

Federal Agencies

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National Marine Fisheries
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Santa Rosa, CA 95404
Attention: Jacqueline Pearson-Meyer, 707.575.6057

U.S. Army Corps of Engineers
333 Market Street, 8th Floor
San Francisco, CA 94105
Attention: Andrea Meier, Regulatory Project Manager, 415.503.6798

U. S. Fish and Wildlife Service
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Attention: Cay Goude, 916.414.6600

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U.S. Environmental Protection Agency, Region 9
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Attention: Melissa Scianni, Wetlands, 415.972.3821

State Agencies

Regional Water Quality Control Board
SF Bay Regional Water Quality Control Board
1515 Clay St, Suite 1400
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Attention: Brian Wines, 510.622.5680

California Department of Fish and Game
DFG, Central Coast-Region 3
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Attention: Greg Martinelli, 707.944.5570

Copy for:

Federal Highway Administration
California Division Office
650 Capitol Mall, #4-100
Sacramento, CA 95814
Attention: Mr. Lanh Phan, 916.498.5046

APPENDIX B

I-80/I-680/SR 12 Interchange Project
NEPA 404 MOU Checkpoint Meeting #2
February 10, 2009
Summary of Discussion

The California Department of Transportation (Caltrans), under assignment from the Federal Highway Administration (FHWA), hosted a Checkpoint meeting to discuss the I-80/I-680/SR 12 Interchange Project and the integration requirements of the National Environmental Policy Act (NEPA) and the Clean Water Act Section 404, consistent with the memorandum of understanding (MOU) signed into effect in May, 2006.

The purpose of the February 10, 2009 meeting was to present an overview of the project alternatives, discuss the purpose and need, present expected impacts on biological and aquatic resources, and seek input from the signatory agencies on the NEPA/404 MOU process.

This meeting summary below is intended to provide an overview of the comments and questions discussed at the meeting grouped by topic.

I. Purpose of Checkpoint Meeting

Maggie Townsley provided an overview of the previous checkpoint meeting in March 2007, which addressed the screening process and the purpose and need. She then discussed the purpose of this meeting, which is to obtain input and request concurrence regarding the Alternatives to be addressed in the Draft Environmental Document. She stated that the purpose and need for the project has not changed since the 2007 meeting and that that public draft document was on an aggressive schedule, to be released in the late summer/early fall of 2009.

Discussion Q and A:
No discussion questions.

II. Project Description

Mike Lohman of Mark Thomas & Company provided an overview of the two full build project alternatives and their first phases (Phase 1s). Maggie Townsley noted that the project footprints haven't changed substantially in the last 2 years; the project alternatives have been refined.

Discussion Q and A:

- **Question:** (EPA) What about the I-80 Eastbound Truck Scales and Jameson Canyon projects?

Answer: They are separate projects. A copy of the I-80 Eastbound Truck Scales EIR/EA was provided.

- **Question:** Was there originally a third alternative?

Answer: There were actually two additional alternatives discussed at the March 2007 Checkpoint Meeting, Alternatives A & D. Alternative A, which was similar to Alternative B, proposed outside connectors for the I-80/I-680 connection. Based on the traffic operations analysis for Alternative A, a consensus was reached that Alternative A would not perform satisfactorily and was therefore screened out. A fourth alternative (D) proposed a raised viaduct along I-80 from I-680 to Suisun Valley Road. This alternative was not well received by the public and was not cost effective. *Note: After researching information provided at the previous March 2007 Checkpoint Meeting, it should*

be noted that Alternatives A and D were discussed as having already been screened out. It was made clear at that time that only Alternatives B and C would be evaluated in the EIR/EIS.

- **Question:** Have Alternatives B and C changed much in the past two years?

Answer: Alternatives B & C have been refined, but have not changed substantially. The biggest changes are at Red Top Road, where the interchange has been moved to the west and at Lopes Road where the road alignment has changed. Additionally, the Options on SR 12 East were conceptual at the last meeting and those have been refined.

- **Question:** Where do the "options" begin and are they interchangeable?

Answer: The options start just east of the I-80/SR 12 East interchange and they are interchangeable. They have been paired (Alternative B/Option 2 and Alternative C/Option 1) for the purposes of analysis. Impacts will be separated out so that they can be easily paired differently at the end of the process, if a different pairing is determined to be preferred.

III. Sensitive Plant and Animal Species

Shahira Ashkar of ICF Jones and Stokes reviewed the potential sensitive plant and animal species habitat within the project area. She noted that habitat for the following species were located within the project area:

- California red-legged frog
- Valley elderberry longhorn beetle
- Fairy shrimp
- Steelhead/Chinook
- Contra Costa Goldfields

Habitat for salt marsh harvest mouse and Delta smelt was evaluated, but none was found.

Discussion Q and A:

- **Question:** What about tiger salamander and Delta green ground beetle? (Caltrans)

Answer: Tiger salamander was evaluated and no habitat was found. Unsure about Delta green ground beetle, but Caltrans and ICF J&S will follow up with the project biologist. *NOTE: J&S project management staff followed-up with the ICF J&S biologist after the NEPA/404 meeting and determined that no habitat for either species was located within the project area.*

IV. Aquatic Resources

Lisa Webber of ICF Jones & Stokes presented a summary of the wetland delineation efforts and results. She discussed the types of resources present within the project area and their locations and referenced the table provided in the hand out. Maggie Townsley summarized the acreages of jurisdictional and non-jurisdictional wetlands.

Discussion Q and A:

- **Question:** How will Alternative C affect traffic operations and how will phasing work?

Answer: Alternatives B and C generally provide the same level of traffic operational improvement and Alternative C allows for more effective phasing due to realigning the interchange.

- **Question:** What is the public's reaction to Alternative B?

Answer: The public expressed concern about possibly losing the freeway connection from I-680 to SR 12 west.

- **Question:** Do we have the total waters in the project area, as opposed to those affected, listed somewhere?

Answer: Lisa Webber stated that the total waters within the project area consisted of the temporary and permanent impacts, but would check with GIS. *Note: ICF J&S staff followed up with GIS staff and obtained the final acreages from the Wetland Delineation. The total jurisdictional waters delineated = 43.49 acres. The total non-jurisdictional waters delineated = 9.82 acres. The breakdown of the acreages is shown in Exhibit A of the Wetland Delineation.*

- **Question:** Is there a mitigation site for Business Center Drive that will be impacted by this project?

Answer: Yes.

- **Question:** Would the USACE jurisdiction have to be reviewed at later phases?

Answer: Yes, unless STA got a Preliminary Jurisdiction.

- **Question:** Have any adjacent properties been considered for mitigation?

Answer: To date, they have not been considered. There are USFWS approved banks in the area, but no USACE approved banks. On-site mitigation in the immediate watershed would be most desirable to the USACE and RWQCB. There are some good wetlands east of I-680 and also south of the existing eastbound truck scales that could be considered for on-site mitigation.

V. Summary of Project Approach

Dale Dennis of STA provided an overview of the project schedule and approach. He noted that the environmental document will analyze the ultimate alternatives even though they will not be constructed for years, so that all potential impacts will be identified and considered. Melanie Brent of Caltrans noted that Caltrans will be seeking a ROD for the fundable first phase.

Discussion Q and A:

- **Question:** USEPA asked about the relative time frame for construction?

Answer: Phase 1 is expected to be constructed in the next 5 to 10 years, with the full build well beyond that.

- **Question:** Are any portions of this project in the RTP or TIP?

Answer: The Phase 1 alternatives are in the RTP. The full build projects are expected to cost 1.5 to 2 billion dollars and will take time to finance. The Phase 1 alternatives cost in the neighborhood of $650-700 million.

- **Question:** Would mitigation be for Phase 1 only?

Answer: The environmental document would look at the ultimate projects at the same level of detail as the fundable Phase 1 alternatives. All surveys cover the entire project area. Impacts would be analyzed for both ultimate alternatives and the Phase 1 alternatives. It would only be possible to mitigate for Phase 1 because the construction of the ultimate project is so far in the future. It would be necessary to do a revalidation or supplemental (depending on how much had changed) prior to the construction of future phases.

- **Question:** Would STA/Caltrans be seeking permits all at once or along the way? If along the way, does that rule out considering overall mitigation?

Answer: Permits would be sought along the way. Because of the size of the project and the availability of funding later phases may be years/decades away and conditions may change. Caltrans, STA, and the County have been looking at options for mitigating impacts for multiple projects in the area at a single site, so they are looking at large scale mitigation, but it would be necessary to do so in phases. The environmental document will disclose impacts of the total project and will have proposed mitigation for only the Phase 1 alternatives. It will also consider cumulative impacts and possible mitigation.

The BA will provide specific mitigation for the Initial Construction Phase of the Phase 1 alternative and conceptual mitigation for future phases. This approach could be used for other resource areas.

VI. Next Steps

Caltrans will send a letter to the signatory/participating agencies requesting agreement/disagreement on the Proposed Alternatives within 30 days

No further formal meetings will precede the circulation of the draft environmental document, but informal meetings can be scheduled if necessary or requested.

Other Discussion Q and A:

- **Question:** USACE noted structures in ROW. Are there any issues with condemnation? **Answer**: There are displacements under both alternatives. Under Alternative B there are primarily commercial displacements in the Cordelia area and under Alternative C there are primarily industrial displacements in the area south of I-80. The only residential displacement that would occur under both alternatives is in the vicinity of the westbound truck scales. Property owners associated with the industrial displacements have been contacted and there has not been any significant opposition expressed to date. In fact, several property owners have indicated they see the merits of Alternative C. Both of these alternatives follow existing roads to a large extent, which minimizes other impacts.

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

AUG 6 - 2009

Regulatory Division

SUBJECT: File Number SPN-2007-400401 S

Ms. Melanie Brent
Office of Environmental Analysis
California Department of Transportation
Post Office Box 23660
Oakland, California 94623-0660

Dear Ms. Brent:

This letter is written in response to your request for comments following an interagency alternatives scoping meeting on February 10, 2009, for the Interstate 80/Interstate 680/State Route 12 Interchange Project. During that meeting, you requested that we consider two "build alternatives", impacts associated with the first phase, and to provide feedback on which alternative would likely result in the least impact to aquatic resources. You also requested that we provide direction on which alternative we believe warrants additional engineering design and development. In addition to responding to those requests, we would like to take this opportunity to outline the overall project purpose that we believe should be used in developing an alternatives analysis that satisfies the US EPA's Clean Water Act (CWA), Section 404(b)(1) Guidelines. We also will summarize what we recommend be included in the scope of analysis in the draft environmental impact statement (DEIS) to be prepared later this year.

Preliminary Alternatives Evaluation

We were unable to reach a determination on which on-site alternative we would select to be a preliminary preferred alternative based on the information we have available. The two combinations of west-end "alternatives" and east-end "options" do not appear to have comparable differences in impacts to waters of the U.S., therefore, we had difficulty in ranking those alternatives based on impacts to areas under our jurisdiction. We also did not have adequate information to balance impacts to waters of the U.S. with other factors such as impacts to water quality and endangered species. For instance, Alternative C, Option 1, appears to have the least permanent and temporary impacts to waters of the U.S., but it would have the most impacts to water quality amongst the other alternatives, based on information in the "I-80/I-680/SR-12 Interchange Project Alternatives Screening Matrix (Tier 2)", received in March 2007. We would also like to point out that now that the wetland delineation has been verified, there will likely be differences in the estimated impacts to waters of the U.S. for the "alternatives" and "options" presented.

Generally, we would expect to have a higher level of information on the environmental setting and impacts in order to make a preliminary selection of the preferred alternative under the SAFETEA-LU authority, National Environmental Policy Act (NEPA), and the CWA Section 404(b)(1) Guidelines. A draft environmental assessment or DEIS would generally provide the necessary information to determine what the effects are proposed to the human environment, including impacts to waters of the U.S. The information we have available at this time is limited to the Alternatives Screening Matrix and the project information presented to us in the February 10, 2009, meeting. We are unable to make any determinations of what proposed impacts may be significant or to make a determination of what we believe would be preliminarily the least environmentally damaging practicable alternative (LEDPA).

If you are still interested in having the Corps make a determination of a preliminary preferred alternative at this time, we would recommend that you update impact maps depicting waters of the U.S. for each "alternative" and "option". Water quality impacts in the matrix should also include an assessment of increased runoff from impervious surfaces. We would also appreciate a clarification of the numbers presented in the Alternatives Screening Matrix for delays, cut-through traffic, truck volumes, and safety. Identifying a range of acceptable levels of service or "vehicle-hours", would be very helpful. Also, explaining the significance of the numerical differences across alternatives in the various categories in the matrix would be helpful in determining the extent to which alternatives meet the project purpose and impact the environment.

Overall Project Purpose

The project purpose guides the scoping and determines the range of alternatives to be considered for impacts and alternatives analysis under NEPA and under the CWA Section 404(b)(1) Guidelines. Based on the information provided, the overall project purpose is to reduce congestion and improve circulation through the I-80/I-680/SR-12 corridor for local drivers, commercial traffic, and other travelers.

Scope of Analysis for Evaluating Impacts to Waters of the U.S. and Other Elements of the Human Environment

In general, the scope of analysis depends on the resource or element of the human environment being evaluated. The geographic scope of analysis for direct impacts to waters of the U.S., should include the project footprint, access roads, and staging areas. The geographic scope of analysis for indirect impacts should include the project area on the verified wetland delineation maps as well as environmentally sensitive areas, resources, and surrounding communities that may be impacted in part or in whole by the project. We encourage coordination with the Corps, the U.S. Environmental Protection Agency, and other resource

agencies as applicable, to determine the scope of the studies to be completed to evaluate the project's impacts in preparation of the DEIS.

Traffic congestion in the corridor has resulted from extensive regional population growth, a tripling of population locally since the 1960's, poorly planned local freeway access, and substantial increases in commercial truck traffic. Policy decisions related to land use patterns in Solano County and nearby areas like Yolo County, Sacramento County, and other parts of the north Bay Area also influence traffic conditions in the corridor. Also, economic and societal trends have impacted traffic in the corridor since it was first designed. These trends include increases in the number of cars per household, the decreasing affordability of housing near large employment centers in the Bay Area, the increasing average distance people are willing to travel for work, and the increased amount of discretionary time and income people have for recreational activities. Based on this information, the geographic scope of analysis for indirect and cumulative effects to traffic, circulation, land use, and economics, in the DEIS should a broader area than the I-80/I-680/SR-12 corridor. We recommend that the DEIS include a brief discussion of how these factors have contributed to traffic issues in the corridor and an evaluation of how these trends may further impact traffic in the corridor.

Traffic impacts from other large transportation projects in the region, such as the Jepson Parkway, North Connector Project, the high occupancy vehicle (HOV) lanes system that is currently under construction, and Fairfield Multi-modal Transportation Center, should also be considered in the cumulative impacts analysis. Even the California High-Speed Rail project may affect traffic in the Interstate 80 corridor, as noted in the Bay Area Council Economic Institute report, "California High-Speed Rail Economic Benefits and Impacts in the San Francisco Bay Area", dated October 2008. While Solano County will not be served by California High-Speed Rail, persons in the Sacramento Valley that commute via I-80 who would normally drive alone or in vanpools/carpools, could switch to the California High-Speed Rail. The Institute's report suggests that as many as 6 percent of Bay Area commuters would shift from cars to high-speed rail.

Other Recommendations

We recommend that an alternative should be included in the DEIS that includes implementing transportation demand management techniques, commute trip reduction techniques, coupled with aggressive local smart growth/sustainable communities land use policies. We would be interested in knowing whether a similar capital investment in various alternative modes of transportation, modifications in land use patterns in the area, and commute trip reduction measures, could result in the same level of service outcomes as the build alternatives. A more extensive and convenient bus system, redevelopment of existing housing and commercial stock, transit-oriented/smart growth developments, paid parking at destinations, and incentives for ridesharing and telecommuting could decrease local traffic substantially. In

combination with ongoing projects such as the HOV lanes, a multi-strategy transportation demand management program may meet the project purpose and result in fewer adverse environmental impacts than the build alternatives.

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at 415-503-6798. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Chief, Regulatory Division

Copies Furnished:

US EPA, San Francisco, CA
US FWS, Sacramento, CA
US NMFS, Santa Rosa, CA
CA DFG, Yountville, CA
CA RWQCB, Oakland, CA
STA, Suisun City, CA

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5231
FAX (510) 286-5600
TTY 711

Flex your power!
Be energy efficient!

13 August 2009

Ms. Carolyn Mulvihill, Environmental Review Office
U. S. Environmental Protection Agency, Region 9
75 Hawthorne Street, Mail Code CED-2
San Francisco, CA 94105

Dear Ms. Mulvihill,

In July, you left me a VoiceMail message inquiring about how the proposed I-80/I-680/State Route 12 Interchange Project would affect existing mitigation sites within the project area.

There is one existing mitigation site in the project area for the I-80/I-680/State Route 12 Interchange—the Green Valley Corporate Wetlands. The initial phase of Alternative B would result in 0.45 acres of permanent impacts and an additional 0.08 acres of temporary impacts. (Please see enclosed exhibit.) Neither the initial phase of Alternative C or the ultimate Alternative C project would affect the mitigation site.

This mitigation site provides habitat for Valley Elderberry Longhorn Beetle and California Red Legged Frog. The number and location of elderberry shrubs that will be affected is currently being determined. Mitigation ratios will be developed in consultation with the U. S. Army Corps of Engineers, the U. S. Fish and Wildlife Service and other regulatory agencies.

If you have additional questions about this project, please contact me at 510.286.5231, or Howell Chan of my staff at 510.286.5623.

Sincerely,

Melanie Brent

MELANIE BRENT
District Office Chief
Office of Environmental Analysis

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

SEP 02 2009

Melanie Brent
California Department of Transportation
District 4
P.O. Box 23660
Oakland, California 94623-0660

Subject: Checkpoint on Range of Alternatives for Interstate 80/ Interstate 680/State Route 12 Interchange Project, Solano County, CA

Dear Ms. Brent:

This letter responds to your May 20, 2009 letter requesting agreement on the Range of Alternatives to be included in the draft environmental impact statement (DEIS) for the Interstate 80 (I-80)/Interstate 680 (I-680)/State Route 12 (SR-12) Interchange Project. The request is in accordance with the 2006 National Environmental Policy Act/Clean Water Act Section 404 Integration Process Memorandum of Understanding (NEPA/404 MOU).

The California Department of Transportation (Caltrans) and the Solano Transportation Authority (STA) propose improvements to freeway-to-freeway connections between I-80, I-680, and SR-12 in Fairfield, Solano County. The U.S. Environmental Protection Agency (EPA) previously provided comments on the Purpose and Need Statement at a March 15, 2007 interagency checkpoint meeting, and subsequently agreed with an updated Purpose and Need Statement and with the Range of Alternatives presented at the meeting in a June 12, 2007 letter. At that time, the project alternatives consisted of Alternatives B and C, with SR-12 Options 1 or 2 possible with either alternative.

Subsequent to your May 2009 letter, EPA requested additional information on the project's potential impacts to the existing Green Valley Corporate Wetlands mitigation site. Your response on August 13, 2009 indicated that Alternative B would result in 0.45 acre of permanent impacts and 0.08 acre of temporary impacts to the site, but that Alternative C would not impact the site.

EPA understands that the identified alternatives have not changed substantively since the 2007 agreement point. Based on this, and the additional information we've received since then, we agree with the range of alternatives as Alternatives B and C, with Options 1 or 2. We also support the recommendations of the U.S. Army Corps of Engineers in their July 28, 2009 letter

to include transportation demand management and trip reduction methods in the project alternatives.

As a next step for this project and as described in the NEPA/404 MOU, EPA will review the DEIS. We are available to continue working with the Interagency Group to further refine the design of project alternatives to avoid and minimize impacts to resources. In addition, we would like to be involved in conceptual mitigation discussions.

Thank you for requesting our agreement on the Range of Alternatives. We look forward to continued participation in this project through the NEPA/404 MOU process. If you have any questions or comments, please contact Carolyn Mulvihill at (415) 947-3554 (mulvihill.carolyn@epa.gov) or Jason Brush at 415-972-3483 (brush.jason@epa.gov), the lead reviewers for this project.

Sincerely,

Cornell Ouano

FOR

Kathleen M. Goforth, Manager
Environmental Review Office (CED-2)

cc: Janet Adams, Solano Transportation Authority
Andrea Meier, U.S. Army Corps of Engineers
Jacqueline Pearson-Meyer, National Marine Fisheries Service
Cay Goude, U.S. Fish and Wildlife Service
Brian Wines, Regional Water Quality Control Board
Greg Martinelli, California Department of Fish and Game

Appendix I Property Impacts

Alternative B and Alternative B-1 Existing Development

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building(s) to be displaced	# of Existing Residential Building(s) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zipcode	Owner	Owner Address	Owner Zipcode	Full or Partial Take of Parcel	Notes
Alternative B - Map 1 (ROW Takes)	`0027260120		139143	3.19	21.62	941,767					Agricultural Land			Meredith Carter	4950 Gordon Valley Road	94534	Partial	
	`0027272070		10584	0.24						vacant land	Government			California State	PO Box 1019 Sacramento	95805	Partial	
	`0027272130		48381	1.11						vacant land	Government			California State	PO Box 1019 Sacramento	95805	Full	
	`0027272140		439492	10.09	11.7	509,652					Agricultural Land			Michelle Valine	4000 Russell Road, Suisun City	94585	Full	
	`0027272120		16749	0.38						vacant land	Agricultural Land			California State	PO Box 1019 Sacramento	95805	Full	
	`0027272180		272045	6.25	91.41	3,981,820					Agricultural Land	2621 Cordelia Road		Edgar Walter Thompson	6508 Horsemans Canyon Road, Walnut Creek	94595	Partial	
	`0027272160		22619	0.52							Improved Multiple Residential	3999 Hale Ranch Road		William R Hale	4011 Hale Ranch Road	94534	Partial	
	`0027252080		446374	10.25	16	696,960				vacant land	Government	10 Hale Ranch Road		Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	68118	Partial	
	`0027252090		4849	0.11							Taxable Below Min. Value			Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	68118	Partial	
	`0027252100		3454	0.08							Taxable Below Min. Value			Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	68118	Partial	
	`0027252110		3316	0.08							Taxable Below Min. Value			Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	68118	Partial	
	`0028200560		5396	0.12							Taxable Below Min. Value			Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	68118	Partial	
	`0027272080		417002	9.57	29.44	1,282,406	2			vacant land	Government	2543 Cordelia Road		Solano County	675 Texas Street	94533	Partial	
Alternative B - Map 2	`0148260090		168239	3.86	30.61	1,333,372					Agricultural Land	1687 Jameson Canyon Road		Susan and Thomas Turner	1687 James Canyon Road, American Canyon, CA	94503	Partial	
	`0148260050		501071	11.50	44.04	1,918,382					Range and Watershed	1646 State Highway 12		Luis and Yolando Salem	2321 Big Ranch Road, Napa, CA	94558	Partial	
	`0148260060		111549	2.56	2.72	118,324					Range and Watershed			Luis and Yolando Salem	2321 Big Ranch Road, Napa, CA	94558	Partial	
	`0180010020		69339	1.59						Railway Tracks	Government			Union Pacific Railroad Co.	1400 Douglas Stop, 1640 Omaha, NE	68179-1640	Partial	
	`0148260080		614488	14.11	21.66	943,510					Range and Watershed			Susan and Thomas Turner	1687 James Canyon Road, American Canyon, CA	94503	Partial	
	`0148260040		22092	0.51			1			vacant land	Government	1827 State Highway 12		Vallejo City	555 Santa Clara Street, Vallejo, CA	94590	Partial	
	`0148260010		838434	19.25	256.1	11,155,716					Range and Watershed			Gary and Mary Mangels	2294 Morrison Lane	94534	Partial	
	`0148270010		97393	2.24	12.8	557,568					Range and Watershed	3537 Roberts Road		Gary and Mary Mangels	2294 Morrison Lane	94534	Partial	
	`0148270340		193292	4.44	42.23	1,839,539					Range and Watershed			Robert W. Dittmer	3539 Roberts Road	94534	Partial	
	`0148270240		209583	4.81	14.98	652,529					Range and Watershed			Robert W. Dittmer	3539 Roberts Road	94534	Partial	
	`0148270060		132386	3.04	5.99	260,924					Agricultural Land			Robert W. Dittmer	3539 Roberts Road	94534	Partial	
	`0180010100		961215	22.07							Improved SFR properties	117 Red Top Road	94534-9500	Margaret Ferrari	5987 Twin Sisters Cout, Suisun City, CA	94585	Partial	
	`0180010080		12150	0.28							Commercial Sales & Service	107 Red Top Road	94534-9500	Victoria Land Partners LP	3655 Nobel Drive, San Diego, CA	92122	Partial	
	`0180010070		11948	0.27							Service Station	119 Red Top Road	94534-9500	Convenience Retailers LLC	PO Box 59365 Schaumburg, IL	60159-0365	Partial	
	`0180010090		8764	0.20						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0180010050		37365	0.86			1		Sunnyside Farms	Producer of Milk	Manufacturing and Warehousing	199 Red Top Road	94534-9500	Super Store Industries	PO Box 2898	94533	Partial	
	`0180010110		313	0.01						vacant land	Vacant Commercial Land			Margaret Ferrari	5987 Twin Sisters Cout, Suisun City, CA	94585	Partial	
	`0180160180		25701	0.59							Vacant Industrial Land			Albert D Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0180140290		15794	0.36							Manufacturing and Warehousing	5200 Watt Circle	94534-4209	Carlsen Investments LLC	PO Box 4900, Scottsdale, AZ	95261-4900	Partial	
	`0180120080		17018	0.39							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral Properties LLC	9321 West Cordelia Road	94534	Partial	
	`0180120070		27050	0.62							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral Properties LLC	9321 West Cordelia Road	94534	Partial	
	`0180120050		5327	0.12							Manufacturing and Warehousing	9324 West Cordelia Road		Curtis and CC Beckwith	131 Hidden Glen Court, Vacaville, CA	95688	Partial	
	`0180120060		128450	2.95						vacant land	Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180120010		76836	1.76						vacant land	Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180120150		13857	0.32			1		Ashley Furniture Homestore	Furniture Store	Commercial Sales & Service	4865 Auto Plaza court	94534	Howard Harstad	PO Box 9760 Seattle, WA	98109	Full	
	`0180110050	`0180110250	82242	1.89										Retail Endeavors Group XI Ltd.	1431 FM 1101 New Braunfels, TX	78130	Partial	
		`0180110260		0.00										Simvest Real Estate VII LLC	655 Montgomery Street, ST 1190, San Francisco, CA	94111	Partial	
	`0180110040		83271	1.91			1		Saturn Dealership	Seller of cars	Commercial Sales & Service	4850 Auto Plaza CT	94534-1637	Benson Investment Inc.	6040 Commerce Boulevard, Rohnert Park, CA	94928	Partial	
	`0180110030	`0180110240	146226	3.36			1		ARCO Gas Station	Service Station	Service Station	4800 Auto Plaza CT		Kerry Egan	PO Box 5015 Buena Park, CA	90622	Partial	
	`0180110230																	
	`0148270220		31916	0.73							Commercial Sales & Service	5253 Business Center Dr	94534-1795	Pem Green Valley H LLC	10303 NW Freeway Houston, TX	77092	Partial	
	`0148270290		435698	10.00						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148280120		6557	0.15						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0148280290		6585	0.15							Commercial Sales & Service	5051 Business Center Drive	94534-1631	Safeway Inc.	1371 Oakland Boulevard, Walnut Creek	94596-4349	Partial	
	`0148280280		3819	0.09							Commercial Sales & Service	5041 Business Center Drive	94534-1786	Watt/Fairfield Associates	PO Box 131071 Carlsbad	92013	Partial	
No Data			3424	0.08													Partial	
	`0148280130		22026	0.51						vacant land	Government	3683 Green Valley Road	94534	Fairfield City	1000 Webster Street	94533	Full	
	`0148280140		26257	0.60						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0045280160		9044	0.21										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280070		9850	0.23										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280060		8237	0.19										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280050	`0045280440	8333	0.19										Fairfield City	1000 Webster Street	94533	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building(s) to be displaced	# of Existing Residential Building(s) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zipcode	Owner	Owner Address	Owner Zipcode	Full or Partial Take of Parcel	Notes
	`0045280040	`0045280440	2233	0.05										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280030		4984	0.11										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280010		3579	0.08										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280440		102336	2.35						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045280280	`0045280450	9015	0.21										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280450		77178	1.77						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0045280540		10446	0.24							Vacant Commercial Land	4725 Business Center Drive	94534-1916	Kaiser Foundation Health Plan Inc.	ATTN Tax and Insurance Oakland	94612	Partial	
	`0045280550		54782	1.26			parking lot				Commercial Sales & Service	4665 Business Center Drive	94534-1675	Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280560		27453	0.63							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0180110010		46731	1.07						vacant land	Government			Pacific Gas and Electric	Tax Dept. B8E, San Francisco, CA	94177	Partial	
	`0180110020		14650	0.34						vacant land	Government			Pacific Gas and Electric	Tax Dept. B8E, San Francisco, CA	94177	Full	
	`0045090120		21025	0.48							Vacant SFR Land	2091 Cordelia Road		2097 & 2121 Cordelia Road LLC	4384 Edinburg CT	94534-9454	Full	
	`0045090260		23366	0.54							Vacant SFR Land			Michael D and Anita O'Brien	1908 Vintage Lane	94534	Full	
	`0045081320		29930	0.69					Direct Buy	Electronics Store	Manufacturing and Warehousing	5090 Central Way		Michael D and Anita O'Brien	1908 Vintage Lane	94534	Full	
	`0045300010		8247	0.19										James & cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300020	`0045300380	15675	0.36						vacant land	Possible Commercial Land			James & cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300030		8233	0.19					Residential House	house	Single Family Residential	4912 Central Way		James & cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300040		8330	0.19			1			vacant shack (possibly 50+ years)	Vacant SFR Land			James & cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300070		19073	0.44			2			vacant land	Government			Fairfield Suisun Unified School District	1025 Delaware Street	94533	Partial	
	`0045300080		73850	1.70			1		California Teacher's Association	Teacher's Association	Commercial Sales & Service	4751 Central Way	94534-1612	California Teachers Association Bay Section	1705 Murchison Drive, Burligame, CA	94010	Partial	
	`0045300350		387	0.01			1		Continental Auto Glass	Auto Glass Install & Repair	Manufacturing and Warehousing	4737 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00						vacant land	Vacant Commercial Land	4739 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Cordelia Automotive	Body Shop	Commercial Sales & Service	4741 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Warehouse Furniture	Furniture Store	Commercial Sales & Service	4743 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300340		23399	0.54			parking lot		Solano Education Coalition	Education Association	Commercial Sales & Service	4735 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300370		8897	0.20			1		Metro II		Manufacturing and Warehousing	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Full	
				0.00					Anyone's Off-Road & Custom	Body Shop	Manufacturing and Warehousing	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Al's Tile and Marble Fino	Marble tile store	Manufacturing and Warehousing	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300360		8179	0.19			1		Room Express Furniture	Furniture Store	Manufacturing and Warehousing	4731 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300200		148	0.00			1		Ponder Environmental Services	Environmental Consuting Firm	Office Use	125 Grobric CT	94534-1620	Dieter & Michelle Folk	7088 Pleasants Valley Road, Vacaville, CA	95688-9010	Partial	
	`0045300290		11725	0.27			1		California Marine Sports	Aquatic Marine Store	Commercial Sales & Service	101 Grobric CT	94534-1673	Earl Baca	3901 Serenity Hills Dr, Vacaville	95688	Partial	
	`0045300280		11567	0.27						vacant land	Vacant Commercial Land			Earl Baca	3901 Serenity Hills Dr, Vacaville	95688	Partial	
	`0045300270		42633	0.98						vacant land	Vacant Industrial Land			Ray and Dalia Shamieh	1545 N Texas Street	94533	Partial	
	`0045300260		4650	0.11			1		Statewide Safety & Signs Inc.	Producers of Signs	Manufacturing and Warehousing	130 Grobric CT	94534	Don & Tamara Nicholas	6325 Mira Cielo, San Luis Obispo	93401	Partial	
	`0045310010		76204	1.75			1		Pearson's Appliance & TV	Appliance & Tv store	Commercial Sales & Service	4685 Central Way	94534-1610	Pearson Family Trust	4167 Oakwood Drive	94534	Partial	
	`0045310430	`0045310880	14042	0.32										Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310420		15378	0.35										Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310400		2905	0.07						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0045310390	`0045310880	22429	0.51										Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310550		1551	0.04			1		Golf Shop	Golf equipment	Commercial Sales & Service	104 Commerce CT	94534-1781	Vacso Development	50 Crestview Drive, Orinda	94563	Partial	
				0.00					Campways	Camping equipment	Commercial Sales & Service	104 Commerce CT	94534-1781	Vacso Development	50 Crestview Drive, Orinda	94563	Partial	
	`0045310650	`0045310890	139134	3.19			1		Davita Fairfield Dialysis	Dialysis Clinic	Commercial Sales & Service	4670 Central Way	94534	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
				0.00					Boot Barn Wastern & Work Wear	Clothing Store	Commercial Sales & Service	4670 Central Way	94534	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
				0.00					Bischoff's Medical Supplies	Medical Supplies	Commercial Sales & Service	4670 Central Way	94534	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
				0.00					Ultimate Water Sports	Water Sport Equipment Store	Commercial Sales & Service	4670 Central Way	94534	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310560			0.00					RV Park	RV Park	Commercial Sales & Service	4560 Central Way	94534	Fairfield City	1000 Webster Street	94533	Partial	
	`0045310660		118088	2.71			1		Cordelia Junction Antiques Lounge	Antique store	Commercial Sales & Service	4560 Central Way	94534-1609	Maurice Epps	8 Willotta Drive	94534	Partial	
Alternative B - Map 3	`0045310180	`0045310890	59578	1.37										B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310600		413	0.01							Vacant Commercial Land			Edith Huey-Chu Hsieh	2536 Cerro Vista Lane, Alamo, CA	94507	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building(s) to be displaced	# of Existing Residential Building(s) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zipcode	Owner	Owner Address	Owner Zipcode	Full or Partial Take of Parcel	Notes
	`0045310870		22889	0.53							Vacant Commercial Land			JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310560		4560	0.10							Vacant Commercial Land			Fairfield City	1000 Webster	94533	Partial	
	`0045310860		70542	1.62			2		Jack in the Box	Fast Food Restaurant	Commercial Sales & Service	4490 Central Way	94534-1609	JSR Enterprises	4106 Fall Creek CT	94534	Partial	
				0.00					Chevron Gas Station	Gas/Service Station	Service Station	4490 Central Way	94534-1609	JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310580		6405	0.15										Origone & Origone	5261 N Highway 99, Stockton, CA	95212		
	`0045310850	`0045310850	21634	0.50			1		Starbucks	Coffee/Food	Commercial Sales & Service	4470 Central Way	94534-1805	Origone & Origone	5261 N Highway 99, Stockton, CA	95212	Full	
	`0045310120		6745	0.15							Service Station	4450 Central Way	94534-1805	World Oil Management Co.	PO Box 2099 Houston TX	77252	Partial	
	`0045340500		3186	0.07							Commercial Sales & Service	190 Pittman Road	94534-1654	Worthing Ford Buxton	2700 Mt Diablo Boulevard, Lafayette, CA	94549	Partial	
	`0045340180		3933	0.09			parking lot				Service Station	134 Pittman Road	94534-1654	Clover Trust 1997-1	PO Box 59365 Schaumburg, IL	60159-0365	Partial	
	`0045280550		54782	1.26			parking lot				Commercial Sales & Service	4665 Business Center Drive	94534-1675	Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280560		27453	0.63							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280570		49395	1.13							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280590		84950	1.95							Vacant Commercial Land			Green Valley Land LLC	4820 Business Center Drive	94534	Partial	
	`0045280490		34417	0.79						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045280530		68530	1.57						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045340320		13610	0.31							Commercial Sales & Service	4350 Central PL	94534-1605	Fairfield CWI Associated Ltd.	PO Box 90018 Bowling Green, KY	42102-9018	Partial	
	`0045340110		7351	0.17			small portion of a mini-		Scandia Family Center		Commercial Sales &	4300 Central Way	94534	Laura & Lee Jensen	1889 Altas Peak Road, Napa	94558	Partial	
	`0027260250		567	0.01						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0027260240		3815	0.09						vacant land	Government			Garaventa FF Commons LLC	2540 Bates Avenue, Concord	94520	Partial	
	`0027260230		355819	8.17						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0027260230		136684	3.14							Vacant Commercial Land	290 Campus CT	94534	88/12	4080 Mallard Drive, Concord, CA	94520	Partial	
	No Data		87813	2.02						vacant land	Government						Partial	No parcel number
	`0027350010	`0027350060	208067	4.78							Vacant Commercial Land			88/12	4080 Mallard Drive, Concord, CA	94520	Partial	
	`0027260220	`0027350070	89263	2.05							Vacant Commercial Land			Mary Garaventa	4080 Mallard Drive, Concord, CA	94520	Partial	
	`0027260200		14089	0.32							Vacant Commercial Land			Mary Garaventa	4080 Mallard Drive, Concord, CA	94520	Partial	
	`0027271030		6913	0.16	0.2	7,840				vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	No Data		10339	0.24													Partial	No parcel number
	`0027271060		490213	11.25	18	784,080	7 buildings (hay/tools/misc.)	1		farm land	Agricultural Land	4018 Russell Road		Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251330		576910	13.24	61.86	2,694,622					Agricultural Land	4000 Russell Road		Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251060		13954	0.32						vacant land	Government			S I D	PO Box 536, Vacaville, CA	95688	Partial	
	`0027251390		3102	0.07						vacant land	Government			S I D	PO Box 536, Vacaville, CA	95688	Partial	
	`0027251400		2702	0.06							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251340		5828	0.13							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251440		88806	2.04							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	No Data		365967	8.40													Partial	No parcel number, part of Fairfield linear trail
	`0027251420		6072	0.14							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Full	
	`0027510030		9587	0.22							Taxable Below Min. Value			Raymond & Betty Conner	39 Conner Court	94534	Partial	
			55309	1.27										Raymond & Betty Conner	39 Conner Court	94534		No parcel number, part of Fairfield linear trail
	`0027510070		44012	1.01							Commercial	4088 Russell Road		Moore Partnership I Ltd.	4088 Russell Road	94534	Partial	
	`0027510160		11721	0.27	4.85	211,266					Agricultural Land			Clyde Loney	4135 Abernathy Road	94534	Partial	
	`0027510200		43920	1.01						vacant land	Government			California State	District 10 PO Box 2048, Stockton, CA	95201	Partial	
	`0027510210		61095	1.40						vacant land	Government			California State	District 10 PO Box 2048, Stockton, CA	95201	Partial	
	`0027510010		146961	3.37						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0027510060		1417	0.03						vacant land	Government			California State	Department of Transportation, Stockton	95201	Full	
	`0028200530	`0028200740	5170	0.12										Fairfield Ford Inc.	3050 Automall Court	94534	Partial	
	`0028200570		7539	0.17										Fairfield Ford Inc.	3050 Automall Court	94534	Partial	
	`0028750040		5709	0.13							Taxable Below Min. Value			Anheuser Busch Inc.	721 Pestalozzi Street, St. Louis, MO	63118	Full	
	`0028750030		4625	0.11							Taxable Below Min. Value			Busch Properties	One Busch Place, St. Louis, MO 63118		Full	
	`0150270090		82008	1.88						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0150270050		43918	1.01	7.66	333,670					Agricultural Land	2814 Rockville Road		Dorene Darville	2802 Rockville Road	94534	Partial	
	`0150270060		89095	2.05	10.47	456,073					Agricultural Land	2818 Rockville Road		Dorene Darville	2802 Rockville Road	94534	Partial	
	`0150270080		43198	0.99			2		Suisun Valley Fruit Growers	Fruit Orchards	Manufacturing and Warehousing	4163 Chadbourne Road		Suisun Valley Fruit Growers	Box 417, Suisun	94585	Partial	
	`0150240010		55110	1.27					Bike Path	vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	Bike Path
	`0150240020		7767	0.18			2		Suisun Valley Fruit Growers	Fruit Orchards	Manufacturing and Warehousing	4162 Chadbourne Road		Suisun Valley Fruit Growers	Box 417, Suisun	94585	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building(s) to be displaced	# of Existing Residential Building(s) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zipcode	Owner	Owner Address	Owner Zipcode	Full or Partial Take of Parcel	Notes
Alternative B-1 - Map 4	`0148270060		252	0.01	5.99	260,924					Agricultural Land			Robert W. Dittmer	3539 Roberts Road	94534	Partial	
	`0148270290		49137	1.13						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0180110040		6861	0.16							Commercial Sales & Service	4850 Auto Plaza CT	94534-1637	Benson Investment Inc.	6040 Commerce Boulevard	94928	Partial	
	`0180110030	`0180110240	62927	1.44	4.23	184,258					Agricultural Land	105 Lopes Road	94534-6847	Kerry Egan	PO Box 5015 Buena Park, CA	90622	Partial	
	`0148280150		330	0.01						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148280140		26257	0.60						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148280130		22026	0.51						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Full	
	`0148280120		6557	0.15						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0148280290		6585	0.15							Commercial Sales & Service	5051 Business Center Drive	94534-1631	Safeway Inc.	1371 Oakland Boulevard, Walnut Creek	94596-4349	Partial	
	`0148280280		3819	0.09							Commercial Sales & Service	5041 Business Center Drive	94534-1786	Watt/Fairfield Associates	PO Box 131071 Carlsbad	92013	Partial	
	`0045280160		9044	0.21						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280070		9850	0.23						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280060		8237	0.19						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280050	`0045280440	8333	0.19						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280040		2233	0.05						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280030		4984	0.11						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280440		64532	1.48						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280280	45280450	8078	0.19						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280450		21080	0.48						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045280540		79207	1.82							Vacant Commercial land	4725 Business Center Drive	94534-1916	Kaiser Foundation Health Plan Inc.	ATTN Tax and Insurance Oakland	94612	Partial	
	`0045280550		52700	1.21			parking lot				Commercial Sales & Service	4665 Business Center Drive	94534-1675	Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280560		19069	0.44							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280570		28925	0.66														
	`0045280590		70953	1.63							Vacant Commercial land			Green Valley Land LLC	4820 Business Center Drive	94543	Partial	
	`0045280490		34417	0.79							Vacant Commercial land			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045280530		68530	1.57						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0027260250		567	0.01						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0027260240		100070	2.30							Vacant Commercial land			Garaventa FF Commons LLC	2540 Bates Avenue, Concord	94520	Partial	
	`0027340080		136984	3.14														
	`0027260230		35656	0.82						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045090120		21025	0.48							Vacant SFR Land	2091 Cordelia Road		2097 & 2121 Cordelia Road LLC	4384 Edinburg CT	94534-9454	Partial	
	`0045090260		23366	0.54						vacant	Vacant SFR Land			Michael D and Anita O'Brien	1908 Vintage Lane	94534	Partial	
	`0045081320		29930	0.69							Manufacturing and Warehousing	5090 Central Way		Michael D and Anita O'Brien	1908 Vintage Lane	94534	Partial	
	`0045300010	`0045300380	8247	0.19										James & Cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300020		15675	0.36										James & Cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300030		8233	0.19							Residential	4912 Central Way		James & Cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300040		8330	0.19					Vacant Shack *possibly 50+ years	vacant land	Vacant SFR Land			James & Cheryl Campi	4334 Rock Lane	94533	Partial	
	`0045300070		17187	0.39			2			vacant land	Government			Fairfield Suisun Unified School District	1025 Delaware Street	94533	Partial	
	`0045300080		73850	1.70			1		California Teacher's Association	Teacher's Association	Government	4751 Central Way	94534-1612	California Teachers Association Bay Section	1705 Murchison Drive	94010	Partial	
	`0045300340		23399	0.54					Solano Education Coalition	Education Association	Taxable Below Min. Value	4735 Central Way	94534	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300350		387	0.01			1		Warehouse Furniture	Furniture Store	Manufacturing and Warehousing	4743 Central Way	94534	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Cordelia Automotive	Body Shop	Manufacturing and Warehousing	4741 Central Way	94534	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Vacant	Vacant	Manufacturing and Warehousing	4739 Central Way	94534	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Continental Auto Glass	Auto Glass Install & Repair	Manufacturing and Warehousing	4737 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300370		8897	0.20			1		Metro II		Manufacturing and Warehousing	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Anyone's Off-Road & Custom	Body Shop	Manufacturing and Warehousing	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
				0.00					Al's Tile and Marble Fino	Marble tile store	Commercial Sales & Service	4733 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300360		8179	0.19			1		Room Express Furniture	Furniture Store	Manufacturing and Warehousing	4731 Central Way	94534-1612	Central Commercial Building	PO Box 966 Benicia	94510	Partial	
	`0045300200		148	0.00			1		Ponder Environmental Services	Environmental Consulting Firm	Manufacturing and Warehousing	125 Grobric CT	94534-1620	Dieter & Michelle Folk	7088 Pleasants Valley Road	95688-9010	Partial	
	`0045300290		23550	0.54			1		California Marine Sports	Water Sport Equipment Store	Commercial Sales & Service	101 Grobric CT	94534-1673	Earl Baca	3901 Serenity Hills Dr, Vacaville	95688	Partial	
	`0045300280		11567	0.27						vacant land	Vacant Commercial Land			Earl Baca	3901 Serenity Hills Dr, Vacaville	95688	Partial	
	`0045300270		42633	0.98						vacant land	Vacant Industrial Land			Ray & Dalia Shamieh	1545 North Texas Street	94533	Partial	
	`0045300260		4650	0.11					Statewide Safety & Signs Inc.	Producers of Signs	Manufacturing and Warehousing	130 Grobric CT	94534	Don & Tamara Nicholas	6325 Mira Cielo, San Luis Obispo	93401	Partial	
	`0045310010		76204	1.75			1		Pearson's Appliance & TV	Appliance & TV store	Commercial Sales & Service	4685 Central Way	94534-1610	Pearson Family Trust	4167 Oakwood Drive	94534	Partial	
	`0045310430		14042	0.32					leased commercial land	vacant unit	Commercial Sales & Service	103 Commerce Court	94534	Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310420	`0045310980	9196	0.21			1		Furniture Expo	Furniture Store	Commercial Sales & Service	103 Commerce Court	94534	Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	

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	`0045310380	`0045310860	21251	0.49			1		Frellen's Casual & Outdoor Furniture	Furniture Store	Commercial Sales & Service	103 Commerce Court	94534	Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310390		1178	0.03						vacant land	Commercial Sales & Service	103 Commerce Court	94534	Gonsalves & Santucci Inc.	5141 Commercial Circle, Concord	94520	Partial	
	`0045310400		2905	0.07						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045310550		1551	0.04					Golf Shop	Golf equipment	Commercial Sales & Service	104 Commerce CT		Vacso Development	50 Crestview Drive, Orinda	94563	Partial	
				0.00					Campways	Camping equipment	Commercial Sales & Service	104 Commerce CT	94534-1781	Vacso Development	50 Crestview Drive, Orinda	94563	Partial	
	`0045310180	`0045310890	59578	1.37							Commercial Sales & Service	4670 Central Way	94534-1809	B&L Properties II LLC	977 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310650		79556	1.83							Commercial Sales & Service	4670 Central Way	94534-1809	B&L Properties II LLC	977 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310660		118088	2.71							Commercial Sales & Service	4560 Central Way	94534-1609	Maurice Epps	8 Willotta Drive	94534	Partial	
	`0045310600		43	0.00							Vacant Commercial Land			Edith Huey-Chu Hsieh	2536 Cerro Vista Lane	94507	Partial	
	`0045310560		4560	0.10							Vacant Commercial Land			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0045310870		22889	0.53							Vacant Commercial Land			JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310860		70542	1.62			2		Jack in the Box	Fast Food Restaurant	Commercial Sales & Service	4490 Central Way	94534-1609	JSR Enterprises	4106 Fall Creek CT	94534	Partial	
				0.00					Chevron Gad Station	Gas/Service Station	Service Station	4490 Central Way	94534-1609	JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310580		6405	0.15										Origone & Origone	5261 N Highway 99, Stockton, CA	95212		
	`0045310850	`0045310850	21634	0.50			1		Starbucks	Coffee/Food	Commercial Sales & Service	4470 Central Way	94534-1805	Origone & Origone	5261 N Highway 99, Stockton, CA	95212	Full	
	`0045310120		6745	0.15							Service Station	4450 Central Way	94534-1609	World Oil Management Co.	PO Box 2099 Houston TX	77252	Partial	
	`0045340180		3933	0.09							Service Station	134 Pittman Road	94534-1654	Clover Trust 1997-1	PO Box 59365 Schaumburg, IL	60159-0365	Partial	
	`0045340500		3186	0.07							Commercial Sales & Service	190 Pittman Road	94534-1654	Worthing Ford Buxton	3700 Mt. Diablo Boulevard, Lafayette	94549	Partial	
	`0045340320		13610	0.31			parking lot				Commercial Sales & Service	4350 Central Place	94534-1605	Fairfield CWI Associated Ltd.	PO Box 90018 Bowling Green, KY	42102-9018	Partial	
	`0045340110		9351	0.21			small portion of a mini-golf course		Scandia Family Center		Commercial Sales & Service	4300 central Way	94534	Laura & Lee Jensen	1889 Altas Peak Road, Napa	94558	Partial	
	`0027260120		30039	0.69	21.62	941,767					Agricultural Land			Meredith Carter	4950 Gordon Valley Road	94534	Partial	
	`0028692400		3204	0.07						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Full	
	`0028692420		43657	1.00						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Full	
	`0028792120		20368	0.47							Manufacturing and Warehousing	2102 Courage Drive	94533-6719	John Howard Luttgens	PO Box 891870 Temecula	92589	Partial	
	`0031301440		23326	0.54						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010170		80613	1.85						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0032010190		74512	1.71						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0032010320		48736	1.12						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010300		50498	1.16						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010470		74874	1.72							Vacant Industrial Land			Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010140		139788	3.21						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0032010280		9400	0.22						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
Alternative B - Map 5	`0046050180		546440	12.54	157.61	6,865,491					Agricultural Land	3360 Ramsey Road		Seecon Financial & Const. Co.	4021 Port Chicago Highway, Concord	94524	Partial	
	`0180070070		54284	1.25						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0180070060		60998	1.40							Vacant SFR Land			Albert D Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0180160010		70486	1.62						vacant land	Government			Fairfield City	1000 Webster Street, 3rd Floor	94533	Partial	
	`0180160020		274635	6.30							Vacant SFR Land			Albert D Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0045090120		21025	0.48							Vacant SFR Land	2091 Cordelia Road		2097 & 2121 Cordelia Road LLC	4384 Edinburg CT	94534-9454	Partial	
	`0045090260		23366	0.54							Vacant SFR Land			Michael D and Anita O'Brien	1908 Vintage Lane	94534	Partial	
	`0045081320		29930	0.69							Manufacturing and Warehousing	5090 Central Way		Michael D and Anita O'Brien	1908 Vintage Lane	94534	Partial	
	`01180110090			0.00					Sierra Truck & Van	Body Shop	Manufacturing and Warehousing	225 Lopes Way	94534				Partial	
	`0045300010	`0045300380	8247	0.19										James & Cheryl Campi	4334 Rock Lane	94533	Partial	
Alternative B - Map 6	`0028750130		14949	0.34							Manufacturing and Warehousing	1 Jelly Belly Lane	94533-6722	Herman Rowland	1 Jelly Belly Lane	94533-6741	Partial	
	`0028750310		15407	0.35							Vacant Industrial Land			Philip Garrett	3428 Ettie Street, Oakland	94608	Partial	
	`0028792140		7837	0.18							Manufacturing and Warehousing	2300 North Watney Way	94533-6720	Thomas & Susan Chipman	1040 Marina Village Pkwy, Alameda	94501	Partial	
	`0028792100		14126	0.32							Vacant Industrial Land			Thomas & Susan Chipman	1040 Marina Village Pkwy, Alameda	94501	Partial	
	`0028792110		9633	0.22							Vacant Industrial Land			DGP Associates	30977 San Antonio Road, Hayward	94544	Partial	
	`0028792130		658	0.02							Vacant Industrial Land	2100 Courage Drive		DGP Associates	30977 San Antonio Road, Hayward	94544	Partial	
	`0028792120		20368	0.47							Manufacturing and Warehousing	2102 Courage Drive		John Howard Luttgens	PO Box 891870 Temecula	92589	Partial	
	`0028692400		3204	0.07						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Full	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building(s) to be displaced	# of Existing Residential Building(s) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zipcode	Owner	Owner Address	Owner Zipcode	Full or Partial Take of Parcel	Notes
	`0028692420		43657	1.00						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Full	
	`0031301440		23326	0.54						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0031170340		2766	0.06							Improved Multiple Residential	201 Pennsylvania Avenue		Fairfield Park Apartments	414 East Chapman Avenue, Orange	92866	Partial	
	`0032010400		16619	0.38							Manufacturing and Warehousing	2001 Meyer Way		Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010410		13848	0.32							Manufacturing and Warehousing	2001 Meyer Way		Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010420		7561	0.17							Vacant Industrial Land			Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010470		95573	2.19							Vacant Industrial Land			Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010460		35487	0.81							Vacant Industrial Land			Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Partial	
	`0032010440		110494	2.54							Vacant Industrial Land			Meyer Cookware Industries Inc.	1 Meyer Place, Vallejo	94590	Full	
	`0032010350		13124	0.30						vacant land	Government			SAC & San Joaquin Drain Distribution	1416 Ninth Street RM 431 Sacramento	95814	Partial	
	`0032010140		205945	4.73						vacant land	Government			Fairfield city	1000 Webster Street, 3rd Floor	94533	Partial	
	`0032010170		80613	1.85						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0032010320		48736	1.12						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010190		74512	1.71						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0032010300		50498	1.16						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010280		9400	0.22						vacant land	Government			California State	Department of Transportation D Street, Stockton	95201	Partial	
	`0032010390		1021279	23.45	65	2,831,400					Agricultural Land			Tom Gentry California Co.	PO Box 295, Honolulu	96809	Partial	
	`0032010230		584356	13.41						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0032020100		101529	2.33						vacant land	Government			Tom Gentry California Co.	PO Box 295, Honolulu	96809	Partial	
	`0032020040		142980	3.28	5	217,800					Agricultural Land			Gregory Gilbert	8776 Killdee CT, Orangevale	95662	Partial	
	`0032020140		437913	10.05	21.51	936,976					Agricultural Land			Tom Gentry California Co.	PO Box 295, Honolulu	96809	Partial	
	`0032020160		83285	1.91	4.54	197,762					Agricultural Land			Tom Gentry California Co.	PO Box 295, Honolulu	96809	Partial	
	`0023020260		7081	0.16							Vacant Industrial Land			Penske Truck Leasing Co.	Route 10 and Pheasant Road, PA	19603	Partial	
	`0032020290		29281	0.67							Vacant Industrial Land			Solano Bay Tow Inc.	413 Chyrl Way, Suisun City	94585	Partial	
	`0032020250		424739	9.75						vacant land	Government	off of Pennsylvania Avenue		Penske Truck Leasing Co.	Route 10 and Pheasant Road, PA	19603	Partial	
	`0032111010		2266	0.05						vacant land	Government			Suisun City	701 Suisun Street	94585	Partial	
	`0032113130		1848	0.04					Residential House *Possibly 50+ years	House	Improved SFR Properties	200 Solano Street		Rodney Mullin	200 Solano Street, Suisun City	94585	Partial	
	`0032113010		1160	0.03					Junk Yard	junk yard	Commercial Sales & Service	201 Sacramento Street		Pensco Trust Company Custodian	2067 Mt. Diablo Boulevard, Walnut Creek	94596	Partial	
	`0032081310		1287	0.03			1		Suisun Roofing Supply	Roofing Tiles	Manufacturing and Warehousing	260 Benton CT		Engell Brothers	PO Box GG Fairfield	94533	Partial	
	`0032081060		9293	0.21			1		Suisun Roofing Supply	Roofing Tiles	Manufacturing and Warehousing	263 Benton CT		Engell Brothers	PO Box GG Fairfield	94533	Partial	
	`0032081050		8650	0.20					Roofing Tile Yard	tile yard	Vacant Industrial Land	257 Benton CT		Engell Brothers	PO Box GG Fairfield	94533	Partial	
	`0032081030		9176	0.21			1		Unknown	Possible Body Shop	Manufacturing and Warehousing	241 Benton CT		Dana Fennie	508 Cottonwood Drive	94533	Partial	
	`0032081020		8975	0.21					Hi-Tech Auto Service	Body Shop	Commercial Sales & Service	237 Benton CT		Kishore Sarup	237 Benton CT, Suisun City	94585	Partial	
	`0032052210		14229	0.33			1		The Hitman	Termite & Pest Control	Commercial Sales & Service	229 Benton Ct		Kishore Sarup	237 Benton CT, Suisun City	94585	Partial	
				0.00					Clear Image	Signs	Commercial Sales & Service	227 Benton Ct		Kishore Sarup	237 Benton CT, Suisun City	94585	Partial	
				0.00							Commercial Sales & Service	225 Benton Ct		Kishore Sarup	237 Benton CT, Suisun City	94585	Partial	
				0.00					Marine Industrial Fire Safety	Marine Fire Safety Equipment	Commercial Sales & Service	223 Benton Ct		Kishore Sarup	237 Benton CT, Suisun City	94585	Partial	
				0.00					Castle Rock Construction	Construction Company	Manufacturing and Warehousing	221 Benton CT		Engell Brothers	PO Box GG Fairfield	94533	Partial	
	`0032052100		4146	0.10			1		Xtreme Cyclez	Bicyle/Motorcycle Store	Commercial Sales & Service	215 Benton Ct		Engell Brothers	PO Box GG Fairfield	94533	Partial	
				0.00							Commercial Sales & Service	213 Benton Ct		Engell Brothers	PO Box GG Fairfield	94533	Partial	
				0.00					Rich Campbell	General Engineering	Commercial Sales & Service	211 Benton ct		Engell Brothers	PO Box GG Fairfield	94533	Partial	
				0.00						vacant land	Commercial Sales & Service	209 Benton Ct		Engell Brothers	PO Box GG Fairfield	94533	Partial	
				0.00					Iron Riders Inc.	Body Shop	Commercial Sales & Service	207 Benton CT		Kurt Cronauer	1295 Horizon Drive	94533	Partial	
	`0032052090		1565	0.04					Kyron's Body Shop	Body Shop	Commercial Sales & Service	205 Benton CT		Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00					Tweed Hut	Recording Studio	Commercial Sales & Service	201 Benton CT		Kurt Cronauer	1295 Horizon Drive	94533	Partial	
	`0032052120		1914	0.04			1		Tidy Tails	Pet Grooming Facility	Commercial Sales & Service	305 Spring Street		Kathryn Shamieh	1004 Spinnaker CT, Suisun City	94585	Partial	
				0.00					Oasaka Massage	Massage Services	Commercial Sales & Service	311 Spring Street		Kathryn Shamieh	1004 Spinnaker CT, Suisun City	94585	Partial	
				0.00					Good Life Health Spa	Spa	Commercial Sales & Service	313 Spring Street		Kathryn Shamieh	1004 Spinnaker CT, Suisun City	94585	Partial	
	`0032020240		99489	2.28					Railway Tracks	vacant land	Government			Suisun Redevelopment Agency	701 civic Center Boulevard, Suisun	94585	Partial	Railway Tracks (part of Caltrain?)

Alternative C and Alternative C-1 Existing Development

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Alternative C-1 - Map 1	`0046050180		515369	11.83	157.61	6,865,491					Agricultural Land	3360 Ramsey Road		Seecon financial & Const Co.	4021 Port Chicago Highway, Concord	94524	Partial	
	`0180070070		53741	1.23						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180070060		80126	1.84							Vacant SFR Land			Alberto Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0180160010		72547	1.67						vacant land	Government			Ricci & Michelle Armijo	233 Eucalyptus Drive, American Canyon	94503	Full	
	`0180160020		288948	6.63							Vacant			Alberto Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0180160220		900177	20.67							Vacant Industrial Land			West Coast Home Builders Inc.	4021 Port Chicago Highway, Concord	94524	Partial	
	`0180160210		24998	0.57							Miscellaneous	5000 Red Top Road	94534-9527	Fairfield-Suisun Unified School district	1975 Pennsylvania Street	94533	Partial	
	No Data		66570	1.53													Partial	No parcel number, part of road
Alternative C - Map 2	`0180160070		167710	3.85							Manufacturing and Warehousing			West Coast Home Builders Inc.	4021 Port Chicago Highway, Concord	94524	Partial	
	No Data		14595	0.34													Partial	
	No Data		10903	0.25													Partial	
	`0180160200		25406	0.58							Manufacturing and Warehousing	5191 Fermi Drive	94534-1607	Panattoni Investments LLC	8401 Jackson Road, Sacramento	95826	Partial	
	`0180130110		90429	2.08							Vacant Industrial Land	490 Edison CT	94534-1636	Yelton Properties	PO Box 2360, Vacaville	95696	Partial	
	`0180130100		14930	0.34						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180130090		41554	0.95			1		UMA Solar	Solar technology	Commercial Sales & Service	499A Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Formaggi Di Ferrante	Cheese producers	Commercial Sales & Service	499A2 Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					The Picture Company	Producers of Wooden Picture Frames	Manufacturing and Warehousing	499B Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					California Imaging	Medical Imaging Equipment, Sales & Service	Commercial Sales & Service	499C Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Vacant Unit	vacant land	Manufacturing and Warehousing	499D Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
	`0180130080		73383	1.68			1		Vacant Unit	vacant land	Manufacturing and Warehousing	495A Edison CT	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Vacant Unit	vacant land	Manufacturing and Warehousing	495D Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					SDH Enterprises	Linen Manufacturer	Manufacturing and Warehousing	495C Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					SDH Enterprises	Linen Manufacturer	Manufacturing and Warehousing	495 B Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
	`0180130070		52709	1.21			1		Fire Department	Fire Hall	Government	473 Edison CT	94534-1636	Patricia Bosco	10085 Lake Edge CT, Truckee	96161	Partial	
				0.00					O' Hara Metal	Metal factory	Manufacturing and Warehousing	473 Edison CT	94534-1636	Patricia Bosco	10085 Lake Edge CT, Truckee	96161	Partial	
				0.00					Clothes Recycle Center	Charity Drop off/distribution center	Commercial Sales & Service	5005 Fulton Drive	94534				Partial	
	`0180130050		80748	1.85			1		Valley Rubber & Gasket		Manufacturing and Warehousing	5045 Fulton Drive	94534-1635	Maria Lasher	PO Box 155 Alamo	94507	Partial	
				0.00					Family Celebration Center	Religious Center	Religious Facility	5045 Fulton Drive	94534-1635	Maria Lasher	PO Box 155 Alamo	94507	Partial	
	`0180030060		43396	1.00			1		Marin Medical		Commercial Sales & Service	497A Edison CT	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Don's Transport/Liquid Trends Northbay	Transport Service	Commercial Sales & Service	497B Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Brewer Metal Products	Brewing Products	Commercial Sales & Service	497C Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Super Store Industries	Dairy Product Manufacturer and Suppliers	Manufacturing and Warehousing	497D & E Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Euro-Machines	vineyard & winery equipment	Manufacturing and Warehousing	497F & G Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
	`0180140190		163172	3.75					Comcast	Internet Company	Commercial Sales & Service	5133 Fulton Drive		Scannell Properties #90 LLC	800 East Ninety-Sixth Street, Indianapolis	46240	Partial	
	`0180140180		64325	1.48			1		Woodline Cabinets	Wood Cabinet producer	Manufacturing and Warehousing	5165 Fulton Drive	94534-1638	Paul & Terri McKay	5165 Fulton Drive	94534	Partial	
	`0180140020		12898	0.30						vacant land	Vacant Industrial Land	5130 Fulton Drive		Fulton Drive Commercial LLC	12885 Alcosta Boulevard, San Ramon	94583	Partial	
	`0180140030		86100	1.98			1		Pacific Coast Steel	Steel Company	Manufacturing and Warehousing	5160 Fulton Drive	94534-1639	Eric Benson	7155 Mission Gorge Road, San Diego	92120	Partial	No area
	`0180140040		93047	2.14			1		Beutter Corp.		Manufacturing and Warehousing	5170 Fulton Drive	94534-4221	Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
				0.00					Ciesco		Manufacturing and Warehousing	5170 Fulton Drive	94534-4221	Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
	`0180140050		66257	1.52							Vacant Industrial Land			Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
	`0180140060		87304	2.00			1		No Name		Manufacturing and Warehousing	355 Watt Drive	94534-4207	Watt Four LLC	355 Watt Drive	94534	Partial	
	`0180140290			2.09			~~1~~		Cal Ceramics/Tom Duffy	ceramic tile & stone manufacturers	Manufacturing and Warehousing	5200 Watt ct	94534-4209	Carlsen Investments LLC	PO Box 4900, Scottsdale, AZ	85261-4900	Partial	
	`0180160180		20499	0.47							Vacant Industrial Land			Alberto Seeno Const. Co.	4021 Port Chicago Highway, Concord	94520	Partial	
	`0180010090		8764	0.20						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180010080		12150	0.28					Jack in the Box	Fast Food Restaurant	Commercial Sales & Service	107 Red Top Road	94534-9500	Vistoria Land Partners LP	3655 Nobel Drive, San Diego	92122	Partial	
	`0180010070		11948	0.27					Circle K	Gas Station	Service Station	119 Red Top Road	94534-9500	Convenience Retailers LLC	PO Box 59365, Schaumburg, IL	60159-0365	Partial	
	`0180010050		31145	0.71			2		Sunnyside Farms	Produces Milk	Manufacturing and Warehousing	199 Red Top Road	94534-9500	Super Store Industries	PO Box 2898	94533	Partial	
	`0180010100		956403	21.96					Thomas Casselbarry, Animal Hospital	Veterinarian Clinic/Animal Hospital	Commercial Sales & Service	117 Red Top Road	94534-9500	Margaret Ferrari	5987 Twin Sisters CT	94585	Partial	
	`0180010110		3205	0.07							Vacant Commercial Land			Margaret Ferrari	5987 Twin Sisters CT	94585	Partial	
	0180-110-023		**40000**	**0.92**							**Vacant Commerical**	**Corner of Lopes Road and Auto Plaza Court**		**Lands of Cordelia I-80 Properties, Inc**	**250 Dittmer Road, Farifield**	**94534-1621**	**Partial**	
	`0148260050		434564	9.98	44.04	1,918,382					Range and Watershed	1646 State Highway 12		Louis & Yolanda Salem	2321 big Ranch Road, Napa	94558	Partial	
	`0148260040		22092	0.51						vacant land	Government	1827 State Highway 12		Vallejo City	555 Santa Clara Street, Vallejo	94590	Partial	

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	`0148260080		598304	13.74	21.66	943,510					Range and Watershed			Thomas Turner & Susan F	1687 Jameson Canyon Road	94503	Partial	
	`0148260090		143303	3.29							Miscellaneous	1687 Jameson Canyon Road		Turner Thomas & Susan F	1687 Jameson Canyon Road	94503	Partial	
	`0148260010		842519	19.34	256.1	11,155,716								Gary Mangles & Mary K	2294 Morrison Lane	94534	Partial	
	`0148270240		294457	6.76							Miscellaneous			Robert Dittmer	3539 Roberts Road	94534	Partial	
	`0148270010		169180	3.88	12.8	557,568					Range and Watershed			Gary & Mary Mangels	2294 Morrison Lane	94534	Partial	
	`0148270340		201253	4.62	42.23	1,839,539					Range and Watershed	3537 Roberts Road		Robert Dittmer	3539 Roberts Road	94534	Partial	
	`0148270060		195838	4.50	5.99	260,924					Agricultural Land			Robert Dittmer	3539 Roberts Road	94534	Partial	
	`0148270290		523273	12.01						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148270300		11202	0.26			1				Commercial Sales & Service	5125 Business Center Drive	94534-1624	Lee's Pet club Inc.	3535 Hollis Street, Emeryville	94601	Partial	
	`0148270310		5394	0.12			1				Commercial Sales & Service	5121 Business Center Drive	94534-1788	Napa Tahoe Spec. Retail Dev.	717 Westholme Avenue, Los Angeles	90024	Partial	
	`0148270320		11912	0.27			1				Commercial Sales & Service	5117 Business Center Drive	94534-1624	Napa Tahoe Spec. Retail Dev.	717 Westholme Avenue, Los Angeles	90024	Partial	
	`0148270330		No Data				1				Commercial Sales & Service	5113 Business Center Drive	94534-1624	Real Estate Association LLC.	633 East Victor Road, Lodi	95240	Partial	No area
	`0148270170		123	0.00							Commercial Sales & Service	511 Business Center Drive	94534-1624	Richard & Beverly Doyle	511 Business Center Drive	94534	Partial	
	`0180120080		62223	1.43							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral properties LLC	9321 West Cordelia Road	94534	Full	
	`0180120070		42645	0.98							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral properties LLC	9321 West Cordelia Road	94534	Partial	
	`0180120050		6222	0.14							Manufacturing and Warehousing	9324 West Cordelia Road		Curtis & CC Beckwith	131 Hidden Glen CT, Vacaville	95688	Partial	
	`0180120060		113247	2.60							Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180120010		56545	1.30							Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180120050		8878	0.20							Commercial Sales & Service	4865 Auto Plaza Court		Simvest Real Estate Properties	655 Montgomery Street, ST 1190, San Francisco, CA	94111	Partial	
	`0180110050	`0180110260	71018	1.63							Commercial Sales & Service	4865 Auto Plaza Court		Simvest Real Estate Properties	655 Montgomery Street, ST 1190, San Francisco, CA	94111	Partial	
	`0045280440		109434	2.51						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045280010		10257	0.24										Fairfield City	1000 Webster Street	94533	Full	
	`0045280060		11883	0.27										Fairfield City	1000 Webster Street	94533	Partial	
	`0045880040		5715	0.13										Fairfield City	1000 Webster Street	94533	Partial	
	`0045280050	`0045280440	9818	0.23										Fairfield City	1000 Webster Street	94533	Full	
	`0045280160		17320	0.40										Fairfield City	1000 Webster Street	94533	Partial	
	`0045250060		9984	0.23										Fairfield City	1000 Webster Street	94533	Full	
	`0045280070		2993	0.07										Fairfield City	1000 Webster Street	94533	Partial	
	`0148280130		21998	0.51						vacant land	Government	3683 Green Valley Road	94534	Fairfield City	1000 Webster Street	94533	Partial	
	`0148280280		4826	0.11							Commercial Sales & Service	5041 Business Center	94534	Watt/Fairfield Associates LP	PO Box 131071, Carlsbad	92013	Partial	
	`0148280120		9751	0.22										Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148280140		3855	0.09						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045310650	`0045310890	21931	0.50							Commercial Sales & Service	4670 Central Way	94534-1809	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310660		17358	0.40							Commercial Sales & Service	4560 Central Way	94534-1609	Maurice Epps	8 Willotta Drive	94534	Partial	
	`0045310120		10741	0.25							Service Station	4450 Central Way	94534-1609	World Oil Management Co.	PO Box 2099 Houston, TX	77252	Partial	
	`0045310850	`0045310850	1037	0.02							Commercial Sales & Service	4470 Central Way	94534-1805	Origone & Origone	5261 North Highway 99, Stockton	95212	Partial	
	`0045310580		3148	0.07							Commercial Sales & Service	4470 Central Way	94534-1805	Origone & Origone	5261 North Highway 99, Stockton	95212	Partial	
	`0045310860		14631	0.34			1				Service Station	4490 Central Way	94534-1609	JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310870		2160	0.05							Vacant Commercial Land			JSR Enterprises	4106 Fall Creek CT	94534	Partial	
	`0045310560		1488	0.03							Vacant Commercial Land			Fairfield City	1000 Webster Street	94533	Partial	
	`0045280540		18228	0.42							Vacant Commercial Land	4725 Business Center Drive	94534-1916	Kaiser Foundation Health plan Inc.	ATTN: Tax and Insurance, Oakland	94612	Partial	
	`0045280550		30575	0.70							Commercial Sales & Service	4665 Business Center Drive	94534-1675	Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280560		13528	0.31							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280570		31396	0.72							Vacant Commercial Land			Copart Inc.	4665 Business Center Drive	94534	Partial	
	`0045280590		146545	3.36							Vacant Commercial Land			Green Valley Land LLC	4820 Business Center Drive	94534	Partial	
	`0045280490		13838	0.32						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045280530		56739	1.30						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045340180		5529	0.13							Service Station	134 Pittman Road	94534-1654	Clover Trust 1997-1	PO Box 59635, Schaumber, IL	60159-0365	Partial	
	`0045340500		4725	0.11							Commercial Sales & Service	190 Pittman Road	94534-1654	Worthington Ford Buxton	3700 MT Diablo Boulevard, Lafayette	94549	Partial	
	`0045340310		1102	0.03							Hotels and Motels	4376 Central Place	94534-1605	Bawa Enterprises Inc.	12671 Garfield, Victorville	92392	Partial	
	`0045340320		3632	0.08							Commercial Sales & Service	4350 Central Place	94534-1605	Fairfield CW I Associated Ltd	PO Box 90018, Bowling Green, KY	42102-9018	Partial	
	`0045340110		22095	0.51			small portion of the mini-golf		Scandia Family Center		Commercial Sales & Service	4300 Central Way	94534	Laura-Lee Jensen	1889 Altas Peak Road, Napa	94558	Partial	
	`0027260240		10102	0.23							Vacant Commercial Land			Garaventa FF Commons LLC	2540 Bates Avenue, Concord	94520	Partial	
	`0027340080		155299	3.57							Vacant Commercial Land	290 Campus CT	94534	88/12	4080 Mallard Drive, Concord	94520	Partial	
	No Data		26107	0.60													Partial	
	`0027350010	`0027350060	224151	5.15										88/12	4080 Mallard Drive, Concord	94520	Partial	
	`0027270030	`0027271030	117561	2.70										Fairfield City	1000 Webster Street	94533	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building's) to be displaced	# of Existing Residential Building's) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zip code	Owner	Owner Address	Owner Zip code	Full or Partial Take of Parcel	Notes
Alternative C - Map 3	`0046050180		515369	11.83	157.61	6,865,491					Agricultural Land	3360 Ramsey Road		Seecon Financial & Const. Co	4021 Port Chicago HWY, Concord	94524	Partial	
	`0180070070		53741	1.23						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180070060		80126	1.84							Vacant SFR Land			Albert D Seeno Const Co.	4021 Port Chicago HWY, Concord	94520	Partial	
	`0180160010		72114	1.66						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0180160220		1307856	30.02							Vacant Industrial Land			West Coast Home Builders Inc.	4021 Port Chicago HWY, Concord	94524	Partial	
	`0180160020		254287	5.84							Vacant Land			Albert D Seeno Const Co.	4021 Port Chicago HWY, Concord	94520	Partial	
	`0180160210		24998	0.57						vacant land	Government	5000 Red Top Road	94534-9527	Fairfield-Suisun Unified School district	1975 Pennsylvania Street	94533	Partial	
Alternative C-1 - Map 4	`0180160070		182305	4.19							Manufacturing and Warehousing			West Coast Home Builders Inc.	4021 Port Chicago Highway, Concord	94524	Partial	
	`0180160200		25406	0.58							Manufacturing and Warehousing	5191 Fermi Drive	94534-1607	Pannattoni Investments LLC	8401 Jackson Road, Sacramento	95826	Partial	
	`0180130110		90429	2.08							Vacant Industrial Land	490 Edison CT	94534-1636	Yelton Properties	PO Box 2360, Vacaville	95696	Partial	
	`0180130100		14930	0.34						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180130090		41554	0.95			1		UMA Solar	Solar technology	Commercial Sales & Service	499A Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Formaggi Di Ferrante	Cheese producers	Commercial Sales & Service	499A2 Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					The Picture Company	Producers of Wooden Picture Frames	Manufacturing and Warehousing	499B Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					California Imaging	Medical Imaging Equipment, Sales & Service	Commercial Sales & Service	499C Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Vacant Unit	vacant land	Manufacturing and Warehousing	499D Edison CT	94534-1698	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
	`0180130080		73383	1.68			1		Vacant Unit	vacant land	Manufacturing and Warehousing	495A Edison CT	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					Vacant Unit	vacant land	Manufacturing and Warehousing	495D Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					SDH Enterprises	Linen Manufacturer	Manufacturing and Warehousing	495C Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
				0.00					SDH Enterprises	Linen Manufacturer	Manufacturing and Warehousing	495 B Edison Court	94534-1683	Edison Industrial 1 LLC	500 Washington Street, San Francisco	94111	Partial	
	`0180130070		52709	1.21			1		Fire Department	Fire Hall	Government	473 Edison CT	94534-1636	Patricia Bosco	10085 Lake Edge CT, Truckee	96161	Partial	
				0.00					O'Hara Metals	Metal Supplier	Manufacturing and Warehousing	473 Edison CT	94534-1636	Patricia Bosco	10085 Lake Edge CT, Truckee	96161	Partial	
				0.00					Clothes Recycle Center	Charity Drop off/distribution center	Commercial Sales & Service	5005 Fulton Drive	94534-1636	Patricia Bosco	10085 Lake Edge CT, Truckee	96161	Partial	
	`0180130050		80748	1.85			1		Family Celebration Center	Religious Center	Religious Facility	5045 Fulton Drive	94534-1636	Maria Lasher	PO Box 155 Alamo	94507	Partial	
				0.00					Valley Rubber & Gasket		Manufacturing and Warehousing	5045 Fulton Drive	94534-1635	Maria Lasher	PO Box 155 Alamo	94507	Partial	
	`0180030060		43396	1.00			1		Marin Medical		Commercial Sales & Service	497A Edison CT	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Don's Transport/Liquid Trends Northbay	Transport Service	Commercial Sales & Service	497B Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Brewer Metal Products	Brewing Products	Commercial Sales & Service	497C Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Super Store Industries	Dairy Product Manufacturer and Suppliers	Manufacturing and Warehousing	497D & E Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
				0.00					Euro-Machines	vineyard & winery equipment	Manufacturing and Warehousing	497F & G Edison Court	94534-1636	Ronals Halterman	7205 Santa Ysabel, Atascadero	93422	Partial	
	`0180140190		163172	3.75					Comcast	Internet Company	Commercial Sales & Service	5133 Fulton Drive		Scannell Properties #90 LLC	800 East Ninety-Sixth Street, Indianapolis	96240	Partial	
	`0180140180		64325	1.48			1		Woodline Cabinets	Wood Cabinet producer	Manufacturing and Warehousing	5165 Fulton Drive	94534-1638	Paul & Terri McKay	5165 Fulton Drive	94534	Partial	
	`0180140020		12898	0.30						vacant land	Vacant Industrial Land	5130 Fulton Drive		Fulton Drive Commercial LLC	12885 Alcosta Boulevard, San Ramon	94583	Partial	
	`0180140030		86110	1.98			1		Pacific Coast Steel	Steel Company	Manufacturing and Warehousing	5160 Fulton Drive	94534-1639	Eric Benson	7155 Mission Gorge Road, San Diego	92120	Partial	
	`0180140040		60914	1.40					Beutter Corp.		Manufacturing and Warehousing	5170 Fulton Drive	94534-4221	Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
				0.00					Ciesco	Technology Company	Manufacturing and Warehousing	5170 Fulton Drive	94534-4221	Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
	`0180140050		36325	0.83							Vacant Industrial Land			Steven Scherner	167 Camino Dorado, Napa`	94559	Full	
	`0180140060		2080	0.05			1		No Name		Manufacturing and Warehousing	355 Watt Drive	94534-4207	Watt Four LLC	355 Watt Drive	94534	Partial	
	`0180140290			2.09					Cal Ceramics/Tom Duffy	ceramic tile & stone manufacturers	Manufacturing and Warehousing	5200 Watt circle	94534-4209	Carlsen Investments LLC	PO Box 4900, Scottsdale, AZ	85261-4900	Partial	
	`0180160180		20499	0.47							Vacant Industrial Land			Fairfield City	1000 Webster Street	94533	Partial	
	`0180010090		8764	0.20						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0180010080		12150	0.28					Jack in the Box	Fast Food Restaurant	Commercial Sales & Service	107 Red Top Road	94534-9500	Vistoria Land Partners LP	3655 Nobel Drive, San Diego	92122	Partial	
	`0180010070		11948	0.27					Circle K	Gas Station	Service Station	119 Red Top Road	94534-9500	Convenience Retailers LLC	PO Box 59365, Schaumburg, IL	60159-0365	Partial	
	`0180010050		31145	0.71			2		Sunnyside Farms	Produces Milk	Manufacturing and Warehousing	199 Red Top Road	94534-9500	Super Store Industries	PO Box 2898	94533	Partial	
	`0180010100		956403	21.96					Thomas Casselbarry, Animal Hospital	Veterinarian Clinic/Animal Hospital	Commercial Sales & Service	117 Red Top Road	94534-9500	Margaret Ferrari	5987 Twin Sisters CT	94585	Partial	
	`0180010110		3205	0.07							Vacant Commercial Land			Margaret Ferrari	5987 Twin Sisters CT	94585	Partial	
	`0148260050		434564	9.98	44.04	1,918,382					Range and Watershed	1646 State Highway 12		Louis & Yolanda Salem	2321 big Ranch Road, Napa	94558	Partial	
	`0148260040		22092	0.51	21.66	943,510				vacant land	Government	1827 State Highway 12		Vallejo City	555 Santa Clara Street, Vallejo	94590	Partial	
	`0148260080		598304	13.74	21.66	943,510					Range and Watershed			Thomas Turner & Susan F	1687 Jameson Canyon Road	94503	Partial	
	`0148270010		177322	4.07	12.8	557,568					Range and Watershed			Gary & Mary Mangels	2294 Morrison Lane	94534	Partial	
	`0148270340		203794	4.68							Miscellaneous	3537 Roberts Road		Robert Dittmer	3539 Roberts Road	94534	Partial	
	`0148260090		143303	3.29							Miscellaneous	1687 James Canyon Road		Thomas Turner & Susan F	1687 Jameson Canyon Road	94503	Partial	
	`0148260010		842519	19.34							Miscellaneous			Gary Mangels & Mary K	2294 Morrison Lane	94534	Partial	
	`0148270340		203794	4.68	42.23	1,839,539					Range and Watershed	3537 Roberts Road		Robert Dittmer	3539 Roberts Road	94534	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building's) to be displaced	# of Existing Residential Building's) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zip code	Owner	Owner Address	Owner Zip code	Full or Partial Take of Parcel	Notes
	No Data		241217	5.54													Partial	No parcel number
	`0148270060		219074	5.03	5.99	260,924					Agricultural Land			Robert Dittmer	3539 Roberts Road	94534	Partial	
	`0148270290		523273	12.01						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148270300		11202	0.26							Commercial Sales & Service	5125 Business Center	94534-1624	Lee's Pet club Inc.	3535 Hollis Street, Emeryville	94601	Partial	
	`0148270310		5394	0.12							Commercial Sales & Service	5121 Business Center Drive	94534-1788	Napa Tahoe Spec. Retail Dev.	717 Westholme Avenue, Los Angeles	90024	Partial	
	`0148270320		11912	0.27							Commercial Sales & Service	5117 Business Center Drive	94534-1624	Napa Tahoe Spec. Retail Dev.	717 Westholme Avenue, Los Angeles	90024	Partial	
	`0148270330		No Data								Commercial Sales & Service	5113 Business Center Drive	94534-1624	Real Estate Association LLC.	633 East Victor Road, Lodi	95240	Partial	No area
	`0148270170		123	0.00							Commercial Sales & Service	5111 Business Center Drive	94534-1624	Richard & Beverly Doyle	511 Business Center Drive	94534	Partial	
	`0180120080		62223	1.43							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral properties LLC	9321 West Cordelia Road	94534	Full	
	`0180120070		42645	0.98							Vacant Industrial Land	9321 West Cordelia Road		Vision Integral properties LLC	9321 West Cordelia Road	94534	Partial	
	`0180120050		6222	0.14							Manufacturing and Warehousing	9324 West Cordelia Road		Curtis & CC Beckwith	131 Hidden Glen CT, Vacaville	95688	Partial	
	`0180120060		113247	2.60							Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180120010		56545	1.30							Vacant Industrial Land			North Bay Properties LLC	250 Dittmer Road	94534	Partial	
	`0180110050	`0180110260	71018	1.63							Commercial Sales & Service	4865 Auto Plaza Court		Simvest Real Estate Properties	655 Montgomery Street, ST 1190, San Francisco, CA	94111	Partial	
	`0045280440		90784	2.08						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045290010		10257	0.24						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045280060		9926	0.23						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0045880040	`0045280440	4494	0.10						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0045280050		9818	0.23						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045250060		9954	0.23						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0045280070		2993	0.07						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0148280130		21998	0.51						vacant land	Government	3683 Green Valley Road	94534	Fairfield City	1000 Webster Street	94533	Partial	
	`0148280280		4826	0.11							Commercial Sales & Service	5041 Business Center	94534-1786	Watt/Fairfield Associates LP	PO Box 131071, Carlsbad	92013	Partial	
	`0148280120		9751	0.22										Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0148280140		3855	0.09						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0045310650	`0045310890	21931	0.50							Commercial Sales & Service	4670 Central Way	94534-1809	B&L Properties II LLC	97 Dobbins Street, Vacaville, CA	95688	Partial	
	`0045310660		17358	0.40							Commercial Sales & Service	4560 Central Way	94534-1609	Maurice Epps	8 Willotta Drive	94534	Partial	
	`0045310120		10741	0.25							Service Station	4450 Central Way	94534-1609	World Oil Management Co.	PO Box 2099 Houston, TX	77252	Partial	
	`0045310850		1037	0.02							Commercial Sales & Service	4470 Central Way	94534-1805	Origone & Origone	5261 North Highway 99, Stockton	95212	Partial	
Alternative C - Map 5	`0027271060		481320	11.05	18	784,080	7	1		farm land	Agricultural Land	4018 Russell Road	94534	Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251330		478887	10.99	61.86	2,694,622					Agricultural Land	4000 Russell Road		Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	
	`0027251425	`0027251390	11522	0.26										S I D	PO Box 536, Vacaville, CA	95688	Partial	
	`0027251340		8530	0.20							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	Engineers sort out
	`0027251440		88807	2.04							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Full	
	No Data		365967	8.40													Partial	
	`0027251370		162274	3.73	20.37	887,317					Agricultural Land	4012 Russell Road		Nick & Enina Orciuoli	1651 Estee Avenue, Napa	94558	Partial	
	`0027251310		109109	2.50	60.53	2,636,687					Agricultural Land			William Robbins	1300 Clay Street, Oakland	94612	Partial	
	`0027251400		2702	0.06							Taxable Below Min. Value			Michelle Valine	4000 Russell Road, Suisun City	94585	Partial	Bike Path
	`0027510030		99228	2.28							Taxable Below Min. Value			Raymond & Betty Conner	39 Conner CT	94534	Partial	
	`0027510200		9560	0.22						vacant land	Government			California State	District 10 PO Box 2038, Stockton	95201	Full	
	`0027510210		61096	1.40						vacant land	Government			California State	District 10 PO Box 2038, Stockton	95201	Full	
	`0027510010		147514	3.39						vacant land	Government			Fairfield City	1000 Webster Street	94533	Full	
	`0027510060		1417	0.03						vacant land	Government			California State	District 10 PO Box 2038, Stockton	95201	Full	
	`0027510160		11721	0.27	4.85	211,266					Agricultural Land			Clyde Loney	4135 Abernathy Road	94534	Partial	
	`0150270050		43918	1.01	7.66	333,670					Agricultural Land	2814 Rockville Road		Dorene Darville	2802 Rockville Road	94534	Partial	
	`0150270060		89136	2.05	10.47	456,073					Agricultural Land	2818 Rockville Road		Dorene Darville	2802 Rockville Road	94534	Partial	
	`0150270080		43198	0.99			3		Suisun Valley Fruit Growers	Fruit Orchard	Manufacturing and Warehousing	4613 Chadbourne Road		Suisun Valley Fruit Growers	Box 417, Suisun	94585	Partial	
	`0150240020		7767	0.18			2		Suisun Valley Fruit Growers	Fruit Orchard	Manufacturing and Warehousing	4162 Chadbourne Road		Suisun Valley Fruit Growers	Box 417, Suisun	94585	Partial	
	`0150240010		58149	1.33						vacant land	Government			Fairfield City	1000 Webster Street	94533	Partial	
	`0028200530		5053	0.12							Commercial Sales & Service			Fairfield Ford Inc.	3050 Automall Court	94534	Partial	
	`0028200570	`0028200740	7704	0.18							Commercial Sales & Service			Fairfield Ford Inc.	3050 Automall Court	94534	Partial	
	`0028123050		21570	0.50							Commercial Sales & Service	2955 Auto Mall Parkway	94533-5833	Napa Associates II	113 North Newport, Napa	94559	Partial	
	`0028123040		732	0.02							Commercial Sales & Service	2901 Auto Mall Parkway	94533-5833	Lithia Real Estate Inc.	360 East Jackson, Medford, OR	97501	Partial	
	`0028750300		8830	0.20							Vacant Commercial Land			Wal-Mart Realty Corp.	2001 SE 10th Street, Bentonville, AR	72716-0550	Partial	
	`0028750290		10229	0.23							Commercial Sales & Service	300 Chadbourne Road	94534-9636	Wal-Mart Realty Corp.	2001 SE 10th Street, Bentonville, AR	72716-0550	Partial	
	`0028750120		4248	0.10							Commercial Sales & Service	1 Jelly Belly Lane	94533-6722	Rowland Family Properties	1 Jelly Belly Lane	94533	Partial	
	`0028750130		16047	0.37							Manufacturing and Warehousing	1 Jelly Belly Lane	94533-6722	Herman Rowland	1 Jelly Belly Lane	94533	Partial	
	`0028750310		15407	0.35							Vacant Industrial Land			Philip Garrett	3428 Ettie Street, Oakland	94608	Partial	
	`0028792140		7837	0.18							Manufacturing and Warehousing	2300 North Watney Way	94533-6720	Thomas & Susan Chipman	1040 Marina Village Parkway, Alameda	94501	Partial	
	`0028792100		14126	0.32							Vacant Industrial Land			Thomas & Susan Chipman	1040 Marina Village Parkway, Alameda	94501	Partial	
	`0028792110		9633	0.22							Vacant Industrial Land			DGP Associates	30977 San Antonio	94544	Partial	

Map	Parcel Number	Parcel Numbers from County	Total Area from Parcel used for Extension (SF)	Total Area from Parcel used for Extension (Acres)	Total Area of Parcel in Acres	Total Area of Parcel in Square Feet	# of Existing Business Building's) to be displaced	# of Existing Residential Building's) to be displaced	Name of Business	Use of Existing Building	Property Type	Displacement Address	Zip code	Owner	Owner Address	Owner Zip code	Full or Partial Take of Parcel	Notes
	`0028792130		15401	0.35							Vacant Industrial Land	2100 Courage Drive	94533-6719	DGP Associates	30977 San Antonio	94544	Partial	
	`0028792120		43648	1.00							Manufacturing and Warehousing	2102 Courage Drive	94533-6719	John Howard Luttgens	PO Box 891870 Temecula	92589	Partial	
	`0028692450		3068	0.07							Improved SFR Properties	2207 Burgundy Way	94533-5854	Esmeralda Ojeda	2207 Burgundy Way	94533	Partial	
	`0028692420		41700	0.96						vacant land	Government			California State	Department of Transportation D Street 10, Stockton	95201	Partial	
	`0031301440		21268	0.49						vacant land	Government			California State	Department of Transportation D Street 10, Stockton	95201	Full	
	`0032010170		80613	1.85						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0032010320		48736	1.12						vacant land	Government			California State	Department of Transportation D Street 10, Stockton	95201	Full	
	`0032010190		74512	1.71						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Full	
	`0032010300		49832	1.14						vacant land	Government			California State	Department of Transportation D Street 10, Stockton	95201	Partial	
	`0032010460		2457	0.06							Vacant Industrial Land			Meyer Cookware Industries	1 Meyer Place, Vallejo	94590	Partial	
	`0032010140		139643	3.21						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0032010390		307383	7.06	65	2,831,400					Agricultural Land			Tom Gentry California CO.	PO Box 295, Honolulu, HI	96809	Partial	
	`0032010230		29234	0.67						vacant land	Government			Fairfield Redevelopment Agency	1000 Webster Street	94533	Partial	
	`0031170340		2832	0.07							Improved Multiple Residential	201 Pennsylvania Avenue	94533-6458	Fairfield Park Apartments	414 East Chapman Avenue, Orange	92866	Partial	
	`0032020260		53558	1.23							Vacant Industrial Land			Penske Truck Leasing Co	Route 10 & Pheasant Road, Reading, PA	19603	Partial	
	`0032020250		255801	5.87							Vacant Industrial Land			Penske Truck Leasing Co	Route 10 & Pheasant Road, Reading, PA	19603	Full	
	`0032020270		14716	0.34							Commercial Sales & Service	1249 Illinois Street	94533-6469	Wayne & Jane Day	1249 Illinois Street	94533	Partial	
	`0032020210		65977	1.51	2.73	118,918	1				Government			Fairfield Suisun Sewer Dist.	1010 Chadbourne Road	94534	Partial	
	`0032020180		1394	0.03							Taxable Below Min. Value			Fairfield City	1000 Webster Street	94533	Partial	
	`0032020040		37894	0.87	5	217,800					Agricultural Land			Gregory Gilbert	8776 Killdee CT, Orangeville	95662	Partial	
	`0032020140		374831	8.60	21.51	936,976					Agricultural Land			Tom Gentry California CO.	ATTN: Accounting, Honolulu, HI	96809-0295	Partial	
	`0032020190		4977	0.11							Taxable Below Min. Value			Fairfield City	1000 Webster Street	94533	Partial	
	`0032020200		328148	7.53							Taxable Below Min. Value			Fairfield City	1000 Webster Street	94533	Full	
	`0032031020		24224	0.56						vacant land	Government			Pacific Gas & Electric Co.	Tax Department B8E, San Francisco	94177	Full	
	`0032031030		10643	0.24						vacant land	Government			California State	Department of Transportation D Street 10, Stockton	95201	Full	
	`0032020160		123279	2.83	4.54	197,762					Agricultural Land			Tom Gentry California CO.	ATTN: Accounting, Honolulu, HI	96809-0295	Partial	
	`0032052120		1311	0.03			1		Tidy Tails	Pet Grooming	Commercial Sales & Service	305 Spring Street	94585-2433	Kathryn Shamieh	1004 Spinnaker CT	94585	Partial	
				0.00					Oasaka Massage	Massage Services	Commercial Sales & Service	311 Spring Street	94585-2433	Kathryn Shamieh	1004 Spinnaker CT	94585	Partial	
				0.00					Good Life Health Spa	Spa Services	Commercial Sales & Service	313 Spring Street	94585-2433	Kathryn Shamieh	1004 Spinnaker CT	94585	Partial	
	`0032020240		9061	0.21					Railway Tracks	tracks	Government			Suisun Redevelopment Agency	701 Civic Center Boulevard, Suisun	94585	Partial	
	`0032052090		1236	0.03			1		Tweed Hut	Recording Studio	Commercial Sales & Service	201 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00					Kyron's Body Shop	Body Shop	Commercial Sales & Service	205 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
	`0032052100		3670	0.08					Iron Riders Inc.	Body Shop	Commercial Sales & Service	207 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00						vacant land	Commercial Sales & Service	209 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00					Rich Campbell	General Engineering	Commercial Sales & Service	211 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00					Xtreme Cyclez	Bicycle/Motorcycle Store	Commercial Sales & Service	213 Benton Ct	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
				0.00							Commercial Sales & Service	215 Benton CT	94585-2405	Kurt Cronauer	1295 Horizon Drive	94533	Partial	
	`0032052210		13383	0.31			1		Castle Rock Construction	Construction Company	Manufacturing and Warehousing	221 Benton CT	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
				0.00					Marine Industrial Fire Safety	Water Fire Safety	Commercial Sales & Service	223 Benton Ct	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
				0.00					Clear Image	Producer of Signs	Commercial Sales & Service	225 Benton Ct	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
				0.00							Commercial Sales & Service	227 Benton Ct	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
				0.00					The Hitman	Termite & Pest Control	Commercial Sales & Service	229 Benton Ct	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
	`0032081020		8971	0.21					Hi-Tech Auto Service	Body Shop	Commercial Sales & Service	237 Benton CT	94585-2405	Kishore Sarup	237 Benton CT	94585	Partial	
	`0032081030		9176	0.21			1		Unknown	Possible body shop	Manufacturing and Warehousing	241 Benton CT	94585-2405	Dana Fennie	508 Cottonwood Drive	94533	Partial	
	`0032081040		8763	0.20			2		Vacant Unit	vacant land	Manufacturing and Warehousing	247 Benton CT	94585-2405	Spiros & rochelle Kontogiannis	760 Kellogg Street	94585	Partial	
	`0032081050		8470	0.19					Roofing Tile Yard	Roofing Supplies	Vacant Industrial Land	257 Benton CT	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
	`0032081060		8635	0.20			1		Suisun Roofing & Supply	Roofing Supplies	Manufacturing and Warehousing	263 Benton CT	94585-2405	Engell Brothers	PO Box GG	94533	Partial	
	`0032081310		859	0.02			1		Suisun Roofing & Supply	Roofing Supplies	Manufacturing and Warehousing	260 Benton CT	94585-2406	Engell Brothers	PO Box GG	94533	Partial	
	`0032111010		91667	2.10						vacant land	Government			Suisun City	701 Suisun Street, Suisun	94585	Partial	
	`0032113130		7471	0.17					Residential House * Possibly 50+ years	house	Improved SFR Properties	200 Solano Street	94585-2429	Rodney Mullin	200 Solano Street, Suisun	94585	Full	
	No Data		4916	0.11													Partial	Part of the street, no parcel number

Appendix J Environmental Commitment Record

Appendix J Environmental Commitment Record

Environmental Commitments

Avoidance, Minimization, and/or Mitigation Measures	Implementation Means	Responsible Party	Timing
HUMAN ENVIRONMENT			
Land Use			
None			
Growth			
None			
Farmlands			
Provide Replacement Conservation Easement	Compensatory Mitigation	Project proponent	Prior to construction
Community Impacts			
None			
Utilities and Emergency Services			
Minimize Disruption of Utilities Services	Agreement	Construction Contractor	During Construction
Prepare Transportation Management Plan (TMP)	Agreement	Project proponent	Prior to Construction
Traffic and Transportation/Pedestrian and Bicycle Facilities			
Design and Construct Intersection Improvements		Project proponent	Design
Maintain Existing and Accomodate Planned Bicycle and Pedestrian Facilities		Project proponent	Design
Adjust Transit Routes and Stops as Needed		Project proponent	Design
Develop and Implement a Transportation Management Plan and Construction Scheduling to Minimize Adverse Effects		Project proponent or construction contractor	Prior to and during construction
Visual and Aesthetic Resources			
Replace Landscaping as Appropriate	Follow up project	Project proponent	After project completion
Incorporate Appropriate Light and Glare Screening Measures		Project proponent	Design
Use Appropriate Building Materials and Forms for the Westbound Truck Scales	Standard Specification	Project proponent or construction contractor	Design/Construction
Incorporate Aesthetic Recommendations in Design of Freeway-Related Structures	Standard Specifications	Project proponent	Design
Cultural Resources			
Development of Programmatic Agreement and Historic Properties Treatment Plan	Agreement	Project proponent	Proir to construction
PHYSICAL ENVIRONMENT			
Hydrology and Floodplain			
Construct Upstream Inlet Structure and Underground Flood Control Storage		Project proponent	Design
Water Quality and Stormwater Runoff			
Prepare and Implement Storm Water Pollution Prevention Plan and Best Management Practices	Permit	Construction contractor	Prior to construction

Avoidance, Minimization, and/or Mitigation Measures	Implementation Means	Responsible Party	Timing
Geology/Soils/Seismic/Topography			
Implement Requirements from State and Local Standards into Final Project Design	Standard Specifications	Project proponent	Design
Implement Recommendations from Draft Geotechnical Reports to Accommodate Permanent Fault-Related Ground Deformation Effects from Surface Fault Rupture on Project Facilities and to Accommodate Effects of Ground Shaking on Project Facilities	Agreement	Project proponent	Design
Conduct Future Geotechnical Investigations	Standard Specifications	Project proponent	Design
Implement Recommendations from Draft Geotechnical Report to Accommodate Effects of Liquefaction on Project Facilities/Design Specific Project Elements to Accommodate Effects of Liquefaction		Project proponent	Design
Conduct Future Geotechnical Investigation/Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Slope Failure on Project Facilities		Project proponent	Design
Implement Preliminary Recommendations from Draft Geotechnical Report to Accommodate Effects of Consolidation Settlements on Project Facilities		Project proponent	Design
Paleontology			
Conduct Preconstruction Surveys	Standard Specification	Project proponent	Prior to construction
Educate Construction Personnel in Recognizing Fossil Material		Project proponent or construction contractor	Immediately prior to and during construction
Retain a Qualified Professional Paleontologist to Monitor Ground-Disturbing Activities		Project proponent or construction contractor	During construction
Stop Work and Conduct Appropriate Treatment if Substantial Fossil Remains Are Encountered During Construction	Standard Specifications	Construction contractor	During construction
Hazardous Waste/Materials			
Perform Groundwater Contamination Testing		Project proponent	Prior to construction
Develop a Health and Safety Plan to Address Worker Health and Safety	Standard Specification	Project proponent or Construction Contractor	Prior to construction
Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadways			
Dispose of Soils Contaminated with ADL, Arsenic, Pesticides, and Herbicides in Accordance with Appropriate Regulations	Standard Specification	Construction contractor	During and after construction
Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals		Construction contractor	During construction
Sampling and Testing of Groundwater		Project proponent	Prior to construction

Avoidance, Minimization, and/or Mitigation Measures	Implementation Means	Responsible Party	Timing
Air Quality			
Amend the Transportation Improvement Program to Include Additional Alternatives	Agreement	Project proponent	Prior to approval
Implement Measures to Reduce MSAT and Criteria Pollutant Emissions		Project proponent	
Implement California Department of Transportation Standard Specification Section 14	Standard Specifications	Construction contractor	Prior to and during construction
Implement Additional Control Measures for Construction Emissions of Fugitive Dust	Agreement	Project proponent and construction contractor	During construction
Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment	Agreement	Construction contractor	During construction
Noise			
Minimize Construction Noise	Standard Specification	Construction contractor	During construction
Energy			
None			
BIOLOGICAL ENVIRONMENT			
Natural Communities			
Place Environmentally Sensitive Area Fencing around the Construction Area to Protect Sensitive Biological Resources In and Near the Construction Area	Permit	Construction contractor/biologist	Prior to and during construction
Conduct Environmental Awareness Training for Construction Employees	Permit	Project proponent or construction contractor	Prior to and during construction
Retain a Biological Monitor to Conduct Daily Visits during Construction in Sensitive Habitats	Permit	Project proponent or construction contractor	During construction
Avoid and Minimize Potential Disturbance of Riparian Communities	Permit	Construction contractor	During construction
Compensate for Temporary and Permanent Loss of Riparian Vegetation	Compensatory Mitigation	Project proponent	After project completion
Wetlands and Other Waters			
Protect Water Quality and Prevent Erosion and Sedimentation into Drainages and Wetlands	Permit	Project proponent or construction contractor	During construction
Restore Temporarily Disturbed Drainage Habitat and Compensate for Permanent Loss of Drainage Habitat	Permit	Construction contractor	After project completion
Restore Temporarily Disturbed Perennial Marsh	Permit	Construction contractor	After projec completion
Compensate for Permanent Loss of Wetlands	Compensatory Mitigation	Project proponent	After project completion
Plant Species			
None			

Avoidance, Minimization, and/or Mitigation Measures	Implementation Means	Responsible Party	Timing
Animal Species			
Conduct Preconstruction Surveys for Western Pond Turtle		Project proponent or construction contractor	Immediately prior to construction
Conduct Preconstruction Nesting Bird and Raptor Surveys and Establish a No-Disturbance Buffer, if Necessary		Project proponent or construction contractor	Immediately prior to construction
Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary	Permit	Project proponent or construction contractor	Immediately prior to construction
Compensate for Loss of Burrowing Owl Nesting Habitat	Compensatory mitigation	Project proponent	After project completion
Conduct Preconstruction Nesting Surveys for Northern Harrier in the Annual Grassland Habitat North of SR 12W		Project proponent or construction contractor	After project completion
Prevent Swallows from Nesting Adjacent to New Bridge Construction		Project proponent or construction contractor	After project completion
Conduct Preconstruction Surveys for Roosting Bats in Mature Trees		Project proponent or construction contractor	After project completion
Prevent Contaminants and Hazardous Materials from Entering the Stream Channel	Permit	Construction contractor	During construction
Restrict In-Water Work to Avoid Special-Status Fish Spawning Seasons	Permit	Construction contractor	During construction
Minimize Impacts on Creek Channels	Standard specifications	Construction contractor	During construction
Provide Alternate Migration Corridor through Creek Channels	Permit	Construction contractor	During construction
Minimize Noise Impacts on Special-Status Fish Species	Permit	Constrution contractor	During construction
Avoid Potential Fish Spawning Habitat	Permit	Construction Contractor	During construction
Implement Culvert Retrofit at the SR 12 Crossing on Ledgewood Creek		Project proponent	Design
Threatened and Endangered Species			
Compensate for the Loss of Contra Costa Goldfields	Compensatory mitigation	Project proponent	After project completion
Avoid and Minimize Potential Direct and Indirect Disturbance of Populations of Callippe Silverspot Butterflies	Permit	Construction contractor	During construction
Avoid and Minimize Potential Indirect Disturbance of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat	Permit	Construction contractor	During construction
Compensate for Loss of Direct and Indirect Impacts on Vernal Pool Fairy Shrimp or Vernal Pool Tadpole Shrimp Habitat	Compensatory mitigation	Project proponent	After project completion
Establish a Minimum 20-Foot-Wide Buffer around All Elderberry Shrubs Where Feasible	Permit	Construction contractor	During construction
Implement Dust Control Measures	Permit	Construction contractor	During construction

Avoidance, Minimization, and/or Mitigation Measures	Implementation Means	Responsible Party	Timing
Compensate for Direct Effects on Valley Elderberry Longhorn Beetle Habitat	Compensatory mitigation	Project proponent	After project completion
Conduct Preconstruction Surveys for California Red-Legged Frog	Permit	Project proponent	Immediately prior to construction
Monitor Construction Occurring near Potential California Red-Legged Frog Habitat	Permit	Project proponent/Construction contractor	During construction
Compensate for Loss and Disturbance of California Red-Legged Frog Habitat	Compensatory mitigation	Project proponent	After project completion
Compensate for Loss of Swainson's Hawk Foraging Habitat	Compensatory mitigation	Project proponent	After project completion
Invasive Species			
Avoid the Introduction and Spread of Invasive Plants	Standard specification	Construction contractor	During construction
Native Trees			
None			
Suisun Marsh Secondary Management Area			
None			

CEQA Mitigation Measures

To mitigate impact to important farmland (those lands classified as “prime farmlands”), long-term land use restrictions such as agricultural conservation easements shall be obtained over Prime Farmland within Solano County at a 1:1 ratio (1 acre protected for every 1 acre directly affected). Lands under an agricultural conservation easement are considered to have higher agricultural value than other agricultural land in the project area. As such, the mitigation for the loss of lands under easement will be implemented at a higher ratio of 1.25:1.
Refer to mitigation presented above for conversion of agricultural land to non-agricultural uses.

Appendix K Glossary

Appendix K Glossary

Action – An "action," a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Handbook, the terms "project", "proposal" and "action" are used interchangeably unless otherwise specified. An action may be categorized as a "categorical exclusion" or a "major federal action."

Area of Potential Effect – A term used in Section 106 to describe the area in which historic resources may be affected by a federal undertaking.

Attainment Area – An area that meets air quality standards.

Auxiliary Lane – A traffic lane downstream of an entrance ramp to accommodate merging traffic, a lane upstream of an exit ramp to accommodate diverging traffic, or a lane between two closely spaced interchanges to accommodate weaving traffic.

Beneficial Use – A use of a natural water resource that enhances the social, economic, and environmental well-being of the user. Twenty-one beneficial uses are defined for the waters of California, ranging from municipal and domestic supply to fisheries and wildlife habitat.

Best Management Practice (BMP) – Any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution.

California Department of Fish and Game (DFG) – The state agency that manages California's wildlife and plant resources.

California Department of Transportation (Department) – Responsible for planning, designing, building, operating, and maintaining California's state highway system.

California Environmental Quality Act (CEQA) – A California law that requires state, local, and other agencies to evaluate the environmental implications of their actions.

California Register of Historic Resources (CRHR) – A comprehensive listing of documented cultural resources that meet the criteria for a "historical resource" (as defined in the California Administrative Code), maintained by the State Office of Historic Preservation. Any historic property determined eligible for listing in the National Register of Historic Places qualifies automatically for the CRHR.

Candidate Species – Any species of fish, wildlife, or plant which has been determined to be candidates for listing under Section 4 of the Endangered Species Act of 1972 (amended).

Clean Water Act – A federal law that regulates the discharge of pollutants into waters of the United States.

Cooperating Agency – Under NEPA, any agency other than the lead agency which has jurisdiction by law of special expertise with respect to any environmental impact involved in a

proposal for any action significantly affecting the human environment. Under CEQA, the term "responsible agency" is used.

Corridor – A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes.

Criteria air pollutant – A pollutant that has standards that have been established to meet specific public health and welfare criteria.

Cultural Resources – Archaeological and historic resources, including buildings, sites, districts, structures, or objects having historical, architectural, archaeological, or cultural association.

Cumulative Impact – 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.

dBA – A sound level in decibels, measured with a sound level meter, having metering characteristics and frequency weighting specified in American National Standard Specifications for sound level meters (ANSI S1.4-1971). It is common to refer to numerical units of an A-weighted sound level as "dBA".

Decibel – A numerical expression of the relative loudness of a sound.

Draft Environmental Impact Report (DEIR) – A draft report, circulated for public review, that analyzes potential environmental impacts of a proposed project in compliance with CEQA.

Draft Environmental Impact Statement (DEIS) – A draft report, circulated for public review, that analyzes environmental effects of a proposed project in compliance with NEPA.

Encroachment (floodplain) – An action within the limits of the 100-year floodplain.

Endangered Species – A plant or animal species that is in danger of extinction throughout all or a significant portion of its range.

Environmental Document – A draft or final Environmental Impact Report (EIR), Environmental Impact Statement (EIS), Finding of No Significant Impact (FONSI), Environmental Assessment (EA), Initial Study (IS) or Negative Declaration (ND).

Equivalent Sound Level (L_{eq}) – A measure of sound energy over a period of time, or a sound level which, in a stated period of time, would contain the same acoustical energy as the time-varying sound during the same period.

Erosion – The wearing away of the land surface by running water, wind, ice, or other geologic agents.

4(f) Resources – Resources protected by Section 4 (f) of the Department of Transportation Act. These include public park and recreation lands, wildlife and waterfowl refuges, and cultural resources eligible for listing or listed on the National Register.

Federal Highway Administration (FHWA) – The federal agency that coordinates highway transportation programs in cooperation with states and other partners. It provides federal financial assistance tot eh states to construct and improve the National Highway System, urban and rural roads, and bridges.

Federal Register – A federal publication that provides official notice of Federal administrative hearings and issuance of proposed and final federal administrative rules and regulations.

Floodplain – The part of the ground surface inundated with water on a recurring basis, usually associated with the one percent recurrence interval (100-year) flow.

Freeway – A divided arterial highway with full control of access and with grade separations at intersections.

General Plan – A document that contains policies used to implement the goals of a community.

Geomorphic – Of the earth's surface configuration.

Geomorphic Province – A topographic-geologic grouping of land based on landforms, rock types, and geologic structure.

Groundwater – Water beneath the earth's surface between saturated soil and rock that supplies wells and springs.

Habitat – The place or type of site where a plant or animal naturally or normally lives and grows.

High Occupancy Vehicle (HOV) – Vehicles occupied by two (sometimes three) or more persons such as carpools and busses.

High Occupancy Vehicle Lane (HOV Lane) – A system of exclusive lanes signed and striped for use by vehicles with multiple occupants (two or more, or three or more, persons). HOV lanes are designed on roadways to reduce traffic congestion, improve safety, reduce fuel consumption, and improve air quality.

Historic Property – Any prehistoric or historic sited, building, structure, object, or district included in or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by Secretary of the Interior.

Hot Spot – A location where air pollutant emissions from specific sources may expose individuals to elevate risks of adverse health effects.

Inversion – A layer of warm air over cooler air that traps air pollution below it.

Intactness – The visual integrity of the natural and built landscape.

L_{eq} – A unit used for evaluation of sound impacts; the measurement of the fluctuating sounds level received by a receptor averaged over a time interval (usually one hour).

Landscape Unit – A geographically distinct portion of an area that has a particular visual characteristics.

Lead Agency – The public agency which has primary responsibility for carrying out or approving a project and preparing the environmental document.

Level of Service (LOS) – The qualitative description of operating level of an intersection or roadway segment based on delay and maneuverability. It can range from "A," representing free flow conditions, to "F," representing gridlock.

Liquefaction – The loss of strength that can occur in loose, saturated soil during or following seismic shaking. This condition can produce a number of ground effects, including lateral spreading boils, ground lurching, and settlement of fill material.

Maintenance Area – An area that had previously been designated a non-attainment area, but now meets applicable air quality standards.

Metropolitan Transportation Commission (MTC) – The transportation planning, coordinating, and financing agency for the nine-county San Francisco Bay Area. It functions as both the region's metropolitan transportation planning agency and as the region's metropolitan planning organization – state and federal designations, respectively.

Migratory Bird Act of 1918 – Reflects agreements involving the United States, Great Britain (for Canada), Mexico, Japan, and the former Soviet Union to protect migratory bird populations.

Mitigation – Compensation for an impact by replacement or provision of substitute resources or environments. Measures taken to minimize adverse environmental impacts. Mitigation could reduce the magnitude and extent of an impact from a level of significance to a level of insignificance.

National Environmental Policy Act (NEPA) – The United States' basic national charger for protection of the environment. It established policy, sets goals, and provides means for carrying out the policy.

National Historic Preservation Act of 1966 (NHPA) – The primary federal law pertaining to protection of cultural resources.

National Pollution Discharge Elimination System (NPDES) permit – A permit required by the Regional Water Quality Control Board that is required if more than one acre of original ground is graded to prevent harmful pollutants from being washed by storm water runoff into local water bodies. One condition of this permit is that the contractor must submit a Storm Water Pollution Prevention Plan (SWPPP), which is similar to the Water Pollution Control Plan required by Caltrans' Standard Specification 7-1.01G.

National Register of Historic Places (NRHP) – A federal listing of historic resources protected under the National Historic Preservation Act of 1966.

Native American Heritage Commission (NAHC) – In California, the NAHC consists of nine members appointed by the Governor with the consent of the Senate. The NAHC is authorized and charged to preserve and protect Native American cemeteries, sacred sites, and traditional cultural properties. One function of the NAHC is to identify the Most Likely Descendant (MLD) whenever Native American human remains are discovered, except on tribal or federal land in California.

Non-attainment Area – An area that does not meet air quality standards.

Noise Abatement Criteria (NAC) – Noise level standards above which noise reducing actions should be considered.

Notice of Availability – A formal public notice under NEPA announcing the availability of a completed EA, DEIS or FEIS. Such a notice is to be published in local newspapers. For EISs, publication of such notice in the Federal Register is also required.

Notice of Completion – The CEQA notice submitted to the State Clearinghouse when an EIR is completed.

Notice of Determination (NOD) – A "Notice of Determination" is a formal written notice under CEQA filed by a lead state agency when approving any project subject to the preparation of an ND or EIR.

Notice of Intent (NOI) – A notice than an Environmental Impact Statement (EIS) will be prepared and considered. The NOI is published in the Federal Register by the Lead Agency. The CEQA equivalent of this is called a Notice of Preparation.

Porter-Cologne Water Act of 1969 – A California law that provides a framework for protecting the quality of waters in California for the use and enjoyment of the people of the state.

Practicable – An action that is possible after taking into consideration cost, existing technology and logistics in light of overall project purposes.

Project – CEQA (Section 21065) defines a "project" as an activity which may cause either a direct physical change in the environment, or reasonably foreseeable indirect physical change in the environment, and which is any of the following:

- An activity directly undertaken by any public agency
- An activity undertaken by a person which is supported, in whole or in part, throughout contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
- An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one of more public agencies.

Receptors – Term used in air quality and noise studies that refers to houses or businesses that could be affected by a project.

Record of Decision (ROD) – A formal written statement, required under NEPA, wherein a federal lead agency must present the basis for its decision to approve a selected project alternative, summarize mitigation measures incorporated into the project, and document any required Section 4(f) approval.

Regulatory Agency – An agency that has jurisdiction by law.

Responsible Agency – A "public agency other than the lead agency which has responsibility for carrying out or approving a project" (PRC 21069). All public agencies which have discretionary approval power over the project (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.

Right-of-way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Riparian – Pertaining to the banks and other adjacent terrestrial (as opposed to aquatic) environs of freshwater bodies, watercourses, estuaries, and surface-emergent aquifers, whose transported freshwater provides soil moisture sufficient in excess of that available through local precipitation to potentially support the growth of vegetation.

RTP – Regional Transportation Plan, prepared by the regional agency responsible for transportation planning and funding. In Solano County, the RTP is prepared by the Metropolitan Transportation Commission to identify transportation improvement priorities.

San Francisco Bay Regional Water Quality Control Board (RWQCB) – An agency with the California Environmental Protection Agency that is responsible for regulating pollutants to protect the water resources of the Bay Area.

Scoping – The process of determining the scope, focus and content of an EIR/S.

Section 106 – This section of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

Special Status Species – Any species of fish, wildlife, or plant that is officially listed as rare, threatened, endangered, or candidate for rare, threatened, or endangered species listing under the state or federal Endangered Species Acts.

State Implementation Plan – A plan for attaining national ambient air quality standards required by the Clean Air Act.

State Historic Preservation Officer (SHPO) – The official appointed or designated pursuant to Section 101 (b)(1) of the National Historic Preservation Act to administer the State historic

preservation program. In California, the SHPO manages the Office of Historic Preservation (OHP) and serves as executive secretary of the State Historical Resources Commission (SHRC).

State Transportation Implementation Program (STIP) – Program updated every two years describes the California Transportation Commission's priorities for improvement on and off the state highway system.

Storm Water Pollution Prevention Plan (SWPPP) – A plan to reduce the potential impacts of erosion and sedimentation from construction.

Surface Runoff – Water that runs off streets and land and enters a body of water.

Threatened Species – A species that is likely to become endangered in the foreseeable future in the absence of special protection.

Transportation Management Plan (TMP) – A plan to manage traffic during construction of projects to reduce congestion.

Transportation System Management (TSM) – Changes to existing roadways and services, such as geometric and striping improvements and expanded transit service, to improve traffic operations.

Undertaking – A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including: those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency. Federal agencies must ensure that their undertakings comply with Section 106 of the National Historic Preservation Act.

Unity – The visual cohesion and compositional harmony of the viewshed.

U.S. Army Corps of Engineers (ACOE) – Federal agency with jurisdiction over waters of the United States.

U.S. Environmental Protection Agency (EPA) – The federal agency responsible for maintaining environmental quality, including air quality, noise, and hazardous waste management.

U. S. Fish and Wildlife Service (USFWS) – The federal agency that administers the federal Endangered Species Act and is involved in protection of fish and wildlife habitat, including wetland areas.

Vividness – The visual power or memorability of landscape components as they combine in striking an distinctive visual patterns.

Waters of the United States – As defined by the ACOE in 33 Code of Federal Regulations 328.3(a):

1. All waters that are currently used , or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use degradation or destruction of which could affect interstate commerce, including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundment of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs 1-4;
6. The territorial seas;
7. Wetlands adjacent to waters (waters that are not wetlands themselves) identified in paragraphs 1-6.

Watershed – The point of high ground dividing different drainage systems.

Weaving – The crossing of traffic streams, moving in the same general direction, accomplished by merging and diverging.

Wetlands – According to regulations of the U.S. Army Corps of Engineers, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, under normal conditions, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, an similar areas and are subject to protection under Executive Order 11990 and Section 404 of the Clean Water Act.

List of Technical Studies

The following technical studies have been prepared and are available for review at the Department's District 04 office at 111 Grand Avenue in Oakland, California.

- *I-80/I-680/SR 12 Interchange Project Community Impact Assessment.* (Circlepoint 2009)
- *Final Traffic Operations Report for the I-80/I-680/SR 12 Interchange Project Report.* (Fehr & Peers 2009)
- *I-80/I-680/SR 12 Interchange Project Visual Impact Assessment.* (Circlepoint 2009)
- *Historic Property Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.* (ICF Jones & Stokes 2009)
- *Historic Resources Evaluation Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.* (ICF Jones & Stokes 2009)
- *Archaeological Survey Report, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.* (ICF Jones & Stokes 2009)
- *Archaeological Extended Phase I and Geoarchaeological Assessment, I-80/I-680/SR 12 Interchange Project, California Department of Transportation, District 4, Solano County, California.* (ICF Jones & Stokes 2009)
- *I-80/I-680/SR-12 Interchange Project, Location Hydraulic Study & Summary Floodplain Encroachment Report.* (Mark Thomas & Co. and Nolte Associates 2009)
- *I-80/I-680/SR-12 Interchange Project, Stormwater Data Report.* (Mark Thomas & Co. and Nolte Associates 2009)
- *Environmental Geotechnical Memorandum, I-80/I-680/SR 12 Interchange Project, Solano County, California, 04-Sol-12, 680, 80 PM Var.* (Parikh Consultants, Inc. 2009)
- *I-80/I-680/SR 12 Interchange Project, Paleontological Sensitivity Analysis.* (ICF Jones & Stokes 2009)
- *Initial Site Assessment, I-80, I-680, SR-12 Improvement Project, Solano County* (Geocon Consultants 2008)
- *I-80/I-680/SR 12 Improvement Project, Fairfield and Suisun City, Solano County, California, Initial Site Assessment Update.* (Geocon Consultants 2009)
- *Interstate 80/Interstate 680/State Route 12 Interchange Project Air Quality Technical Report.* (ICF Jones & Stokes 2009)
- *Noise Study Technical Report for the Interstate 80/Interstate 680/State Route 12 Interchange Project.* (ICF International 2010)
- *Interstate 80/Interstate 680/State Route 12 Interchange Natural Environmental Study.* (ICF International 2010)

- *Delineation of Waters of the United States for the Interstate 80/Interstate 680/State Route 12 Interchange Project, Solano County, California.* (ICF Jones & Stokes 2009)
- *Fish Passage Assessment for Green Valley, Ledgewood, and Suisun Creeks, Solano County, California.* (ICF International 2010)
- *Interstate 80/Interstate 680/State Route 12 Interchange Project Energy Technical Report* (ICF International 2010)
- *Assessment of Fault Rupture and Analysis of Displacement Hazard, Solano Transportation Authority Interchange Project, Cordelia, California (I80/I680/SR12 Interchange)* (William Lettis & Associates 2009)