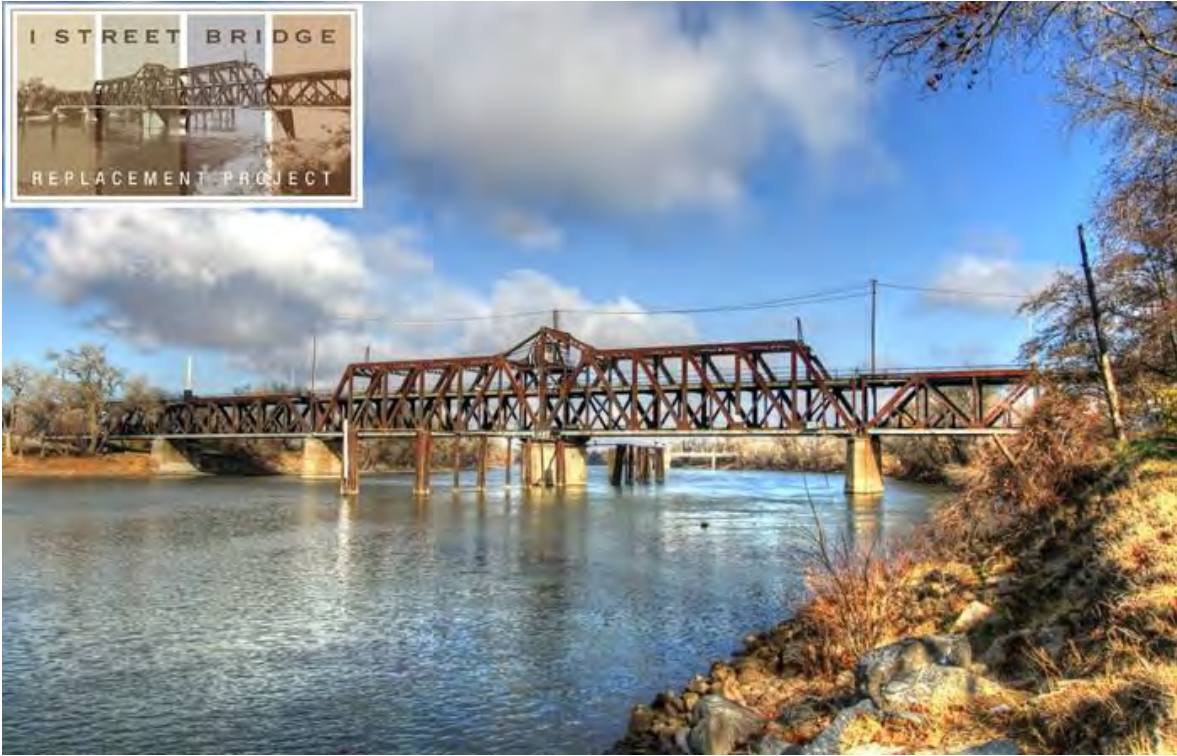


VOLUME 1

I Street Bridge Replacement Project



Final Environmental Impact Report/ Environmental Assessment with Finding of No Significant Impact

Sacramento and Yolo Counties

Federal Project No.: BRLS 5002(164)

Prepared by the
City of Sacramento and the
State of California Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.



May 2019

General Information about This Document

The City of Sacramento and the California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Final Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Sacramento and Yolo Counties, California. The City of Sacramento is the lead agency under the California Environmental Quality Act (CEQA). Caltrans is the lead agency under the National Environmental Policy Act (NEPA). The document tells you why the project is being proposed; what alternatives we have considered for the project; how the existing environment could be affected by the project; the potential impacts of each of the alternatives; and the proposed avoidance, minimization, and/or mitigation measures.

The Draft EIR/EA circulated to the public for 45 days between September 28, 2017 and November 12, 2017. Comments received during this period are included in Appendix I. Elsewhere throughout this document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated.

Additional copies of this document and the related technical studies are available for review at the City of Sacramento's Community Development Department, 300 Richards Blvd., 3rd Floor, Sacramento, CA 95811, the City of West Sacramento's Community Development Department office located at 1110 West Capitol Avenue, 2nd Floor, West Sacramento, CA, 95691. This document may also be downloaded at the following website:

<http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Gilbert Mohtes-Chan, Public Information Office, California Department of Transportation, 703 B St., Marysville, CA 95901; (530) 741-4572. Voice, or use the California Relay Service TTY number, 711.

SCH#: 2014092069
BRLS 5002(164)

I Street Bridge Replacement Project

Construct a new bridge over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet north of the existing I Street Bridge

Final Environmental Impact Report/ Environmental Assessment with Finding of No Significant Impact

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

STATE OF CALIFORNIA
Department of Transportation
and the
CITY OF SACRAMENTO

Cooperating Agencies: U.S. Coast Guard, U.S. Army Corps of Engineers
Responsible Agencies: City of West Sacramento, Department of Fish and Wildlife, Regional Water Quality Control Board,
Central Valley Flood Protection Board, State Lands Commission

June 5, 2019
Date


Tom Buford, Environmental Services Manager
City of Sacramento
CEQA Lead Agency

6/10/19
Date


Suzanne Melim, Office Chief
North Region Environmental Services, South
California Department of Transportation
NEPA Lead Agency

The following persons may be contacted for more information about this document:

Jesse Gothan
City of Sacramento
915 I Street
Sacramento, CA 95814
(916) 808-6897

Laura Loeffler
Environmental Senior, Caltrans District 3
703 B Street
Marysville, CA 95901
(530) 741-4592

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

I Street Bridge Replacement Project

FOR

The California Department of Transportation (Caltrans) has determined that Alternative 1— Signalized Intersections at Jibboom Street and Bercut Drive will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA) which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by Federal Highway Administration and Caltrans.

6/10/19

Date

Suzanne Melim
for Caltrans District Director

Summary

NEPA Assignment

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016 for a term of five years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Introduction

The City of Sacramento, in cooperation with the City of West Sacramento and the California Department of Transportation (Caltrans), proposes to construct a new bridge over the Sacramento River to replace the vehicle crossing that is currently accommodated by the existing I Street Bridge in order to remove a series of functionally obsolete or structurally deficient bridges (i.e., approach structures). The new connection also would reduce future traffic congestion, improve operations and safety, serve multiple modes of transportation, and comply with current American Association of State Highway and Transportation Officials, Caltrans, and local agency design standards. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). Under CEQA, the City of Sacramento is the lead agency, and the City of West Sacramento is a responsible agency.

Overview of Project Area

The project is located over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet north of the existing I Street Bridge. Land uses in and around the project area include commercial, industrial, and residential development. Old Sacramento, the City's historic district, is located between the Sacramento River and Interstate-5 (I-5), just south of the existing I Street Bridge. Matsui Waterfront Park, the Sacramento River Parkway, and several hotels are located along the eastern Sacramento River waterfront. The area east of I-5 consists of primarily commercial uses, including retail, office uses, and government buildings and the currently undeveloped Sacramento Railyards.

River Walk Park borders the western side of the Sacramento River and is a prominent recreational feature. Two large buildings, the Ziggurat Building and a state building, are located west of River Walk Park, south of the existing bridge. Some commercial land uses are interspersed with the primarily single-family and multifamily residential uses within the Washington District of West Sacramento.

Project Location

The project limits starting within Sacramento consist of Railyards Boulevard from 200 feet east of Bercut Drive on the east, continuing west over the Sacramento River into West Sacramento along C Street, crossing 2nd Street and terminating approximately 100 feet west of the 5th Street intersection. The project limits also extend along Bercut Drive approximately 500 feet north of Railyards Boulevard, along Jibboom Street 550 feet north of Railyards Boulevard and 300 feet south of Railyards Boulevard, along 3rd Street 50 feet north and south of C Street, along 4th Street 50 feet north and south of C Street, and along 5th Street 50 feet north and south of C Street. The total length of the project is approximately 0.42 mile along C Street and Railyards Boulevard.

Purpose and Need

The proposed project would construct a new bridge over the Sacramento River between the cities of Sacramento and West Sacramento to replace the vehicle crossing that is currently provided by the existing I Street Bridge. Construction of the proposed project has independent utility; the project is not dependent on other projects or improvements in Sacramento or West Sacramento to meet the purpose and need.

Termini for the proposed project were developed through an iterative process involving engineering design and traffic operations analysis. Preliminary design concepts were tested with the traffic operations analysis model to evaluate how lane configurations influenced peak-hour conditions.

Purpose

The purpose and objectives of the project are listed below.

- The project should construct a new public crossing of the Sacramento River north of the Union Pacific Railroad-owned I Street Bridge from C Street in the City of West Sacramento to Railyards Boulevard in the City of Sacramento, consistent with the adopted findings of the Sacramento River Crossings Alternatives Study for Bridge Location 2 in the North Market Area.
- The new bridge should meet the requirements of the Neighborhood Friendly Bridge definition that the City of Sacramento City Council adopted by resolution on October 18, 2011

- In addition to the Neighborhood Friendly Bridge definition, the project would include pedestrian and bicycle facilities in the new public crossing that meet Americans with Disabilities Act (ADA) requirements, and facilitate connections to and from the new crossing and the Sacramento River Parkway and Riverfront Park trails.
- The project would facilitate vehicular and multimodal traffic over the river in order to reduce traffic congestion, improve safety, and remove a number of structurally deficient or functionally obsolete bridges that have reached the limit of their design life.
- The proposed structure would be a movable bridge that satisfies the vertical clearance and river navigation requirements of the U.S. Coast Guard (USCG).
- The project design should accommodate future high-quality transit and the addition of a streetcar, which would be a separate stand-alone project developed by the Cities of West Sacramento and Sacramento.
- The new bridge also is intended to improve the connectivity to, and accessibility of, businesses, recreational areas, and new or redevelopment opportunity sites located in the urban core of Sacramento and West Sacramento, including the Sacramento Railyards and the River District in Sacramento and the Washington District in West Sacramento.

Need

The project is needed for the following reasons.

- The existing I Street Bridge does not fully comply with current design and traffic operation standards due to the following conditions.
 - I Street Bridge limits or restricts traffic capacity and multimodal use. The current bridge width is not sufficient to provide adequate traffic operations, bicycle lanes, or the ability for transit service, including busses, across the bridge.
 - The I Street Bridge and the four associated approach structures are on the eligible bridge list for federal funds for replacement and/or rehabilitation through the Highway Bridge Program (HBP). The I Street Bridge has been classified as functionally obsolete, and the existing approach structures have been classified as structurally deficient. The Cities of Sacramento and West Sacramento have decided to pursue replacement through the HBP.
- It is necessary to provide access to and between two proposed transit-oriented infill development planning areas on opposite sides of the Sacramento River, Washington District and Sacramento Railyards. To realize the full potential of each of the areas, a pedestrian-friendly, multimodal connection across the river is necessary, and is not provided by the current I Street Bridge.
- The I Street Bridge is not in compliance with ADA standards. Standard and continuous sidewalks, and bicycle facilities that encourage walking and bicycling are needed to comply with the ADA and promote the use of alternative modes of travel.

Proposed Action

The project under consideration in this Environmental Impact Report/Environmental Assessment (EIR/EA) is one alignment for the new bridge over the Sacramento River. A new approximately 860-foot bridge is proposed, consisting of two vehicle lanes, on-street Class II bike lanes, and sidewalks along both sides. The bridge would include two fixed-span approach structures, approximately 200 feet and 270 feet in length, that tie into the Sacramento and West Sacramento banks of the river, respectively. The center span of the bridge would be an approximately 330-foot movable span that meets the USCG requirements. Roadway improvements on Railyards Boulevard in Sacramento and C Street in West Sacramento also are proposed.

In Sacramento, two alternatives for portions of the roadway design at the Railyards Boulevard/Jibboom Street/Bercut Drive intersection are being considered. Alternative 1 consists of a signalized intersection at Jibboom Street and Bercut Drive, while Alternative 2 consists of a roundabout between these two intersections. Beyond the Jibboom Street and Bercut Drive intersections, the remaining project elements and limits in the City of Sacramento are similar under both alternatives.

The project limits starting within Sacramento consist of Railyards Boulevard from 200 feet east of Bercut Drive on the east, continuing west over the Sacramento River into West Sacramento along C Street, and terminating approximately 100 feet west of the 5th Street intersection. The project limits also extend along Bercut Drive approximately 500 feet north of Railyards Boulevard, along Jibboom Street 550 feet north of Railyards Boulevard and 300 feet south of Railyards Boulevard, along 3rd Street 50 feet north and south of C Street, along 4th Street 50 feet north and south of C Street, and along 5th Street 50 feet north and south of C Street. The total length of the project is approximately 0.42 mile (2,200 feet) along C Street and Railyards Boulevard.

Joint California Environmental Quality Act/National Environmental Policy Act Documentation

The proposed project is subject to federal, as well as City of Sacramento, and state environmental review requirements because the City of Sacramento proposes the use of federal funds from the Federal Highway Administration (FHWA) and/or the project requires an approval from FHWA. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. The Cities of Sacramento and West Sacramento are the project proponents. Under CEQA, the City of Sacramento is the lead agency and the City of West Sacramento is a responsible agency. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans. With NEPA assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment Memorandum of Understanding, projects excluded by definition, and specific project exclusions.

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

After receiving comments from the public and reviewing agencies, this Final EIR/EA was prepared. This Final EIR/EA includes responses to comments received on the Draft EIR/EA (Appendix I). Alternative 1—Signalized Intersections at Jibboom Street and Bercut Drive has been identified as the preferred alternative. If the decision is made to approve the project, the City of Sacramento will publish a Notice of Determination for compliance with CEQA. Caltrans has decided to issue a Finding of No Significant Impact (FONSI) for compliance with NEPA. A Notice of Availability (NOA) of the FONSI was sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

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

Project impacts would occur in the following resource areas: Land Use, Community Impacts, Utilities/Emergency Services, Traffic and Transportation/Pedestrian and Bicycle Facilities, Visual/Aesthetics, Cultural Resources, Hydrology and Floodplain, Water Quality, Geology/Soils/Seismic/Topography, Paleontological Resources, Hazardous Waste/Materials, Air Quality, Noise, Natural Communities, Wetlands and Other Waters, Animal Species, Threatened and Endangered Species, and Invasive Species. Significant and unavoidable impacts under CEQA would occur in the following resource areas: Biological Resources, Noise (construction only), and Traffic. The project would contribute to cumulatively considerable effects related to traffic impacts and loss of habitat for purple martins. Project effects under NEPA are discussed fully in Chapter 2. Table S-2, located at the end of this summary, summarizes the impacts of the project under NEPA. Chapter 3 addresses impacts under CEQA. Table S-3, which follows Table S-2, summarizes the significant impacts under CEQA.

Coordination with Other Public Agencies

Notice of Preparation

A Notice of Preparation (NOP) was published on September 22, 2014. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties. A copy of the NOP is included in Appendix G.

A public scoping meeting/community open house for the EIR/EA was held on October 9, 2014, from 3:30 to 6:30 p.m. at the Stanford Galleria, 111 I Street, Sacramento, California. The meeting was announced in the NOP and via a postcard mailer sent to all addresses in the vicinity of the proposed project. The purpose of the scoping meeting was to identify concerns of both the public and agencies in order to clearly define the environmental issues and alternatives to be examined in the Draft EIR/EA. Maps and other project information displays were available, and City of Sacramento and City of West Sacramento staff were on hand to answer questions and receive comments regarding the scope and content of the EIR/EA.

Information pertaining to the scoping process and the public open house scoping meeting also appeared on the project website at <https://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Necessary Permits and Approvals

The table below shows the permits and approvals that would be required.

Table S-1. Permits and Approvals

Agency	Permit/Approval	Status
City of West Sacramento	City Council approval of project	Not yet initiated
U.S. Coast Guard	Authorization under General Bridge Act of 1946, as amended, for new bridge over navigable waters of the United States	Initiated
U.S. Army Corps of Engineers Regulatory Division, Delta Branch	Clean Water Act Section 404 authorization for fill of waters of the United States	Submitted delineation of potential waters of the United States, including wetlands, on May 3, 2016, to support a preliminary jurisdictional determination USACE verified delineation on July 7, 2016 Pre-application meeting on September 1, 2016.
U.S. Army Corps of Engineers Operations and Readiness Branch	U.S. Code Section 408 authorization for alteration of USACE projects, the east and west Sacramento River levees	Pre-application meeting on September 1, 2016.
National Marine Fisheries Service	Coordination regarding threatened and endangered species	Biological Assessment and EFH assessment requesting consultation sent August 4, 2016. Biological Opinion received June 25, 2018
U.S. Fish and Wildlife Service	Coordination regarding threatened and endangered species	Biological Assessment requesting consultation sent August 4, 2016 Biological Opinion received June 15, 2017
California Department of Fish and Wildlife	Section 1602 Department of Fish and Game Code Streambed Alteration Agreement	Not yet initiated
California Department of Fish and Wildlife	Incidental Take Permit for potential "take" of state-listed species	Not yet initiated
State Water Resources Control Board	Coverage under the existing Statewide Phase II MS4 Permit (NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). Coverage under the existing Caltrans National Pollutant Discharge Elimination System Permit (Order No. 2012-0011-DWQ) Coverage under the existing Construction General Permit (Order No. 2009-0009-DWQ)	Not yet initiated

Summary

Agency	Permit/Approval	Status
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification Coverage under the existing Waste Discharge Requirements Cities Of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, And County Of Sacramento Storm Water Discharges From Municipal Separate Storm Sewer System Sacramento County (Order NO. R5-2015-0023; NPDES NO. CAS082597) Coverage under the existing Waste Discharge Requirements Limited Threat Discharges To Surface Water Order No. R5-2016-0076; NPDES NO. CAG995002)	Not yet initiated
Central Valley Flood Protection Board	Encroachment Permit	Not yet initiated
State Lands Commission	Lease of State Lands	Not yet initiated
Sacramento Area Flood Control Agency	Approval of changes to levee	Not yet initiated
West Sacramento Area Flood Control Agency	Approval of changes to levee	Not yet initiated
Sacramento Metropolitan Air Quality Management District	Formal notification prior to construction	Not yet initiated
Yolo-Solano Air Quality Management District	Formal notification prior to construction	Not yet initiated

Table S-2. Comparison of Alternatives

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
HUMAN ENVIRONMENT			
2.1—Land Use			
Consistency with <i>Sacramento General Plan</i>	Not consistent; plan assumes replacement of bridge	Consistent	None required
Consistency with <i>Sacramento Railyards Specific Plan</i>	Not consistent; plan assumes replacement of bridge	Consistent	None required
Consistency with <i>River District Specific Plan</i>	Consistent	Consistent	None required
Consistency with <i>Sacramento River Parkway Plan</i>	Consistent	Consistent	None required
Consistency with <i>City of Sacramento Pedestrian Master Plan</i>	Consistent	Consistent	None required
Consistency with <i>City of Sacramento Bicycle Master Plan</i>	Consistent	Consistent	None required
Consistency with <i>City of West Sacramento General Plan</i>	Consistent	Consistent	None required
Consistency with <i>Washington Specific Plan</i>	Consistent	Consistent	None required
Consistency with <i>West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i>	Consistent	Consistent	None required
Effects on riverfront parks in Sacramento	No effect	Acquisition of approximately 2.155 acres from the Sacramento River Parkway; acquisition of 0.04 acres from the proposed Riverfront Park in Railyards development; re-routing of the Sacramento River Parkway Trail for approximately 2 years during construction	Restore Sacramento River Parkway Trail after construction; provide advance notification of Sacramento River Parkway Trail closures

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Effects on riverfront parks in West Sacramento	No effect	Acquisition of approximately 0.135 acre from southern portion of Broderick Boat Ramp and 3.083 acres from the proposed River Walk Park site	None required
2.2—Growth			
Potential to induce growth	No change from existing conditions	Improved accessibility between Sacramento and West Sacramento but no potential to induce growth effect	None required
2.3—Community Impacts			
Effects on community character and cohesion	No change from existing conditions	No separation or division of an existing neighborhood; improved accessibility between Sacramento and West Sacramento	None required
Economic effects	No change from existing conditions	Temporary increase in economic activity in local area and region from project-related spending, including purchases of goods and services required for construction and employment of workers needed for construction) Permanent loss of up to 54 parking spaces (including on-street and off-street spaces)	Construct Mid-block East West Road
Potential for cut-through traffic to disrupt existing neighborhoods or community areas	No change from existing conditions	No negative effects on community cohesion by cut-through traffic associated with the project because cut-through routes that could avoid traffic delays are not readily available	None required
Temporary effects on roadways in the study area during construction	No effect	Temporary lane closures and delays during periods of active construction	Prepare a Transportation Management Plan

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Displacement of residences and businesses	No effect	Acquisition of right-of-way from 23 individual parcels; one multifamily apartment building would be affected, and single-family residences would need to be removed Permanent loss of up to 54 parking spaces (both on-street and off-street)	Acquisitions and compensation to residential property owners will be consistent with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as amended Construct Mid-block East West Road
Effects on environmental justice populations	No effect	No disproportionately high or adverse human health or environmental effects on minority or low-income residents of the study area	None required
2.4—Utilities/Emergency Services			
Effects on public and private utilities	No effect	Interruption of service during relocation of utilities or adjustment to grade (including existing water, sewer, gas, electric, and communication facilities within Jibboom Street, Bercut Drive, C Street, and 2nd Street)	Provide advance notice to utility service providers
Effects on police, fire, and emergency service providers	No effect	Short-term lane closures during construction to accommodate street widening and striping; changes in access and circulation in the project area Permanent change in access and circulation in West Sacramento for emergency service providers Creation of a cul-de-sac that exceeds the maximum length allowed by West Sacramento Standard Specifications and Details	Prepare a Transportation Management Plan Construct Mid-block East West Road

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
2.5—Traffic and Transportation/Pedestrian and Bicycle Facilities			
Sacramento River Bridges Roadway Volumes	Approximately 20% increase in demand volume crossing the river by 2020 and approximate 50% increase by 2040.	New bridge would be able to serve a higher volume than the existing I Street Bridge. A portion of additional trips would simply be shifted volume from the other bridges. A little over 5,000 new vehicle trips would be induced by the project in 2020. By 2040 the new bridge would attract a higher volume than the existing I Street Bridge by about 7,500 daily trips	None required
Opening Year (2020) Intersection Operations	12 intersection locations operating at unacceptable levels of service during either a.m. or p.m. peak hour	2 intersection locations operating at unacceptable levels of service and operating worse than the No Build Alternative	Implement Roadway and Freeway Improvements
Design Year (2040) Intersection Operations	20 intersection locations operate at unacceptable levels of service during either a.m. or p.m. peak hour	6 locations operating at unacceptable levels of service and operating worse than the No Build Alternative	Implement Roadway and Freeway Improvements
Opening Year (2020) Freeway Operations	Increased demand volume causes the queues to extend onto the freeway mainline most notably for the I-5 southbound off-ramp to J Street	1 location operating at unacceptable level of service and operating worse than the No Build Alternative Same increased demand volume causes the queues to extend onto the freeway mainline as in no build no build alternative	Implement Roadway and Freeway Improvements
Design Year (2040) Freeway Operations	Freeway operations would be slightly worse, particularly queuing on southbound I-5 off-ramps at Richards Boulevard and J Street	As with no build alternative, increases in demand volumes are sufficient to cause queuing on southbound I-5 off-ramps at Richards Boulevard and J Street to extend onto the mainline	Implement Roadway and Freeway Improvements

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2^a	Avoidance, Minimization, and/or Mitigation Measures
Transit System	No change from existing conditions. I Street Bridge does not have enough roadway width clearance to allow buses	Buses would be able to cross on the new bridge and bridge would accommodate a planned streetcar service	None required
Bicycle Facilities	No change from existing conditions. There are no bicycles facilities on the bridge and viaduct structures. Bicycles would continue to share the narrow sidewalks with pedestrians.	Bike lanes would connect to Railyards Boulevard and the American River Bike Trail on the Sacramento side, and to the River Walk Trail on the West Sacramento side, though some travel distances might be slightly longer	None required
Pedestrian Facilities	No change from existing conditions which includes narrow, non-continuous sidewalks	Standard sidewalks and a shared-use path on new bridge would be an improvement over narrow sidewalks on existing bridge. Some travel distances might be affected slightly	None required
Construction-related effects	No effect	Short-term impacts on local transportation networks as a result of construction of the new C Street alignment to the bridge, including access to 2nd Street in West Sacramento; constructing the bridge across the Sacramento River; constructing the Railyards Boulevard connection at Jibboom Street and Bercut Drive in Sacramento. Disruptions and delays could affect drivers, transit service/riders, bicyclists, pedestrians, and Sacramento River users	Prepare a Transportation Management Plan

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
2.6—Visual/Aesthetics			
Effects on scenic resources	No effect	No effect	None required
Visual changes from construction activities	No effect	Temporary visual changes from introduction of heavy equipment and associated vehicles, removal of the existing approaches to the existing I Street Bridge, installation of falsework platforms and cofferdams, construction signaling and signage	None required
Visual changes from vegetation removal	No effect	Temporary visual changes from removal of vegetation along the river corridor during construction; permanent visual changes from loss of up to 1.44 acres of cottonwood riparian forest	Compensate for temporary effects on and permanent loss of cottonwood riparian forest (including shaded riverine aquatic cover); Implement project landscaping
Visual changes from introduction of a new bridge	No effect	Permanent visual changes from introduction of a new bridge, most visible from areas north of the existing I Street Bridge	Work with stakeholders to determine bridge aesthetics
Introduction of light and glare	No effect	Low visual impacts related to light and glare from construction; slightly increased glare in the project area from the bridge structure and removal of vegetation; potential for increased nuisance light and glare from use of LED lighting if not properly designed	Apply minimum lighting standards
2.7—Cultural Resources			
Effects on the National Register of Historic Places-listed I Street Bridge	No effect	No adverse effect from demolishing approach structures leading up to the bridge from both directions. Proposed project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property	Develop interpretative display for the I Street Bridge to document the vehicular uses of this bridge

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Effects on the National Register of Historic Places/California Register of Historic Resources-eligible segment of Sacramento River East Levee	No effect	No adverse effect. No project-related changes to structure are proposed. Proposed project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property	None required
Effects on archaeological resource CA-SAC-658H	No effect	Potential for project-related changes if not protected and avoided	CA-SAC-658H will be protected in its entirety as an Environmentally Sensitive Area (ESA). Stipulations of an ESA Action Plan will be followed, which includes mandatory cultural awareness training for construction personnel
Effects on unidentified cultural resources	No effect	Potential for unknown archaeological resources to be uncovered during ground-disturbing construction activities	A Programmatic Agreement and associated Cultural Resources Management Plan was prepared that addresses identification and mitigation of effects to cultural resources if found during construction. The Programmatic Agreement and Cultural Resources Management Plan will ensure cultural resources are adequately protected. Stipulations of the Programmatic Agreement include mandatory cultural resources awareness training for construction personnel and monitoring by a qualified archaeologist and a Native American representing local Tribes
PHYSICAL ENVIRONMENT			
2.8—Hydrology and Floodplain			
Increase in water surface elevation	No effect	Negligible increase in water surface elevation of 0.02 feet immediately upstream of the project	None required
Increased runoff from added impervious surfaces	No effect	Minor additional impervious surface with the potential to increase runoff volume in the Sacramento River	Implement Construction General Permit Stormwater Pollution Prevention Plan post-construction measures, site design measures, low impact development measures, erosion control measures from Caltrans' MS4 program guidance documents, Sacramento Stormwater

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
			<p>Quality Partnership's SQIP, and City of West Sacramento's Storm Water Management Plan; comply with National Pollutant Discharge Elimination System permit requirements</p> <p>Because the project involves more than 1 acre of newly created or replaced impervious area, permanent treatment BMPs need to be considered. Permanent treatment BMPs may include bioretention areas, and vegetated swales. In addition, erosion and sediment control BMPs such as drainage swales, geotextile, slope drains, and mulch would be implemented to control any runoff from the project site.</p>
Effects on drainage	No effect	Temporary effects on ability of water to drain in the surrounding area from relocating onsite drainage systems	Install temporary best management practices to protect existing drainage inlets and storm drain systems, and to control any runoff or erosion from the project site that may discharge into the surrounding waterways; re-route drainage to other active storm drain inlets during relocation activities.
Increased scour	No effect	Maximum predicted scour up to 40 feet at piers	Implement recommended bridge pier design to below total scour depths; perform a detailed structural/geotechnical analysis during final design to determine actual foundation depths, accounting for the given minimum scour elevations
Incompatible floodplain development	No effect	No new access to developed or undeveloped land and no support of incompatible floodplain development	None required
Traffic interruptions from flooding	No effect	Low risk of traffic interruptions from flooding because of freeboard clearance to 3 feet above the 50-year floodwater surface elevation	None required

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
2.9—Water Quality			
Disturbance of substrate	No effect	Potential to remobilize sediments and contaminants and to transport resuspended particulate material to other locations in the Sacramento River, particularly during in-water work for bridge construction	Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. The project design will incorporate Construction General Permit SWPPP post-construction measures, site design measures, LID measures, and other permanent erosion control elements found in Caltrans' MS4 program guidance documents, Sacramento Stormwater Quality Partnership's SQIP, and the City of West Sacramento's SWMP. Proposed BMPs will address soil stabilization, sediment control, wind-erosion control, and non-storm water management and will be based on the best available technology. Implementation of these measures will ensure that storm water runoff does not cause soil erosion and would reduce or avoid permanent impacts on water quality. Erosion and sediment control BMPs such as soil stabilization, geotextile, sediment traps, and mulch will be implemented to control any runoff and erosion from the project site. In addition, water quality including baseline turbidity will be measured in the Sacramento River
Effects on drainage	No effect	Change in drainage from relocation of storm drains that could affect ability of water to drain during a rain event and alter surface runoff from new impervious surface and changes in topography	Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. Erosion and sediment control BMPs such as soil stabilization, slope drains, and geotextiles and mats would be implemented to control any runoff and erosion from the project site

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2^a	Avoidance, Minimization, and/or Mitigation Measures
<p>Increase in turbidity / suspended sediment</p>	<p>No effect</p>	<p>Potential short-term increases in turbidity from soil erosion and suspended solids being introduced into the Sacramento River, from both in-water and land construction activities and particularly during in-water work for bridge construction</p> <p>Permanent loss of 1.88 acres of levee slope vegetation for rock slope protection and permanent structures</p> <p>Added impervious surface with the potential to increase storm runoff volume in Sacramento River</p>	<p>Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. The project design will incorporate SWPPP post-construction measures, LID measures, and other permanent erosion control elements found in Caltrans' MS4 program guidance documents, Sacramento Stormwater Quality Partnership's SQIP, and the City of West Sacramento's SWMP, to ensure that storm water runoff does not cause soil erosion. Proposed BMPs will address soil stabilization, sediment control, wind-erosion control, and non-storm water management. BMPs will be based on the best available technology through implementation of temporary and permanent construction BMPs to the maximum extent practicable. The contractor will implement and maintain BMPs and will adhere to construction specifications meant to protect receiving waters and preserve water quality. Erosion and sediment control BMPs such as soil stabilization, geotextiles and mats, sediment traps, and mulch will be implemented to control any runoff and erosion from the project site and minimize increases in turbidity and suspended sediment</p>

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Introduction of pollutants of concern or toxic chemicals to the project site	No effect	Potential introduction of pollutants of concern or toxic chemicals to the project site from use of heavy construction equipment or construction-related materials and from post-construction roadway operations	Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. Proposed BMPs will address soil stabilization, sediment control, vehicle tracking control, non-storm water management, and waste management practices and will be based on the best conventional and best available technology. These BMPs include vehicle and equipment fueling and maintenance, spill prevention, hazardous and concrete waste management, and material storage and delivery
Change in water temperature	No effect	Potential change in water temperature from removal of streamside vegetation and new overwater structures	Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. The project design will incorporate Construction General Permit SWPPP post-construction measures, site design measures, LID measures, and other water quality measures found in Caltrans' MS4 program guidance documents, and Sacramento Stormwater Quality Partnership's SQIP to ensure that storm water runoff does not result in changes in water temperature. In addition, water quality including temperature will be measured in the Sacramento River. As required by the 401 Certification, the project will be in compliance with state water quality standards

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
2.10—Geology/Soils/Seismic/Topography			
Risk of seismic hazard and slope instability	No effect	Low risk of strong seismic ground shaking in the project area; risk of secondary seismic hazards related to slope instability and liquefaction	All structures will be designed using the Caltrans' Seismic Design Criteria to meet the minimum seismic requirements for highway bridges designed in California. Site-specific field exploration and laboratory testing, including cone penetration tests and borings, will be necessary to develop final geotechnical engineering properties and design criteria for bridge foundations, project retaining wall, earthwork, and pavement design. This work will be performed as part of the final bridge design process. No additional measures are required
Increase in soil erosion rates and/or loss of topsoil	No effect	Potential increase in soil erosion rates and/or loss of topsoil from ground-disturbing earthwork	Compliance with Caltrans' <i>Construction Site Best Management Practices Manual</i> and the <i>Stormwater Pollution Prevention Plan and Water Pollution Control Program Preparation Manual</i> will ensure that construction activities to not result in significant erosion. No additional measures are required The project design will incorporate Construction General Permit SWPPP post-construction measures and other permanent erosion control elements found in Caltrans' MS4 program guidance documents, Sacramento Stormwater Quality Partnership's SQIP, and the City of West Sacramento's SWMP, to ensure that storm water runoff does not cause soil erosion. Proposed BMPs will address soil stabilization, sediment control, wind-erosion control, and non-storm water management. BMPs will be based on the best available technology through implementation of temporary and permanent construction BMPs to the maximum extent practicable. Erosion and sediment control BMPs such as

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
			soil stabilization, geotextiles and mats, sediment traps, and mulch will be implemented to control any runoff and erosion from the project site
Effects from expansive soil	No effect	Expansive soils not extensive in project area but could occur locally	Potential impact on project structures will be evaluated during final design. All construction and engineered fills will comply with Caltrans' Standard Specifications, and all construction will compact the roadway subgrade in accordance with Caltrans' Standard Specifications. No additional measures are required
2.11—Paleontology			
Damage to fossils	No effect	Potential damage to fossils during earth-disturbing activities	Educate construction personnel in recognizing fossil material; stop work if substantial fossil remains are encountered during construction
2.12—Hazardous Waste/Materials			
Exposure to soil and/or groundwater contamination	No effect	High to moderate risk of recognized environmental conditions for 10 parcels located within the project area	Conduct a detailed review of existing records; develop and implement plans to address worker health and safety
Exposure to previously unknown hazardous materials	No effect	Moderate risk of previously unreported hazardous materials being discovered during construction	Conduct Phase II site assessments; develop and implement plans to address worker health and safety

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Exposure of known hazardous materials to humans or the environment	No effect	Potential for presence of hazardous materials in the form of asbestos-containing material and lead-containing paint, aerially deposited lead, lead or chromium in yellow/white traffic striping; and polychlorinated biphenyls. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/ replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances	Conduct Phase II site assessments; develop and implement plans to address worker health and safety; conduct sampling, testing, removal, storage, transportation, and disposal of yellow/white traffic striping; perform soil testing and appropriately dispose of soils contaminated with ADL; develop a Lead and Asbestos Abatement Plan; comply with the land use covenant for the Northern Shops and Sacramento Station study areas; Comply with the Land Use Covenant or guidance documents for the Manufactured Gas Plant study area
Exposure to hazardous conditions from the accidental release of hazardous materials	No effect	Potential exposure of humans and the environment to hazardous conditions from accidental release of hazardous materials during construction	Develop and implement plans to address worker health and safety
2.13—Air Quality			
Emissions of criteria pollutants during operation	No effect	Negligible long-term air quality impacts associated with motor vehicles operating on the roadway network. Negligible differences in criteria pollutant emissions of ROG, NOX, CO, PM10, and PM2.5 compared to No Build conditions	None required
Emissions of dust and exhaust during construction	No effect	Short-term degradation of air quality from release of airborne dust generated by excavation, grading, hauling, and various other construction-related activities. Exhaust emissions from construction equipment, including CO, NOX, VOCs, directly emitted PM (PM10 and PM2.5), and toxic air contaminants such as diesel particulate matter	Implement control measures for construction emissions of fugitive dust, including compliance with Caltrans' Standard Specification Section 14, "Environmental Stewardship"; dust control measures recommended by Sacramento Metropolitan Air Quality Management District; measures recommended by Yolo-Solano Air Quality Management District; and mitigation measures in the adopted <i>Mitigation Monitoring Plan</i> for the Railyards development

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Exposure to asbestos	No effect	Low risk of construction activity encountering naturally occurring asbestos	Project dust control measures would effectively control unanticipated naturally occurring asbestos exposure through a variety of required control measures, including watering. Develop and implement an Asbestos Abatement Plan
Exposure to lead	No effect	Risk of encountering aurally deposited lead in soils during construction and grading activities and in paint on the existing I Street Bridge during demolition or modification	Develop and implement a Lead Abatement Plan
Increase in mobile source air toxics	No effect	Because the estimated regional vehicle miles travelled under Build Alternatives and the No Build Alternative are nearly the same, no appreciable difference is expected in overall mobile source air toxics emissions between the No Build Alternative and Build Alternatives	None required
2.14—Noise			
Traffic noise	No effect	Traffic noise levels would approach or exceed the noise abatement criteria for residential uses and park uses	Following 23 CFR 772(13)(c), Noise abatement in the form of noise barriers was evaluated. In all cases, construction of noise barriers to reduce noise impacts was found infeasible because driveway access needs to be maintained
Construction noise	No effect	Temporary increase in noise levels due to transport and operation of construction equipment, and other construction activities	Construction would be conducted in accordance with provisions in Section 14-8.02, "Noise Control" of the Caltrans Standard Specifications and applicable local noise standards
2.15—Energy			
Energy demands	No effect	Temporary increase in energy consumption during construction; improved fuel efficiency during operations	None required

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
BIOLOGICAL ENVIRONMENT			
2.16—Natural Communities			
Effects on cottonwood riparian forest	No effect	Permanent loss of up to 1.44 acres and temporary disturbance of up to 1.52 acres of cottonwood riparian forest from vegetation removal; potential indirect impacts on riparian habitat from shading by new bridge approach structures	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including shaded riverine aquatic cover (onsite or offsite restoration/enhancement or mitigation bank credit purchase)
Effects on protected trees	No effect	Removal of up to 22 heritage trees in Sacramento and 45 heritage trees in West Sacramento; potential temporary impacts on trees from trimming for construction access	Implement avoidance, minimization, and compensatory mitigation as required in the tree ordinances of the Cities of Sacramento and West Sacramento; compensate for loss of protected trees not in riparian habitat
2.17—Wetlands and Other Waters			
Effects on wetlands	No effect	No effect	None required
Effects on waters of the United States and waters of the State	No effect	Permanent loss of 1.85 acres and temporary impacts on 0.10 acre of perennial stream (Sacramento River)	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; protect water quality and prevent erosion and sedimentation in drainages and wetlands; compensate for loss of perennial stream
2.18—Plant Species			
Effects on special-status plants	No effect	No effect	None required

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
2.19—Animal Species			
Effects on western pond turtle	No effect	Permanent impacts on 3.3 acres and temporary impacts on 3.4 acres of potential nesting habitat; potential injury or mortality during construction or from underwater vibrations during pile driving	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including shaded riverine aquatic cover; compensate for loss of perennial stream; conduct preconstruction surveys for western pond turtle and allow turtles to leave work area unharmed
Effects on white-tailed kite	No effect	Permanent impacts on 3.8 acres and temporary impacts on 4.0 acres of potential nesting habitat (from removal of trees); potential disruption of nesting behavior during construction	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including shaded riverine aquatic cover; conduct preconstruction surveys for nesting migratory birds, including special-status birds, and establish protective buffers; conduct tree removal during non-sensitive periods for wildlife; avoid and minimize impacts on nesting birds and roosting bats from demolition of approach structures; monitor active Swainson’s hawk and white-tailed kite nests during pile driving and other construction activities
Effects on purple martin	No effect	Loss of nesting habitat from removal of approach structures; cumulative contribution to loss of habitat	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; avoid and minimize impacts on purple martins during construction activities; avoid and minimize impacts on nesting birds and roosting bats from demolition of approach structures; conduct staff training; enhance existing colony entrance holes; create purple martin replacement habitat; prepare and implement a monitoring and management plan for the I Street Bridge purple martin colony replacement habitat.

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
			Considering the proportion of the Sacramento population that would be directly affected and the uncertainty of whether purple martins would colonize the habitat recreated in the new bridge, this impact is considered significant and unavoidable
Effects on other migratory birds	No effect	Potential effects on nesting birds through direct injury or mortality during ground-disturbing activities or by disrupting normal behaviors	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including SRA cover; conduct preconstruction surveys for nesting migratory birds, including special-status birds, and establish protective buffers; conduct tree removal during non-sensitive periods for wildlife; avoid and minimize impacts on nesting birds and roosting bats from demolition of approach structures
Effects on pallid bat, western red bat, and other bat species	No effect	Loss of potential roosting habitat from removal of approach structures and trees	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; conduct tree removal during non-sensitive periods for wildlife; avoid and minimize impacts on nesting birds and roosting bats from demolition of approach structures; conduct preconstruction surveys for roosting bats and implement protective measures
Effects on Central Valley fall- and late fall-run Chinook salmon, Sacramento splittail, Pacific lamprey, and river lamprey	No effect	Disturbance and mortality related to noise and vibration associated with impact pile driving; potential adverse effects related to increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, increased runoff from added impervious surfaces, increased turbidity and sedimentation, temporary and permanent loss of aquatic habitat, loss of SRA cover, and increase	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including shaded riverine aquatic cover; protect water quality and prevent erosion and sedimentation in drainages and wetlands; compensate for loss of perennial stream; conduct all in-water construction activities between May 1 and November 30, and only during daylight hours; implement measures to minimize exceedance of interim threshold sound levels during pile

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
		in overwater structure (shade), fish entrapment in cofferdams; increases in aquatic invasive species, and increased predation from added lighting on the Sacramento River	driving; develop and implement a hydroacoustic monitoring plan; monitor turbidity in the Sacramento River; implement cofferdam restrictions; prepare and implement a fish rescue and relocation plan; prevent the spread or introduction of aquatic invasive species; minimize or avoid temporary construction lighting and permanent bridge lighting from directly radiating on water surfaces of the Sacramento River
2.20—Threatened and Endangered Species			
Effects on valley elderberry longhorn beetle	No effect	Loss of suitable habitat from direct (by removal or trimming) and indirect effects (from construction activities) on elderberry shrubs	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; avoid and minimize impacts on valley elderberry longhorn beetle; transplant elderberry shrubs that cannot be avoided; compensate for impacts on valley elderberry longhorn beetle habitat
Effects on Swainson's hawk	No effect	Disturbance or loss of active nests; removal of 3.8 acres and temporary disturbance of 4.0 acres of potential nesting habitat; disruption of nesting behavior during construction	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including SRA cover; conduct preconstruction surveys for nesting migratory birds, including special-status birds, and establish protective buffers; conduct tree removal during non-sensitive periods for wildlife; avoid and minimize impacts on nesting birds and roosting bats from demolition of approach structures; conduct focused surveys for nesting Swainson's hawk prior to construction; conduct tree removal during non-sensitive periods for wildlife; monitor active Swainson's hawk and white-tailed kite nests during pile driving and other construction activities

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
Effects on Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, southern distinct population segments of North American green sturgeon, delta smelt, and longfin smelt	No effect	Disturbance and mortality related to noise and vibration associated with impact pile driving; potential adverse effects related to increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, increased runoff from added impervious surfaces, increased turbidity and sedimentation, temporary and permanent loss of aquatic habitat, loss of shaded riverine aquatic cover, and increase in overwater structure (shade), fish entrapment in cofferdams; increases in aquatic invasive species, and increased predation from added lighting on the Sacramento River	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including SRA cover; protect water quality and prevent erosion and sedimentation in drainages and wetlands; compensate for loss of perennial stream; conduct all in-water construction activities between May 1 and November 30, and only during daylight hours; implement measures to minimize exceedance of interim threshold sound levels during pile driving; develop and implement a hydroacoustic monitoring plan; monitor turbidity in the Sacramento River; implement cofferdam restrictions; prepare and implement a fish rescue and relocation plan; prevent the spread or introduction of aquatic invasive species; minimize or avoid temporary construction lighting and permanent bridge lighting from directly radiating on water surfaces of the Sacramento River
Effects on designated critical habitat for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, southern distinct population segments of North American green sturgeon, and delta smelt.	No effect	Adverse temporary effects on the water column (underwater noise and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including SRA cover; protect water quality and prevent erosion and sedimentation in drainages and wetlands; compensate for loss of perennial stream; conduct all in-water construction activities between May 1 and November 30, and only during daylight hours; implement measures to minimize exceedance of interim threshold sound levels during pile driving; develop and implement a hydroacoustic monitoring plan; monitor turbidity in the Sacramento River; implement cofferdam restrictions; prevent the spread or introduction of aquatic invasive species; and minimize or

Table S-2. Continued

Impact	No Build	Alternatives 1 and 2 ^a	Avoidance, Minimization, and/or Mitigation Measures
			avoid temporary construction lighting and permanent bridge lighting from directly radiating on water surfaces of the Sacramento River. Purchase channel enhancement credits for permanent impacts on critical habitat (purchase of 9.33 acres of mitigation credits at a NMFS-approved anadromous fish conservation bank)
Effects on essential fish habitat for Sacramento winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and fall-run and late fall-run Chinook salmon.	No effect	Adverse temporary effects on the water column (underwater noise and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River	Install construction fencing; conduct environmental awareness training; conduct biological monitoring; compensate for effects on loss of cottonwood riparian forest, including shaded riverine aquatic cover; protect water quality and prevent erosion and sedimentation in drainages and wetlands; compensate for loss of perennial stream; conduct all in-water construction activities between May 1 and November 30, and only during daylight hours; implement measures to minimize exceedance of interim threshold sound levels during pile driving; develop and implement a hydroacoustic monitoring plan; monitor turbidity in the Sacramento River; implement cofferdam restrictions; prevent the spread or introduction of aquatic invasive species; minimize or avoid temporary construction lighting and permanent bridge lighting from directly radiating on water surfaces of the Sacramento River
2.21—Invasive Species			
Introduction and spread of invasive plant species	No effect	Potential introduction and spread of invasive plant species from temporarily created additional disturbed areas	Avoid the introduction and spread of invasive plants

^a The effects summarized in this table are the same for both Alternatives 1 and 2.

Table S-3. Summary of CEQA Significant Impacts

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Visual/Aesthetics				
Substantially degrade the existing visual character or quality of the site and its surroundings.	Changes in all visual assessment units have the potential to result in significant impacts resulting from vegetation removal and if the public and affected viewers do not favor the look of the proposed final bridge design.	Significant	Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]; Work with Stakeholders to Determine Bridge Aesthetics, Implement Project Landscaping	Less than significant
Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.	New lighting could affect sensitive receptors if not properly designed by creating a substantial source of nighttime light and glare that could negatively affect nighttime views in the area	Significant	Apply Minimum Lighting Standards	Less than significant
Air Quality				
Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	Temporary construction emissions could exceed thresholds as outlined in the <i>Mitigation Monitoring Plan</i> for the Railyards development	Significant (during construction)	Implement Control Measures for Construction Emissions of Fugitive Dust	Less than significant
Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	Exceedances of the project-level thresholds would be cumulatively considerable	Significant (during construction)	Implement Control Measures for Construction Emissions of Fugitive Dust	Less than significant

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Biological Resources				
<p>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.</p>	<p>Direct and indirect impacts to VELB, western pond turtle, white-tailed kite, Swainson’s hawk, pallid bat, western red bat, other migratory birds, other bat species, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley fall- and late fall–run Chinook salmon, Central Valley steelhead, the Southern DPS of North American green sturgeon, delta smelt, longfin smelt, Sacramento splittail, Pacific lamprey, and river lamprey</p>	<p>Significant</p>	<p>Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources; Conduct Environmental Awareness Training for Construction Employees; Conduct Periodic Biological Monitoring; Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]; Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands; Compensate for Loss of Perennial Stream; Conduct Preconstruction Surveys for Western Pond Turtle and Allow Turtles to Leave Work Area Unharmed; Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers; Conduct Tree Removal during Non-Sensitive Periods for Wildlife; Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures; Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures; Replace Bat Roosting Habitat Lost from Demolition of Approach Structures; Monitor Bat Replacement Habitat; Conduct All In-Water Construction Activities between May 1 and November 30 and Only during Daylight Hours; Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving; Develop and Implement a</p>	<p>Less than significant</p>

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			Hydroacoustic Monitoring Plan; Monitor Turbidity in the Sacramento River; Implement Cofferdam Restrictions; Prepare and Implement a Fish Rescue and Relocation Plan; Prevent the Spread or Introduction of Aquatic Invasive Species; Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River; Implement Measures Required in the Biological Assessments	
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.	Removal of purple martin habitat (i.e., approach structures) could displace approximately 25% of the Sacramento purple martin population	Significant Cumulatively considerable	Avoid and Minimize Impacts on Purple Martins during Construction Activities; Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures; Conduct Staff Training; Enhance Existing Colony Entrance Holes; Create Purple Martin Replacement Habitat; Prepare and Implement a Monitoring and Management Plan for the I Street Purple Martin Colony Replacement Habitat	Significant and unavoidable Cumulatively considerable
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.	Permanent and temporary impacts on vegetation communities of special concern, including, non-wetland riparian forest and SRA cover	Significant	Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources; Conduct Environmental Awareness Training for Construction Employees, Conduct Periodic Biological Monitoring; Compensate for Loss of Protected Trees not in Riparian Habitat; Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]	Less than significant

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
<p>Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means.</p>	<p>Permanent and temporary effects on non-wetland waters of the United States and waters of the State in the Sacramento River, which is a perennial stream</p>	<p>Significant</p>	<p>Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources; Conduct Environmental Awareness Training for Construction Employees; Conduct Periodic Biological Monitoring; Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands</p>	<p>Less than significant</p>
<p>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.</p>	<p>Short-term work activities, including pile driving, in or adjacent to the Sacramento River could affect fish species that may be injured or killed by exposure to harmful levels of noise, suspended sediment, contaminants, or other factors</p>	<p>Significant</p>	<p>Conduct All In-Water Construction Activities between May 1 and November 30 and Only during Daylight Hours; Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving; Develop and Implement a Hydroacoustic Monitoring Plan; Monitor Turbidity in the Sacramento River; Implement Cofferdam Restrictions; Prepare and Implement a Fish Rescue and Relocation Plan; Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River</p>	<p>Less than significant</p>
<p>Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.</p>	<p>Removal of heritage trees in the City of Sacramento and the City of West Sacramento</p>	<p>Significant</p>	<p>Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources; Conduct Environmental Awareness Training for Construction Employees; Conduct Periodic Biological Monitoring; Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]; Compensate</p>	<p>Less than significant</p>

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			for Loss of Protected Trees not in Riparian Habitat	
Cultural Resources				
Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5	Removal of the approaches (non-rail vehicular aspect of the bridge) would modestly affect the bridge's integrity of design.	Significant	Develop Interpretative Display for the I Street Bridge	Less than significant
Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.	Ground-disturbing activities could impact CA-Sac-658H or previously unknown archaeological resources	Significant	Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel; Implement Programmatic Agreement; Implement Avoidance and Notification Procedures for Cultural Resources	Less than significant
Disturb any human remains, including those interred outside of formal cemeteries	Earth-disturbing and (i.e., excavation and grading) construction activities could damage human remains if present in the project area	Significant	Follow provisions of PRC Section 5097.98 (i.e., if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The project proponent will work with the MLD to avoid the remains and, if avoidance is not feasible, to determine the respectful treatment of the remains) Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel; Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction	Less than significant

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Geology and Soils				
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	Earth-disturbing and (i.e., excavation and grading) construction activities could damage fossils if present in the project area	Significant	Educate Construction Personnel in Recognizing Fossil Material, Stop Work if Substantial Fossil Remains Are Encountered during Construction	Less than significant
Noise				
Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.	Operational noise impacts at both interior and exterior locations in West Sacramento could exceed City of West Sacramento standards	Significant	Build Pavement Surface Designed to Reduce Tire-Pavement Noise; Ensure Building Compliance with City Noise Limits for Interior Spaces	Less than significant
Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.	Construction noise could exceed City of West Sacramento noise standards for non-transportation sources	Significant	Use Noise-Reducing Construction Practices	Significant and unavoidable
Expose persons to or generate excessive groundborne vibration or groundborne noise levels.	Impact pile driving vibration within about 175 feet of the activity could result in vibration causing potential annoyance or damage to historic buildings.	Significant	Use Noise-Reducing Construction Practices	Significant and unavoidable
Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	Substantial permanent increases in noise could occur at outdoor use areas	Significant	Build Pavement Surface Designed to Reduce Tire-Pavement Noise	Less than significant
Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	Increases in construction noise is expected to result in noise levels that exceed City of West Sacramento noise standards at nearby residential uses	Significant	Use Noise-Reducing Construction Practices	Significant and unavoidable

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Recreation				
Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.	Temporary and permanent impacts—including acquisition of land—on the riverfront parks in both the Sacramento and West Sacramento	Significant	Restore Sacramento River Parkway Trail after Construction; Provide Advance Notification of Sacramento River Parkway Trail Closures	Less than significant
Transportation/Traffic				
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.	Unacceptable LOS conditions for certain Sacramento and West Sacramento intersections under 2020 and 2040 conditions Worsened LOS F conditions on southbound I-5 from Garden Highway to Richards Boulevard under 2020 conditions	Significant	Prepare a Transportation Management Plan; Implement Roadway and Freeway Improvements	Less than significant
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.	LOS F conditions could worsen for the City of Sacramento intersection of North 12th Street /North B Street under design year (2040) conditions	Significant Cumulatively considerable contribution	Prepare a Transportation Management Plan; Implement Roadway and Freeway Improvements	Significant and unavoidable Cumulatively considerable

Table S-3. Continued

Significant Impact	Impact Summary	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Result in inadequate emergency access.	Permanent change in access and circulation in West Sacramento for emergency service providers Creation of a cul-de-sac that exceeds the maximum length allowed by West Sacramento Standard Specifications and Details	Significant	Prepare a Transportation Management Plan; Construct Mid-block East West Road	Less than significant

Table of Contents

		Page
Summary		S-1
List of Tables		vi
List of Figures		ix
List of Abbreviated Terms		xi
Chapter 1	Proposed Project.....	1-1
1.1	Introduction.....	1-1
1.1.1	Project Location	1-1
1.2	Purpose and Need	1-2
1.2.1	Purpose	1-2
1.2.2	Need	1-3
1.3	Project Description	1-3
1.3.1	Build Alternatives	1-4
1.3.2	No Build (No-Project) Alternative	1-12
1.4	Comparison of Alternatives	1-12
1.5	Identification of a Preferred Alternative	1-13
1.6	Alternatives Considered but Eliminated from Further Discussion Prior to Draft Environmental Document	1-14
1.6.1	Camille Lane Alignment	1-14
1.6.2	Fixed-Span Bridge Type	1-14
1.6.3	Movable Bridge Types	1-15
1.6.4	Roadway Configuration Alternatives	1-16
1.6.5	Transportation Demand Management and Transportation System Management Strategies	1-17
1.6.6	Other Design Options Considered in Value Analysis	1-17
1.7	Permits and Approvals Needed.....	1-18
1.8	References Cited	1-20
Chapter 2	Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures	2-1
	Human Environment	
2.1	Land Use	2.1-1
2.1.1	Existing Land Uses and Development Trends	2.1-1
2.1.2	Consistency with State, Regional, and Local Plans and Programs	2.1-3
2.1.3	Parks and Recreational Facilities	2.1-10
2.1.4	Environmental Consequences	2.1-12
2.1.5	Avoidance, Minimization, and/or Mitigation Measures.....	2.1-13
2.1.6	References Cited	2.1-14
2.1.7	Personal Communications	2.1-15
2.2	Growth	2.2-1
2.2.1	Regulatory Setting.....	2.2-1
2.2.2	Affected Environment	2.2-1
2.2.3	Environmental Consequences	2.2-2
2.2.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.2-4
2.2.5	References Cited	2.2-5

2.3	Community Impacts.....	2.3-1
2.3.1	Community Character and Cohesion	2.3-1
2.3.2	Relocations and Real Property Acquisition.....	2.3-8
2.3.3	Environmental Justice	2.3-11
2.3.4	References Cited	2.3-13
2.4	Utilities/Emergency Services.....	2.4-1
2.4.1	Affected Environment	2.4-1
2.4.2	Environmental Consequences	2.4-3
2.4.3	Avoidance, Minimization, and/or Mitigation Measures.....	2.4-4
2.4.4	References Cited	2.4-5
2.5	Traffic and Transportation/Pedestrian and Bicycle Facilities.....	2.5-1
2.5.1	Regulatory Setting.....	2.5-1
2.5.2	Affected Environment	2.5-8
2.5.3	Environmental Consequences	2.5-19
2.5.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.5-35
2.5.5	References Cited	2.5-38
2.6	Visual/Aesthetics	2.6-1
2.6.1	Regulatory Setting.....	2.6-1
2.6.2	Affected Environment	2.6-1
2.6.3	Environmental Consequences	2.6-7
2.6.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.6-15
2.6.5	References Cited	2.6-18
2.7	Cultural Resources.....	2.7-1
2.7.1	Regulatory Setting.....	2.7-1
2.7.2	Affected Environment	2.7-2
2.7.3	Environmental Consequences	2.7-9
2.7.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.7-11
2.7.5	References Cited	2.7-13
Physical Environment		
2.8	Hydrology and Floodplain.....	2.8-1
2.8.1	Regulatory Setting.....	2.8-1
2.8.2	Affected Environment	2.8-3
2.8.3	Environmental Consequences	2.8-8
2.8.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.8-11
2.8.5	References Cited	2.8-12
2.9	Water Quality.....	2.9-1
2.9.1	Regulatory Setting.....	2.9-1
2.9.2	Affected Environment	2.9-12
2.9.3	Environmental Consequences	2.9-17
2.9.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.9-23
2.9.5	References Cited	2.9-27
2.10	Geology/Soils/Seismic/Topography	2.10-1
2.10.1	Regulatory Setting.....	2.10-1
2.10.2	Affected Environment	2.10-4
2.10.3	Environmental Consequences	2.10-6
2.10.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.10-7
2.10.5	References Cited	2.10-7
2.11	Paleontology	2.11-1
2.11.1	Regulatory Setting.....	2.11-1
2.11.2	Affected Environment	2.11-1

2.11.3	Environmental Consequences	2.11-2
2.11.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.11-3
2.11.5	References Cited	2.11-3
2.12	Hazardous Waste/Materials	2.12-1
2.12.1	Regulatory Setting.....	2.12-1
2.12.2	Affected Environment	2.12-2
2.12.3	Environmental Consequences	2.12-15
2.12.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.12-17
2.12.5	References Cited	2.12-20
2.13	Air Quality	2.13-1
2.13.1	Regulatory Setting.....	2.13-1
2.13.2	Affected Environment	2.13-2
2.13.3	Environmental Consequences	2.13-7
2.13.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.13-14
2.13.5	Climate Change	2.13-15
2.13.6	References Cited	2.13-16
2.14	Noise	2.14-1
2.14.1	Regulatory Setting.....	2.14-1
2.14.2	Affected Environment	2.14-4
2.14.3	Environmental Consequences	2.14-5
2.14.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.14-8
2.14.5	References Cited	2.14-11
2.15	Energy.....	2.15-1
2.15.1	Regulatory Setting.....	2.15-1
2.15.2	Affected Environment	2.15-1
2.15.3	Environmental Consequences	2.15-1
2.15.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.15-1
Biological Environment		
2.16	Natural Communities	2.16-1
2.16.1	Regulatory Setting.....	2.16-1
2.16.2	Affected Environment	2.16-3
2.16.3	Environmental Consequences	2.16-5
2.16.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.16-8
2.16.5	References Cited	2.16-12
2.17	Wetlands and Other Waters	2.17-1
2.17.1	Regulatory Setting.....	2.17-1
2.17.2	Affected Environment	2.17-2
2.17.3	Environmental Consequences	2.17-3
2.17.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.17-4
2.17.5	References Cited	2.17-7
2.18	Plant Species.....	2.18-1
2.18.1	Regulatory Setting.....	2.18-1
2.18.2	Affected Environment	2.18-2
2.18.3	Environmental Consequences	2.18-7
2.18.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.18-7
2.18.5	References Cited	2.18-8
2.19	Animal Species	2.19-1
2.19.1	Regulatory Setting.....	2.19-1
2.19.2	Affected Environment	2.19-2
2.19.3	Environmental Consequences	2.19-25

2.19.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.19-43
2.19.5	References Cited	2.19-56
2.20	Threatened and Endangered Species	2.20-1
2.20.1	Regulatory Setting.....	2.20-1
2.20.2	Affected Environment	2.20-1
2.20.3	Environmental Consequences	2.20-13
2.20.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.20-21
2.20.5	References Cited	2.20-27
2.21	Invasive Species.....	2.21-1
2.21.1	Regulatory Setting.....	2.21-1
2.21.2	Affected Environment.....	2.21-1
2.21.3	Environmental Consequences	2.21-3
2.21.4	Avoidance, Minimization, and/or Mitigation Measures.....	2.21-3
2.21.5	References Cited	2.21-4
2.22	Cumulative Impacts	2.22-1
2.22.1	Regulatory Setting.....	2.22-1
2.22.2	Approach to Cumulative Impact Analysis	2.22-1
2.22.3	Assessment of Cumulative Impacts	2.22-1
2.22.4	References Cited	2.22-13
Chapter 3	California Environmental Quality Act (CEQA) Evaluation.....	3-1
3.1	Determining Significance under CEQA	3-1
3.2	CEQA Impact Assessment.....	3-2
3.2.1	Discussion of Significance of Impacts	3-13
3.3	Mitigation Measures for Significant Impacts under CEQA.....	3-44
3.3.1	Visual/Aesthetics.....	3-44
3.3.2	Air Quality.....	3-46
3.3.3	Biological Resources	3-48
3.3.4	Cultural Resources	3-69
3.3.5	Geology and Soils	3-71
3.3.6	Noise.....	3-71
3.3.7	Recreation.....	3-73
3.3.8	Traffic/Transportation	3-74
3.4	Best Management Measure for Less than Significant Impact	3-77
3.5	References Cited	3-78
Chapter 4	Comments and Coordination	4-1
4.1	Scoping Process for the EIR/EA.....	4-1
4.1.1	Notice of Preparation.....	4-1
4.1.2	Public Outreach and Scoping Meetings	4-4
4.2	Consultation and Coordination with Public Agencies	4-5
4.2.1	U.S. Army Corps of Engineers.....	4-5
4.2.2	U.S. Fish and Wildlife Service.....	4-5
4.2.3	National Marine Fisheries Service	4-6
4.2.4	Native American Heritage Commission and Coordination with Local Native American Tribes.....	4-6
4.2.5	North Central Information Center	4-7
4.2.6	State Historic Preservation Officer.....	4-7
4.3	Circulation of Draft EIR/EA and Comments Received.....	4-8
4.4	References Cited	4-10

Chapter 5	List of Preparers	5-1
5.1	City of Sacramento	5-1
5.2	City of West Sacramento	5-1
5.3	Caltrans	5-1
5.4	ICF	5-2
5.5	Mark Thomas & Company	5-2
5.6	Modjeski and Masters	5-2
5.7	Fehr & Peers	5-3
5.8	Terry A. Hayes Associates, Inc.....	5-3
5.9	MBK Engineers	5-3
5.10	Blackburn Consulting, Inc.	5-3
5.11	GEI Consultants, Inc.....	5-3
5.12	Aim Consulting, Inc.....	5-3
5.13	Egret, Inc.....	5-3
Chapter 6	Distribution List	6-1

Appendices (Volume 2)

- Appendix A Section 4(f) De Minimis Determination and Section 6(f) Assessment**
- Appendix B Title VI Policy Statement**
- Appendix C Summary of Relocation Benefits**
- Appendix D Avoidance, Minimization and/or Mitigation Summary**
- Appendix E Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis**
- Appendix F Sub-Area Travel Forecasting Model Development and Validation**
- Appendix G Agency Letters and Consultations**
- Appendix H List of Technical Studies**
- Appendix I Public Comments and Responses**

List of Tables

	Page
S-1	Permits and ApprovalsS-6
S-2	Comparison of Alternatives.....S-8
S-3	Summary of CEQA Significant ImpactsS-29
1-1	Permits and Approvals Needed 1-18
2.2-1	Existing Regional and Local Population Change 2.2-2
2.3-1	Existing Regional and Local Race and Ethnicity Characteristics (2010)..... 2.3-3
2.3-2	Income and Poverty Statistics for the Study Area (2010) 2.3-4
2.3-3	Mid-block East West Road Parcel Acquisitions..... 2.3-8
2.3-4	Proposed Parcel Acquisitions 2.3-10
2.5-1	Level of Service Definitions for Study Intersections 2.5-11
2.5-2	Level of Service Definitions for Freeway Segments 2.5-11
2.5-3	Sacramento River Crossing Volume Comparison—Existing Conditions (2014) 2.5-14
2.5-4	Peak-Hour Intersection Operations—Existing Conditions (2014) 2.5-15
2.5-5	Freeway Operations—Existing Conditions (2014) 2.5-17
2.5-6	Off-Ramp Queues—Existing Conditions (2014) 2.5-18
2.5-7	Daily Bridge Volumes, Opening Year (2020)..... 2.5-22
2.5-8	Peak Hour Intersection Operations, Opening Year (2020)..... 2.5-23
2.5-9	Freeway Operations, Opening Year (2020)..... 2.5-26
2.5-10	Off-Ramp Queues, Opening Year (2020) 2.5-27
2.5-11	Daily Regional Vehicle Miles Traveled, Opening Year (2020)..... 2.5-28
2.5-12	Daily Bridge Volumes, Design Year (2040) 2.5-29
2.5-13	Peak Hour Intersection Operations, Design Year (2040) 2.5-30
2.5-14	Freeway Operations, Design Year (2040) 2.5-33
2.5-15	Off-Ramp Queues, Design Year (2040)..... 2.5-34
2.5-16	Daily Regional Vehicle Miles Traveled, Design Year (2040) 2.5-34
2.7-1	Previously Recorded Cultural Resources in the APE..... 2.7-4
2.7-2	Shipwrecks Listed as Located in the APE..... 2.7-5
2.8-1	Month Average Precipitation at the Sacramento Executive Airport 2.8-4
2.8-2	FEMA Flood Zone Designations in the Project Vicinity 2.8-6
2.9-1	Designated Beneficial Uses for the Sacramento River..... 2.9-14
2.9-2	Section 303(d)-Listed Impairments for the Sacramento River..... 2.9-15
2.9-3	Summary of Sediment Risk..... 2.9-16
2.9-4	Summary of Receiving Water Risk 2.9-16
2.11-1	California Department of Transportation Paleontological Sensitivity Terminology 2.11-2
2.12-1	Hazardous Waste/Contamination Reports Prepared for the Proposed Project 2.12-2
2.12-2	Adjacent Sites with Known/Potential Recognized Environmental Conditions..... 2.12-13
2.12-3	Parcels with the Potential for Soil and/or Groundwater Contamination 2.12-15
2.13-1	California and National Ambient Air Quality Standards 2.13-4
2.13-2	Ambient Air Quality Monitoring Data Measured at the Sacramento T Street Monitoring Station 2.13-5
2.13-3	Federal and State Attainment Status of the Project Area in Yolo and Sacramento Counties..... 2.13-6

2.13-4	Estimated Criteria Pollutant Emissions from Operation of I Street Bridge Replacement Project.....	2.13-9
2.13-5	Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Build Alternatives (ppd).....	2.13-11
2.14-1	Noise Abatement Criteria for NEPA Analysis.....	2.14-2
2.14-2	Summary of Short-Term Measurements.....	2.14-5
2.14-3	Typical Construction Equipment Noise Levels.....	2.14-7
2.16-1	Impacts on Cottonwood Riparian Forest.....	2.16-7
2.17-1	Impacts on Wetlands and Other Waters.....	2.17-4
2.18-1	Special-Status Plant Species Identified as Having the Potential to Occur in the Project Region or That May Be Affected by the Proposed Project.....	2.18-3
2.19-1	Special-Status Wildlife and Fish Known or with Potential to Occur in the Project Region, or That May Be Affected by the Proposed Project.....	2.19-4
2.19-2	Life Stage Timing and Distribution of Special-Status Fish Species Potentially Affected by the Project.....	2.19-18
2.19-3	Number of Fall-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.19-20
2.19-4	Number of Late Fall-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.19-21
2.19-5	Number of Sacramento Splittail Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.19-22
2.19-6	Existing Shaded Riverine Aquatic Cover (Overhead Vegetation and Undercut Banks) in the Biological Study Area.....	2.19-24
2.19-7	Interim Criteria for Injury to Fish from Pile Driving Activities.....	2.19-29
2.19-8	Assumptions in the Hydroacoustic Analysis for I Street Bridge.....	2.19-31
2.19-9	Amount of Temporarily and Permanently Affected Aquatic Habitat in the Sacramento River Resulting from the Proposed Project.....	2.19-39
2.19-10	Amount of Artificial Overwater Structure (Shade) on the Sacramento River under Existing and With-Project Conditions.....	2.19-41
2.20-1	Elderberry Shrub Survey Results.....	2.20-4
2.20-2	Number of Winter-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.20-6
2.20-3	Number of Spring-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.20-8
2.20-4	Total Number of Wild and Hatchery-Origin Juvenile Steelhead Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.20-9
2.20-5	Number of Delta Smelt Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015).....	2.20-12
2.20-6	Required Compensation for Directly Affected Elderberry Shrubs.....	2.20-24
2.21-1	Invasive Plant Species Identified in the Biological Study Area.....	2.21-2
3-1	Project screening levels.....	3-14
3-2	Estimated 2020 Annual GHG EMISSIONS.....	3-16
3-3	Estimated 2040 Annual GHG EMISSIONS.....	3-16
3-4	City of West Sacramento Maximum Allowable Noise Exposure from Transportation Noise Sources.....	3-32
3-5	Predicted Traffic Noise Levels at Outdoor Use Areas and in Interior Spaces.....	3-33

3-6 Predicted Traffic Noise Level increase at Residential Outdoor Use Areas 3-34

3-7 Peak Hour Intersection Operations – Opening Year (2020)..... 3-36

3-8 Peak Hour Intersection Operations – Design Year (2040)..... 3-36

3-9 Peak Hour Intersection Operations – Opening Year (2020) 3-37

3-10 Peak Hour Intersection Operations – Design Year (2040)..... 3-37

3-11 Freeway Operations – Opening Year (2020)..... 3-38

3-12 City of West Sacramento Non-Transportation Noise Level Standards 3-40

3-13 Construction Noise 3-40

3-14 Guideline Vibration Annoyance Potential Criteria 3-41

3-15 Guideline Vibration Damage Potential Criteria 3-42

3-16 Vibration from Construction Equipment..... 3-42

3-17 Peak Hour Intersection Operations – Design Year (2040) 3-43

3-18 Required Compensation for Directly Affected Elderberry Shrubs 3-67

4-1 List of Agencies, Individuals, and Organizations Commenting on the Draft EIR/EA..... 4-9

List of Figures

	Follows Page
1-1	Vicinity Map 1-2
1-2	Proposed Project..... 1-4
1-3	Proposed I Street Bridge: Plan View, Profile, and Elevation 1-6
1-4	Construction Schedule..... 1-6
2.1-1	CIA Study Area 2.1-2
2.1-2	Land Use Designations—Sacramento 2.1-2
2.1-3	Land Use Designations—West Sacramento 2.1-2
2.1-4	Community Resources 2.1-12
2.5-1	Analysis Locations 2.5-8
2.5-2	Existing (2014) Functional Class 2.5-10
2.5-3	Existing (2014) Lanes 2.5-10
2.5-4	Existing Conditions Peak Hour Intersection LOS 2.5-14
2.5-5	Existing Rail Transit Facilities 2.5-18
2.5-6	Existing Transit Bus Routes & Facilities 2.5-18
2.5-7	Existing Bicycle Facilities 2.5-18
2.5-8	Existing Pedestrian Facilities 2.5-20
2.5-9	Build Alternatives..... 2.5-20
2.5-10	Existing Plus Project – Distribution of Daily Traffic Volume Using New I Street Bridge 2.5-22
2.5-11	Existing Plus Project – Total Daily Volume Difference between Existing Condition and Existing Plus Project (New I Street Bridge) 2.5-22
2.5-12a	2014 Existing Conditions & 2020 Alternatives AM Peak Hour Intersection LOS 2.5-22
2.5-12b	2014 Existing Conditions & 2020 Alternatives PM Peak Hour Intersection LOS..... 2.5-22
2.5-13	Opening Year 2020 Bicycle & Pedestrian Distance Comparison 2.5-28
2.5-14a	2014 Existing Conditions & 2040 Alternatives AM Peak Hour Intersection LOS 2.5-32
2.5-14b	2014 Existing Conditions & 2040 Alternatives PM Peak Hour Intersection LOS..... 2.5-32
2.6-1	Visual Assessment Units and Key View Locations 2.6-4
2.6-2a	Key View 1 (Bridge Closed): Existing View and Simulated Conditions— from the Sacramento River Parkway looking north 2.6-4
2.6-2b	Key View 1 (Bridge Opened): Existing View and Simulated Conditions— from the Sacramento River Parkway looking north 2.6-4
2.6-3	Key View 2: Existing View and Simulated Conditions—from C Street looking east 2.6-4
2.6-4	Key View 3: Existing View and Simulated Conditions—from 2 nd Street looking north 2.6-4
2.6-5a	Key View 4 (Bridge Closed): Existing View and Simulated Conditions— from the Sacramento River Parkway looking southeast..... 2.6-6
2.6-5b	Key View 4 (Bridge Opened): Existing View and Simulated Conditions— from the Sacramento River Parkway looking southeast..... 2.6-6
2.6-6a	Key View 5 (Bridge Closed): Existing View and Simulated Conditions— from the existing I Street Bridge looking north..... 2.6-6
2.6-6b	Key View 5 (Bridge Opened): Existing View and Simulated Conditions— from the existing I Street Bridge looking north..... 2.6-6

Contents

2.6-7a	Key View 6 (Bridge Closed): Existing View and Simulated Conditions— from the Sacramento River Water Intake Structure looking south	2.6-6
2.6-7b	Key View 6 (Bridge Opened): Existing View and Simulated Conditions— from the Sacramento River Water Intake Structure looking south	2.6-6
2.8-1	FEMA Flood Zones within the Project Vicinity	2.8-6
2.12-1a–c	ISA Study Area and Potential Hazardous Waste Sites	2.12-2
2.13-1	Air Monitoring Stations.....	2.13-4
2.13-2	Sensitive Receptors within 500 feet	2.13-6
2.14-1	Noise Levels of Common Activities	on 2.14-3
2.14-2	Noise Measurement and Prediction Locations	2.14-4
2.16-1	Impacts on Landcover Types and Sensitive Biological Resources in the Biological Study Area	2.16-4

List of Abbreviated Terms

°	degrees
°F	Fahrenheit
2010	Society of Vertebrate Paleontology
AADT	Average annual daily traffic
AAQS	ambient air quality standards
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADI	Area of Direct Impact
ADL	aerially deposited lead
AEP	Azimuth-over-Elevation Positioning
AGR	Agricultural
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	Area of Potential Effects
APN	Assessor's Parcel Number
ARB	California Air Resources Board
BAU	business-as-usual
BMPs	best management practices
BSA	biological study area
BTEX	benzene, toluene, ethylbenzene, xylene
C	Celsius
CAAQS	California ambient air quality standards
Cal/OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CHRIS	California Historical Resources Information System
CIA	Community Impact Assessment
CIDH	cast-in-drill-hole
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CSLS	California State Lands Commission
CSMP	Corridor System Management Plan
CSS	combined sewer system
CT	Census Tract
CV	Central Valley
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
CRMP	Cultural Resources Management Plan
dB RMS	decibels root mean square

dba	A-weighted decibels
DPM	diesel particulate matter
DPS	distinct population segment
DSA	Disturbed Soil Area
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources
EFH	essential fish habitat
EIR/EA	Environmental Impact Report/Environmental Assessment
EO	Executive Order
EO 11990	Executive Order for the Protection of Wetlands
EPA	U.S. Environmental Protection Agency
ESA	Environmentally Sensitive Area
ESU	evolutionary significant unit
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FHWG	Fisheries Hydroacoustic Working Group
FOE	Finding of Effects
FONSI	Finding of No Significant Impact
FR	Federal Register
FTA	Federal Transit Administration
FTIPs	Federal Transportation Improvement Programs
GHG	greenhouse gas
GMP	groundwater management plan
GSRDs	Gross Solids Removal devices
H ₂ S	hydrogen sulfide
HBP	Highway Bridge Program
HCM	Highway Capacity Manual
HUC	Hydrologic Unit Code
I-5	Interstate-5
I-80	Interstate 80
ICF	ICF International
IND	Industrial Service Supply
IRR	Irrigation
ISA	Initial Site Assessment
Ksat	saturated hydraulic conductivity
LCP	lead containing paint
LEDPA	least environmentally damaging practicable alternative
LID	low impact development
LOS	level of service
LSAA	Lake or Streambed Alteration Agreement
LSNFH	Livingston Stone National Fish Hatchery
LUC	land use covenant
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBTA	Migratory Bird Treaty Act
MGP	Manufactured Gas Plant
MLD	Most Likely Descendent
mm	millimeters
MPO	Metropolitan Planning Organization
MS4	municipal separate storm sewer systems
MSA	Magnuson-Stevens Fishery Conservation and Management Act of 1976

MSAT	mobile source air toxics
MTP/SCS	2016 Metropolitan Transportation Plan/Sustainable Communities Strategy
MTP/SCS 2035	Metropolitan Transportation Plan/Sustainable Communities Strategy 2035
MUN	Municipal and Domestic
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOA	Naturally occurring asbestos
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
NSA	Northern Shops study area
NSR	Noise Study Technical Report
NWIC	Northwest Information Center
O ₃	ozone
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
Pb	lead
PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PGA	peak ground acceleration
PM ₁₀	particles of 10 micrometers or smaller
PM _{2.5}	particles of 2.5 micrometers and smaller
PRC	Public Resources Code
PROC	Industrial Process
project-specific PA	project-specific Programmatic Agreement
RAPs	respective remedial action plans
RCEM	Roadway Construction Emissions Model
RCRA	Resource Conservation and Recovery Act of 1976
RD	Reclamation District
RECs	recognized environmental conditions
ROG	reactive organic gases
RSP	rock slope protection
RTPs	Regional Transportation Plans
RUSLE	Revised Universal Soil Loss Equation
RWQCBs	Regional Water Quality Control Boards
SACOG	Sacramento Area Council of Governments
SAFCA	Sacramento Area Flood Control Agency
SB	Senate Bill
SDC	Seismic Design Criteria

Section 106 PA	First Amended 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
SEL	sound exposure level
SFHA	Special Flood Hazard Area
SHPO	<i>California State Historic Preservation Officer</i>
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMP	soil management plan
SMUD	Sacramento Municipal Utilities District
SO ₂	sulfur dioxide
SPFC	State Plan of Flood Control
SPL	sound pressure level
SPTCo	Pacific Transportation Company
SRA	shaded riverine aquatic
SRBPP	Sacramento River Bank Protection Project
State Water Board	State Water Resources Control Board
SVAB	Sacramento Valley Air Basin
SVOCs	semi-volatile organic compounds
SWMP	Sacramento's Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan
TAZs	Transportation analysis zones
TCCR	Transportation Corridor Concept Report Interstate 5
TCEs	temporary construction easements
TCLs	Traditional Cultural Landscapes
TCPs	Traditional Cultural Properties
TDM	Transportation demand management
TISG	Guide for the Preparation of Traffic Impact Studies
TMDL	total maximum daily load
TMP	Transportation Management Plan
TNM	Traffic Noise Model
TPH	total petroleum hydrocarbon
TSM	Transportation system management
UAIC	United Auburn Indian Community of the Auburn Rancheria
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCG	U.S. Coast Guard
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey [
USLE	Universal Soil Loss Equation
USTs	underground storage tanks
VA	value analysis
VELB	valley elderberry longhorn beetle
VIA	Visual Impact Assessment
VMT	vehicle miles of travel
VOCs	volatile organic compounds

WDRs	Waste Discharge Requirements
WPCP	Water Pollution Control Program
WSAFCA	West Sacramento Area Flood Control Agency
WSE	water surface elevation
YCEHS	Yolo County Environmental Health Services
YDWN	Yocha Dehe Wintu Nation
YSAQMD	Yolo Solano Air Quality Management District

Chapter 1 Proposed Project

1.1 Introduction

The City of Sacramento, in cooperation with the City of West Sacramento and the California Department of Transportation (Caltrans), proposes to construct a new bridge over the Sacramento River to replace the vehicle crossing that is currently accommodated by the existing I Street Bridge in order to remove a series of functionally obsolete or structurally deficient bridges (i.e., approach structures). The new connection also would reduce future traffic congestion, improve operations and safety, serve multiple modes of transportation, and comply with current American Association of State Highway and Transportation Officials, Caltrans, and local agency design standards.

The project is subject to state and federal environmental review requirements because of use of federal Highway Bridge Program (HBP) funds from the Federal Highway Administration (FHWA). Accordingly, project documentation is being prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The City of Sacramento is the lead agency under CEQA, with the City of West Sacramento as a responsible agency, and Caltrans is the lead agency under NEPA. The FHWA's other responsibilities for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project will be carried out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (USC) 327.

This project is included in the Sacramento Area Council of Governments (SACOG) 2016 *Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS).

1.1.1 Project Location

The project is located over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet north of the existing I Street Bridge (Figure 1-1). The project limits starting within Sacramento consist of Railyards Boulevard from 200 feet east of Bercut Drive on the east, continuing west over the Sacramento River into West Sacramento along C Street, crossing 2nd Street, and terminating approximately 100 feet west of the 5th Street intersection. The project limits also extend along Bercut Drive approximately 500 feet north of Railyards Boulevard, along Jibboom Street 550 feet north of Railyards Boulevard and 300 feet south of Railyards Boulevard, along 3rd Street 50 feet north and south of C Street, along 4th Street 50 feet north and south of C Street, and along 5th Street 50 feet north and south of C Street. The total length of the project is approximately 0.42 mile (2,200 feet) along C Street and Railyards Boulevard.

1.2 Purpose and Need

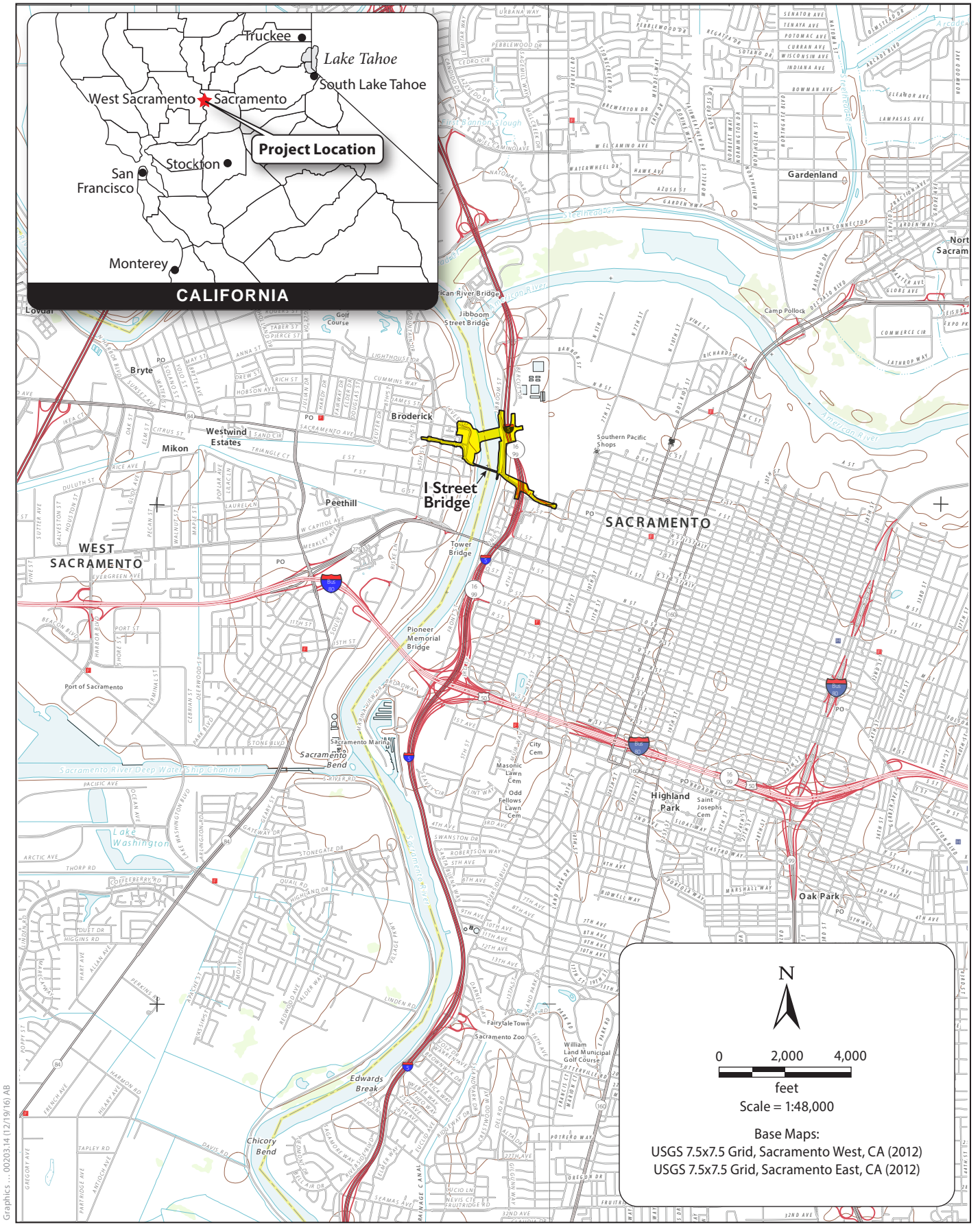
The proposed project would construct a new bridge over the Sacramento River between the cities of Sacramento and West Sacramento to replace the vehicle crossing that is currently provided by the existing I Street Bridge. Construction of the proposed project has independent utility; the project is not dependent on other projects or improvements to meet the purpose and need.

Termini for the proposed project were developed through an iterative process involving engineering design and traffic operations analysis. Preliminary design concepts were tested with the traffic operations analysis model to evaluate how lane configurations influenced peak-hour conditions.

1.2.1 Purpose

The purpose and objectives of the project are listed below.

- The project should construct a new public crossing of the Sacramento River north of the Union Pacific Railroad (UPRR)-owned I Street Bridge from C Street in the City of West Sacramento to Railyards Boulevard in the City of Sacramento, consistent with the adopted findings of the Sacramento River Crossings Alternatives Study for Bridge Location 2 in the North Market Area.
- The new bridge should meet the requirements of the Neighborhood Friendly Bridge definition that the City of Sacramento City Council adopted by resolution on October 18, 2011.
- In addition to the Neighborhood Friendly Bridge definition, the project would include pedestrian and bicycle facilities in the new public crossing that meet Americans with Disabilities Act (ADA) requirements, and facilitate connections to and from the new crossing and the Sacramento River Parkway and Riverfront Park trails.
- The project would facilitate vehicular and multimodal traffic over the river in order to reduce traffic congestion, improve safety, and remove a number of structurally deficient or functionally obsolete bridges that have reached the limit of their design life.
- The proposed structure would be a movable bridge that satisfies the vertical clearance and river navigation requirements of the U.S. Coast Guard (USCG).
- The project design should accommodate future high-quality transit and the addition of a streetcar, which would be a separate stand-alone project developed by the Cities of West Sacramento and Sacramento.
- The new bridge also is intended to improve the connectivity to, and accessibility of, businesses, recreational areas, and new or redevelopment opportunity sites located in the urban core of Sacramento and West Sacramento, including the Sacramento Railyards and the River District in Sacramento and the Washington District in West Sacramento.



Graphics ... 002033.14 (12/19/16) AB

**Figure 1-1
Vicinity Map**

1.2.2 Need

The project is needed for the following reasons.

- The existing I Street Bridge does not fully comply with current design and traffic operation standards due to the following conditions.
 - I Street Bridge limits or restricts traffic capacity and multimodal use. The current bridge width is not sufficient to provide adequate traffic operations, bicycle lanes, or the ability for transit service, including busses, across the bridge.
 - The I Street Bridge and the four associated approach structures are on the eligible bridge list for federal funds for replacement and/or rehabilitation through the Highway Bridge Program (HBP). The I Street Bridge has been classified as functionally obsolete, and the existing approach structures have been classified as structurally deficient. The Cities of Sacramento and West Sacramento have decided to pursue replacement through the HBP.
- It is necessary to provide access to and between two proposed transit-oriented infill development planning areas on opposite sides of the Sacramento River, Washington District and Sacramento Railyards. To realize the full potential of each of the areas, a pedestrian-friendly, multimodal connection across the river is necessary, and is not provided by the current I Street Bridge.
- The I Street Bridge is not in compliance with ADA standards. Standard and continuous sidewalks, and bicycle facilities that encourage walking and bicycling are needed to comply with the ADA and promote the use of alternative modes of travel.

1.3 Project Description

This section describes the proposed action and the design alternatives that were developed to meet the identified need through accomplishing the defined purpose(s), while avoiding or minimizing environmental impacts. All aspects of the proposed project would comply with applicable provisions of the Caltrans 2015 *Standard Specifications* (California Department of Transportation 2015) (referred to herein as Standard Specifications).

The build alternatives under consideration are one bridge alignment for the new bridge over the Sacramento River and two alternatives for portions of the roadway design in Sacramento.

- City of Sacramento Railyards Boulevard/Jibboom Street/Bercut Drive Intersection
 - Alternative 1—Signalized Intersection at Jibboom Street and Bercut Drive
 - Alternative 2—Roundabout Intersection at Jibboom Street and Bercut Drive
- No Build (No-Project) Alternative

The proposed project is located in Sacramento and Yolo Counties, over the Sacramento River and between the cities of Sacramento and West Sacramento, and approximately 1,000 feet north of the existing I Street Bridge (Figure 1-1). The total length of the project is approximately 0.42 mile (2,200 feet) along C Street and Railyards Boulevard. The purpose of the project is to

construct a new public crossing of the Sacramento River north of the UPRR-owned I Street Bridge from C Street in the City of West Sacramento to Railyards Boulevard in the City of Sacramento in order to remove a series of functionally obsolete or structurally deficient bridges, consistent with the adopted findings of the Sacramento River Crossings Alternatives Study for Bridge Location 2 in the North Market Area.

1.3.1 Build Alternatives

One alignment is proposed for the new bridge over the Sacramento River. A new approximately 860-foot long bridge, consisting of two vehicle lanes, on-street Class II bike lanes, and sidewalks along both sides, is proposed. The bridge would include two fixed-span approach structures, approximately 200 feet and 270 feet in length, that tie into the Sacramento and West Sacramento banks of the river, respectively. The center span of the bridge would be an approximately 330-foot long movable span that meets the USCG requirements. Roadway improvements on Railyards Boulevard in Sacramento and C Street in West Sacramento also are proposed. In Sacramento, two alternatives for portions of the roadway design at the Railyards Boulevard/Jibboom Street/Bercut Drive intersection are being considered. Figure 1-2 depicts the proposed project and the roadway design alternatives, described below.

- City of Sacramento Railyards Boulevard/Jibboom Street/Bercut Drive Intersection
 - Alternative 1—Signalized Intersection at Jibboom Street and Bercut Drive
 - Alternative 2—Roundabout Intersection at Jibboom Street and Bercut Drive

In the City of Sacramento, Alternative 1 consists of signalized intersections at Jibboom Street and Bercut Drive, while Alternative 2 consists of a roundabout between these two intersections. Beyond the Jibboom Street and Bercut Drive intersections, the remaining project elements and limits in the City of Sacramento are similar under both alternatives.

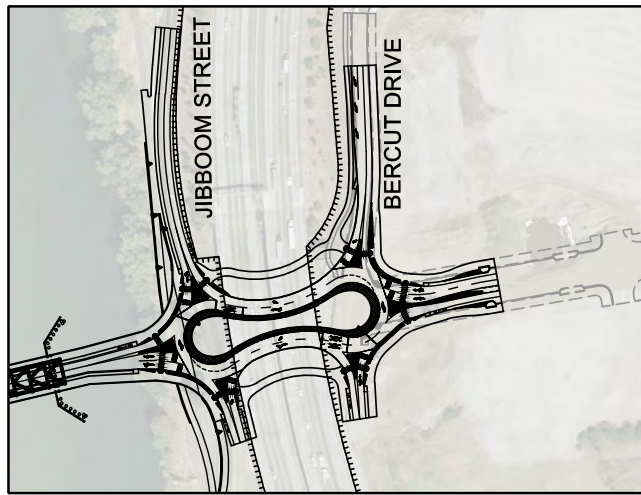
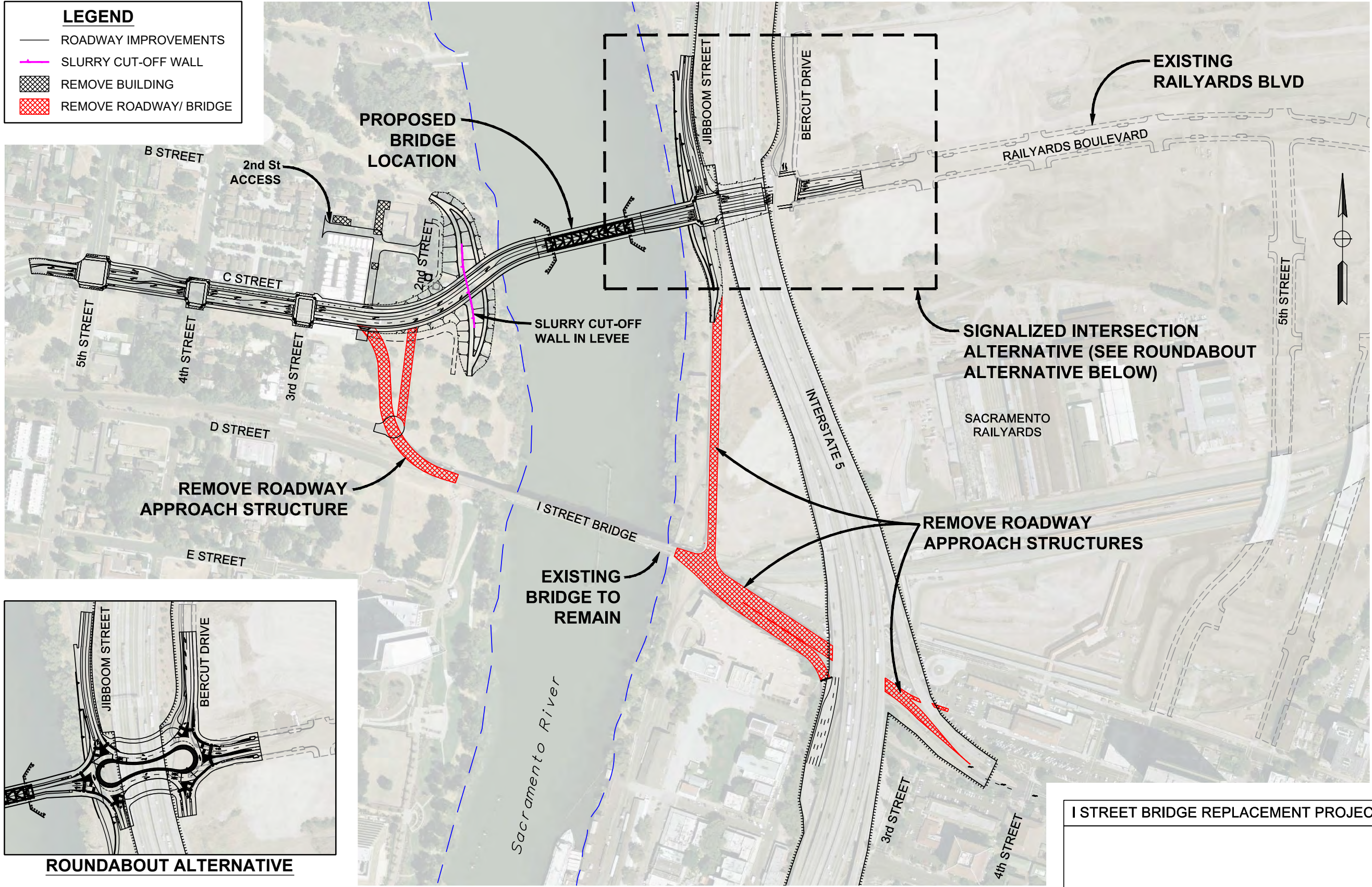
1.3.1.1 Common Design Features of the Build Alternatives

The proposed project would construct a new bridge over the Sacramento River between Sacramento and West Sacramento to replace the vehicular crossing that is provided by the existing I Street Bridge. The project would facilitate vehicular and multimodal traffic over the river in order to reduce traffic congestion, improve safety, and remove a number of structurally deficient or functionally obsolete bridges that have reached the limit of their design life. While the existing I Street Bridge over the Sacramento River would remain in-place, the approach structures leading up to the bridge from both directions would be demolished. See Figure 1-2 for a depiction of the project limits and the approach structures that would be removed.

The Sacramento River is considered to be a navigable waterway of the United States. Under the provisions of the General Bridge Act of 1946, as amended, the USCG must approve proposed location and plans for bridges over navigable waters of the United States prior to commencing construction.

Common design features of the build alternatives are discussed below.

- LEGEND**
- ROADWAY IMPROVEMENTS
 - SLURRY CUT-OFF WALL
 - REMOVE BUILDING
 - REMOVE ROADWAY/ BRIDGE



ROUNDBOUT ALTERNATIVE

I STREET BRIDGE REPLACEMENT PROJECT

SCALE: NTS

**Figure 1-2
Proposed Project**

New Bridge Construction and Roadway Modifications

Bridge Construction

The total length of the new bridge would be approximately 860 feet, with up to an 82-foot-wide deck consisting of two vehicle lanes, on-street Class II bike lanes, and sidewalks along both sides of the bridge. The bridge would include two fixed-span approach structures that tie into the Sacramento and West Sacramento banks of the river and are approximately 200 feet and 270 feet in length, respectively (see Figure 1-3). The center span of the bridge would be a movable span that meets the USCG requirements. The movable span is anticipated to be approximately 330 feet in length. The bridge soffit elevation would be set 3 feet above the 200-year water surface elevation to comply with the Central Valley Flood Protection Board (CVFPB) freeboard requirements.

The two fixed-span approach structures would be up to 82 feet wide, with a superstructure depth (or total bridge thickness) of approximately 6 feet. Each approach structure would be a two-span bridge.

Based on coordination with the USCG, the movable span would provide a 278-foot clear channel opening approximately centered at the middle of the river. As such, a vertical lift span was identified as the appropriate type of movable span. Vertical lift span bridges have a movable span that is lifted vertically to permit passage of boats beneath it. The Tower Bridge over the Sacramento River just downstream of the existing I Street Bridge is an example of a vertical lift span bridge. Like Tower Bridge, the proposed project's bridge would have two towers, one on either side of the lift span. A counterweight would be suspended in each tower, with each counterweight weighing approximately half of the weight of the span. As the bridge is raised, the counterweights would lower. The vertical lift span would raise the bridge to a minimum vertical clearance of 59 feet over the maximum river elevation of 31 feet (measured to the 29 National Geodetic Vertical Datum [NGVD]).

The truss depth of the movable span would be approximately 40 feet, with 6 feet of the structure being below the bridge deck and 34 feet above the bridge deck. The vertical towers would be approximately 130 feet tall, measured from the bridge soffit elevation. The vertical towers would be approximately 33 feet in thickness and the same width as the bridge deck. The total bridge width on the movable span would be 81 feet.

Due to the existing soil conditions, the bridge would be constructed on deep pile foundations. The abutments for the fixed-span approach structures at the river bank would consist of approximately 50 piles per abutment that are driven or cast-in-drilled-hole (CIDH), to a depth of approximately 70 feet below the original ground elevation. The center piers for the two fixed-span approach structures (located approximately at the bank toe of slope in the river, below the ordinary high water mark) would consist of 50 driven or CIDH piles per pier that are approximately 70 feet below the original ground elevation. If driven piles are selected for either the abutments or piers, the piles would be precast concrete or steel. The foundations for the movable span would consist of four large-diameter cast-in-steel-shell piles per pier. Each pile would be 9 feet in diameter, extending approximately 140 feet below the original ground elevation.

Erosion control measures would be installed around the proposed bridge foundations to prevent future scour at the bridge supports. It is anticipated that rock slope protection (RSP) would be installed around the bridge abutments and piers within the water to control erosion.

A bridge fender system also is planned around the movable span piers to protect the piers from errant watercrafts that are navigating along the river. The fender system would include approximately 30 driven concrete or wooden piles around each of the movable span piers. The piles would be driven to a depth of approximately 30 feet below the original ground elevation.

Temporary Falsework

Temporary falsework platforms would be required to construct the proposed bridge foundations and approach structures. The platforms would be constructed using temporary piles within the river. In addition, temporary cofferdams would be required to construct the bridge piers within the water. The cofferdams would consist of temporary sheetpiles installed around the individual piers. Dewatering inside the cofferdams would be required.

Bridge Construction Sequence

Figure 1-4 shows the sequencing of construction activities. All in-water work would be conducted between May 1 and November 30 during the two construction seasons. This schedule is intended to reduce the number of construction seasons to construct the bridge.

Roadway Modifications

City of Sacramento

In Sacramento, Bercut Drive would be modified from Railyards Boulevard north approximately 500 feet. Bercut Drive would be designed to have two northbound lanes at the Railyards Boulevard intersection, tapering down to one northbound lane at the northern project limits and one southbound lane. Improvements to Bercut Drive south of Railyards Boulevard are not part of, or needed for, the proposed project and would be constructed if needed as part of a separate future project.

Proposed improvements on Jibboom Street would extend 550 feet north of Railyards Boulevard. The roadway would consist of one travel lane in each direction, on-street Class II bike lanes, sidewalk along the west side of the roadway, and retaining walls of various heights along both sides of the road. Extension of Jibboom Street south of Railyards Boulevard is not included in, or needed for, the proposed project and would be constructed if needed as part of a separate future project.

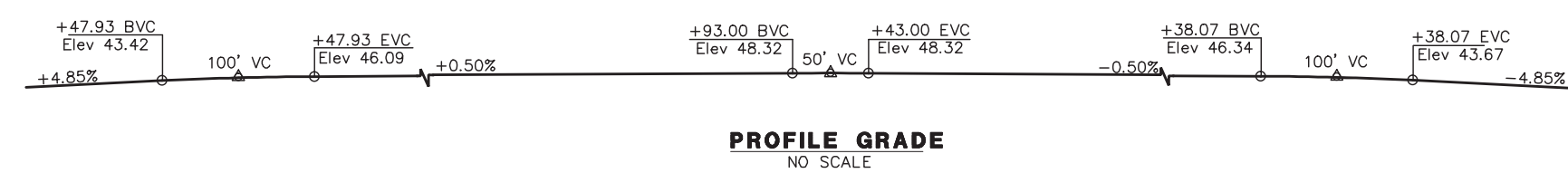
The proposed roadway profile for Railyards Boulevard would be approximately 6 feet higher than the original ground elevation at the Jibboom Street intersection. The profile adjustment is needed in order to satisfy the CVFPB requirements to provide 3 feet of clearance between the 200-year-flood water surface elevation and the bridge soffit (low chord of the bridge).

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
03	YOL/SAC	"C"/"RY"	N/A

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS
915 I STREET, ROOM 2000
SACRAMENTO, CA 95814

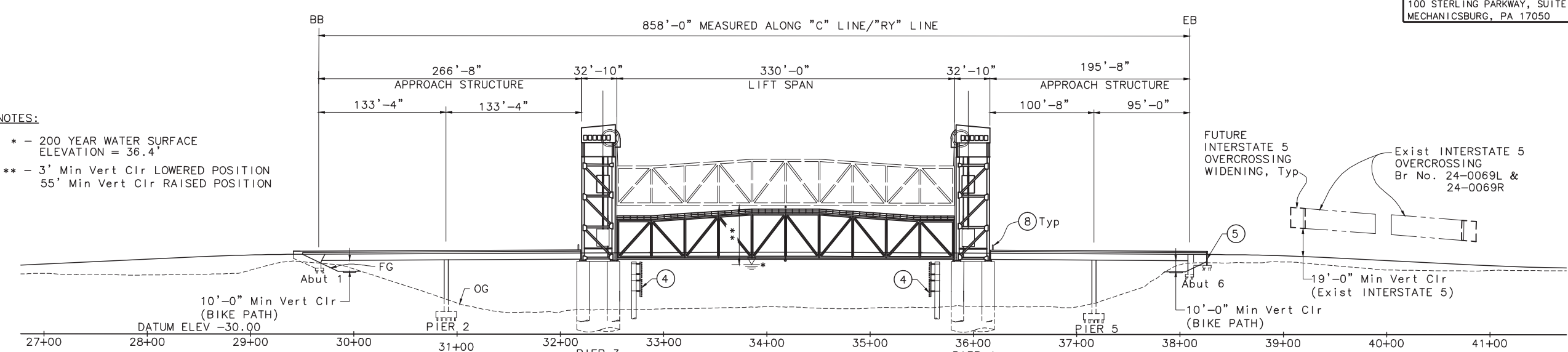
MARK THOMAS & COMPANY, INC.
7300 FOLSOM BLVD., SUITE 203
SACRAMENTO, CA 95826

MODJESKI AND MASTERS, INC.
100 STERLING PARKWAY, SUITE 302
MECHANICSBURG, PA 17050

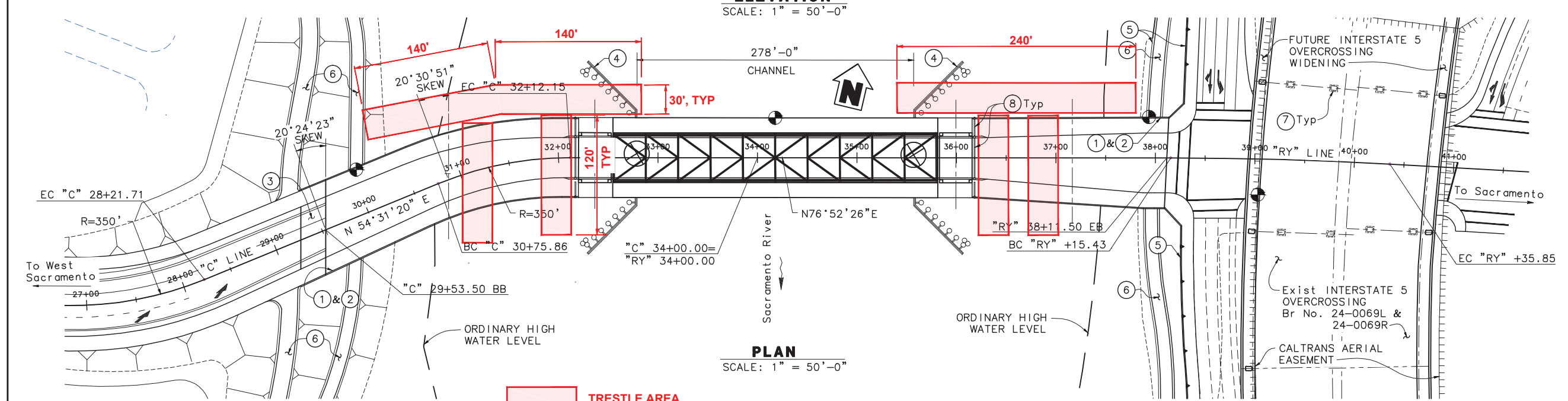


PROFILE GRADE
NO SCALE

- NOTES:
- * - 200 YEAR WATER SURFACE ELEVATION = 36.4'
 - ** - 3' Min Vert Clr LOWERED POSITION
55' Min Vert Clr RAISED POSITION



ELEVATION
SCALE: 1" = 50'-0"



PLAN
SCALE: 1" = 50'-0"

- LEGEND:**
- POINT OF MINIMUM VERTICAL CLEARANCE
 - ⊗ USCG GPS TARGET LOCATION
 - ① PAINT BRIDGE NAME
 - ② PAINT BRIDGE NUMBER
 - ③ APPROACH SLAB
 - ④ FENDER SYSTEM
 - ⑤ RETAINING WALL
 - ⑥ BIKE PATH
 - ⑦ ISOLATION CASING AROUND EXISTING BRIDGE COLUMNS
 - ⑧ TRAFFIC/PEDESTRIAN GATE & WARNING SIGNAL

TRESTLE AREA

DESIGNED BY J. HICKEY	DATE 03-20-15	E. FREDRICKSON PROJECT ENGINEER
DRAWN BY J. DOTY	DATE 03-20-15	
CHECKED BY T. PHAM	DATE 03-20-15	
APPROVED E. FREDRICKSON	DATE 03-20-15	

ALTERNATIVE 1

PLANNING STUDY

I STREET BRIDGE (REPLACE)

BRIDGE NO. XXX	UNIT:
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: 03-XXXXXX

X DESIGN OVERSIGHT
X SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

DATE PLOTTED => 10-JUL-15 TIME PLOTTED => 10:41 AM USERNAME => JDOTY

Figure 1-3
Proposed I Street Bridge: Plan View, Profile, and Elevation

I Street Bridge Replacement Construction Schedule

7-Day Work Week

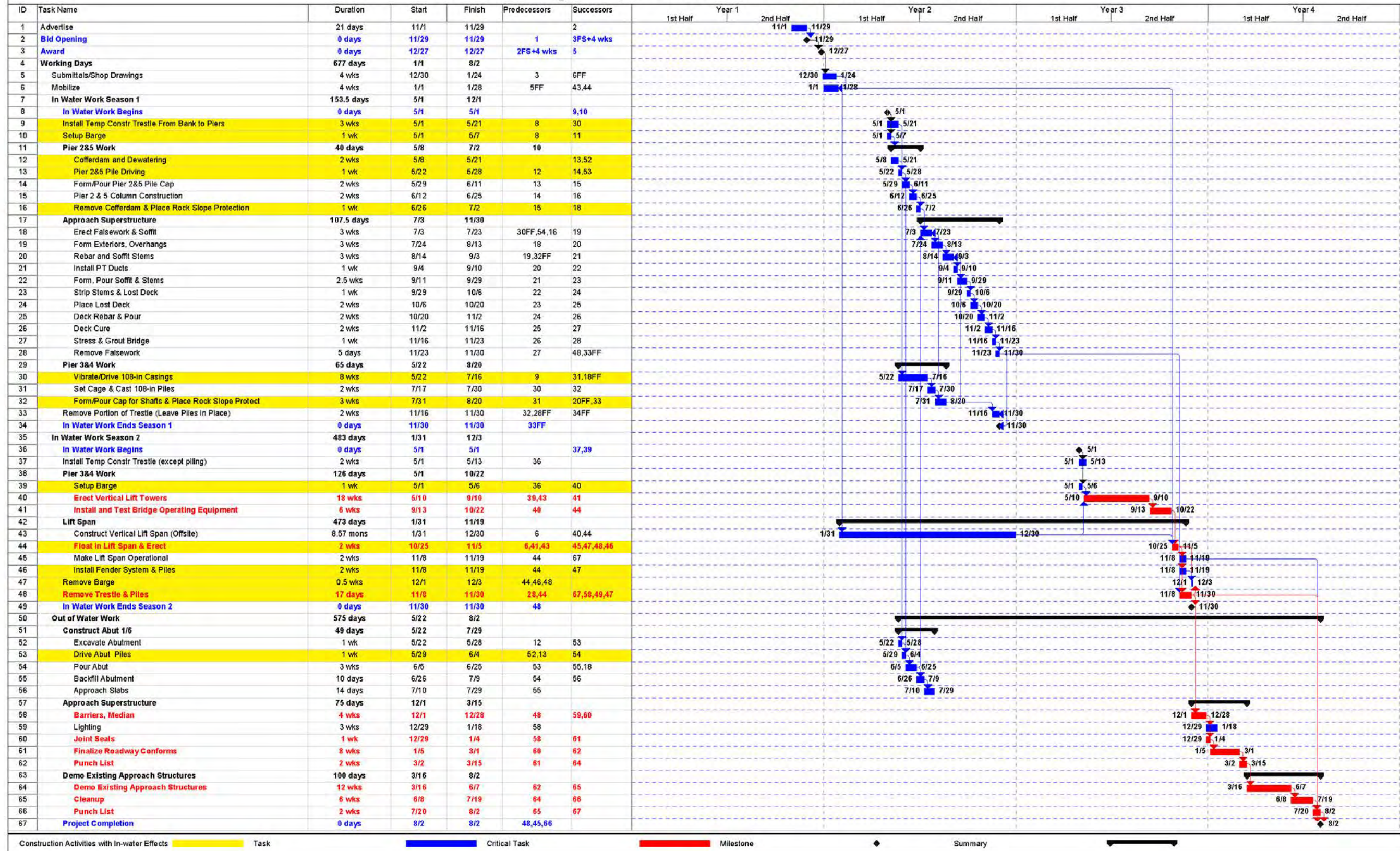


Figure 1-4
Construction Schedule

City of West Sacramento

Between the bridge touchdown location along C Street in West Sacramento and the 4th Street/ C Street intersection, the roadway would consist of one westbound travel lane, two eastbound travel lanes (the two eastbound travel lanes would taper down to one eastbound lane east of the 3rd Street intersection), a center left-turn lane, on-street Class II bike lanes, on-street parking along the north side of the roadway, and sidewalks along both sides of the roadway. As the roadway through this section currently consists of the proposed number of travel lanes, the widening through this area is primarily needed to support the Class II bike lanes and wider sidewalks.

Along C Street between 4th Street and 5th Street, the roadway would consist of one travel lane in each direction, left-turn lanes, on-street Class II bike lanes, and sidewalks along both sides of the road. All of the improvements through this section would be accommodated within the existing roadway limits.

Residential Access

The new C Street alignment would cut off access to four residential parcels and one multifamily parcel located along 2nd Street, north of C Street. The project would construct a new connection to C Street approximately 150 feet east of the 3rd Street intersection that would continue north approximately 300 feet. The new connection would then make a 90-degree left turn and connect to 3rd Street approximately 300 feet north of C Street. The proposed access would be consistent with the City of West Sacramento's design standards for a public alley, which consists of 30-foot wide public right of way, supporting a 20-foot travel way, a 5-foot sidewalk, and a 5-foot buffer to adjacent parcels. This would require right-of-way acquisition from seven individual parcels and removal of three structures. One structure is located on Assessor's Parcel Number (APN) 010-101-010 and appears to be an individual residence. Another structure is located on APN 010-101-013 and appears to be an apartment building that supports up to one individual apartment. The last structure is located on APN 010-101-004 and appears to be an individual residence.

Class I Bikeway and Levee Modifications and Improvements

City of Sacramento

The existing Class I Sacramento River Parkway trail along Jibboom Street would be reconstructed approximately 500 feet north and 300 feet south of Railyards Boulevard as part of the proposed project. In order to provide a continuous levee maintenance road and off-street Class I path along this section, the path would be grade-separated under the proposed bridge structure. At Railyards Boulevard, maintenance vehicles would have the ability to ingress or egress the path. Cyclists and pedestrians approaching Railyards Boulevard in either direction would have the option to continue along the path under the new structure, avoiding the need to cross the roadway. Cyclists and pedestrians who are traveling along the path also would have the option to connect to Railyards Boulevard and cross over the proposed bridge into West Sacramento or turn east into Sacramento. Due to the limited horizontal clearance between the river and the Interstate-5 (I-5) viaduct structure, retaining walls would be needed along the path

to account for the vertical elevation difference between Jibboom Street and the path that continues under the proposed bridge structure. The maximum retaining wall height along the bike path would be 16 feet.

City of West Sacramento

The proposed project would require improvements to the existing levee along the West Sacramento side of the river, where the proposed bridge alignment would connect to C Street. The existing levee does not meet current standards required by Title 23 of the California Code of Regulations (CCR). Extending approximately 300 feet north and south of the proposed C Street alignment, the levee cross-section would be reconstructed to meet current design standards, which would require 3:1 side slopes on the landside and waterside of the levee, and a 20-foot-wide crown at the top of the levee. The levee improvements also would include a slurry cutoff wall extending to a depth of 110 feet below the original ground elevation (see Figure 1-2). In addition, the proposed roadway profile would be approximately 6 feet higher than the original ground elevation as it crosses over the levee. In order to maintain access to the levee for inspection and maintenance services, access roads would be constructed from the new roadway to the top of the improved levee section. The proposed grading for the levee would require relocation of the existing water tower that is located along 2nd Street, just north of the proposed C Street alignment. The tower would be relocated to the northwest, approximately 43 feet from its existing location.

The new levee maintenance road also would serve as the future Class I River Walk Park trail extension in West Sacramento. Similar to the trail improvements proposed in Sacramento as part of this project, the trail would be grade-separated under the proposed bridge structure. Cyclists and pedestrians approaching C Street in either direction would have the option to continue along the trail under the new structure, avoiding the need to cross the roadway. Cyclists and pedestrians who are traveling along the trail also would have the option to connect to C Street to cross over the proposed bridge into Sacramento or head west on C Street.

Storm Water Drainage Management

Drainage for the proposed roadway would be conveyed to the existing storm drain system installed within Railyards Boulevard in Sacramento and C Street in West Sacramento. Railyards Boulevard currently drains storm water to the east along the roadway and then into a retention basin south of Railyards Boulevard. C Street drains storm water west along the roadway and then ultimately south beyond the project limits. The proposed project would be designed to ensure that existing storm water conveyance is sufficient, or would increase the capacity of the system to accommodate the project, if necessary.

As is standard with all construction projects, the contractor would be required to install temporary best management practices (BMPs) to control any runoff or erosion from the project site into the surrounding waterways. These temporary BMPs would be installed prior to any construction operations and would be in place for the duration of the contract. The removal of these BMPs would be the final operation, along with project site cleanup.

Structure Demolition and Roadway Modifications

Following completion of the new bridge connections at Railyards Boulevard and C Street, traffic would be diverted to the new bridge, and the four existing approach structures to the I Street Bridge would be removed. Bridge numbers 24C0364L, 24C0364R, 22-0033, and 22C0154 would be demolished, and the foundations would be removed to a depth of 3 feet below the original ground elevation. Encroachment permits from Caltrans and the UPRR would be needed to complete the bridge removal. The existing I Street Bridge is owned and operated by the UPRR and would continue to remain in place and be used by trains following construction of the new bridge.

As part of the removal of the existing approach structures, the project would include modifications to I Street within the City of Sacramento between the southbound I-5 on-ramp and the 5th Street intersection. The modification would include signing and striping revisions, demolition of existing roadway sections that are no longer required, and removal of bridge abutments and foundations.

Staging, Storage, and Proposed Access during Construction

Two staging areas would be used to store materials and equipment during construction, such as pipe materials, precast manholes and drop inlets, steel girders, piles, and rebar, along with the construction equipment when not in use. One area would be located south of Railyards Boulevard under I-5 in Sacramento; the other area would be located west of the landward side of the levee, south of the new bridge location in West Sacramento. The staging area located along Railyards Boulevard would be accessed via the existing intersection at Jibboom Street. The staging area in West Sacramento would be accessed via the existing 2nd Street connection at 3rd Street, south of C Street. The staging areas would be in use throughout the construction duration; the areas would be returned to their pre-project conditions at the completion of the project.

Utility Relocations

A number of public and private utilities would need to be relocated or adjusted to grade as part of the project, including existing water, sewer, gas, electric, and communication facilities within Jibboom Street, Bercut Drive, C Street, and 2nd Street.

Traffic Management and Detours during Construction

While most of the project would be constructed outside of existing roadways, some areas would require temporary detours or staged construction.

Along Jibboom Street at the proposed Railyards Boulevard intersection, the new roadway profile would be raised approximately 6 feet above the original ground elevation. To maintain access to the existing Jibboom Street viaduct south of Railyards Boulevard during the roadway construction, a temporary access road would be needed. The proposed temporary access road would connect to the existing Jibboom Street viaduct abutment approximately 350 feet south of Railyards Boulevard. The temporary road would then continue under I-5 and connect to the

Railyards Boulevard/Bercut Drive intersection. The temporary road would require placement of temporary fill material and a roadway structural section that would be removed after construction of the new bridge. Traffic traveling north along Jibboom Street would continue north along Bercut Drive to access the Richards Boulevard/I-5 interchange. There are multiple active projects planned along Jibboom Street and Railyards Boulevard adjacent to the proposed project. In the event that constructing the proposed temporary road described above conflicts with other improvements, traffic on Jibboom Street would be detoured south to J Street, then east to 5th Street where traffic could continue north along 5th Street to Railyards Boulevard.

In order to complete the improvements at Jibboom Street and Railyards Boulevard, Jibboom Street would be closed to traffic approximately 600 feet north of Railyards Boulevard. Traffic traveling south along Jibboom Street to continue over the existing I Street Bridge into West Sacramento would be detoured over to Bercut Drive at Richards Boulevard. Traffic would then use the temporary access road to connect to the Jibboom Street viaduct structure. The temporary access road would be in place for approximately 2 years, after which traffic would use the new roadways and new bridge. If the temporary road conflicts with adjacent planned projects, vehicular traffic would be detoured east along Railyards Boulevard, then south along 5th Street to I Street, then west along I Street over the existing bridge.

The Sacramento River Parkway trail along Jibboom Street also would require temporary re-routing during construction. Subsequent to public circulation of the Draft EIR/EA, and in response to comments received, the trail detour route was adjusted. The temporary alignment for the trail (described from south to north) would follow the temporary Jibboom Street alignment to south of Railyards Boulevard. The path would then be temporarily re-routed to pass under I-5, around the I Street Bridge project construction limits at the west end of Railyards Boulevard. Cyclists and pedestrians would then travel north along Jibboom Street and connect back to the trail just south of Matsui Park. The portion of Jibboom Street south of Matsui Park would be closed to vehicular traffic during construction. The detour would be in place for approximately 2 years.

During construction, traffic along C Street would be maintained along the existing approach structure until the new bridge is constructed.

Project Construction Sequence

New bridge and roadway construction would occur first, followed by demolition of the four approach structures that connect to the existing I Street Bridge. Once the new bridge and roadways are constructed, traffic would be diverted to the new bridge in order to allow demolition adjacent to the existing bridge. Construction of the project is expected to take approximately 30 months.

Property Acquisition

The project would require temporary construction easements (TCEs) and permanent property acquisitions along C Street, 3rd Street, and 2nd Street within the City of West Sacramento and along Railyards Boulevard, Jibboom Street, Bercut Drive, and I Street within the City of Sacramento.

Along C Street in West Sacramento, TCEs and permanent acquisitions would be required along the south side of the roadway from the intersection of 4th Street to the Sacramento River to accommodate the construction of standard shoulders, bike lanes, and sidewalks.

Along 3rd Street and 2nd Street in West Sacramento, TCEs and permanent acquisitions would be needed from the UPRR on the south, to just north of the B Street intersections, for construction of the proposed roadway and levee improvements.

Along Railyards Boulevard, Jibboom Street, and Bercut Drive in Sacramento, TCEs and permanent acquisition would be needed from the currently state-owned right-of-way for I-5, for construction of the roadway. In addition, TCEs and permanent acquisitions would be needed along Jibboom Street for the proposed temporary detour road and Class I bikeway improvements.

TCEs would be required along the existing I Street connection in Sacramento to facilitate removal of the existing viaduct structures. Due to the limited space available in Old Sacramento, it is anticipated that construction activities would occur by accessing the area from the parking lot at the intermodal station.

1.3.1.2 Unique Features of Build Alternatives

In the City of Sacramento, two alternatives for portions of the roadway design at the Railyards Boulevard/Jibboom Street/Bercut Drive intersection are being considered. Alternative 1 consists of signalized intersections on Railyards Boulevard at Jibboom Street and Bercut Drive, while Alternative 2 consists of a roundabout between these two intersections. Beyond the Jibboom Street and Bercut Drive intersections, the remaining project elements and limits are similar under both alternatives.

Alternative 1—Signalized Intersections at Jibboom Street and Bercut Drive

Under Alternative 1, Railyards Boulevard would be extended west to the new bridge over the Sacramento River. East of Bercut Drive, Railyards Boulevard would consist of two westbound lanes and one eastbound lane. Between Jibboom Street and Bercut Drive, Railyards Boulevard would consist of two westbound lanes and three eastbound lanes; two eastbound lanes would be trapped into left-turn lanes onto Bercut Drive, and one eastbound lane would continue along Railyards Boulevard. West of Jibboom Street, Railyards Boulevard would consist of one lane in each direction.

Alternative 2—Roundabout Intersection at Jibboom Street and Bercut Drive

Under Alternative 2, Railyards Boulevard would be extended west to the new bridge over the Sacramento River. East of Bercut Drive, Railyards Boulevard would consist of two westbound lanes and one eastbound lane. Between Jibboom Street and Bercut Drive, Railyards Boulevard would consist of a roundabout with two lanes in each direction. One westbound lane would be a trap onto northbound Jibboom Street, and one westbound lane would continue onto the new bridge. One eastbound lane would be trapped into left-turn lanes onto Bercut Drive, and one

eastbound lane would continue along Railyards Boulevard. West of Jibboom Street, Railyards Boulevard would consist of one lane in each direction.

1.3.2 No Build (No-Project) Alternative

Under the No Build Alternative, the existing I Street Bridge would remain in use for vehicle, bicycle, and pedestrian access between the cities of Sacramento and West Sacramento. No changes to traffic patterns on I Street or C Street would occur. The four approach structures would remain in place and in use; and there would be no changes to existing roadways, levees or Class I bikeways.

Improvements and development of transportation infrastructure would continue following the general plans of both cities, the *Sacramento Railyards Specific Plan* (approved November 2016), and the *Washington Specific Plan* (adopted May 1996). The *Sacramento Railyards Specific Plan* (City of Sacramento 2016) identifies the extension of Railyards Boulevard west to a Tee intersection at Jibboom Street. Railyards Boulevard at Bercut Drive would consist of two westbound lanes and one eastbound lane. The same number of lanes on Railyards Boulevard would extend west to the intersection with Jibboom Street; at this point, the left westbound lane on Railyards Boulevard would become a dedicated left-turn lane onto southbound Jibboom Street, and the right westbound lane would be a dedicated right-turn lane onto northbound Jibboom Street.

In West Sacramento, future changes to C Street would be based on the *Washington Specific Plan* (City of West Sacramento 1996), which identifies 12-foot-wide sidewalks and 7-foot-wide Class II bike lanes along the roadway. The connection to the I Street Bridge would not change.

1.4 Comparison of Alternatives

Two alternatives for portions of the roadway design at the Railyards Boulevard/Jibboom Street/Bercut Drive intersections are being considered. The alternatives would either install signalized intersections on Railyards Boulevard at Jibboom Street and Bercut Drive or one roundabout that would serve both connections. The full description of the alternatives is included in Section 1.3.1.2., “Unique Features of Build Alternatives.” The selection of one alternative over another will be based on the following criteria.

- Traffic operations
- Congruity with adjacent land uses and traffic circulation
- Severity of environmental effects
- Right-of-way requirements and impacts on property owners
- Compatibility with future improvements proposed by Caltrans along I-5 within Caltrans right-of-way

The alternatives differ in the way they control and flow traffic through the intersections of Railyards Boulevard/Jibboom Street/Bercut Drive. Alternative 1 would move traffic on Railyards Boulevard via two westbound lanes and three eastbound lanes. Two eastbound lanes would be trapped into left-turn lanes onto Bercut Drive, and one eastbound lane would continue along Railyards Boulevard. West of the Jibboom Street intersection, Railyards Boulevard would consist of one lane in each direction.

Alternative 2 would move traffic along Railyards Boulevard through a roundabout with two lanes in each direction. One westbound lane would be a trap onto northbound Jibboom Street, and one westbound lane would continue onto the new bridge. One eastbound lane would be trapped into left-turn lanes onto Bercut Drive, and one eastbound lane would continue along Railyards Boulevard. West of Jibboom Street, Railyards Boulevard would consist of one lane in each direction.

Traffic operations elsewhere within the project footprint are identical regardless of alternative.

The two alternatives share a similar project footprint in terms of overall ground disturbance. However, Alternative 2, roundabout intersection, would require a larger footprint within Caltrans right-of-way under the I-5 viaduct. Depending on the future improvements Caltrans identifies along I-5, the roundabout intersection would result in more conflicts with the structural components of the I-5 viaduct.

After the public circulation period, all comments were considered, and the City of Sacramento and Caltrans selected a preferred alternative and made the final determination of the project's effects on the environment. Under CEQA, the City of Sacramento will certify that the 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 City will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, the mitigation measures included as conditions of project approval, that findings were made, and that a Statement of Overriding Considerations was adopted. Similarly, Caltrans, as assigned by FHWA, determined that the NEPA action does not significantly affect the environment, and will issue a Finding of No Significant Impact.

1.5 Identification of a Preferred Alternative

The two roadway design alternatives at the Railyards Boulevard/Jibboom Street/Bercut Drive intersections were considered and Alternative 1—Signalized Intersections at Jibboom Street and Bercut Drive was identified as the preferred alternative. The selection of the preferred alternative was based on the criteria listed in Section 1.4, above. Alternative 1 was selected because, while it has similar traffic operations and environmental effects compared to Alternative 2—Roundabout Intersection at Jibboom Street and Bercut Drive, it is better able to accommodate the potential delays when traffic stopped while the bridge is opening and closing. Further Alternative 1 requires less rights-of-way and would result in fewer conflicts with the structural components of the I-5 viaduct.

1.6 Alternatives Considered but Eliminated from Further Discussion Prior to Draft Environmental Document

As part of the development of the project and screening of alternatives, the following alternatives were evaluated but eliminated from further consideration prior to the circulation of the draft environmental document.

1.6.1 Camille Lane Alignment

In 2014, a study was conducted to determine the best alignment for the new bridge (Mark Thomas & Company 2014). The West Sacramento approach on C Street is the most logical western connection for the project since the existing bridge already connects to C Street and removal of the existing viaduct on the West Sacramento side of the river still allows for a C Street connection.

On the east side of the river, continuing to have a connection at I Street was considered to be infeasible because of the alignment of the existing bridge and the freeway ramps. The purpose of the proposed project would not be met by using the existing I Street connection point.

Connections south of I Street were considered infeasible because of the existing development in the Old Sacramento Historic District, the location of the State Railroad Museum, and the inadequate options available for traffic circulation.

Two options for the new roadway connection were ultimately identified north of I Street connecting to the Sacramento Railyards: Railyards Boulevard or Camille Lane. The two connection options were compared and the results were documented in a Bridge Location Feasibility Study memorandum (Mark Thomas & Company 2014).

The results of the Bridge Location Feasibility Study determined that the Camille Lane alignment would result in circulation, hazardous materials, and river navigability effects unique to the alignment or worse than the Railyards Boulevard alignment. Based on the study findings, the Camille Lane alignment was eliminated from further discussion and the Railyards Boulevard alignment was selected as the preferred alignment.

1.6.2 Fixed-Span Bridge Type

The FHWA requires that bridges be built as fixed (not movable) wherever practicable (Code of Federal Regulations [CFR] 650.809). In order to meet the clearance requirements over the Sacramento River mandated by the USCG, the height and length of a fixed-span bridge would necessitate a large and very long bridge with a footprint that would extend well inland (over 1,000 feet) from the river on both sides and would need to span not only the river but also I-5. Because a high-elevation, long bridge would not meet the project purpose—including the adopted Neighborhood Friendly Bridge definition, would be extremely costly and visually intrusive due to its size, and would conflict with existing and proposed development, it was eliminated from further discussion. As required by CFR 650.809, a cost benefit analysis was

conducted that documented the “social, economic, environmental or engineering reasons which favor the selection of a movable bridge” and the results of the recommendation to proceed with a movable instead of a fixed-span bridge (Mark Thomas & Company 2016).

1.6.3 Movable Bridge Types

There are three main types of movable bridge structures: vertical lift span, swing span, and bascule span. A vertical lift bridge design was selected for replacement of the I Street Bridge and both the bascule and swing movable bridge types were eliminated from further discussion. A general description of the swing and bascule span movable bridge types and their limitations is provided below.

1.6.3.1 Swing Span

A swing span bridge rotates the movable span on a center pivot pier, allowing navigational traffic to pass the bridge on either side of the center pier. Due to the span lengths required by the USCG and the requirement of creating a neighborhood friendly river crossing with low vertical grades, the superstructure of the swing span would most likely be a through-truss design (the truss would be cross-braced above and below the traffic). This would give the structure an appearance similar to the existing I Street Bridge.

For a swing span to be viable for the replacement of the I Street Bridge, one leaf of the movable span would be required to span the entire 278-foot navigational channel. This would require the total bridge length to be approximately 700 feet long, which is exceptionally long for a swing span. Building a swing span of this length would have a construction cost much greater than other movable bridge types at the project location. While a swing span could be designed to span the Sacramento River’s navigable channel, it is not a prudent or feasible bridge type. A swing span bridge was eliminated from further discussion.

1.6.3.2 Bascule Span

A bascule span bridge is a type of drawbridge and operates by raising into the air one side of a counterweighted movable span while the other side rotates on a horizontal axis. The rotating axis could be fixed (like a hinge) or rolling (like a rocking chair). A bascule bridge can be designed with a single movable span or two movable spans (double bascule bridge). The Freeport Bridge over the Sacramento River in the town of Freeport is a double bascule span bridge.

Bascule bridges can be constructed with the counterweight either suspended above the deck level (overhead counterweight) or placed below the deck level (underdeck counterweight). To use an underdeck counterweight at the proposed project location, a large box pier would need to be built to enclose the counterweight below the deck level in order to keep the counterweight out of the water when the bridge is opened. The bascule pier would be quite large, and would negatively impact river hydrology. Traditionally, the bascule leaf superstructure is placed under the roadway, in a deck girder/truss arrangement. Due to the limited under clearance available for the proposed project, a modified through-girder arrangement, with a portion of the superstructure located above the deck, would be more appropriate.

With an overhead counterweight, a large box pier is not required to encase the counterweight. The bridge could be supported on drilled shafts or concrete piers which would have less impact to the surrounding river. A through-truss or through-girder arrangement could be used for the bascule span. The overhead counterweight typically consists of a large block of concrete suspended over the travel lanes.

Due to the constraints of freeboard clearance and river hydraulics, an overhead counterweight bascule span would be required at the project location. However, due to the size of the machinery required to lift each span, the bascule bridge (regardless of overhead or underdeck counterweight) would result in both construction and maintenance costs higher than a vertical lift span bridge. Also, the USCG-required span length is approaching the practical limit for a double bascule span. And, use of a bascule bridge poses design constraints that could limit the future accommodation of a streetcar on the bridge. Therefore, a bascule span bridge was eliminated from further discussion.

1.6.4 Roadway Configuration Alternatives

1.6.4.1 Three Travel Lanes Across the New Bridge

Two different scenarios for three travel lanes across the new bridge were evaluated: two westbound lanes and one eastbound lane, or two eastbound lanes and one westbound lane. Both scenarios were eliminated from further consideration since they resulted in lower performance for traffic operations compared to the selected project alternatives.

1.6.4.2 Four Travel Lanes Across the Bridge

This alternative evaluated a four-lane section across the new bridge, with two lanes in both directions. This alternative was eliminated from further consideration since it resulted in lower performance for traffic operations compared to the selected project alternatives.

1.6.4.3 Widening C Street to 5th Street

An alternative was considered that would widen C Street in West Sacramento to include four travel lanes, two in each direction, from 3rd Street to 5th Street. This alternative was eliminated from further consideration since it resulted in more property impacts and lower performance for traffic operations compared to the proposed project alternatives.

1.6.4.4 2nd Street Connection at C Street

Various configurations were evaluated for maintaining a connection to 2nd Street at C Street in West Sacramento. These included a partial intersection that would only provide a right turn into and out of 2nd Street from C Street; an alternative which would construct a new bridge along C Street over 2nd Street; and an alternative which would extend B Street to 2nd Street. Ultimately all of these alternatives were eliminated from further consideration due to potential property impacts, levee impacts, and traffic circulation impacts.

1.6.5 Transportation Demand Management and Transportation System Management Strategies

Transportation demand management (TDM) focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy. Transportation system management (TSM) strategies increase the efficiency of existing facilities primarily to reduce emissions by reducing congestion.

TDM and TSM measures and strategies alone could not satisfy the purpose and need of the project because of the restrictions of travel mode and congestion relief options on the existing bridge due to the bridge width. However, the following TDM/TSM elements have been incorporated into the build alternatives.

- Accommodation of bus passage, not available on the current bridge because of limited lane width.
- Inclusion of bicycle lanes, sidewalks of current design standard width, and connections to bicycle trails.
- No preclusion of a future streetcar project.

1.6.6 Other Design Options Considered in Value Analysis

A value analysis (VA) of the project was conducted in February 2016 (Value Management Strategies, Inc. 2016). The objectives of the study were to review the project design to identify value-improving alternatives, with a focus on saving both cost and construction time while maintaining or improving the performance of the project design.

Ten VA alternatives were identified and considered in the study. The VA alternatives were assessed for technical feasibility and compared in terms of whether incorporation of the alternative into the proposed project would result in an initial cost savings, life-cycle cost savings, a change in the project schedule, or a change in project performance. Based on this comparison, six of the alternatives were rejected and eliminated from further discussion for the reasons described below. The remaining four were determined to add value and were incorporated into the proposed project described above. The VA alternatives that were eliminated are described briefly below.

- VA Alternative 1.1. Design the curb-to-curb 52-foot bridge deck with one contra flow transit-only lane (bus or streetcar). This alternative was rejected in favor of the design that is part of the proposed project. From a traffic standpoint, the transit-only lane does not work.
- VA Alternative 2.2. Construct two tower truss spans in lieu of four concrete or steel approach spans. This structural option was rejected because it is too expensive to implement.
- VA Alternative 3.0. Shorten the length of the left-turn lane for turns from the westbound (C Street) bridge approach onto 3rd Street. This alternative was rejected in favor of the design that is part of the proposed project. From a traffic standpoint, shorting the turn lane length does not work.

- VA Alternative 4.0. Construct a floodwall in lieu of an earthen levee north and south of the West Sacramento C Street bridge approach roadway. The floodwall was rejected because the transition from a floodwall back to the existing levee north and south of the new bridge would require an overlap of the two on both the north and south ends. The overlap and transitions would likely increase the overall length of the floodwall and each transitional overlap could be approximately 100 feet long. The transition from a floodwall to the existing levee would also need to accommodate levee operations, maintenance, inspection, flood fighting, and emergency response traffic along (parallel to) the flood system alignment. And, the construction of a floodwall would not eliminate the need for a slurry cutoff wall to prevent underseepage. This alternative was rejected primarily due to the considerable additional right-of-way that would be necessary.
- VA Alternative 5.0. Skew the bridge to straighten the western curve within the USCG-recommended fender alignment. This concept was developed in order to provide greater design speed along the new bridge. However, the intent with the design of the proposed project is that the curve approaching the bridge from West Sacramento would be traffic calming compared to a straight roadway. Increasing the design speed approaching the bridge would encourage vehicles to drive at a higher speed, which is not ideal for the surrounding area. Also, the additional cost proposed by this alternative did not justify the proposed operational improvements.
- VA Alternative 8.0. Drop the 2nd eastbound lane on eastbound C Street at 3rd Street to keep the lane drop off the bridge approach span. This concept was dismissed because it would reduce vehicle storage capacity when the bridge span is raised. Vehicle storage capacity would not be sufficient to meet expected traffic volumes.

1.7 Permits and Approvals Needed

The following permits and coordination would be required for the project.

Table 1-1. Permits and Approvals Needed

Agency	Permit/Approval	Status
City of West Sacramento	City Council approval of project	Not yet initiated
U.S. Coast Guard	Authorization under General Bridge Act of 1946, as amended, for new bridge over navigable waters of the United States	Initiated
U.S. Army Corps of Engineers Regulatory Division, Delta Branch	Clean Water Act Section 404 authorization for fill of waters of the United States	Submitted delineation of potential waters of the United States, including wetlands, on May 3, 2016, to support a preliminary jurisdictional determination. USACE verified delineation on July 7, 2016 Pre-application meeting on September 1, 2016

Agency	Permit/Approval	Status
U.S. Army Corp of Engineers Operations and Readiness Branch	U.S. Code Section 408 authorization for alteration of USACE projects, the east and west Sacramento River levees	Pre-application meeting September 1, 2016
National Marine Fisheries Service	Coordination regarding threatened and endangered species	Biological Assessment and EFH assessment requesting consultation sent August 4, 2016; Biological Opinion received June 25, 2018
U.S. Fish and Wildlife Service	Coordination regarding threatened and endangered species	Biological Assessment requesting consultation sent August 4, 2016; Biological Opinion received June 15, 2017
California Department of Fish and Wildlife	Section 1602 Department of Fish and Game Code Streambed Alteration Agreement	Not yet initiated
California Department of Fish and Wildlife	Incidental Take Permit for potential "take" of state-listed species	Not yet initiated
State Water Resources Control Board	Coverage under the existing Statewide Phase II MS4 Permit (NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). Coverage under the existing Caltrans National Pollutant Discharge Elimination System Permit (Order No. 2012-0011-DWQ) Coverage under the existing Construction General Permit (Order No. 2009-0009-DWQ)	Not yet initiated
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification Coverage under the existing Waste Discharge Requirements Cities Of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento, And County Of Sacramento Storm Water Discharges From Municipal Separate Storm Sewer System Sacramento County (Order NO. R5-2015-0023; NPDES NO. CAS082597) Coverage under the existing Waste Discharge Requirements Limited Threat Discharges To Surface Water Order No. R5-2016-0076; NPDES NO. CAG995002)	Not yet initiated
Central Valley Flood Protection Board	Encroachment Permit	Not yet initiated
State Lands Commission	Lease of State Lands	Not yet initiated
Sacramento Area Flood Control Agency	Approval of changes to levee	Not yet initiated
West Sacramento Area Flood Control Agency	Approval of changes to levee	Not yet initiated
Sacramento Metropolitan Air Quality Management District	Formal notification prior to construction	Not yet initiated
Yolo-Solano Air Quality Management District	Formal notification prior to construction	Not yet initiated

1.8 References Cited

- California Department of Transportation. 2015. *Standard Specifications*. Available: http://www.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2015_StdSpecs/2015_StdSpecs.pdf. Accessed: September 15, 2016.
- City of Sacramento. 2016. *Sacramento Railyards Specific Plan*. October. Approved by the City of Sacramento on November 10, 2016.
- City of West Sacramento. 1996. *Washington Specific Plan*. Adopted by the West Sacramento City Council on May 15, 1996. Available: <https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=3639>. Accessed: July 31, 2015.
- Mark Thomas & Company. 2016. *Fixed Evaluation*. January 22. Memorandum to Jesse Gothan, City of Sacramento.
- _____. 2014. *I Street Replacement – Bridge Location Feasibility Study*. July 1. Memorandum to Jesse Gothan, City of Sacramento.
- Value Management Strategies, Inc. 2016. *Final Value Analysis Study Report*. April. D-3 I Street Bridge Replacement.

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

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

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

- **Coastal Zone.** The project area is located outside the California Coastal Zone and therefore outside the jurisdiction of the California Coastal Commission. The project would not affect the coastal zone.
- **Farmlands/Timberlands.** The project area is not located on or adjacent to lands used for agriculture or timber production. No farmland or timberland would be affected by the proposed project.

The following environmental issue was also considered, but no adverse impacts were identified. Consequently, there is no further discussion regarding this issue in this document.

- **Wild and Scenic Rivers.** The Sacramento River is not designated as Wild and Scenic. The American River has been designated as “recreational river” in both the federal and state Wild and Scenic river systems. However, the limits of protection under the acts are the limits of the American River Parkway. The proposed project is downstream of the confluence of the American River and is not adjacent to the American River Parkway. The proposed project would not affect designated Wild and Scenic rivers.

Human Environment

2.1 Land Use

This section is a summary of the analysis documented in the *Community Impact Assessment* (CIA) prepared for this project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. Land use characteristics include major existing land uses, land use designations, parks and recreation facilities, development trends, and relevant land use plans and policies applicable to the study area.

2.1.1 Existing Land Uses and Development Trends

As described in Chapter 1, “Introduction,” the project area is located over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet north of the existing I Street Bridge (Figures 1-1 and 1-2). A land use study area was defined by the U.S. Census Bureau–designated block groups that intersect the project area. Figure 2.1-1 depicts the CIA study area and shows the individual block groups: Census Tract (CT) 101.01 BG 1, CT 101.01 BG 3, CT 101.01 BG 4, CT 07.00 BG 1, and CT 53.01 BG 1.

2.1.1.1 Existing Land Uses

The project area traverses portions of two counties (Sacramento and Yolo) and two cities (Sacramento and West Sacramento). Overall, the project area is densely developed and is surrounded by commercial, industrial, and residential development.

The portion of the study area east of the Sacramento River and north of the existing I Street Bridge (CT 53.01 BG 1) contains land uses that are primarily industrial and commercial. It is largely made up of the Sacramento Railyards, including the Sacramento Valley/Amtrak station. The Sacramento water treatment plant is located just east of I-5, adjacent to the Sacramento Railyards, along Bercut Drive. Matsui Waterfront Park, the Sacramento River Parkway, and several hotels are located along the Sacramento riverfront. The American River, Tiscornia Park, and the American River Parkway border this portion of the study area to the north.

The portion of the study area east of the Sacramento River and south of the existing I Street Bridge (CT 07.00 BG 1) is bisected by I-5. Old Sacramento, the City’s historic district, is located between the Sacramento River and I-5. The historic district is primarily made up of commercial and recreational uses. The area east of I-5 consists of commercial uses, including retail, office uses, and government buildings. This area also contains the construction site where a new indoor sports arena is being built.

The portion of the study area west of the Sacramento River and north of the existing I Street Bridge (CT 101.01 BGs 1 and 3) contains land uses that are primarily recreational and residential. River Walk Park borders the Sacramento River and currently terminates at the I Street Bridge overcrossing. Broderick Boat Ramp and Yolo County Park are also located in this

quadrant along the west bank of the river. Residential uses, including single-family residences and one multifamily complex along 3rd Street are located behind the recreational/waterfront uses.

The portion of the study area west of the Sacramento River and south of the existing I Street Bridge (CT 101.01 BG 4) contains a variety of land uses. River Walk Park borders the west bank of the Sacramento River and is a prominent recreational feature in this portion of the study area. Two large buildings, the Ziggurat Building and a state building, are located west of River Walk Park. Residential uses are located further west and include single-family and multifamily residences.

2.1.1.2 Land Use Designations

Most of the land in the Sacramento portion of the study area is designated as Urban Center Business District and Urban Center High. Old Sacramento is designated as Traditional Center, and the riverfront is designated as Recreational. See Figure 2.1-2 for the General Plan land use designations in the Sacramento portion of the study area.

The West Sacramento portion of the study area contains a mix of land uses, including single-family and multifamily residential, commercial, office, public/quasi public, and industrial. There are several vacant properties in the West Sacramento portion of the study area as well (Mintier Harnish 2009). See Figure 2.1-3 for the General Plan land use designations in the West Sacramento portion of the study area.

2.1.1.3 Development Trends

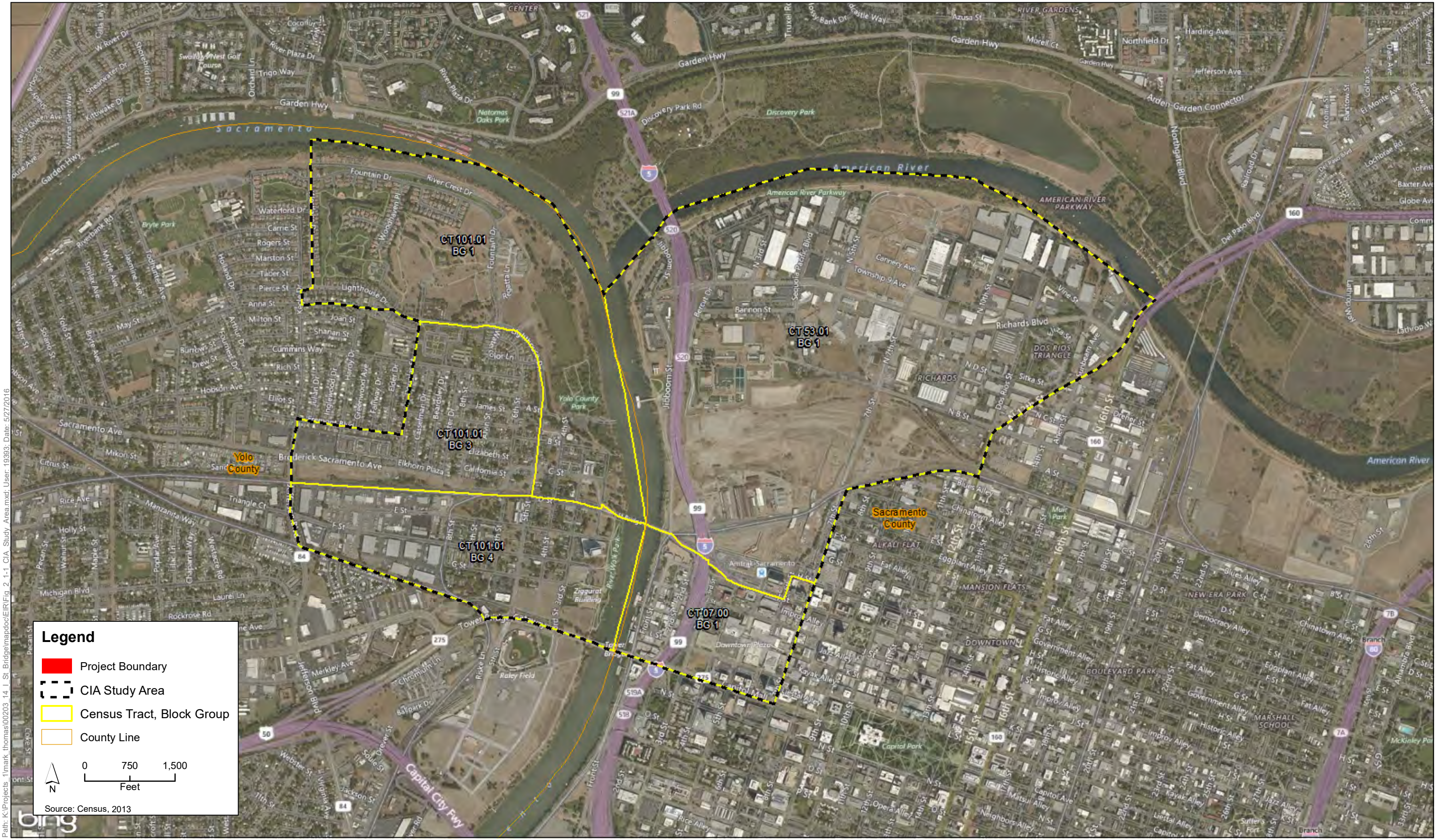
City of Sacramento

SACOG's *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* (MTP/SCS 2035) projects that the region will have approximately 1.3 million employees and 1.2 million housing units by 2035. Sacramento is expected to contain roughly 20 percent of the region's housing and nearly 30 percent of the region's jobs.

The *Sacramento 2035 General Plan* identifies that most of the development in the Sacramento portion of the study area will be infill development. In October 2009, the Sacramento City Council identified priority "shovel-ready" sites, including Tier One areas where development is likely to occur in the near term. The majority of the Sacramento portion of the study area is identified as a Tier One shovel-ready site, with a high likelihood of job and housing growth by 2030 (City of Sacramento 2015).

City of West Sacramento

West Sacramento has experienced rapid population growth since 1990, which has brought significant land use change including new residential development in the outlier areas and redevelopment within existing built-up areas. West Sacramento has adopted five specific plans to help guide and implement land use planning in different areas of the city (Mintier Harnish 2009: Figure 2-5). The *Washington Specific Plan* pertains to land use in the study area.



Path: K:\Projects_1\mark_thomas\0203_14_1_1_1_S1_Bridgelmappoc\ER\Fig 2.1-1 CIA Study Area.mxd; User: 19393; Date: 5/27/2016

Figure 2.1-1
CIA Study Area

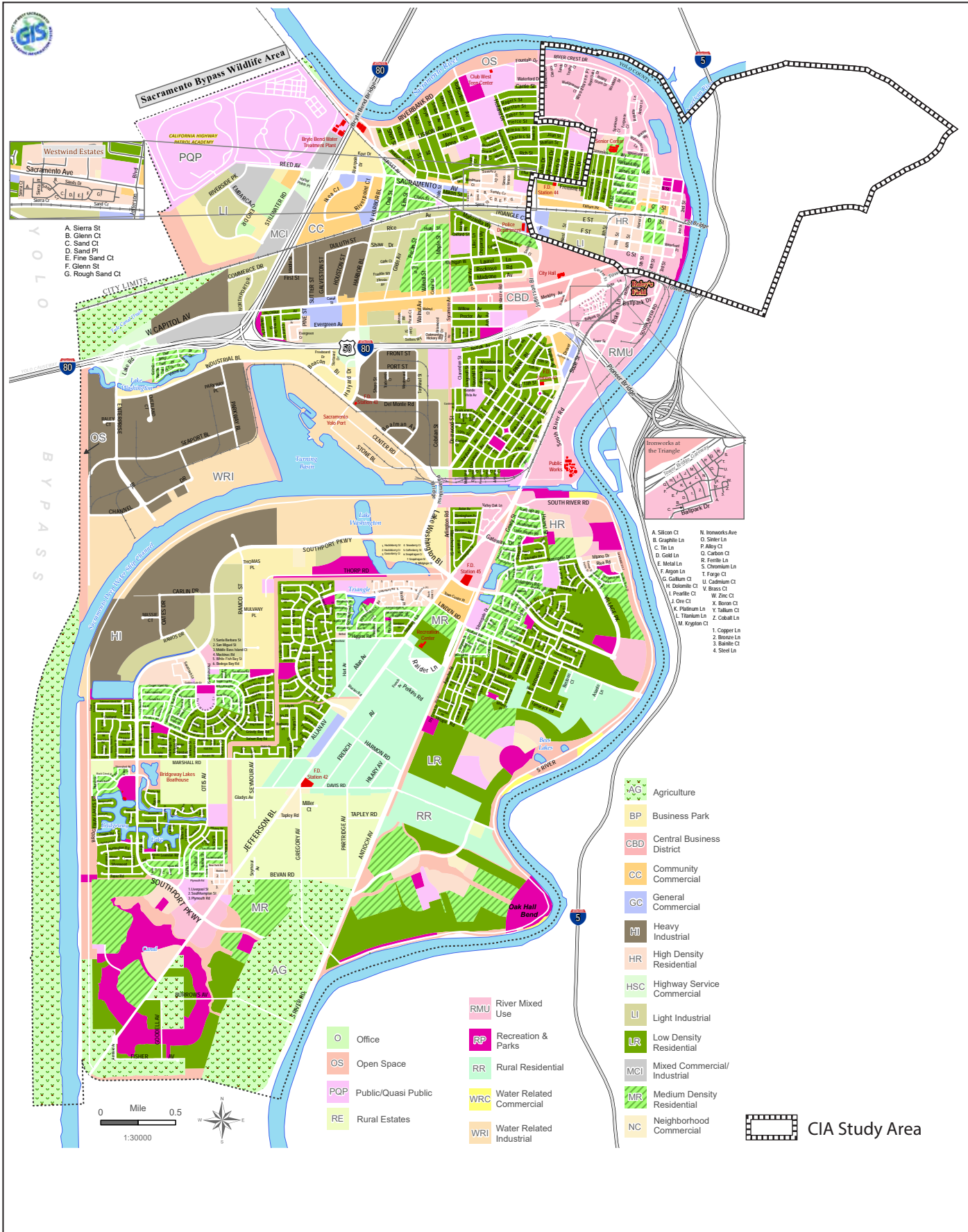


Figure 2.1-3
Land Use Designations–West Sacramento

The *Washington Specific Plan* covers the portion of the study area north of the existing I Street Bridge. It establishes a framework for long-term redevelopment and includes a single-family housing development, the CalSTRS government building, and the Raley’s Landing mixed-use project (City of West Sacramento 1996).

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

The project’s consistency with state, regional, and local plans and programs is discussed below. Land use planning in the study area is governed by the City of Sacramento and the City of West Sacramento General Plans, in addition to various other plans as detailed below. Only plans with direct relevance to the project are discussed below.

2.1.2.1 City of Sacramento General Plan

The *Sacramento 2035 General Plan* (City of Sacramento 2015) was reviewed to identify policies relevant to the project. The project’s consistency with relevant policies is discussed below.

Mobility Element

Goal M 1.1 Comprehensive Transportation System. Provide a transportation system that is effectively planned, managed, operated, and maintained.

Policy M 1.1.2 Travel System. The City shall manage the travel system to ensure safe operating conditions.

Policy M 1.1.4 Facilities and Infrastructure. The City shall effectively operate and maintain transportation facilities and infrastructure to preserve the quality of the system.

The purpose of and need for the project is to replace the deficient I Street Bridge with a new bridge, which would enhance the safety of the crossing. The project is consistent with these policies.

Goal M 1.2 Multimodal System. Provide expanded transportation choices to improve the ability to travel efficiently and safely to destinations throughout the city and region.

Policy M 1.2.1 Multimodal Choices. The City shall promote development of an integrated, multi-modal transportation system that offers attractive choices among modes including pedestrianways, public transportation, roadways, bikeways, rail, waterways, and aviation and reduces air pollution and greenhouse gas emissions.

Policy M 1.2.3 Multimodal Access. The City shall promote the provision of multimodal access to activity centers such as commercial centers and corridors, employment centers, transit stops/stations, airports, schools, parks, recreation areas, and tourist attractions.

Goal M 1.3 Barrier Removal. Improve system connectivity by removing barriers to travel.

Policy M 1.3.3 Eliminate Gaps. The City shall eliminate “gaps” in roadways, bikeways, and pedestrian networks.

- a. The City shall construct new multi-modal crossings of the Sacramento and American Rivers.
- b. The City shall plan and seek funding to construct grade-separated crossings of freeways, rail lines, canals, creeks, and other barriers to improve connectivity.
- c. The City shall construct new bikeways and pedestrianways in existing neighborhoods to improve connectivity.

Policy M 1.3.6 Multi-Jurisdictional Transportation Corridors. The City shall work with adjacent jurisdictions to identify existing and future transportation corridors that should be linked across jurisdictional boundaries so that sufficient right-of-way may be preserved. (IGC)

Goal M 2.1 Integrated Pedestrian System. Design a universally accessible, safe, convenient, and integrated pedestrian system that promotes walking.

Policy M 2.1.2 Sidewalk Design. The City shall require that sidewalks wherever possible be developed at sufficient width to accommodate pedestrians including the disabled; a buffer separating pedestrians from the street and curbside parking; amenities; and allow for outdoor uses such as cafes.

Policy M 2.1.5 Continuous Network. The City shall provide a continuous pedestrian network in existing and new neighborhoods that facilitates convenient pedestrian travel free of major impediments and obstacles.

Policy M 2.1.12 Safe Sidewalks. The City shall develop safe and convenient pedestrianways that are universally accessible, adequately illuminated, and properly designed to reduce conflicts between motor vehicles and pedestrians.

Goal M 3.1 Safe, Comprehensive, and Integrated Transit System. Create and maintain a safe, comprehensive, and integrated transit system as an essential component of a vibrant transportation system.

Policy M 3.1.14 Streetcar Facilities. The City shall support the development of streetcar lines in the Central City and other multi-modal districts.

Goal M 4.1 Roadway System. Create a roadway system that will ensure the safe and efficient movement of people, goods, and services that supports livable communities and reduces air pollution and greenhouse gas emissions.

Policy M 4.1.5 Bridge Crossings. The City shall continue to work with adjacent jurisdictions to establish the appropriate responsibilities to fund, evaluate, plan, design, construct, and maintain new river crossings.

Goal M 4.2 Complete Streets. Provide complete streets that balance the diverse needs of users of the public right-of-way.

Policy M 4.2.4 Pedestrian and Bicycle Facilities on Bridges. The City shall identify existing and new bridges that can be built, widened, or restriped to add pedestrian and/or bicycle facilities.

Goal M 5.1 Integrated Bicycle System. Create and maintain a safe, comprehensive, and integrated bicycle system and support facilities throughout the city that encourage bicycling that is accessible to all.

Policy M 5.1.1 Bikeway Master Plan. The City shall maintain and implement a Bikeway Master Plan that carries out the goals and policies of the General Plan. All new development shall be consistent with the applicable provisions of the Bikeway Master Plan.

The project represents collaboration between the Cities of Sacramento and West Sacramento and Caltrans to enhance the roadway system and multi-modal opportunities in the study area. The project will improve connectivity and accessibility between the two cities, as well as improve bicycle and pedestrian facilities. The project is consistent with the goals and policies listed above. The project also would not preclude future development of a streetcar system as a separate project.

2.1.2.2 Sacramento Railyards Specific Plan

The *Sacramento Railyards Specific Plan* (City of Sacramento 2016a), approved by City Council in November 2016, was reviewed to identify policies directly relevant to the project. The project's consistency with relevant policies is discussed below.

Goal S-1: Maximize the use of sustainable development practices in the Plan Area.

Policy S-1.5: Promote the installation of safe pedestrian and bicycle facilities to encourage walking and bicycling, thereby decreasing dependence on motorized vehicles.

Goal CC-1: Create an intensive mixed-use transit oriented urban environment that will become an integral part of the Central City.

Policy CC-1.3: Require active and public- oriented ground level uses that contribute to the pedestrian environment.

Goal OS-1: Provide a system of parks, open space and recreational facilities that serves the needs of future residents and employees of the Plan Area, and that enhances the overall identity of the Central City and the Railyards.

Policy OS-1.3: Utilize opportunities provided by planned open spaces to provide functional and attractive pedestrian and bicycle connections through the Plan Area and to adjacent open space areas such as the Riverfront.

Goal C-3: Create a walkable street system that extends the unique qualities of downtown neighborhoods gives structure and orientation to the downtown experience and enhances the pedestrian environment.

Policy C-3.3: Create and maintain attractive, functional streetscapes that integrate vehicular traffic, pedestrian, bicycle on-street parking and incorporate traffic calming features.

Policy C-3.4: Enhance the non-vehicular environment by developing streets at a scale that is suitable and attractive for pedestrians and bicyclists.

Goal C-4: Extend and improve the existing system of bicycle circulation in downtown Sacramento that is safe and efficient.

Policy C-4.1: Provide bicycle connections to improve circulation.

Policy C-4.2: Provide both on-street and off-street bikeways that provide connectivity within the development and connect to existing and planned bikeways along the Plan Area boundary.

Goal C-5: Create and reinforce safe and efficient pedestrian connections within the Plan Area and in relation to surrounding districts.

Policy C-5.1: Extend pedestrian connections from the downtown area into the Plan Area, as well as Old Sacramento, the Riverfront and the River District area.

Policy C-5.3: Provide safe pedestrian linkages to public spaces, such as schools, transit facilities, riverfront, parks and plazas by minimizing parking and service access crossings of sidewalks.

The *Sacramento Railyards Specific Plan* was a key factor in developing design alternatives for the new I Street Bridge because the specific plan places a high priority on creating a street system that promotes walking and bicycling, and multi-modal connectivity. The proposed project will improve connectivity and accessibility of bicycle and pedestrian facilities. The project is consistent with the goals and policies listed above.

2.1.2.3 River District Specific Plan

The *River District Specific Plan* (City of Sacramento 2011) was reviewed to identify policies directly relevant to the project. The project's consistency with relevant policies is discussed below.

Circulation

Goal C1: Maximize vehicle and pedestrian/bicycle connections within and between the River District and surrounding neighborhoods.

Policy C1b: Improve the design of major streets including North 16th Street, North 12th Street, North 7th Street, Jibboom Street and Richards Boulevard to enhance walkability while moving traffic as smoothly as possible through the District.

Goal C6: Provide pedestrian and bicycle paths, lanes and routes suitable for recreational and commuting purposes.

Policy C6a: Ensure bicycle and pedestrian trails and routes provide seamless connections within and beyond the River District.

Policy C6d: Improve and increase access to and along the rivers for bicycles and pedestrians.

The project will improve connectivity and accessibility of bicycle and pedestrian facilities. The project is consistent with the goals and policies listed above.

2.1.2.4 Sacramento River Parkway Plan

The *Sacramento River Parkway Plan* (City of Sacramento 1975, Updated 1997) was reviewed to identify policies relevant to the project. The project's consistency with relevant policies is discussed below.

General Policies

Policy G3. There should be close coordination among all public jurisdictions, including, but not limited to the City of Sacramento, the County of Sacramento, Yolo County, the City West Sacramento, and the State Lands Commission in the planning and development of the Sacramento River resources.

Policy G7. Land adjacent to the Parkway shall be protected from injurious or incompatible elements associated with Parkway land uses.

The project involves acquisition of approximately 2.155 acres of the Sacramento River Parkway. The project is a collaboration between the Cities of Sacramento and West Sacramento and Caltrans to construct an improved bridge, which will improve accessibility to the Sacramento River Parkway. The acquisition of 2.155 acres does not represent a significant portion of the parkway and does not preclude the use of the recreational areas.

2.1.2.5 City of Sacramento Pedestrian Master Plan

The *City of Sacramento Pedestrian Master Plan* (City of Sacramento 2006) is a comprehensive vision for improving pedestrian conditions over the next 20 years. The Plan includes a framework for creating an improved pedestrian environment. The project's consistency with relevant goals and policies are discussed below.

Goal 3: Provide crossings that are convenient and comfortable for pedestrians to use.

Policy. Provide connections over barriers such as railroads, waterways, and freeways.

The project replaces the I Street Bridge with a new bridge that includes improved and pedestrian facilities. It will enhance accessibility for pedestrians and bicyclists traveling over the Sacramento River between the two cities, as well as contribute to the walkability of the riverfront. The project is consistent with the goals and policies listed above.

2.1.2.6 City of Sacramento Bicycle Master Plan

The *City of Sacramento Bicycle Master Plan* (City of Sacramento 2016b) was developed to add overarching goals to the policy framework of the City of Sacramento in order to increase ridership, safety, connectivity and equity for bicycling in the city. There are no specific policies or objectives that pertain to the proposed project.

The purpose of the plan is to set forth bicycle related investments, policies, programs and strategies to establish a complete bicycle system. The proposed project seeks to improve accessibility to bicycle and pedestrian access across the Sacramento River, and is consistent with the plan.

2.1.2.7 City of West Sacramento General Plan

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) was reviewed to identify policies directly relevant to the project. The project's consistency with relevant policies is discussed below.

Recreational and Recreation Element

Goal PR-2: To provide a continual system of parks and open space corridors that connect destination points within and beyond the city of West Sacramento.

Policy PR-2.2. The City shall develop and maintain a system of pedestrian and bicycle pathways linking City parks, neighborhood shopping areas, major activity centers, and major open space areas with one another and with nearby residential areas.

Policy PR-2.3. The City shall strive to ensure that pedestrian and bicycle pathways that cross the Sacramento River connect to the city's recreational corridors.

Policy PR-2.5. The City shall coordinate with SACOG and surrounding jurisdictions to ensure that recreational corridors within the city connect with existing and planned facilities outside the city.

Mobility Element

Goal M-3: To develop and maintain a street and highway system that promotes safe, efficient and reliable movement of people and goods by multiple transportation modes and routes, reduces air quality impacts and GHG emissions, and minimizes noise impacts.

Policy M-3.15. The City shall work with Caltrans and the City of Sacramento to improve the pedestrian, bicycle, and transit capacity of the Tower Bridge and the I-Street Bridge, and in the development of future bridges.

Urban Structure and Design Element

Goal UD-2: To provide a distinct and visually-pleasing experience for residents and visitors entering gateways to West Sacramento and entryways to the city's unique neighborhoods, districts, and corridors.

Policy UD-2.5. The City shall promote the enhancement of river-crossings and bridges to create strong, positive, and memorable gateways into West Sacramento and to reinforce the significance of historical bridges.

Goal UD-3: To promote West Sacramento’s waterfront as the active and vibrant urban core of the city that celebrates the Sacramento River as the focus of development and activity.

Policy UD-3.5. The City shall ensure that development along the waterfront provides for and strengthens connectivity through improved public open space, pedestrian and bicycle circulation, transportation systems, and visual corridors.

The project replaces the I Street Bridge with a new bridge that includes improved bicycle and pedestrian facilities. The new bridge will enhance accessibility between the two cities, as well as contribute to the development of both riverfronts. The project is consistent with the goals and policies listed above.

2.1.2.8 Washington Specific Plan

The *Washington Specific Plan* (City of West Sacramento 1996) was reviewed to identify policies relevant to the project. The project’s consistency with relevant policies is discussed below.

Transportation and Circulation

Goal 3A. To create and maintain a roadway network in the Washington Plan Area that will ensure the safe and efficient movement of people and goods within and through the Plan Area.

Policy 3.A.3. The City shall work with Caltrans and the City of Sacramento in improving the traffic and pedestrian carrying capacity of the Tower Bridge and the I-Street Bridge and to provide more direct connections from these bridges into the Washington Plan Area.

Goal 3C. To encourage communication and cooperation within the community, with adjacent jurisdictions, and with state and federal agencies concerning transportation issues affecting the Washington Plan Area.

Policy 3.C.2. The City should continue to cooperate with the City of Sacramento to establish roadway, pathway, and river transportation links between Washington Plan Area and Sacramento.

Goal 6.B. To enhance the relationship between the Washington Plan Area and the Sacramento River.

6.B.1. The City shall seek to protect areas of significant vegetation along the banks of the Sacramento River, including mature stands of valley oaks, for their aesthetic qualities and environmental and ecological values.

6.B.2. The City shall protect and enhance public access to the Sacramento River along the riverfront within the Washington Plan Area by providing for development of a continuous landscaped parkway with pedestrian and bicycle paths along the river.

6.B.3. The City shall promote and enhance open space and pedestrian links between the river and adjoining residential and employment areas as well as public parks and trails.

6.B.4. The City shall promote the enhancement of the areas where the "I" Street and Tower Bridges meet the riverfront to create strong, positive, and memorable entryways into the Washington Plan Area and to reinforce the historical significance of these bridges.

The project will improve access for all forms of transportation across the Sacramento River. It also provides an enhanced connection between the Washington Plan Area and Sacramento. The project is consistent with the goals and policies listed above.

2.1.2.9 West Sacramento Bicycle, Pedestrian, and Trails Master Plan

The *West Sacramento Bicycle, Pedestrian, and Trails Master Plan* (City of West Sacramento 2013) was reviewed to identify policies directly relevant to the project. In addition to the City's general plan policies, the master plan identifies specific policies relating to bicycles, pedestrians, and trails. The project's consistency with these relevant policies is discussed below.

Policy 2. A continuous and interconnected system of bikeways and walkways that provide safe and convenient travel to key destinations.

Policy 4. A transportation system that is safe for bicycling and walking such that bicyclist- and pedestrian vehicle collision rates decrease from 2013 levels

The project improves bicycle and pedestrian access across the Sacramento River, and is consistent with the policies listed above.

2.1.3 Parks and Recreational Facilities

2.1.3.1 Regulatory Setting

This project will affect facilities that are protected by the Park Preservation Act (California Public Resources Code [PRC] Sections 5400–5409). The public parks and trails that could be affected are listed below in Section 2.1.3.2. The Park Preservation Act prohibits local and state agencies from acquiring any property that is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land. In addition, Section 4(f) of the Department of Transportation Act of 1966 specifies that FHWA and other United States Department of Transportation (USDOT) agencies must consider park and recreational lands, wildlife and waterfowl refuges, and historic sites (referred to as *Section 4[f] properties*) when developing transportation projects. FHWA administers the act through 23 CFR 774, which requires all possible planning to minimize harm to Section 4(f) properties before approving a transportation project.

2.1.3.2 Affected Environment

This section is based on the CIA (ICF International 2016) and the *Section 4(f) de Minimus Determination and /Section 6(f) Assessment* (Appendix A) prepared for the project. The Section 4(f) analysis evaluates whether parks, recreational facilities, wildlife and waterfowl refuges, and historic properties within or adjacent to the project area trigger Section 4(f) protection (see Appendix A).

2.1.3.3 City of Sacramento Parks and Recreational Facilities

Tiscornia Park is located in CT 53.01 BG 1, at the confluence of the Sacramento and American Rivers at 195 Jibboom Street. This park provides riverfront access and access to the American River Bike Trail.

Matsui Waterfront Park is located in CT 53.01 BG 1, just south of Tiscornia Park along the Sacramento River. This park connects Old Sacramento to Discovery Park. A second phase of development is planned for the park, which includes a group picnic and BBQ area, parking lot, and rehabilitation of the historic building for community use.

The Sacramento River Parkway (Central Area), where the project is located, is between Jibboom Street and Old Sacramento. The Parkway contains a strip of land adjacent to the river, and the paved Sacramento River Parkway Trail, which provides connection to the American River Bike Trail. This portion of the Sacramento River Parkway is primarily used by pedestrians. It provides riverfront views and other forms of passive recreation.

Old Sacramento State Historic Park is located in CT 07.00 BG 1, just south of the existing I Street Bridge and west of I-5. The park contains many historic buildings, as well as the Sacramento Railroad Museum. It is accessible via the Capitol Mall/Lincoln Highway, and J Street. There are two public parking garages as well as on-street parking along most of the streets in Old Sacramento. This state park is popular in the region and is frequented by both locals and tourists.

Several planned public parks are identified in the *Sacramento Railyards Specific Plan*, which identifies Open Space areas that are intended to create a framework for linking the different districts within the Railyards development. The parks within the Sacramento Railyards would be privately developed, but under jurisdiction of the City of Sacramento. They would also be maintained by the City of Sacramento (Rich pers. comm.).

The planned parks, recreational facilities, and open space areas in the study area are shown in Figure 2.1-4.

2.1.3.4 City of West Sacramento Parks and Recreational Facilities

Three public parks (Elkhorn Plaza, Raley Field and River Walk Park) are located within the study area in the city of West Sacramento but would not be affected by the proposed project.

Elkhorn Plaza is located within the study area, approximately 0.6 mile west of the project boundary. Access to Elkhorn Plaza is through Sacramento Avenue and Elkhorn Plaza.

Raley Field is located within the study area, approximately 0.45 mile west of the project boundary. Access to Raley Field is through 5th Street, the Tower Bridge Gateway, and Ballpark Drive. Parking for Raley Field is located between 5th Street and South River Road.

River Walk Park is located in CT 101.01 BG 4, along the west bank of the Sacramento River between the Tower Bridge and the existing I Street Bridge. The park has views of the Sacramento River, Old Sacramento, and the Sacramento Skyline. There are picnic areas, an area for special events available for rent, and a restroom facility.

Broderick Boat Ramp is a public park that primarily provides boating access to both the Sacramento and American Rivers. Boats of many sizes may be launched from the boat ramp. The park is located on the west bank of the Sacramento River at 103 4th Street. It contains a boat ramp and launching dock, parking for trailers, and restroom facilities. The park is approximately 8.87 acres. The majority of the park is undeveloped and does not contain any public facilities or structures. There is no entrance fee to the park.

Several proposed parks are identified in West Sacramento. River Walk Park will eventually extend from the Broderick Boat Ramp to the I-80 river crossing. A 0.75-acre access corridor is proposed just south of the Ziggurat building, between 3rd Street and River Walk Park. Washington Plaza is a 0.38-acre urban plaza that would be located at the corner of 5th and E Streets; it would contain a gathering area, water feature, public art, and game tables. The Broderick Boat Ramp would be expanded to include a 1.5-acre dog park. Lastly, The *City of West Sacramento Parks Master Plan* identifies a proposed Governor's Residence State Park, which would be located just west of the Sacramento River and north of the Broderick Boat Ramp (City of West Sacramento 2003).

2.1.4 Environmental Consequences

As stated above, multiple parks, trails, and open space areas are located throughout the study area, particularly along the riverfront. This section discusses the parks and trails adjacent to proposed improvements with the potential to be directly or indirectly affected by project construction or operation. Other parks and recreational facilities in the study area are not anticipated to experience changes in access or use as a result of the project.

2.1.4.1 Build Alternatives

Both build alternatives would result in the same temporary and permanent impacts on the riverfront parks in both the Sacramento and West Sacramento portions of the study area. In Sacramento, approximately 2.155 acres would be acquired from the Sacramento River Parkway (APNs 002-010-023 and 001-210-018). Both of these parcels are owned by the State of California. The Sacramento River Parkway Trail is routed through these two parcels along the river and would require a detour during construction. No acquisitions would be required at

Matsui Waterfront Park. 0.04 acre would be acquired from a future park site in Sacramento (Riverfront Park).

The proposed project would result in the acquisition of approximately 0.135 acre from the southern portion of Broderick Boat Ramp. The area that would be acquired is at the southern portion of the park, away from the boat ramp itself and other developed facilities. The proposed River Walk Park area north of the existing I Street Bridge would also be affected; 3.083 acres would be acquired from this proposed park site (APNs 010-102-004, 010-102-003, 010-102-002, 010-102-010, and 010-372-010).

Overall, the parkland acquisitions required for the project would be minor and would not affect the overall viability of the parks and recreational facilities in the community. The project would result in an acquisition from the Sacramento River Parkway, but it would not significantly alter the recreational opportunities in that area, which mainly include use of the Sacramento River Parkway Trail. The trail would be detoured for 2 years and then would be restored within the Sacramento River Parkway. As stated above, the project would require temporary re-routing of the Sacramento River Parkway trail along Jibboom Street during construction. The temporary alignment for the trail would follow the temporary Jibboom Street alignment south of Railyards Boulevard. Northbound cyclists and pedestrians would then follow a detour north along Bercut Drive to Richards Boulevard, where they could connect back to the Parkway on the west side of I-5. The detour would be in place for approximately 2 years.

2.1.4.2 No Build Alternative

Under the No Build Alternative, no bridge would be built, and the existing I Street Bridge would continue to be a source of transportation across the Sacramento River between the City of Sacramento and the City of West Sacramento. Because this alternative does not alter existing conditions, there would be no associated impacts related to land use.

2.1.5 Avoidance, Minimization, and/or Mitigation Measures

Minimization Measures

Restore Sacramento River Parkway Trail after Construction

In the event that any inadvertent damage occurs to the Sacramento River Parkway Trail, the area affected will be restored to the condition that existed prior to construction activities or better.

Provide Advance Notification of Sacramento River Parkway Trail Closures

The City of Sacramento will provide advance notification of the Sacramento River Parkway Trail closure on its websites and trailheads. Notices will include trail closure dates, approximate duration, and a description of the detour available during closure.

2.1.6 References Cited

- City of Sacramento. 2016a. *Sacramento Railyards Specific Plan*. October. Approved by the City of Sacramento on November 10, 2016.
- _____. 2016b. *Bicycle Master Plan*. Approved by the City of Sacramento on August 16, 2016.
- _____. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.
- _____. 2011. *River District Specific Plan*. Community Development Department and Economic Development Department. Adopted February 15, 2011. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Specific%20Plans>>. Accessed: May 10, 2016.
- _____. 2006. *City of Sacramento Pedestrian Master Plan*. City of Sacramento Department of Transportation. September. Available: <<http://portal.cityofsacramento.org/Public-Works/Transportation/Programs-and-Services/Pedestrian-Program>>. Accessed: July 31, 2015.
- _____. 1997. *Sacramento River Parkway Plan*. City of Sacramento Department of Neighborhoods, Planning and Development Services. Adopted October 21, 1997. Available: <http://www.sacramentoriverparkway.org/The_Parkway_Story/Sac-River-Parkway-Plan.1997.pdf>. Accessed: June 22, 2015.
- City of West Sacramento. 2016. *City of West Sacramento General Plan 2035 Policy Document*. Adopted November 2016. City of West Sacramento Community Development Department. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 21, 2017.
- _____. 2015. *Washington Realized – a Sustainable Community Strategy*. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=13210>>. Accessed: May 10, 2016.
- _____. 2013. *2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan*. May. Prepared for City of West Sacramento. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=9388>>. Accessed: May 10, 2016.
- _____. 2003. *City of West Sacramento Parks Master Plan*. September. Prepared for City of West Sacramento Department of Parks & Community Services. Prepared by SmithGroup JJR. Available: <<https://www.cityofwestsacramento.org/city/depts/comdev/planning/documents.asp>>. Accessed: May 10, 2016.

_____. 1996. *Washington Specific Plan*. Adopted by the West Sacramento City Council on May 15, 1996. West Sacramento, CA. Available: <https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=3639>. Accessed: July 31, 2015.

ICF International. 2016. *Community Impact Assessment – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. August. Sacramento, CA.

Mintier Harnish et al. 2009. *City of West Sacramento General Plan Public Review Draft Background Report*. Prepared for the City of West Sacramento. Sacramento, CA.

2.1.7 Personal Communications

Rich, Richard. City of Sacramento. Project Manager, Railyards Project Entitlements and Environmental Review. September 8, 2016—Phone conversation with Lindsay Christensen, ICF International.

2.2 Growth

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with NEPA, requires evaluation of the potential environmental effects of all proposed federal activities and programs. This includes a requirement to examine indirect effects, 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 “indirect impacts.” Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires analysis of a project’s potential to induce growth. The State CEQA Guidelines (Section 15126.2[d]) require that environmental documents “...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment....”

2.2.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

As described in Chapter 1, “Introduction,” the project area is located over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet north of the existing I Street Bridge (Figures 1-1 and 1-2). The study area for growth was defined by the U.S. Census Bureau–designated block groups that intersect the project area. Figure 2.1-1 depicts the CIA study area and shows the individual block groups: CT 101.01 BG 1, CT 101.01 BG 3, CT 101.01 BG 4, CT 07.00 BG 1, and CT 53.01 BG 1.

There has been considerable growth in the Sacramento area between 2000 and 2010. The City of West Sacramento experienced significant annual growth—5.4 percent. Regional and local population changes for key jurisdictions from 2000 to 2010 are shown in Table 2.2-1.

Table 2.2-1. Existing Regional and Local Population Change

Area	2000	2010	Percent Change (%)	Average Annual Growth Rate (%)
California	33,871,648	36,637,290	8.2	0.8
Sacramento County	1,223,499	1,395,144	14.0	1.6
Yolo County	168,660	200,849	19.1	1.9
City of Sacramento	407,018	466,488	14.6	1.5
City of West Sacramento	31,615	48,744	54.2	5.4

Source: U.S. Census Bureau 2010.

2.2.2.1 City of Sacramento

SACOG’s MTP/SCS 2035 projects that the region will have approximately 1.3 million employees and 1.2 million housing units by 2035. Sacramento is expected to contain roughly 20 percent of the region’s housing and nearly 30 percent of the region’s jobs.

The *Sacramento 2035 General Plan* identifies that most of the development in the Sacramento portion of the study area will be infill development. In October 2009, the Sacramento City Council identified priority “shovel-ready” sites, including Tier One areas where development is likely to occur in the near term. The majority of the Sacramento portion of the study area is identified as a Tier One shovel-ready site, with a high likelihood of job and housing growth by 2030 (City of Sacramento 2015).

2.2.2.2 City of West Sacramento

West Sacramento has experienced rapid population growth since 1990, which has brought significant land use change including new residential development in the outlier areas and redevelopment within existing built-up areas. West Sacramento has adopted five specific plans to help guide and implement land use planning in different areas of the city (Mintier Harnish 2009: Figure 2-5). The *Washington Specific Plan* pertains to land use in the study area.

The *Washington Specific Plan* covers the portion of the study area north of the existing I Street Bridge. The plan establishes a framework for long-term redevelopment that includes a single-family housing development, the CalSTRS government building, and the Raley’s Landing mixed-use project (City of West Sacramento 1996).

2.2.3 Environmental Consequences

2.2.3.1 Build Alternatives

The discussions below apply equally to both build alternatives since they share the same footprint and traffic capacity.

Caltrans provides guidelines for determining whether a project will cause growth-related impacts on the surrounding community. The Caltrans *Guideline for Preparers of Growth-Related*,

Indirect Impact Analysis (California Department of Transportation 2006) (referred to in the remainder of this section as “the Guidance document”) is the document used to determine whether the I Street Bridge Replacement Project would cause growth-related impacts on the Cities of Sacramento and West Sacramento. A two-phase approach was used to determine whether the project is anticipated to cause growth-related impacts. The first phase was a first-cut screening, based on factors that include how the project potentially changes accessibility, how the project type and location may influence growth, whether project-related growth is “reasonably foreseeable,” and whether any project-related growth would affect resources of concern. If the project is determined to have significant impacts under first-cut screening criteria, a second screening analysis is needed.

The first-cut screening considers the following factors.

- How, if at all, does the project potentially change accessibility?
- How, if at all, do the project type, project location, and growth-pressure potentially influence growth?
- Determine whether project-related growth is “reasonably foreseeable.”
- If there is project-related growth, how, if at all, will that affect resources of concern?

To determine the potential for growth-related impacts associated with the two build alternatives, a first-cut screening was performed in accordance with the Guidance document. The interrelated screening factors (accessibility, growth pressure, project type, and project location) discussed in Chapter 5 and summarized in Figure 5-2 of the Guidance document were considered. The results of this analysis are detailed below.

In terms of accessibility, the project would improve accessibility between Sacramento and West Sacramento by replacing the existing I Street Bridge with an improved bridge. The existing I Street Bridge does not comply with current design and traffic operation standards for vehicles, bicycles, or pedestrians. The width of the existing I Street Bridge is not sufficient to provide adequate traffic operations, bicycle lanes, or adequate or ADA-compliant pedestrian facilities or public transit across the bridge. Improving the bridge and adjacent intersections would improve access throughout the project area, which would benefit the surrounding residents of Sacramento and West Sacramento.

In terms of growth pressure, the extent to which the project would induce growth in the project area depends largely on the strength of local planning and growth management mechanisms, including adhering to adopted growth boundaries, maintaining existing zoning restrictions and land use designations, and implementing farmland and floodplain protection policies. The Cities of Sacramento and West Sacramento have provided land use designations to guide future growth in the study area; and new development must adhere to these land use designations, per the rules and regulations of the relevant cities. Adherence to these restrictions reduces pressure for unplanned development by making adequate quantities of land available for development in locations that best serve the policy goals of the relevant cities. Given the coordinated growth control mechanisms in place, the project is unlikely to substantially encourage unplanned development in the project area, or to shift or hasten planned growth in the study area. Growth-related impacts of the project related to growth pressure would be minimal to none.

In terms of project type, the project would construct a new two-lane bridge for vehicles to the north of the existing crossing that would connect to Railyards Boulevard instead of I Street on the Sacramento side. The new crossing would include facilities for bicycles and pedestrians. The two lanes of vehicular travel on the existing bridge would be relocated to the new bridge, and the existing I Street Bridge would remain for railroad use only. As described in the Guidance document, projects that do not increase roadway capacity are not typically considered likely to cause growth-related impacts.

In terms of project location, the project is located in built-up urban areas on both sides of the Sacramento River. As detailed in the Guidance document, transportation projects in urban areas are less likely to cause growth-related impacts because the land uses are generally built-out. Presently, the study area is largely built out. Most of the development planned for the study area is infill such as within the *Sacramento Railyards Specific Plan* and *Washington Specific Plan* areas. The *Sacramento Railyards Specific Plan* area is planned for mixed-use development (City of Sacramento 2016), and roadway and other infrastructure currently are under construction. Some vacant parcels in West Sacramento are planned for future development under the *Washington Specific Plan* (City of West Sacramento 1996). Growth is expected in the surrounding region and would not be attributable to, or otherwise influenced by, the project.

The results of the first-cut screening analysis indicate that, because of the developed nature of the project area, the existing land use designations, and the planning and growth mechanisms enforced by local agencies, the project is not expected to encourage unplanned development or increase growth in the project area. The project type, a bridge replacement that would provide adequate traffic operations, bicycle lanes, and ADA-compliant pedestrian facilities, would improve accessibility between Sacramento and West Sacramento and would not cause extensive development beyond what is already planned for in the general plans of the local jurisdictions.

Based on the first-cut screening analysis detailed above, the project would not be growth-inducing, and further analysis of the potential for growth inducement is not necessary.

2.2.3.2 No Build Alternative

The No Build Alternative would not lead to any growth-inducing improvements in the project area or in the surrounding community. The existing I Street Bridge would operate at its current levels of service and efficiency, and existing accessibility issues would remain and likely worsen over time.

2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.2.5 References Cited

California Department of Transportation. 2006. *Guidance for Preparers of Growth-Related Indirect Impact Analysis*. May. Sacramento, CA. Available: http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm. Accessed: August 15, 2014.

City of Sacramento. 2016. *Sacramento Railyards Specific Plan*. October. Approved by the City of Sacramento on November 10, 2016.

_____. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>. Accessed: May 10, 2016.

City of West Sacramento. 1996. *Washington Specific Plan*. Adopted by the West Sacramento City Council on May 15, 1996. West Sacramento, CA. Available: <https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=3639>. Accessed: July 31, 2015.

ICF International. 2016. *Community Impact Assessment – I Street Bridge Replacement Project, Sacramento County and Yolo County, California*. August. Sacramento, CA.

Mintier Harnish et al. 2009. *City of West Sacramento General Plan Public Review Draft Background Report*. Prepared for the City of West Sacramento. Sacramento, CA.

U.S. Census Bureau. 2010. *2010 Demographic Profile Data*. Available: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none>. Accessed: December 8, 2014.

2.3 Community Impacts

2.3.1 Community Character and Cohesion

2.3.1.1 Regulatory Setting

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 USC 4331[b][2]). In its implementation of NEPA (23 CFR 109[h]), FHWA directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

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

2.3.1.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Community cohesion is the degree to which residents have a “sense of belonging” to their neighborhood; a level of commitment of the residents to the community; or a strong attachment to neighbors, groups, or institutions—usually because of continued association over time. Communities often are delineated by physical barriers such as major roadways or large open space areas (California Department of Transportation 2011).

Cohesive communities are indicated by specific social characteristics such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when the projects act as physical barriers or are perceived by residents as psychological barriers. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood.

The study area is divided from east to west by the Sacramento River. Other dividing factors include I-5 and the UPRR tracks. Pedestrian and bicycle crossing is limited over the river and over/under the freeway and railroad tracks. Crossing these barriers via public or private motorized transportation is possible only at designated overpasses.

The Sacramento side of the study area is comprised of a mix of land uses. The portion of the study area east of the Sacramento River and north of the existing I Street Bridge is made up of industrial land use, including the Sacramento Railyards and the Sacramento Water Treatment Plant. Old Sacramento is located between the Sacramento River and I-5, and downtown Sacramento is located east of I-5. These areas are mostly comprised of commercial and governmental land uses. There are some residences in this side of the study area, but they are scattered in small clusters. Because the land uses are so varied and because there are few residential uses in this portion of the study area, community cohesion is considered low in the Sacramento portion of the study area.

The West Sacramento side of the study area includes more residential and recreational uses. This portion of the study area is divided north and south by the UPRR tracks. The neighborhood north of Sacramento Avenue contains sidewalks, schools, and parks. While there are many new land use changes to the West Sacramento side of the study area, including redevelopment near the waterfront, this neighborhood contains older homes, and residences that have likely been here for longer periods of time. West Sacramento residents shop and recreate locally. These factors indicate a cohesive community.

Study Area

The project is located in the Cities of Sacramento and West Sacramento in Sacramento and Yolo Counties. The study area is considered to be within the U.S. Census Bureau–designated block groups that intersect the project area. Figure 2.1-1 depicts the study area and shows the individual block groups: CT 101.01 BG 1, CT 101.01 BG 3, CT 101.01 BG 4, CT 07.00 BG 1, and CT 53.01 BG 1.

Ethnicity and Race

As reported in the 2010 census (U.S. Census Bureau 2010), the total population of the City of Sacramento is 466,488. Of the total population, the largest group is White (approximately 35.5 percent), and persons of Hispanic or Latino origin of any race made up the next largest group (26.9 percent). The remaining population in descending order of proportion is Asian, Black or African American, Two or more races combined, Native Hawaiian/Pacific Islander, American Indian/Alaskan Native, and Other (Table 2.3-1). The total population of the City of West Sacramento is 48,744 (U.S. Census Bureau 2010). Of the total population, the largest group is White (approximately 47.4 percent), and persons of Hispanic or Latino origin of any race made up the next largest group (31.4 percent). The remaining population in descending order of proportion is Asian, Black or African American/Two or more races combined, Native Hawaiian/Pacific Islander, American Indian/Alaskan Native, and Other. Table 2.3-1 indicates the ethnic distribution of the relevant census tracts.

As shown in Table 2.3-1, several of the block groups within the CIA study area are more ethnically diverse compared to the cities of Sacramento and West Sacramento. CT 07.01 BG 1 and CT 53.01 BG 1 have higher percentages of Black or African American residents, and CT 101.01 BG 3 has a higher percentage of Hispanic residents than average for the cities of Sacramento and West Sacramento.

Table 2.3-1. Existing Regional and Local Race and Ethnicity Characteristics (2010)

Area	Total Population	Hispanic or Latino (of Any Race)	%	Not Hispanic or Latino													
				White	%	Black or African American	%	American Indian or Alaskan Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Other Race	%	Two or More Races	%
California	37,253,956	14,013,719	37.6	14,956,253	40.1	2,163,804	5.8	162,250	0.4	4,775,070	12.8	128,577	0.3	85,587	0.2	968,696	2.6
Sacramento County	1,418,788	306,196	21.6	687,166	48.4	139,949	9.9	7,875	0.6	198,944	14.0	13,099	0.9	3,418	0.2	62,141	4.4
Yolo County	200,849	60,953	30.3	100,240	49.9	4,752	2.4	1,098	0.5	25,640	12.8	817	0.4	443	0.2	6,906	3.4
City of Sacramento	466,488	125,276	26.9	161,062	34.5	64,967	13.9	2,586	0.6	83,841	18.0	6,392	1.4	1,253	0.3	21,111	4.5
West Sacramento	48,744	15,282	31.4	23,092	47.4	2,180	4.5	395	0.8	4,961	10.2	502	1.0	121	0.2	2,211	4.5
CT 07.00 BG 1	2,806	607	21.6	931	33.2	687	24.5	45	1.6	376	13.4	9	0.3	48	1.7	103	3.7
CT 53.01 BG 1	838	211	25.2	173	20.6	358	42.7	7	0.8	22	2.6	7	0.8	2	0.2	58	6.9
CT 101.01 BG 1	1,140	231	20.3	616	54.0	79	6.9	16	1.4	136	11.9	4	0.4	5	0.4	53	4.6
CT 101.01 BG 3	2,754	1,290	46.8	982	35.7	150	5.4	38	1.4	188	6.8	32	1.2	5	0.2	69	2.5
CT 101.01 BG 4	1,291	406	31.4	495	38.3	125	9.7	27	2.1	136	10.5	22	1.7	4	0.3	76	5.9

Note: Refer to Figure 2.1-1 for the locations of block groups included in this table.
Source: U.S. Census Bureau 2010.

Income

According to the 2010 census (U.S. Census Bureau 2010), several block groups in the study area have a notably lower median household income and a lower per capita income than the respective cities, especially CT 07.00 BG 1, CT 53.01 BG 1, and CT 101.01 BG 4. Table 2.3-2 shows income and poverty statistics in the study area and region.

Table 2.3-2. Income and Poverty Statistics for the Study Area (2010)

Area	Median Household Income	Per Capita Income
California	\$61,094	\$29,527
Sacramento County	\$55,064	\$26,739
Yolo County	\$55,918	\$27,730
City of Sacramento	\$49,753	\$25,508
West Sacramento	\$53,394	\$24,827
CT 07.00 BG 1	\$12,403	\$10,123
CT 53.01 BG 1	\$11,359	\$5,453
CT 101.01 BG 1	\$67,039	\$53,855
CT 101.01 BG 3	\$36,162	\$16,433
CT 101.01 BG 4	\$17,318	\$6,783

Note: Refer to Figure 2.1-1 for the locations of block groups included in this table.
Source: U.S. Census Bureau 2010.

Community Facilities

Community facilities and services, including schools and health care facilities, are shown in Figure 2.1-4. There are no public community libraries in the study area, and libraries are not discussed further in this document.

Schools

Few schools are located in the study area. Smythe Academy is located in CT 53.01 BG 1 at 700 Dos Rios in Sacramento, approximately 1.12 miles northeast of the project boundary. Elkhorn Village Elementary School is located in CT 101.01 BG 3, at 750 Cummins Way in West Sacramento. It is approximately 0.5 mile northwest of the project boundary.

Health Care Facilities

There are no health care facilities within in the study area. The major health care facilities nearest to the study area include the UC Davis Medical Center at 2315 Stockton Boulevard and Sutter General Hospital at 2801 L Street in Sacramento, and the West Sacramento Medical Center at 155 15th Street in West Sacramento.

Economic Conditions

This section discusses the economic conditions of the study area and the surrounding region, including employment and income data and a description of business activity in the study area.

Regional Economy and Employment

City of Sacramento

In recent years, both residential and commercial development have declined due to a weak housing market, high foreclosure rates, and lack of financing. However, there are some positive trends indicating that this downward economic trend is reversing. The unemployment rate is falling (from 14.11 percent in 2011 to 10.8 percent in 2013). Sacramento also saw a slight increase in commercial development starting in 2012.

City of West Sacramento

The largest industry sectors in West Sacramento include transportation and warehousing (approximately 4,100 jobs), wholesale trade (approximately 3,100 jobs), retail trade (approximately 2,700 jobs), and manufacturing (approximately 2,100 jobs) (City of West Sacramento 2012).

Business Activity in the Region

City of Sacramento

Major employers in Sacramento include government agencies (e.g., California Air Resources Board, Caltrans, Disabled America Veterans, Employment Development Department, Environmental Protection Agency, Municipal Services Agency, and Water Resources Department); California State University, Sacramento; Corrections Department; Sacramento Regional Transit; Sutter Memorial Hospital and UC Davis Medical Center; Sacramento Bee; and Sacramento Municipal Utilities District (SMUD).

City of West Sacramento

Major employers in West Sacramento include Raley's, Tony's Fine Foods, United Parcel Service, Norcal Beverage, Beaulieu of America, Dennis Blazona Construction, Siemens Healthcare Diagnostics, FEDEX Freight, Capital Express Lines, Clark Pacific, and Ikea (City of West Sacramento 2012).

2.3.1.3 Environmental Consequences

Build Alternatives

The affected roadways in the study area, including I Street in Sacramento and C Street in West Sacramento, serve as primary transportation routes for commuters and patrons of the local businesses and shopping areas. I Street and C Street also serve as a primary transportation route between Sacramento and West Sacramento. During the construction period, roadways would remain open, with unrestricted travel during hours of non-construction activities. Travelers may experience delays during periods of active construction that would require temporary lane closures. These delays could discourage some travelers from using these access routes, but lane closures would be temporary; implementation of a Transportation Management Plan (TMP) (see

description below in Section 2.3.1.4) would ensure that access to adjacent properties would be provided during construction and that delays would be minimized as much as possible.

The project would not construct any new structures or roadways that would significantly alter the divisions already existing in the community or that could further divide existing communities. The project's new C Street alignment would cut off the existing access from C Street to four residential parcels and one multifamily parcel located along 2nd Street, north of C Street. However, as part of the project, a new connection to C Street from 2nd Street would be constructed to allow continued access to the residential properties. The connectivity provided by the existing I Street Bridge would be maintained with the new bridge. The transportation infrastructure being constructed in the Sacramento Railyards Specific Plan area would connect the new bridge location to downtown Sacramento, and the access point in West Sacramento would not change. Also, the new bridge would contain bicycle and pedestrian facilities that would improve bicycle and pedestrian connectivity between the cities.

Although traffic patterns would change slightly on local streets, there is little potential for cut-through traffic to disrupt existing neighborhoods or community areas. Although the project could cause traffic delays in the study area during active construction periods, cut-through traffic routes that could avoid these delays are not readily available. Thus, no negative effects on community cohesion would be caused by cut-through traffic associated with the project.

It is expected that public facilities in the project vicinity would be minimally affected during construction because the existing I Street Bridge would remain open and functional during construction.

Construction of the proposed project would result in temporary economic effects in the local area and region. One temporary effect would be an increase in economic activity due to project-related spending, including purchases of goods and services required for construction and employment of workers needed for construction. The increased economic activity would prompt secondary economic activity as a portion of the construction-related revenue and employee compensation is re-spent in sectors throughout the local and regional economy. The extent of the economic impact of construction-related expenditures on the local and regional economy depends on the proportion of construction expenditures that would occur in the local and regional area and on the residential location of persons employed by construction contractors.

Construction of the project could also negatively affect the economic activity of local businesses due to the loss of up to 54 parking spaces, including on-street and off-street spaces permanently eliminated by project construction.

No Build Alternative

No impacts on community cohesion would occur under the No Build Alternative.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The temporary travel delays and changes in access during periods of active construction that would require temporary lane closures can be mitigated through implementation of a TMP. The

permanent loss of parking spaces can be mitigated through construction of a mid-block east west road, described below. Construction of the new road will directly affect up to four parcels (APNs 010-371-007 [vacant], 010-371-008 [vacant], 010-371-009 [vacant], and 010-372-002 [vacant]) because of needed rights-of-way, will be near the historic Washington Firehouse on 070-371-004 (now containing commercial uses), and will require consideration of the presence of underground contamination from hazardous materials. The acquisitions necessary to implement this mitigation are listed in the measure below. The location of the access road will be adjacent to the former Capitol Plating, an electroplating facility formerly located at 319 3rd Street in West Sacramento (APN 010-371-003). Soil on that parcel is contaminated with elevated levels of chromium, nickel and lead. Contaminated soil extends offsite to the east and south. Shallow groundwater is contaminated with chromium, hexavalent chromium, nickel, copper and 1, 2-dichloroethane, and extends minimally offsite. Construction workers could be exposed to hazardous materials encountered during ground-disturbing activities such as grading, and/or roadbed resurfacing at the areas known to contain hazardous substances. A detailed review of existing environmental records at Yolo County Environmental Health Services and the RWQCB to determine current status of compliance will need to be completed. And, to avoid an adverse effect, implementation of the following avoidance, minimization, and/or mitigation measures listed in Hazardous Waste/Materials Section 2.12.4, will be required prior to construction of the access road: *Conduct Phase II Site Assessment, Develop and Implement Plans to Address Worker Health and Safety, Conduct Sampling, Testing, Removal, Storage, Transportation, And Disposal of Yellow/White Traffic Striping.*

Prepare a Transportation Management Plan

Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP). Implementation of a TMP would minimize disruptions to traffic and to emergency services during construction and ensure that construction would not create major delays. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices as well as innovative strategies. A TMP program includes public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce the overall duration of work activities where appropriate. Typical components of a TMP can include measures such as implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts on traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public of construction activities.

Implementation of the measures in the TMP would reduce the temporary access and circulation impacts of the project that would be caused by potentially lengthy construction delays. In addition to the measures described above, the TMP will include the following measures.

- Any emergency service agency whose ability to respond to incidents will be affected by any lane closure must be notified prior to that closure.
- Work will be coordinated with the local busing system (including school buses and public systems) to minimize impacts on their bus schedules.

The project proponent will provide information to residents and businesses before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction.

Construct Mid-block East West Road

Construct a new east/west access road south of C Street, just south of the Washington Firehouse property, to restore on-street parking, emergency access, and circulation to parcels currently served by 2nd Street, and prevent creation of a cul-de-sac inconsistent with West Sacramento’s Standard Specifications. The roadway will restore circulation that will be impaired or unusable due to bridge impacts on the parking lot and the adjacency of the new location of the southeast corner of 3rd and C Street to the driveway or curb cut into the Washington Firehouse parking. The roadway will be consistent with the 2nd Street reconfiguration shown in Figure 2.81 and Figure 2.85 of *Washington Realized* (City of West Sacramento 2015). Implementation of this measure will occur concurrent with project construction and will require acquisition of rights-of-way from four parcels in West Sacramento, as listed in Table 2.3-3 below.

Table 2.3-3. Mid-block East West Road Parcel Acquisitions

Assessor’s Parcel Number	Description	Proposed Acquisitions (acres)
010-371-007	Vacant – City of West Sacramento	0.091
010-371-008	Vacant – City of West Sacramento	0.221
010-371-009	Vacant – City of West Sacramento	0.044
010-372-002	Vacant waterfront – City of West Sacramento	0.191

Source: Mark Thomas and Company 2018.

The new access road will provide access to private parcels between 3rd Street and the Sacramento River and will accommodate pedestrian and bicycle use as well as provide limited vehicular access within the same street space. It will be designed to enhance and visually communicate the shared nature of the street. It may be a “Stubbed” access street connected 3rd Street and 2nd Street, then terminating in a hammer head or parking lot. Or it may be a “Connecting” access street connected to the existing 2nd Street. The new access road will be a minimum of 60 feet wide with a 20-foot right-of-way for vehicles and a 20-foot “no structure” zone on each side which may accommodate semi-private uses or parking.

2.3.2 Relocations and Real Property Acquisition

2.3.2.1 Regulatory Setting

Caltrans’ Relocation Assistance Program is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and 49 CFR 24. The purpose of the Relocation Assistance Program is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not

suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix D for a summary of the Relocation Assistance Program.

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

2.3.2.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

The project area is densely developed and is surrounded by commercial, industrial, and residential development. The area east of the Sacramento River, east of the new bridge alignment, is largely made up of the Sacramento Railyards, including the Sacramento Valley/Amtrak station. The Sacramento water treatment plant is located just east of I-5, adjacent to the Sacramento Railyards, along Bercut Drive. Matsui Waterfront Park, the Sacramento River Parkway, and several hotels are located along the Sacramento riverfront north of I Street. Old Sacramento, the City's historic district, is located between the Sacramento River and I-5 south of I Street.

West of the Sacramento River within the project limits are a mixture of residential, recreational and commercial properties. River Walk Park borders the Sacramento River and currently terminates at the I Street Bridge overcrossing. Residential uses, including single-family residences and one multifamily complex along 3rd Street are located behind the recreational/waterfront uses. Retail, restaurant and other commercial properties, as well as residential properties, are located along C Street and on cross streets within the project limits.

2.3.2.3 Environmental Consequences

Build Alternatives

Implementation of the proposed project would require acquisition of private property, including residences and parkland (parkland impacts are discussed further in Section 2.1, "Land Use"). Project impacts include both full and partial acquisitions, which may displace or alter existing uses. Full acquisition of a property occurs if the entire parcel is within the footprint (right-of-way) of the project or if any portion of a building is located within the footprint of the project. Full acquisitions also occur when the property is needed for right-of-way or levee fee/easements and results in an uneconomic remnant. Partial acquisition of a property occurs if any part of a parcel is within the footprint (right-of-way) of the project but does not require displacement of the structures on the property. These impacts range from a sliver or edge of a parcel within the proposed right-of-way to substantial portions that fall short of entire displacement.

Table 2.3-4 shows the proposed acquisitions for the project. The parcel data used to determine the proposed acquisitions shown in the table was obtained from various sources, including

assessor data, available GIS information, and boundary surveys collected during preliminary project design. The parcel data used may vary from the actual property dimensions for individual parcels. In general, County Assessor’s maps are not necessarily a land survey and are created for convenience. As stated on assessor maps, they do not guarantee dimensions, distances, bearings, or acreage. Existing survey monuments and physical evidence was collected in the field in order to approximate the existing rights-of-way within the project area. For the boundary survey created during preliminary project design, existing survey monuments and physical evidence was collected in the field in order to approximate the existing rights-of-way within the project area. This data was analyzed and the rights-of-way were delineated to determine the potential need for acquisitions as part of the project. Since circulation of the Draft EIR/EA the right-of-way requirements for the project design were revisited, prompting minor revisions to the proposed property acquisitions. The revisions are not substantial, and no additional parcels or structures are affected. The actual parcel data will be determined during the final design phase of the project.

Table 2.3-4. Proposed Parcel Acquisitions

Assessor's Parcel Number	Description	Proposed Acquisitions ^a (acres)
002-010-056	Vacant-City of Sacramento	0.608
002-010-023	Sacramento River Parkway (Central Area)	2.193
001-210-018		
001-019-017	Sacramento River Parkway (Central Area)	0.001
010-102-005	Vacant	0.128
010-102-004	Vacant waterfront – City of West Sacramento	0.182
010-102-003	Vacant waterfront – City of West Sacramento	0.661
010-102-002	Vacant waterfront – City of West Sacramento	0.296
010-102-010	Vacant waterfront/Historic Water Tank	1.277
010-372-003	Vacant waterfront – City of West Sacramento	0.667
010-372-002	Vacant waterfront – City of West Sacramento	0.191
010-101-004	Single-family residence	0.188
010-101-013	Multifamily residence	0.065
010-101-008	Vacant – City of West Sacramento	0.146
010-101-009	Single-family residence	0.058
010-101-010	Single-family residence	0.045
010-101-011	Single-family residence	0.049
010-101-012	Vacant – City of West Sacramento	0.136
010-371-005	Parking lot	0.038
010-371-006	Parking lot	0.030
010-482-007	Vacant – City of West Sacramento	0.029
010-482-008	Vacant – City of West Sacramento	0.015
010-482-009	Vacant – City of West Sacramento	0.015
010-482-011	Vacant – City of West Sacramento	0.059

^a There are no differences in acreage impacts as a result of the City of Sacramento roadway design alternatives. Source: Mark Thomas and Company 2018.

Construction of the proposed project would require right-of-way acquisition from 23 individual parcels. One multifamily apartment building on APN 010-101-013 would be affected. Two single-family residence structures, located on APNs 010-101-004 and 010-101-010, would need to be removed. The extent of structure demolition and property acquisition that would occur, including the possibility that the entire multifamily apartment building may need to be demolished, would be determined during right-of-way acquisition negotiations with property owners. Up to 54 parking spaces, including on-street and off-street spaces, would be permanently eliminated by project construction, reducing available parking currently relied on by adjacent businesses. These property acquisitions are considered an adverse impact.

No Build Alternative

No impacts on properties would occur under the No Build Alternative.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

Acquisitions and compensation to residential property owners would occur consistent with the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act, as amended. The loss of parking spaces can be mitigated through construction of a mid-block east west road south of C Street, just south of the Washington Firehouse property.

Construct Mid-block East West Road

Please refer to the discussion of this measure in Section 2.3.1.4, including the acquisition of rights-of-way necessary for this mitigation measure.

2.3.3 Environmental Justice

The project is being developed in accordance with the Civil Rights Act of 1964, as amended; the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended; and Executive Order (EO) 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*). *Environmental justice* refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The CEQ's *Environmental Justice: Guidance under the National Environmental Policy Act* (1997) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts.

For adverse environmental justice effects to result from the project, two conditions need to exist. First, minority or low-income populations need to reside in parts of the study area that would be adversely affected by the project. Second, any adverse impacts would need to fall disproportionately on minority or low-income populations, rather than proportionately on all populations affected by the project.

Once minority and/or low-income populations are identified and an environmental justice analysis is required, a determination must be made as to whether the project would cause a disproportionately high and adverse effect on human health or the environment. This requires comparing the burdens and benefits that would be experienced by environmental justice populations with the burdens and benefits that would be experienced by non-environmental justice populations. USDOT Order 5610.2(a) defines a *disproportionately high and adverse effect* as one that would meet either characteristic below.

- The adverse effect would be predominantly borne by a minority and/or low-income population.
- The adverse effect suffered by the minority and/or low-income population would be appreciably more severe than the adverse effect suffered by the non-minority and/or non-low-income population.

An analysis of the project based on these criteria is provided below.

2.3.3.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal programs, policies, and activities 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 2010, this was \$22,050 for a family of four.

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

2.3.3.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

As shown in Table 2.3-1, several of the census tracts in the study area have higher percentages of minority populations and low-income populations compared to the rest of Sacramento and West Sacramento. The block groups with notably low incomes include CT 07.00 BG 1 and CT 53.01 BG 1 in Sacramento, and CT 101.01 BG 4 in West Sacramento. Census tract 07.00 BG 1 is located in the Downtown Sacramento/Old Sacramento area. This block group is divided by a major freeway, I-5. There is very little residential development in this block group, and there are no single-family homes. Residents in this block group live in high-density residential housing or temporary housing in motels. An apartment building at 5th and I Streets offers senior citizen housing. CT 53.01 BG 1 is located in the northeast portion of the study area and is mainly

comprised of industrial land uses, including the Sacramento Railyards. There is very little residential development in this block group. The Dos Rios housing project is located in this block group, but it is located over a mile northeast of the project limits. In CT 101.01 BG 4, an established neighborhood is located between the UPRR tracks and G Street in West Sacramento. This neighborhood consists of older single-family residences as well as multi-family complexes. Most of the residents in the study area are located within CT 101 BG 1 and CT 101 BG 3.

2.3.3.3 Environmental Consequences

Build Alternatives

In general, impacts resulting from construction would be most noticeable in the areas closest to the project alignment because construction work would create traffic, noise, and dust. However, the impacts borne by the environmental justice populations in the study area would be similar to and no greater than impacts borne by all populations in the study area. The project would also increase cross-river access for *all* the minority and low-income populations as well as other residents of the study area. As stated above, minority and low-income populations are located in pockets and are not pervasive throughout the study area. Most of the residents in the study area are located in CT 101 BG 1 and CT 101 BG 3, which have incomes more comparable to the median household incomes of the respective cities.

Based on the above discussion and analysis, the proposed project, including the two build alternatives, will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898. No further environmental justice analysis is required.

No Build Alternative

Under the No Build Alternative, the project would not be built; therefore, no impacts on minority or low-income populations would occur.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.3.4 References Cited

California Department of Transportation. 2011. *Community Impact Assessment, Caltrans Standard Environmental Reference, Environmental Handbook 4*. October. Available: <http://www.dot.ca.gov/ser/vol4/downloads/vol4_entire.pdf>. Accessed: July 2, 2015.

City of West Sacramento. 2012. City Profile, Census Bureau. Available: <<https://www.cityofwestsacramento.org/documents/WSEconProfile092013Rev2.pdf>>. Accessed: July 2, 2015.

_____. 2015. *Washington Realized – a Sustainable Community Strategy*. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=13210>>. Accessed: April 18, 2017.

Council on Environmental Quality. 1997. *Environmental Justice – Guidance under the National Environmental Policy Act*. Washington, D.C. Available: <http://www.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_ceq1297.pdf>. Accessed: December 8, 2014.

ICF International. 2016. *Community Impact Assessment – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. August. Sacramento, CA.

Mark Thomas and Company. 2018. Right of Way Acquisition. I Street Bridge Replacement. September.

U.S. Census Bureau. 2010. *2010 Demographic Profile Data*. Available: <<http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none>>. Accessed: December 8, 2014.

2.4 Utilities/Emergency Services

This section is based on the CIA prepared for the project (ICF International 2016) and discusses utilities and emergency services (including police, fire, and emergency medical services). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

2.4.1 Affected Environment

2.4.1.1 Utilities

Electricity and Natural Gas

SMUD generates, transmits, and distributes electricity to a 900-square-mile territory that includes Sacramento, Sacramento County, and a small portion of Placer County (Sacramento Municipal Utilities District 2015). SMUD provides electric service in the Sacramento County portion of the project area.

The Pacific Gas and Electric Company (PG&E) provides natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California (Pacific Gas and Electric Company 2015). PG&E provides electric service to the City of West Sacramento and natural gas service to the entire project area.

Water Supply

The City of Sacramento's Department of Utilities is responsible for providing and maintaining water, sewer collection, storm drainage, and flood control services along with solid waste removal for residents and businesses within the city limits. The City's existing distribution system consists of two water supply and water treatment plants, two pressure zones, groundwater wells, storage tanks, pumping facilities, and distribution/transmission pipelines (City of Sacramento 2011). The City of Sacramento treats surface water diverted from the Sacramento and American Rivers through the Sacramento River Water Treatment Plant and the E. A. Fairbairn Water Treatment Plant, respectively.

In the City of West Sacramento, the George Kristoff Water Treatment Plant diverts water from the Sacramento River and provides treatment at the recently upgraded and expanded, state-of-the-art facility, which was designed to serve the city's expanding needs. This plant is administered by the City's Water Treatment Division and is operated 24 hours a day. To address population growth, the plant was expanded in 2004, increasing maximum capacity from 24 to 58 million gallons per day (City of West Sacramento 2015). In addition to the plant, the city operates several water tanks to provide additional storage for fire and emergency needs (City of West Sacramento n.d.).

Wastewater/Stormwater

In general, stormwater runoff within the city of Sacramento flows into the City's combined sewer system or into individual drainage sumps located throughout the city. Water collected by the combined sewer system is transported to the Sacramento Regional County Sanitation District's Sacramento Regional Wastewater Treatment Plant, where it is treated prior to discharge into the Sacramento River. When the flows in the combined sewer system exceed 60 million gallons per day, flows are routed to Pioneer Reservoir. (City of Sacramento 2014.)

The City of West Sacramento runs and maintains a sewer collection system across the city consisting of 12 sewer pump stations along with all underlying sewer pipes. The collected sewage is then delivered to the Sacramento County Regional Sanitation District for treatment via the 19-mile Lower Northwest Interceptor Pipeline (City of West Sacramento n.d.).

Solid Waste

The City of Sacramento's Recycling and Solid Waste Department provides garbage, recycling, yard waste collection, and street sweeping services. Waste from the city is taken to the Sacramento Recycling and Transfer Station at 8491 Fruitridge Road in Sacramento.

Waste Management, Inc. provides trash collection services in the City of West Sacramento. Waste is taken to the Yolo County Central Landfill at 44090 County Road 28H in Woodland.

Telecommunications

Telecommunications service to the City of Sacramento is provided by AT&T, Sprint, Comcast, Surewest, MetroPCS Wireless, Verizon Communications, Inc., Integra Telecom Holdings, Inc., and Earthlink Business (City of Sacramento 2015). Telecommunications service to the City of West Sacramento is mainly provided by AT&T, Wave Broadband, and Sprint. These companies generally add improvements or relocations as the need arises to meet customer demand.

2.4.1.2 Emergency Services

Police

City of Sacramento Police Department

The City of Sacramento Police Department, headquartered at 5770 Freeport Boulevard in Sacramento, provides law and traffic enforcement for the portion of the project area within the City of Sacramento. There is one station at 300 Richards Boulevard. In 2014, the full-service department had approximately 987 officers (sworn and civilian) (City of Sacramento Police Department 2014).

City of West Sacramento Police Department

The City of West Sacramento Police Department, headquartered at 550 Jefferson Boulevard in West Sacramento, provides law and traffic enforcement for the portion of the project area within

the City of West Sacramento. The Department is divided into three offices: Administration, Investigations (which includes the Code Enforcement Division), and Operations. Police officers patrol 23.3 square miles. The department is staffed with 71 sworn officers; 23 civilian officers; 8 part time officers, 18 parking enforcement officers; and 4 part-time, non-sworn staff. Other positions in the department include part-time police officers, parking enforcement officers, reserve police officers, and volunteers.

Fire

City of Sacramento Fire Department

The City of Sacramento Fire Department provides fire protection and emergency medical services to the portion of the project area within the Sacramento city limits. Its service area is 146.3 square miles, and it serves a population of 516,167. Of the 24 active stations, the station nearest the project corridor is Station 14 at 1341 C Street in Sacramento. In 2012, the Sacramento Fire Department received 74,130 total calls (City of Sacramento Fire Department 2012).

Sacramento Metropolitan Fire District

The Sacramento Metropolitan Fire District (Metro Fire) is a combination of 16 smaller fire districts, including the Sacramento County Fire Protection District, that merged to create a California Special District. Metro Fire provides fire, rescue, and emergency medical services to an area of 417 square miles and a population of 640,000. There are approximately 155 on-duty personnel on any given day. In the 2013/2014 fiscal year, Metro Fire responded to 6,206 service calls (Sacramento Metropolitan Fire District 2015).

West Sacramento Fire Department

The City of West Sacramento Fire Department provides fire protection and emergency response services within the city limits and responds to emergencies in outlying areas when other departments request aid. The West Sacramento Fire Department has 17 personnel on duty at a given time. There are five stations in West Sacramento. The two stations nearest to the project area are Station 41 at 132 15th Street and Station 44 at 905 Fremont Street in West Sacramento.

2.4.2 Environmental Consequences

2.4.2.1 Build Alternatives

A number of public and private utilities would need to be relocated or adjusted to grade as a result of the proposed project, including existing water, sewer, gas, electric, and communication facilities within Jibboom Street, Bercut Drive, C Street, and 2nd Street.

It is expected that public facilities and emergency service centers in the project vicinity would be minimally affected during construction because the existing I Street Bridge would remain open and functional during construction. During construction, short-term lane closures could be

necessary on local streets to accommodate street widening and striping. The following emergency service providers would be notified by the project proponent prior to any road closures.

- Sacramento County Sheriff Department
- Yolo County Sheriff Department
- City of Sacramento Police Department
- City of West Sacramento Police Department
- City of Sacramento Fire Department
- City of West Sacramento Fire Department
- California Highway Patrol
- American Medical Response

Access and circulation would change in the project area, including changing access to specific properties and routes for emergency responders. In addition, the project would create a cul-de-sac on 2nd Street that exceeds the maximum length allowed by West Sacramento Standard Specifications and Details (Division 1, Design Standards, Section 3.05G, Street Design, Dead-end Length) associated with public safety access and egress. Depending on what direction the emergency service is driving, the route could be shorter or up to about 1 mile longer. Implementation of a TMP during construction would reduce potential impacts on the response times of emergency service providers (including law enforcement, fire protection, and ambulance service providers) caused by potential construction delays. In addition, construction of a mid-block east west road south of C Street would restore adequate emergency access and avoid the creation of a conflict with West Sacramento's Standard Specifications.

2.4.2.2 No Build Alternative

There would be no impacts on utilities or public services under the No Build Alternative.

2.4.3 Avoidance, Minimization, and/or Mitigation Measures

Provide Advance Notice to Utility Service Providers

The project proponent will provide advance notification and coordinate with utility service providers prior to and during construction to avoid or minimize potential service disruptions.

Prepare a Transportation Management Plan

Please refer to the discussion of this measure in Section 2.3.1.4.

Construct Mid-block East West Road

Please refer to the discussion of this measure in Section 2.3.2.3.

2.4.4 References Cited

- City of Sacramento. 2011. *City of Sacramento 2010 Urban Water Master Plan*. Available: <<file:///C:/Users/19090/Downloads/2010UWMP.pdf>>. Accessed: May 12, 2016.
- _____. 2014. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update*. August. Available: <http://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Environmental-Impact-Reports/2035-GP-Update/Public-Draft-MEIR081114.pdf?la=en>>. Accessed: October 5, 2016.
- City of Sacramento. 2015. *City of Sacramento 2035 General Plan Background Report*. Adopted March 3, 2015. Available: <<http://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/General-Plan/2035-GP/Chapter-4---Utilities.pdf?la=en>>. Accessed: October 4, 2016.
- City of Sacramento Fire Department. 2012. *Sacramento Fire Department Annual Report 2012*. Available: <<http://www.cityofsacramento.org/~/-/media/Corporate/Files/Fire/Reports/2012-Annual-Report.pdf>>. Accessed: October 5, 2016.
- City of Sacramento Police Department. 2014. *City of Sacramento Police Department Annual Report 2014*. Available: <<http://www.cityofsacramento.org>>. Accessed: October 5, 2016.
- City of West Sacramento. 2015. *George Kristoff Water Treatment Plant*. Last revised: unknown. Available: <https://www.cityofwestsacramento.org/city/depts/pw/public_works_operations/water/de_fault.asp>. Accessed: October 2, 2015.
- _____. n.d. *City Utility Services*. Last revised: unknown. Available: <<https://www.cityofwestsacramento.org/city/depts/pw/utilityservices.asp>>. Accessed: May 12, 2016.
- ICF International. 2016. *Community Impact Assessment – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. August. Sacramento, CA.
- Pacific Gas and Electric Company. 2015. *Company Profile*. Available: <<http://www.pge.com/en/about/company/profile/index.page>>. Accessed: August 4, 2015.
- Sacramento Metropolitan Fire District. 2015. *About Us*. Available: <<http://www.metrofire.ca.gov/index.php/about-us>>. Accessed: July 31, 2015.
- Sacramento Municipal Utilities District. 2015. *SMUD 2014 Annual Report, Sacramento Rising*. Available: <<https://www.smud.org/en/about-smud/company-information/documents/2014-annual-report.pdf>>. Accessed: August 4, 2015.

2.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.5.1 Regulatory Setting

2.5.1.1 Federal Requirements

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

In July 1999, 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 USC 794). FHWA has enacted regulations for implementation of the 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.

2.5.1.2 State Requirements

I-5 Transportation Corridor Concept Report and Corridor System Management Plan

I-5 crosses directly north-south through the study area and would be influenced by proposed changes to the local roadway network. Performance expectations for I-5 within the project study area are governed by two Caltrans' policy documents—the *Transportation Corridor Concept Report Interstate 5* (TCCR) (California Department of Transportation 2010) and the *State Route 99 & Interstate 5 Corridor System Management Plan* (CSMP) (California Department of Transportation 2009). The TCCR describes existing traffic operations and outlines the expectations for future performance based on a planning-level analysis of the entire I-5 corridor through Caltrans District 3, which largely covers the Sacramento region. Under both existing and future conditions, I-5 through the study area has a concept level of service (LOS) of "F," which is largely due to physical constraints that limit capacity expansion. LOS ratings vary from A to F, similar to a report card. LOS A conditions represent low levels of traffic while LOS F reflects conditions where demand exceeds capacity and drivers experience travel speeds below free-flow or posted levels. While LOS F is expected, individual development or infrastructure projects are expected to avoid or minimize worsening the LOS F conditions when feasible. The CSMP provides a more focused analysis for portions of I-5, including the section through the study area. The CSMP contains detailed traffic analysis and reaches the same conclusion as the TCCR—that LOS F occurs today and can be expected into the future.

Local Development – Intergovernmental Review Program Interim Guidance

Caltrans' Local Development-Intergovernmental Review (LD-IGR) program reviews land use and infrastructure plans and projects across the state for potential impacts on the state highway system. In 2016, Caltrans published the *Local Development – Intergovernmental Review Program Interim Guidance* (California Department of Transportation 2016) to provide new instructions about how to review potential impacts on the state highway system. The new guidance states the following.

LD-IGR coordinators and functional reviewers will transition away from using delay based analysis, such as LOS or similar measures of vehicular capacity or traffic congestion, to determine the impacts of land use and infrastructure plans and projects. Instead, they will identify opportunities for reduced VMT generation, advise Lead Agencies on maintaining safe operations, and provide recommendations on developing location-efficient (e.g., centrally located, infill) and travel-efficient (e.g., inclusion of TDM measures) land use.

2.5.1.3 Regional Requirements

2016 Metropolitan Transportation Plan/Sustainable Communities Strategy

The *2016 Metropolitan Transportation Plan/Sustainable Communities Strategy* (MTP/SCS) (Sacramento Area Council of Governments 2016) is the current transportation plan for the region under the jurisdiction of SACOG. As such, it provides the basis for air quality conformity findings related to the national Clean Air Act and determinations of whether the region is complying with greenhouse gas (GHG) reduction targets for automobiles and light trucks established under California's Senate Bill 375. Major projects that are inconsistent with the plan could jeopardize the plan's effectiveness for air pollution and GHG reduction. Consequently, consistency with the MTP/SCS is a potential basis for determining adverse impacts related to these environmental topics. The 2016 version of the plan was adopted after this traffic study was completed. The prior version was titled, *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* (MTP/SCS 2035), SACOG, April 2012. The plans are similar, especially in regard to the long-range population and employment growth forecasts.

Regional Bicycle, Pedestrian, and Trails Master Plan

The *Regional Bicycle, Pedestrian, and Trails Master Plan* (Sacramento Area Council of Governments 2015) is a comprehensive list of planned projects prepared by SACOG. This is the first plan shaped by the goals and strategies of the MTP/SCS 2035 that was adopted in 2012.

2.5.1.4 Local Requirements

City of Sacramento General Plan

When the transportation impact study for the proposed project began in 2014, the following policies from the *Sacramento 2030 General Plan* (City of Sacramento 2009) were in place to coordinate the transportation and circulation system with planned land uses. For most projects, the City relies on vehicle LOS to measure how changes in traffic volumes affect the operation of streets and intersections (i.e., traffic delays to drivers). For the core area of downtown, which

cover the project study area, Sacramento, Policy M 1.2.2 (see excerpt below) allows LOS F conditions. While LOS F is allowed, the City requires transportation impact studies to provide LOS information and to identify potential improvements to avoid worsening LOS F conditions (Hajeer pers. comm.).

Mobility Element

Excerpt of Policy M 1.2.2. The City shall allow for flexible Level of Service (LOS) standards, which will permit increased densities and mix of uses to increase transit ridership, biking, and walking, which decreases auto travel, thereby reducing air pollution, energy consumption, and greenhouse gas emissions.

- a. Core Area Level of Service Exemption—LOS F conditions are acceptable during peak hours in the Core Area bounded by C Street, the Sacramento River, 30th Street, and X Street. If a Traffic Study is prepared and identifies a LOS impact that would otherwise be considered significant to a roadway or intersection that is in the Core Area as described above, the project would not be required in that particular instance to widen roadways in order for the City to find project conformance with the General Plan. Instead, General Plan conformance could still be found if the project provides improvements to other parts of the citywide transportation system in order to improve transportation-system-wide roadway capacity, to make intersection improvements, or to enhance non-auto travel modes in furtherance of the General Plan goals. The improvements would be required within the project site vicinity or within the area affected by the project’s vehicular traffic impacts. With the provision of such other transportation infrastructure improvements, the project would not be required to provide any mitigation for vehicular traffic impacts to road segments in order to conform to the General Plan. This exemption does not affect the implementation of previously approved roadway and intersection improvements identified for the Railyards or River District planning areas.

On March 3, 2015, the City of Sacramento adopted the *Sacramento 2035 General Plan* (City of Sacramento 2015). The new plan largely maintains the concept of allowing LOS F operations in the core area of downtown, as described below.

Mobility Element

Excerpt of Policy M 1.2.2 Level of Service (LOS) Standard. The City shall implement a flexible context-sensitive Level of Service (LOS) standard, and will measure traffic operations against the vehicle LOS thresholds established in this policy. The City will measure Vehicle LOS based on the methodology contained in the latest version of the Highway Capacity Manual (HCM) published by the Transportation Research Board. The City’s specific vehicle LOS thresholds have been defined based on community values with respect to modal priorities, land use context, economic development, and environmental resources and constraints. As such, the City has established variable LOS thresholds appropriate for the unique characteristics of the City’s diverse neighborhoods and communities. The City will strive to operate the roadway network at LOS D or better for vehicles during typical weekday conditions, including AM and PM peak hour with the following exceptions described below and mapped on Figure M-1.

- A. Core Area (Central City Community Plan Area) – LOS F allowed

- E. If maintaining the above LOS standards would, in the City’s judgment be infeasible and/or conflict with the achievement of other goals, LOS E or F conditions may be accepted provided that provisions are made to improve the overall system, promote non-vehicular transportation, and/or implement vehicle trip reduction measures as part of a development project or a city-initiated project. Additionally the City shall not expand the physical capacity of the planned roadway network to accommodate a project beyond that identified in Figure M4 and M4a (2035 General Plan Roadway Classification and Lanes).

Part of the rationale for allowing LOS F in the downtown core (bounded by Broadway, Alhambra Boulevard, the American River, and the Sacramento River, as shown in Figure M-1 of the *Sacramento 2035 General Plan*) is that this area is well served by multiple modes, including bus and rail transit, bicycling, and walking.

The City also recognizes that transportation projects may affect the total amount of vehicle use on the roadway network. As such, the City has used vehicle miles of travel (VMT) as a key metric and evaluated performance of the network based on forecasts of VMT based on the General Plan and the MTP/SCS (Hajeer pers. comm.).

The Mobility Element of the *Sacramento 2035 General Plan* also includes the following policies related to connectivity, walking, biking, transit, and parking that are relevant to this project. Select goals and policies are listed below.

Mobility Element

Goal M 1.3 Improve accessibility and system connectivity by removing physical and operational barriers to safe travel.

Policy M 1.2.4 Multimodal Access. The City shall facilitate the provision of multimodal access to activity centers such as commercial centers and corridors, employment centers, transit stops/stations, airports, schools, parks, recreation areas, medical centers, and tourist attractions.

Policy M 1.3.2 Eliminate Gaps. The City shall eliminate ‘gaps’ in roadways, bikeways, and pedestrian networks. To this end:

- a. The City shall construct new multi-modal crossings of the Sacramento and American Rivers.
- b. The City shall plan and pursue funding to construct grade-separated crossings of freeways, rail lines, canals, creeks, and other barriers, to improve connectivity.
- c. The City shall construct new bikeways and pedestrian paths in existing neighborhoods to improve connectivity.

Policy M 1.3.6 Multi-Jurisdictional Transportation Corridors. The City shall work with adjacent jurisdictions and the Sacramento Area Council of Governments (SACOG) to identify existing and future transportation corridors that should be linked across jurisdictional boundaries to provide desired upstream and downstream traffic operations and to preserve sufficient right-of-way.

City of Sacramento Pedestrian Master Plan

The *City of Sacramento Pedestrian Master Plan* (City of Sacramento 2006) is intended “to make Sacramento the Walking Capital.” It provides a comprehensive vision for creating a model

pedestrian-friendly city for the next 20 years. The following plan objectives and goals are relevant to this project.

Objectives

Prepare policy, standard and procedural recommendations that allow the City to leverage the best pedestrian environments from new developments and incorporate pedestrian considerations into all transportation and land use projects.

Prepare a capital improvement process that enables the City to systematically retrofit currently deficient sidewalk and pedestrian crossing locations.

Goals

Create a walkable pedestrian environment throughout the City.

Improve awareness of the pedestrian mode through education.

Increase pedestrian safety.

2016 Bicycle Master Plan

The *City of Sacramento Bicycle Master Plan* (City of Sacramento 2016) was developed as an outcome of the 2035 General Plan, which established an overarching goal of making Sacramento the most livable city in America. The Bicycle Master Plan (BMP) sets forth bicycle related investments, policies, programs and strategies to establish a complete bicycle system throughout the City.

Grid 3.0 Planning the Future of Mobility in the Sacramento Central City

The *Grid 3.0 Planning the Future of Mobility in the Sacramento Central City* (City of Sacramento 2016) was developed in response to the central city attracting a higher share of the region's growth over time, resulting in more travel demand on the downtown grid. The *Sacramento 2035 General Plan* set an expectation that serving future transportation needs would, "...create a well-connected transportation network, support increased densities and a mix of uses in multi-modal districts, help walking become more practical for short trips, support bicycling for both short- and long-distance trips, improve transit to serve highly frequented destinations, conserve energy resources, reduce greenhouse gas emissions and air pollution, and do so while continuing to accommodate auto mobility." Grid 3.0 represents the City's plan to integrate a number of planned transportation improvements and programs, and to further enhance the downtown grid.

Sacramento Railyards Specific Plan

The *Sacramento Railyards Specific Plan* (City of Sacramento 2016) was originally adopted in 2007 and went through a major update in 2016. The update was prepared to include a Kaiser Permanente Medical Center, a Major League Soccer Stadium, stormwater outfall projects, and various modifications to land uses and the transportation network. The plan contains the

following elements related to future development of the study area directly east of the I Street Bridge, encompassing about 60 downtown blocks.

- The distribution, location, and extent of all land uses, including open space.
- The proposed distribution, location, extent, and intensity of major components of public infrastructure, such as transportation and drainage systems, and other essential facilities needed to support the land uses.
- Standards and criteria that specify how development of the Railyards area will proceed.
- A statement of consistency between the Specific Plan and the goals and policies contained in the General Plan.
- A program of implementation measures such as regulations, programs, and public works projects, and financing measures necessary to complete the essential facilities to allow for development of the plan area.

The planned circulation network was guided by goals and policies that reinforce the desire for a transit-oriented urban environment that is integrated with the central city. The circulation network was developed in recognition of the proposed I Street Bridge Replacement Project, including roadway alignments and number of lanes.

River District Specific Plan

The *River District Specific Plan* (City of Sacramento 2011) provides planning and design standards for redevelopment of approximately 773 acres of land directly north of the Railyards Specific Plan area. A key principle of the plan is to transform the current industrial truck and auto circulation network to one that places a high priority on the pedestrian while balancing the needs of an increasingly diverse land use base. Similar to the *Sacramento Railyards Specific Plan*, the *River District Specific Plan* was developed prior to the decision to replace the existing I Street Bridge with a new bridge.

City of West Sacramento General Plan

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) was recently adopted after an update process that started in 2007. The plan outlines the following key goals and policies that relate to the City's transportation system and the proposed project.

Goals

M-1 To develop and maintain a multi-modal integrated transportation system that provides for the safe and efficient movement of people and goods, supports vibrant neighborhoods and districts, and reduces air pollution and greenhouse gas (GHG) emissions.

M-2 To provide complete streets that accommodate driving, walking, bicycling, and public transit and are designed to enable safe, attractive, and comfortable access and travel for all users.

M-5 To develop and maintain a safe, comprehensive, and integrated bicycle system and bicycle support facilities throughout the city.

M-6 Develop and maintain a safe, accessible and integrated pedestrian system that promotes walking.

Policies

M-2.2 The City shall preserve and continue to develop a comprehensive, integrated, and connected network of streets that balance walking and bicycling with public transit, automobiles and trucks.

M-2.7 The City, to the extent feasible, shall require that all new street construction and reconstruction be designed to achieve complete streets. Exceptions to complete streets design shall require approval of the Planning Commission.

M-2.11 The City shall ensure, to the extent that bridges and overpasses include infrastructure, features, and amenities to provide a continuous, unbroken system of complete streets within the city and to provide a welcoming entrance at the city’s gateways.

M-3.15 The City shall work with Caltrans and the City of Sacramento to improve the pedestrian, bicycle, and transit capacity of the Tower Bridge and the I Street Bridge, and in the development of future bridges.

M-3.2 The City shall endeavor to maintain a Level of Service “C” on all streets within the city, except at intersections and on roadway segments within one-quarter mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal, or Sacramento River, where a Level of Service “D” shall be deemed acceptable, and within pedestrian oriented, high density, mixed use areas, such as the Bridge District Specific Plan area, the Washington Specific Plan area, and West Capitol Avenue from Harbor Blvd. east, where a Level of Service “E” shall be deemed acceptable. For purposes of CEQA impact analyses, Level of Service shall be considered as part of General Plan consistency.

West Sacramento Bicycle, Pedestrian, and Trails Master Plan

The *2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan* (City of West Sacramento 2013) identifies current and proposed bicycle facilities in the City of West Sacramento portion of the study area. The plan recognizes replacement of the I Street Bridge and proposes that the new bridge include Class II bike lanes and a Class I bike path.

Washington Specific Plan

The *Washington Specific Plan* (City of West Sacramento 1996) defines a vision for redeveloping the 194-acre urban area of West Sacramento bounded by Tower Bridge Gateway, the Sacramento River, A Street, and portions of 6th and 8th Streets. The existing I Street Bridge is a major connection for this area, linking it to the City of Sacramento and was specifically recognized in the Specific Plan as follows.

Policy 3.A.3. The City shall work with Caltrans and the City of Sacramento in improving the traffic and pedestrian carrying capacity of the Tower Bridge and the I-Street Bridge and to provide more direct connections from these bridges into the Washington Plan Area.

The City of West Sacramento (2014) developed a *Transit-Oriented Development Strategy* for the Washington District that recommends refinements to the Specific Plan policies and circulation network. These changes are largely to modify the street system to be more supportive of transit-oriented development, with a higher priority for pedestrians and bicyclists. The changes also recognize the new I Street Bridge alignment and the proposed future streetcar route. The City of West Sacramento also approved the Washington District Sustainable Community Infrastructure Project in 2016 that includes bicycle and pedestrian improvements within the specific plan area. The proposed project was designed to be compatible with these improvements.

Sacramento River Crossings Alternatives Study

In 2011, the City of Sacramento and the City of West Sacramento completed the *Sacramento River Crossings Alternatives Study* (Fehr & Peers et al. 2011). This study evaluated potential new crossings of the Sacramento River to provide connectivity to communities on both sides of the river. The study evaluates a variety of alternatives and considers land use implications, transportation effects, environmental constraints, costs, and other related issues. As an outcome of the study, West Sacramento and Sacramento are pursuing three new Sacramento River crossings: a new all-modes bridge between C Street in West Sacramento and the Railyards in Sacramento, a bicycle- and pedestrian-only bridge between the Bridge District in West Sacramento and R Street in Sacramento, and an all-modes bridge between Pioneer Bluff in West Sacramento and Broadway in Sacramento.

2.5.2 Affected Environment

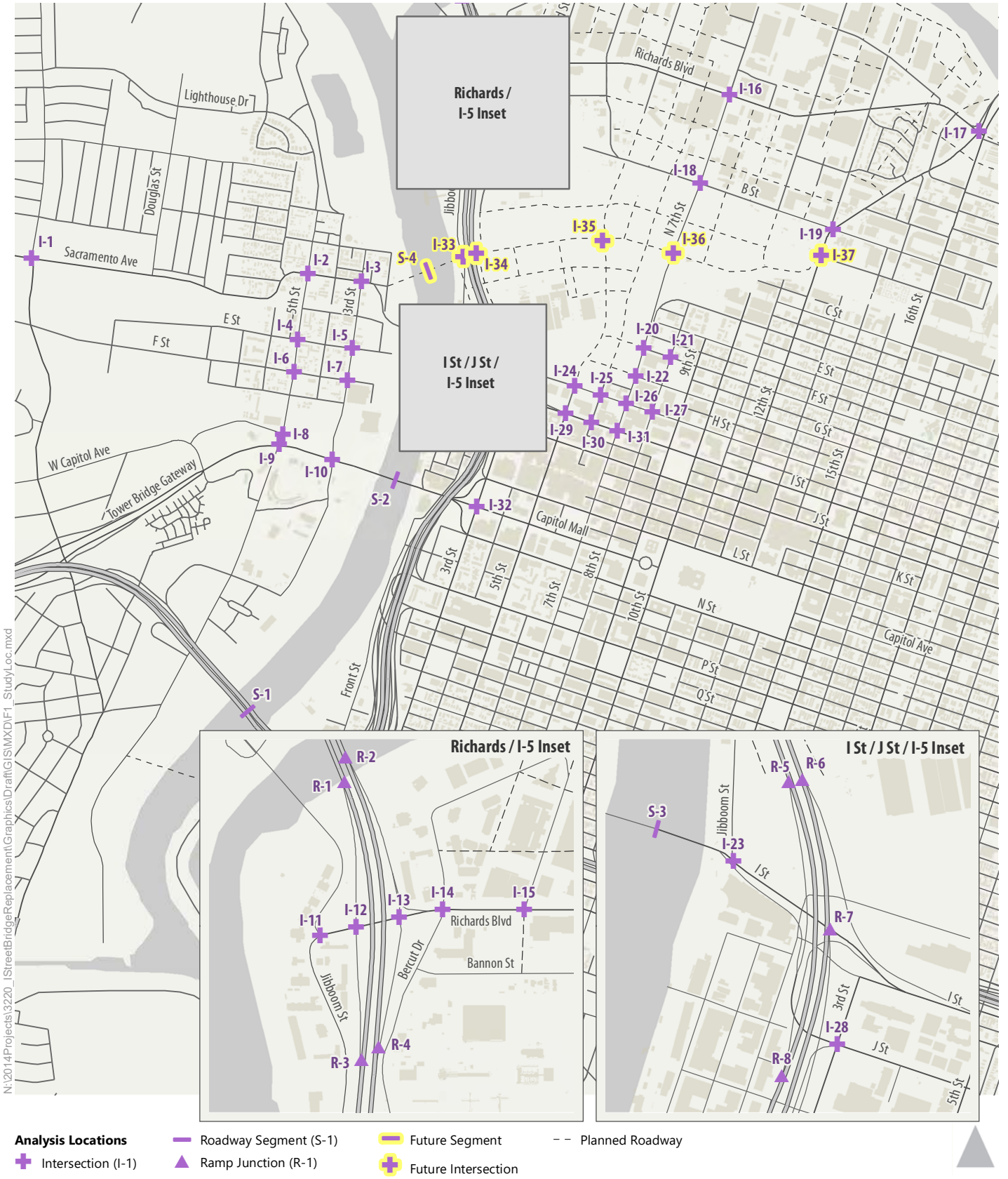
The affected environment describes the general physical and operational conditions of the roadway, transit, bicycle, and pedestrian components of the transportation system within the project study area at the time the environmental impact analysis was commenced.

The detailed traffic data and calculations, as well as existing geometrics and traffic control for each analysis location, are available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

2.5.2.1 Study Area

The project study area is shown in Figure 2.5-1; the study area was determined in consultation with the project development team and was largely based on the following evidence.

- Roadway network – a travel forecasting analysis using a modified version of the regional SACMET model that showed the distribution of project trips based on the proposed I Street Bridge replacement alignment.



N:\2014\Projects\3220_IStreetBridgeReplacement\Graphics\Draft\GIS\MXD\F1_StudyLoc.mxd

Figure 2.5-1

Analysis Locations



- Transit network – a review of existing and planned transit routes that could be influenced by a new I Street Bridge that could accommodate local and regional buses plus streetcar.
- Bicycle and pedestrian network – a review of major attractors and destinations within a 10-minute walk of the existing I Street Bridge and the proposed I Street Bridge replacement alignment.

2.5.2.2 Existing Roadway Network

The proposed project will require modification to the existing roadway network. Information on existing roadway conditions was collected from field observations; aerial photographs; and readily available information from the City of Sacramento, City of West Sacramento, and Caltrans.

Figure 2.5-2 shows the existing roadway functional classification. The functional class is organized into a hierarchy based on the purpose of the roadway, such as serving only local trips or handling higher volumes because the roadway connects directly to a freeway. Figure 2.5-3 shows the existing number of lanes for each roadway in the study area. The number of lanes is a key factor influencing the capacity of the roadway.

City of Sacramento Roadways

The Sacramento roadway network consists of a grid system of mostly two-way streets, and a few one-way couplets leading to and from the freeways.

The roadway network is efficient at distributing trips and allowing traffic to flow to the freeway access points. Traffic delays do occur during morning and evening peak periods as workers enter and leave the downtown area.

City of West Sacramento Roadways

The West Sacramento roadway network consists of a grid system of two-way streets built to serve mostly local traffic, except for the Tower Bridge Gateway, which provides a direct connection from US 50 into West Sacramento and downtown Sacramento across the Tower Bridge.

Caltrans Roadways

Tower Bridge is one of three Sacramento River bridge crossings near the study area, connecting Sacramento and West Sacramento. Tower Bridge is a lift-span bridge manually controlled to provide passage to watercraft. An improvement project that widened sidewalks on the bridge and added Class II bike lanes was completed in 2008.

I-5 is a north-south interstate freeway that runs along the western edge of the City of Sacramento, adjacent to the Sacramento River.

2.5.2.3 Methodology and Limitations

Transportation data used in the analysis of existing conditions for the above transportation system components were collected in 2014. Traffic volume counts were conducted in April 2014 during morning (i.e., between 7 and 9 a.m.) and afternoon (i.e., between 4 and 6 p.m.) peak periods for most analysis locations, although historical data also were used to supplement these data (detailed count information is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>).

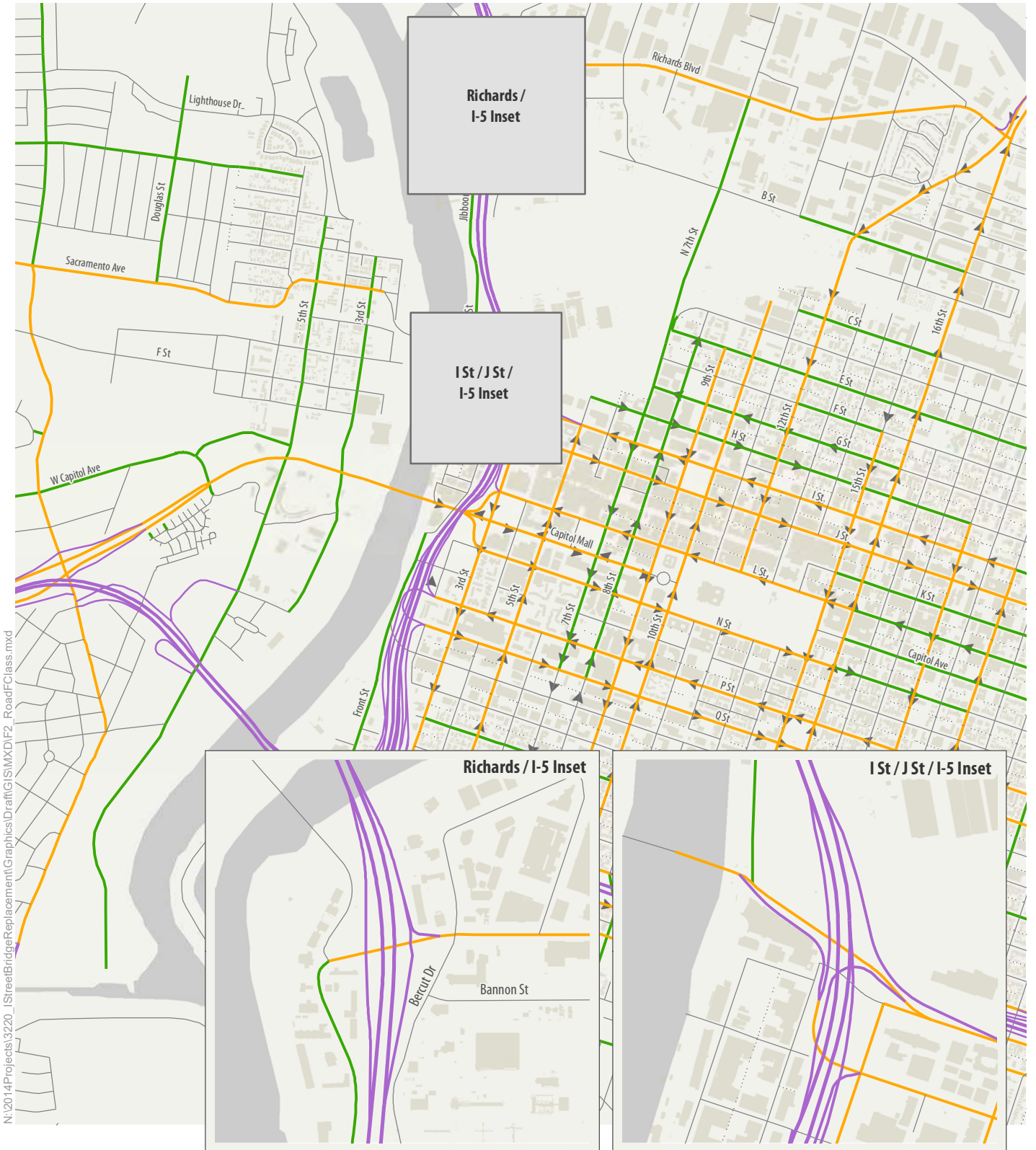
The traffic analysis evaluated the following analysis periods.

- Weekday a.m. peak hour (between 7:00 and 9:00 a.m.) – this occurs from 7:30 to 8:30 a.m. at the vast majority of study intersections.
- Weekday p.m. peak hour (between 4:00 and 6:00 p.m.) – this occurs from 4:30 to 5:30 p.m. at the majority of study intersections.

The analysis was conducted for a.m. and p.m. peak-hour conditions following the prescribed methodology for each facility type contained in the *Highway Capacity Manual* (Transportation Research Board 2010). Input variables were based on field observed data, estimates, and parameters specified by the City of Sacramento. The peak hours were determined based on the morning and evening peak-period traffic counts (Fehr & Peers 2015).

The *Highway Capacity Manual* procedures describe traffic operating conditions from a driver’s perspective based on the concept of LOS. LOS is a qualitative measure that conveys driving comfort and convenience from the driver’s perspective. As noted earlier in this section, six levels of service are used to characterize operating conditions, with letter designations ranging from A to F. LOS A represents the best operating conditions from a driver’s perspective and LOS F, the worst. Perspectives from other roadway network users such as bicyclists and pedestrians are not accounted for in this methodology.

Table 2.5-1 displays the average control delay per vehicle for each LOS threshold for signalized and unsignalized intersections. *Control delay* is the delay associated with the traffic control device assigning right-of-way at the intersection, such as a signal, stop sign, or roundabout. The LOS for signalized, all-way stop-controlled, and roundabout-controlled intersections is based on the average control delay of all vehicles traveling through the intersection. The LOS for side-street stop-controlled intersections is determined by the movement with the greatest average delay.



N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F2_RoadFCClass.mxd

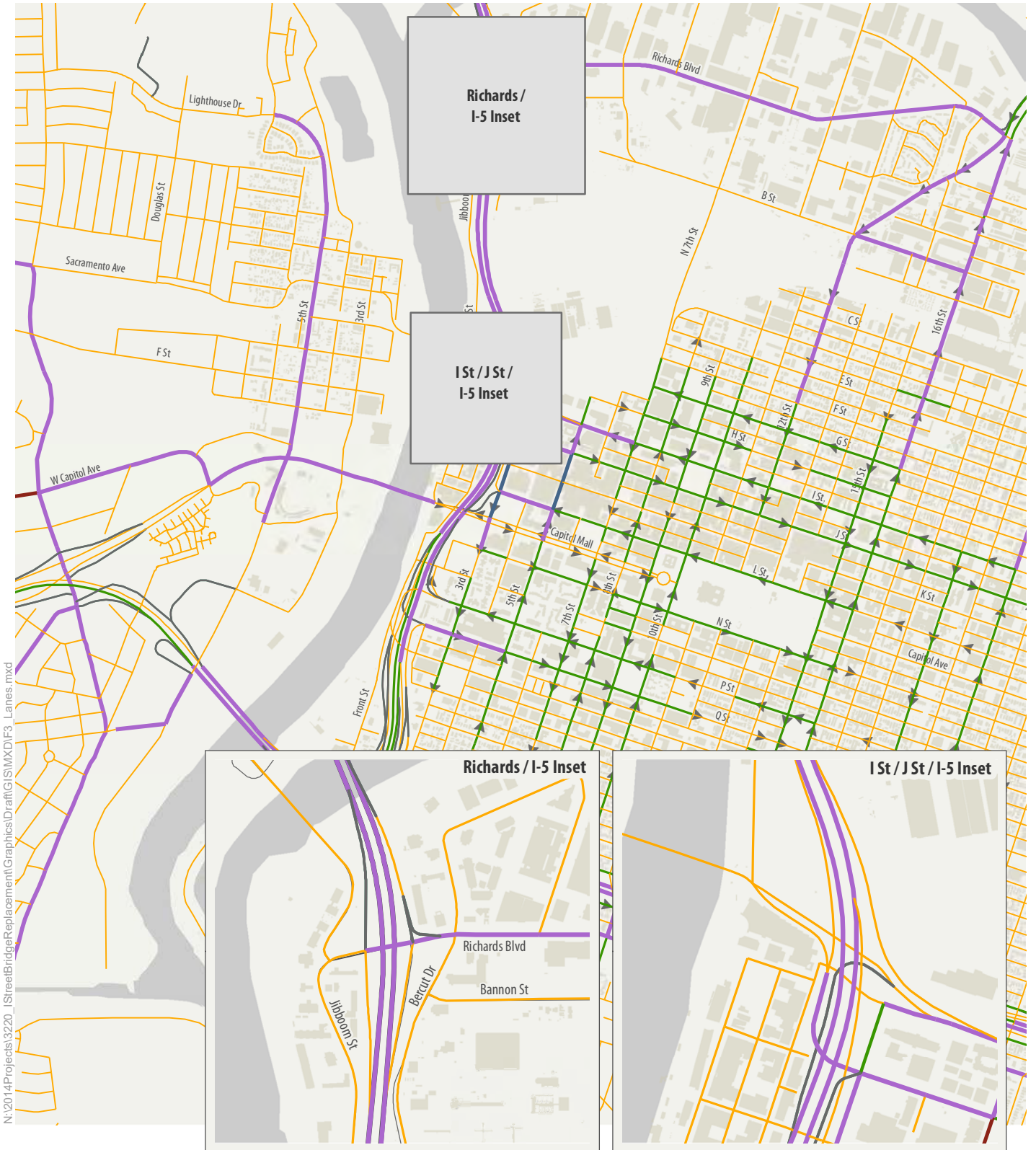
Functional Classification

- Ramp
- Local
- Arterial
- Highway
- Collector
- Alley
- ▶ One-way Street

Figure 2.5-2

Existing (2014) Functional Class





N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F3_Lanes.mxd

Number of Lanes

- 1
- 2
- 3
- 4
- 5
- 6

▶ One-way Street



Figure 2.5-3

Existing (2014) Lanes

Table 2.5-1. Level of Service Definitions for Study Intersections

Level of Service	Control Delay (seconds/vehicle)	
	Signalized	Unsignalized
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board 2010.

Given the impact of queuing and interaction between closely spaced intersections, the SimTraffic microsimulation software was used to analyze operating conditions for all study intersections under all scenarios.

Freeway facilities were analyzed using procedures described in the *Highway Capacity Manual* (Transportation Research Board 2010), with the exception of weave segments. In accordance with Caltrans policies, weave segments were analyzed using the Leisch method, which is described in the latest editions of the *Highway Design Manual* (California Department of Transportation 2012). Table 2.5-2 displays the density range associated with each LOS category for mainline segments and ramp merge/diverge movements. The Leisch method reports only LOS.

Table 2.5-2. Level of Service Definitions for Freeway Segments

Level of Service	Mainline (density) ^a	Ramp Junctions (density) ^a
A	< 11	< 10
B	> 11 to 18	> 10 to 20
C	> 18 to 26	> 20 to 28
D	> 26 to 35	> 28 to 35
E	> 35 to 45	> 35
F	> 45 or demand exceeds capacity ^b	Demand exceeds capacity ^b

Notes:

^a Density is expressed in passenger car equivalents per hour per mile per lane.

^b Level of service F occurs when freeway demand exceeds upstream (diverge) or downstream (merge) freeway segment capacity, or when off-ramp demand exceeds off-ramp capacity.

Source: Transportation Research Board 2010.

2.5.2.4 Acceptable Traffic Operating Conditions

The project has the potential to affect traffic operations across multiple jurisdictions. LOS is used to assess effects because each affected agency has established policies and thresholds related to LOS expectations. The acceptable traffic operating conditions and thresholds for determining the significance of traffic impacts for each jurisdiction in the study area are described below.

Freeway Operations

Caltrans' transportation impact study practices changed during preparation of this traffic study. At the beginning of the study, Caltrans' direction was to use vehicle LOS as the basis for determining significant impacts and to rely on thresholds established in the CSMP and TCCR for I-5 in the study area, which establish LOS F as the concept LOS. This approach was based on the *Guide for the Preparation of Traffic Impact Studies* (TISG) (California Department of Transportation 2002). In September 2016, new interim guidance for LD-IGR reviews of local development and infrastructure projects was published as described above. The new Caltrans guidance recommended a shift away from LOS to VMT as the basis for transportation impacts. Given the interim nature of the guidance, this traffic study continues to use LOS for freeway operations impacts although VMT information is included as part of the analysis. The VMT information is essential for impact analyses related to other environmental topics such as air quality and GHG, plus local agency review of the project.

Following the TISG, the LOS threshold for freeway facilities in the impact analysis was established as LOS F (with the clarification that this level is based on existing or no build operations and that any worsening of LOS F would constitute a significant impact).

Freeway impacts may include ramp junctions, weave areas, and ramp terminal intersections, as specified below.

A significant impact would occur at ramp junctions/weave areas if either of the following conditions would result.

- The traffic generated by the project degrades LOS from acceptable (without the project) to unacceptable (with the project).
- The LOS (without the project) is already (or projected to be) unacceptable and project-generated traffic leads to a perceptible worsening of the applicable performance measure for freeway operations.

A significant impact would occur at ramp terminal intersections if any of the following conditions would result.

- The traffic generated by the project degrades LOS from acceptable (without the project) to unacceptable (with the project).
- The LOS (without the project) is already (or projected to be) unacceptable and project-generated traffic leads to a perceptible worsening of the applicable performance measure for freeway operations.
- The traffic generated by the project causes off-ramp traffic to queue back to the freeway gore point or mainline, or worsens an existing/projected queuing problem.

Intersections in City of Sacramento

The *Sacramento 2035 General Plan* (City of Sacramento 2015) uses LOS D as the threshold for the roadway network, although several exceptions are provided. One exception is that facilities

located in the Core Area are allowed to operate at LOS F. This applies to study intersections 20 through 32 (see Table 2.5-4). The remaining study intersections in the City of Sacramento use the LOS D threshold.

The City of Sacramento considers traffic conditions unacceptable and that a significant impact would occur if any of the following conditions would result.

- The traffic generated by the project degrades LOS from acceptable (without the project) to unacceptable (with the project).
- The LOS (without the project) is already (or projected to be) unacceptable and project-generated traffic increases the average vehicle delay by 5 seconds or more.
- The traffic generated by the project worsens existing or no project LOS F conditions by more than 5 seconds for intersections located in the downtown Core Area.

Intersections in City of West Sacramento

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) identifies a range of LOS standards within the study area based on Policy M-3.2 below.

M-3.2 The City shall endeavor to maintain a Level of Service “C” on all streets within the city, except at intersections and on roadway segments within one-quarter mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal, or Sacramento River, where a Level of Service “D” shall be deemed acceptable, and within pedestrian oriented, high density, mixed use areas, such as the Bridge District Specific Plan area, the Washington Specific Plan area, and West Capitol Avenue from Harbor Blvd. east, where a Level of Service “E” shall be deemed acceptable. For purposes of CEQA impact analyses, Level of Service shall be considered as part of General Plan consistency.

The City’s LOS C standard would apply only to the Jefferson Boulevard/Sacramento Avenue intersection in the study area. The other West Sacramento study area intersections are located within the Washington Specific Plan area, where LOS E applies.

An impact was considered significant in the West Sacramento portion of the study area if implementing the proposed project would result in either of the following conditions.

- Deteriorate an acceptable LOS to an unacceptable LOS.
- Increase average driver delay by more than 5 seconds at an intersection that already operates at an unacceptable LOS without the project.

Transit System

Impacts on the transit system were considered significant if the proposed project would result in any of the following conditions.

- Generate ridership that exceeds the available or planned system capacity.
- Disrupt an existing facility or service.

- Interfere with a planned facility or service.

Bicycle Facilities

Impacts on bicycle facilities were considered significant if the proposed project would result in either of the following conditions.

- Disrupt an existing facility.
- Interfere with a planned facility.

Pedestrian Circulation

Impacts on pedestrian circulation were considered significant if the proposed project would result in either of the following conditions.

- Disrupt an existing facility.
- Interfere with a planned facility.

2.5.2.5 Existing Conditions

Bridge Roadway Volumes

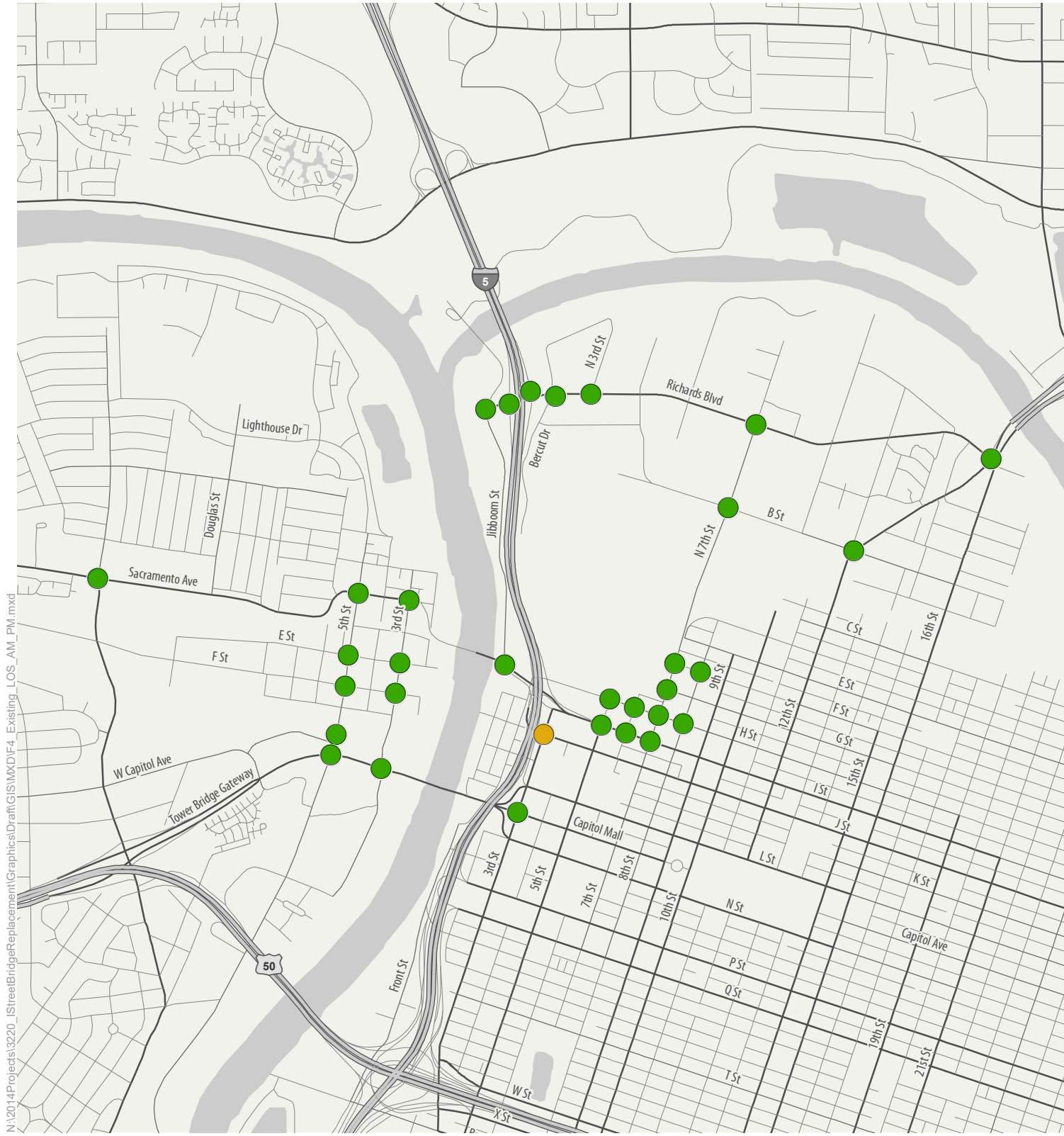
Table 2.5-3 shows existing daily traffic volume estimates across the Sacramento River, using the existing bridges at US 50, Tower Bridge, and I Street.

Table 2.5-3. Sacramento River Crossing Volume Comparison—Existing Conditions (2014)

Bridge	Daily Traffic Volume
I Street Bridge	12,730
Tower Bridge	15,670
Pioneer Bridge (US 50)	162,060
Total of Sacramento River bridge crossings	190,460

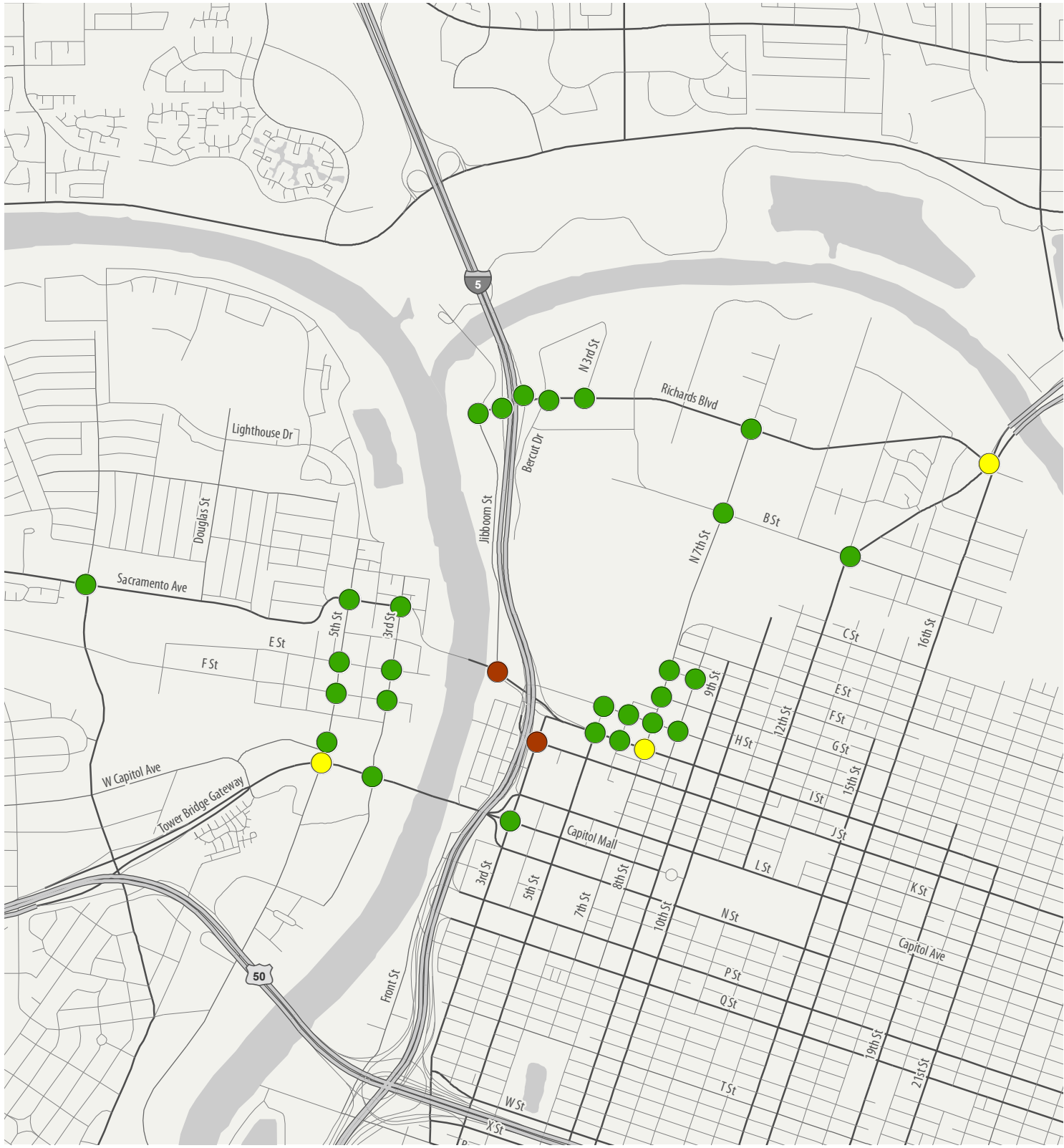
Intersection Operations

Figure 2.5-4 shows the existing a.m. and p.m. peak-hour levels of service at each of the study intersections. The LOS and average delay per vehicle are summarized in Table 2.5-4.



Level of Service
 ● A - C ● D ● E ● F

Existing AM



Existing PM

Figure 2.5-4

Existing (2014) Conditions
 Peak Hour Intersection LOS



Table 2.5-4. Peak-Hour Intersection Operations—Existing Conditions (2014)

Intersection	Traffic Control	LOS Threshold	LOS/Delay
1. Jefferson Boulevard/Sacramento Avenue	Signal	C	C/23 C/29
2. 5th Street/C Street	Signal	E	B/18 B/20
3. 3rd Street/C Street	Signal	E	B/10 B/15
4. 5th Street/E Street	Side-street stop	E	A/8 A/7
5. 3rd Street/E Street	Signal	E	A/7 A/6
6. 5th Street/F Street	Side-street stop	E	A/9 A/10
7. 3rd Street/F Street	Signal	E	A/10 A/8
8. 5th Street/West Capitol Avenue	Signal	E	C/33 C/33
9. 5th Street/Tower Bridge Gateway	Signal	E	C/34 D/45
10. 3rd Street/Tower Bridge Gateway	Signal	E	B/15 B/16
11. Jibboom Street/Richards Boulevard	Side-street stop	F	C/19 B/15
12. I-5 southbound ramps/Richards Boulevard	Signal	F	B/19 C/20
13. I-5 northbound ramps/Richards Boulevard	Signal	F	B/14 B/15
14. Bercut Drive/Richards Boulevard	Signal	F	B/12 C/21
15. North 3rd Street/Richards Boulevard	Signal	F	B/18 C/32
16. North 7th Street/Richards Boulevard	Signal	F	C/25 B/20
17. North 12th Street/North 16th Street/Richards Boulevard	Signal	F	C/32 D/38
18. North 7th Street/North B Street	Signal	F	B/14 B/17
19. North 12th Street/North B Street	Signal	F	B/15 B/17
20. North 7th Street/F Street	Signal	F	A/9 A/9
21. 8th Street/F Street	All-way stop	F	A/6 A/6
22. North 7th Street/G Street	Signal	F	A/8 A/7
23. Jibboom Street/I Street Bridge	Signal	F	C/23 F/97*
24. 5th Street/H Street	Side-street stop	F	A/9 A/7
25. 6th Street/H Street	Signal	F	A/9 A/8
26. North 7th Street/H Street	Signal	F	B/10 B/11
27. 8th Street/H Street	Signal	F	A/8 A/8

Intersection	Traffic Control	LOS Threshold	LOS/Delay
28. 3rd Street/J Street	Signal	F	E/64 F/94*
29. 5th Street/I Street	Signal	F	A/6 B/17
30. 6th Street/I Street	Signal	F	B/12 C/23
31. 7th Street/I Street	Signal	F	A/9 D/38
32. 3rd Street/Capitol Mall	Signal	F	C/24 C/21

Notes:

- ¹ Level of service (LOS)/delay is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop-controlled intersections, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁴ LOS is based on the *Highway Capacity Manual* (Transportation Research Board 2010).
- ⁵ LOS threshold is based on the respective city General Plan policies as noted under “Acceptable Traffic Operating Conditions” in the text.

The majority of the study intersections operate acceptably at LOS D or better during both the a.m. and p.m. peak hours. The intersection of 3rd Street/J Street has high delays during both peak hours due primarily to competing traffic flows entering downtown from the northbound and southbound I-5 off-ramps. During the p.m. peak hour, the intersection of Jibboom Street/I Street Bridge has high delays due to constrained lane configurations and traffic signal operation. The intersection of 5th Street/Tower Bridge Gateway operates inefficiently due to the traffic signal operations clustered with the adjacent 5th Street/West Capitol Avenue intersection. The intersection of 12th Street/16th Street/Richards Boulevard in the p.m. peak hour has high delays due to the high demand of volume headed onto State Route 160 eastbound.

Freeway Operations

Table 2.5-5 shows the existing (2014) peak-hour operations on the study freeway facilities. A number of study freeway segments operate at LOS E or F during one of the peak hours. Actual conditions along I-5 southbound may be worse than the reported LOS due to a bottleneck farther downstream at the US 50 interchange that can frequently cause queues to extend into the study area. In addition, construction on I-80 influences the amount of peak-hour traffic that can reach southbound I-5.¹ The construction activity may artificially meter peak-hour traffic demand such that the operations results in Table 2.5-5 appear better than if the construction activity was not present.

¹ I-80 was under construction in 2014 when the existing conditions data were collected. Construction was completed in late 2016/early 2017.

Table 2.5-5. Freeway Operations—Existing Conditions (2014)

Freeway Segment	Type	LOS/Density
I-5 Northbound		
1. J Street to L Street	Basic	D/27 D/28
2. L Street on-ramp	Merge	C/26 D/33
3. I Street to Richards Boulevard	Weave	C E
4. Between Richards Boulevard ramps	Basic	C/25 E/39
5. Richards Boulevard to Garden Highway	Weave	C F
I-5 Southbound		
1. Garden Highway to Richards Boulevard	Weave	E C
2. Between Richards Boulevard ramps	Basic	D/33 D/27
3. Richards Boulevard to J Street	Weave	E D
4. J Street to I Street	Basic	C/25 C/25
5. I Street on-ramp	Weave	C/26 D/32

Notes:

- ¹ Level of service (LOS)/density is reported for basic and merge segments in the a.m. peak hour (top) and p.m. peak hour (bottom) for each freeway segment.
- ² Density was measured in passenger car equivalents per lane per mile. Density was not calculated for weave segments or any segment with LOS F.
- ³ Freeway operations were analyzed using the *Highway Capacity Manual* (Transportation Research Board 2010) freeway analysis procedures. Weave segments were analyzed using the Leisch method.

Freeway operations also can be affected by I-5 off-ramp intersections with local streets at J Street and Richards Boulevard. Therefore, off-ramp queues are evaluated in this analysis. Table 2.5-6 shows the study off-ramp queues during the a.m. and p.m. peak hours. Despite some queues extending several hundred feet, all study off-ramp queues remain within the available storage during both peak hours.

Table 2.5-6. Off-Ramp Queues—Existing Conditions (2014)

Off-Ramp	Storage Length (feet)	Maximum Queue Length (feet)
I-5 Northbound		
Off-ramp to Richards Boulevard	950	225
		125
I-5 Southbound		
Off-ramp to Richards Boulevard	1,050	275
		200
Off-ramp to J Street	1,475	600
		700

Notes:

¹ Maximum queue length is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each off-ramp.

² Maximum queue length was determined using SimTraffic microsimulation software. Reported queues were rounded to the nearest 25 feet.

Transit System

Local transit service is provided by the Sacramento Regional Transit District and the Yolo County Transportation District. Multiple other transit agencies offer commuter service into downtown Sacramento, including Elk Grove Transit, Roseville Transit, El Dorado Transit, Yuba-Sutter Transit, Folsom Stage Lines, the San Joaquin Regional Transit District, and Amador Regional Transit System.

The Sacramento Valley Station also is located within the study area, just north of I Street between 3rd and 5th Streets. The station is served by two Amtrak California regional routes, the Capitol Corridor (San Jose-Sacramento-Auburn) and the San Joaquins (Sacramento-Bakersfield).

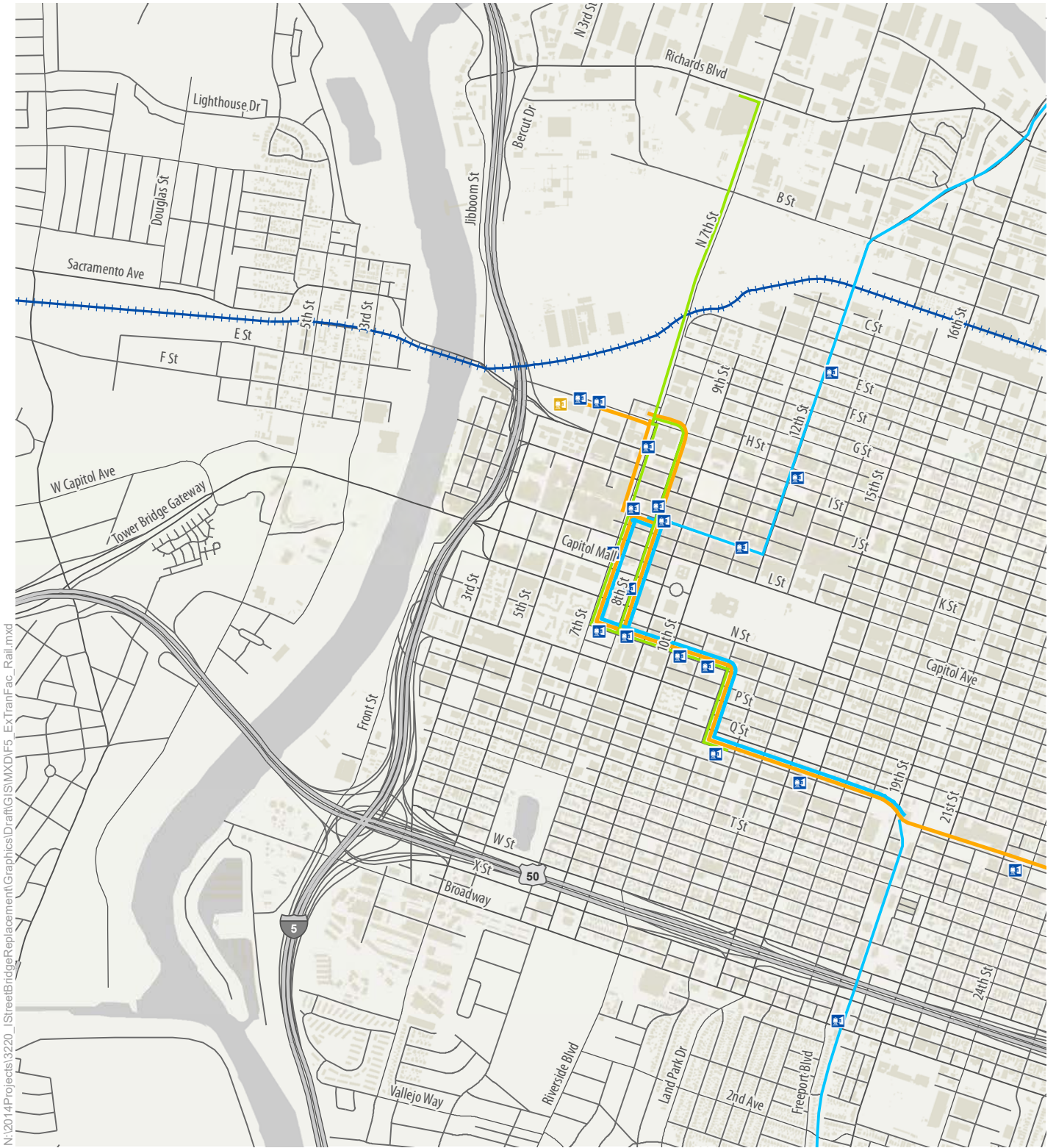
Figure 2.5-5 shows the existing rail transit service and Figure 2.5-6 shows the regional bus transit routes and facilities in the study area.

Bicycle Facilities

The following types of bicycle facilities exist in the study area, as shown in Figure 2.5-7.

- Multi-use paths (Class I) – are paved trails that are separated from roadways, and allow for shared use by both cyclists and pedestrians.
- On-street bike lanes (Class II) – are designated for use by bicycles by striping, pavement legends, and signs.
- On-street bike routes (Class III) – are designated by signage for shared bicycle use with vehicles but do not necessarily include any additional pavement width.

No bicycle facilities exist on the current I Street Bridge, forcing bicyclists to share narrow travel lanes (see photo below).



N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F5_Ext\TranFac_Rail.mxd

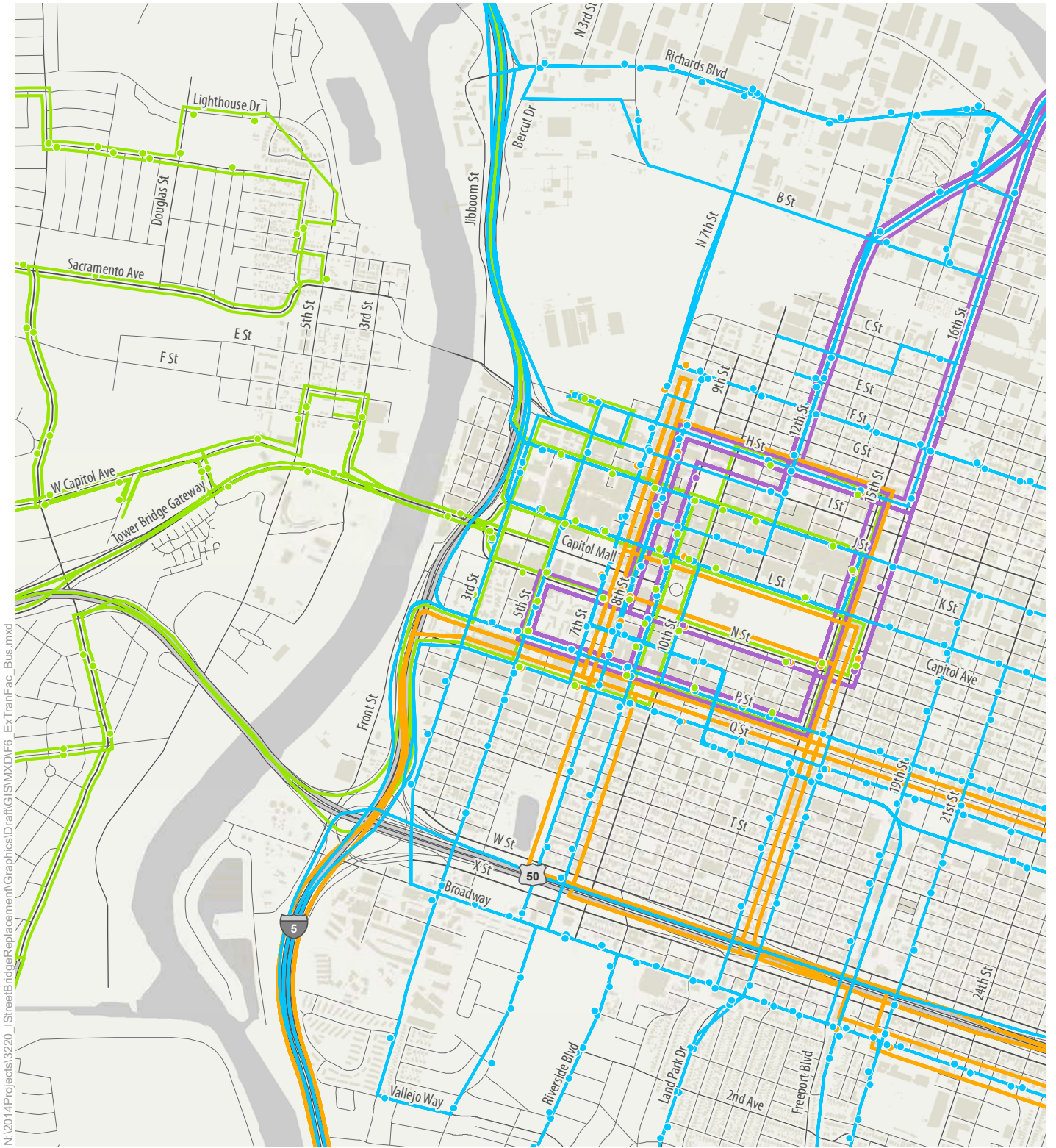
- LRT Route
- Blue
- Gold
- Green
- Capitol Corridor
- Amtrak Station
- LRT Station



Figure 2.5-5

Existing (2014) Rail Transit Facilities





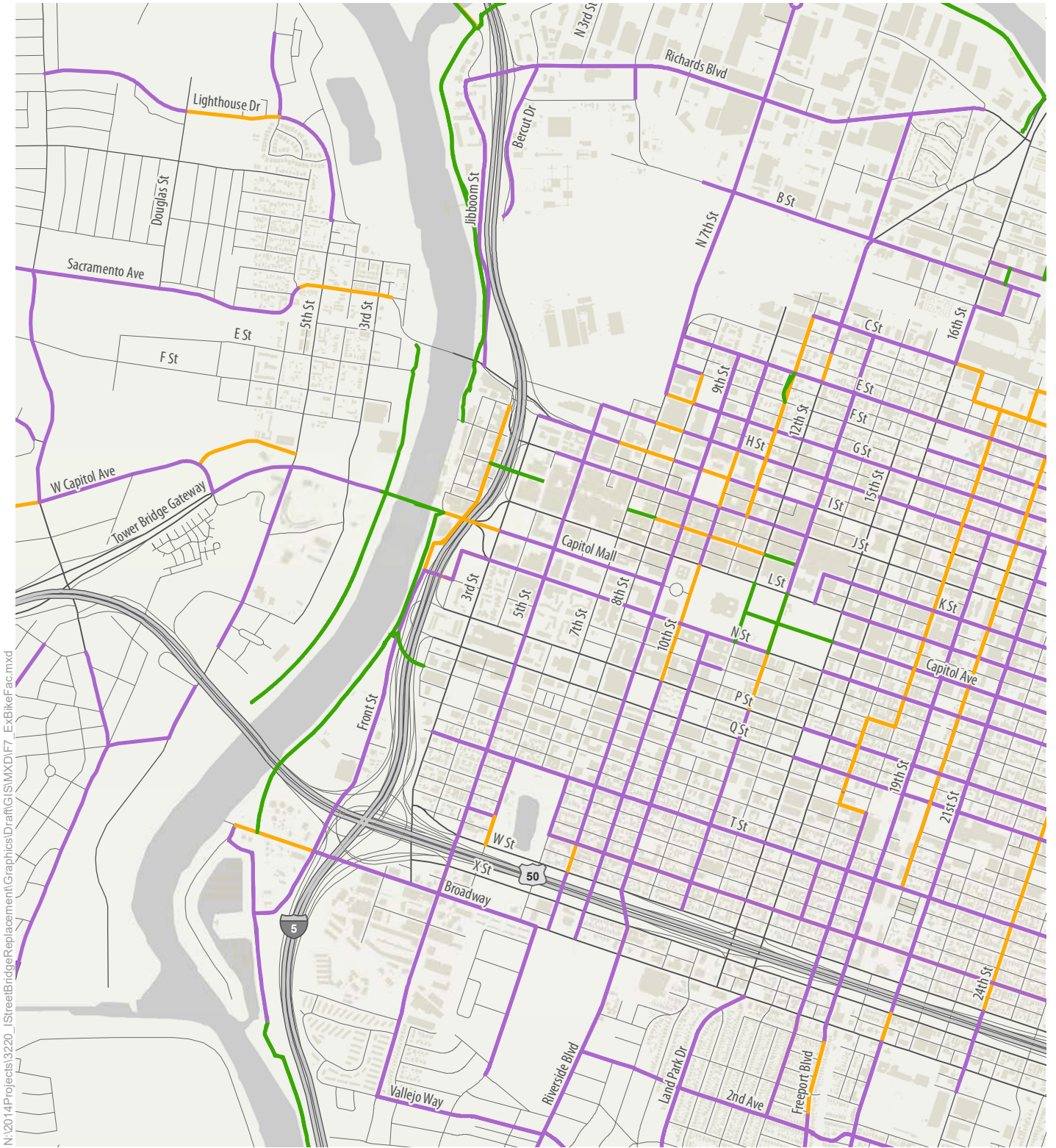
N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F6_Ext\TranFac_Bus.mxd

- YoloBus Stop
- YoloBus Route
- SacRT Stops
- SacRT Route
- Roseville Transit Stops
- Roseville Transit Route
- eTran Stops
- eTran Route

Figure 2.5-6

Existing (2014) Transit Bus Routes & Facilities





N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F7_ ExBikeFac.mxd

- Class 1 Bike Path
- Class 2 Bike Lane
- Class 3 Bike Route

Figure 2.5-7

Existing (2014) Bicycle Facilities





Pedestrian Facilities

The existing pedestrian system within the study area is shown in Figure 2.5-8. Sidewalks and crosswalks exist along the majority of the roadways in the study area. The existing I Street Bridge has narrow sidewalks that do not comply with current design standards (see photo above). Because vehicle travel lanes also are narrow, bicyclists often will ride on the sidewalk and create conflicts with pedestrians.

2.5.3 Environmental Consequences

2.5.3.1 Build Alternatives

Both of the build alternatives include a new bridge between C Street in West Sacramento and Railyards Boulevard in Sacramento, as shown in Figure 2.5-9. The following components differentiate the two alternatives.

- Alternative 1 – Signals for the Railyards Boulevard intersections at Jibboom Street and Bercut Drive
- Alternative 2 – Roundabouts for the Railyards Boulevard intersections at Jibboom Street and Bercut Drive

Because the two build alternatives differ only on the control type at the intersections of Jibboom Street and Bercut Drive with Railyards Boulevard, traffic operations vary only in the local area

near these intersections. A separate intersection operations analysis for Alternative 2 was conducted for the bridge approach intersections from 3rd Street/C Street in West Sacramento to 7th Street/Railyards Boulevard in Sacramento. Operations beyond this area would be the same as Alternative 1.

2.5.3.2 Travel Forecasts

The SACMET regional travel forecasting model developed and maintained by SACOG was used to forecast traffic volumes at the study locations. This model has a base year of 2008 and a future horizon year of 2035 based on the MTP/SCS 2035. The more recent MTP/SCS adopted in 2016 extended the horizon year to 2036 with little change in the long-range population and employment growth forecasts as well as limited changes in the planned transportation network improvements. The MTP/SCS 2035 included approximately 3.09 million people and 1.32 million jobs in the region by 2035. The current MTP/SCS projects about 3.08 million people and 1.33 million jobs by 2036. Modifications to the model were made as part of this project to enhance the model's ability to accurately forecast changes to travel patterns in the study area, which represents a sub-area of the SACOG region.

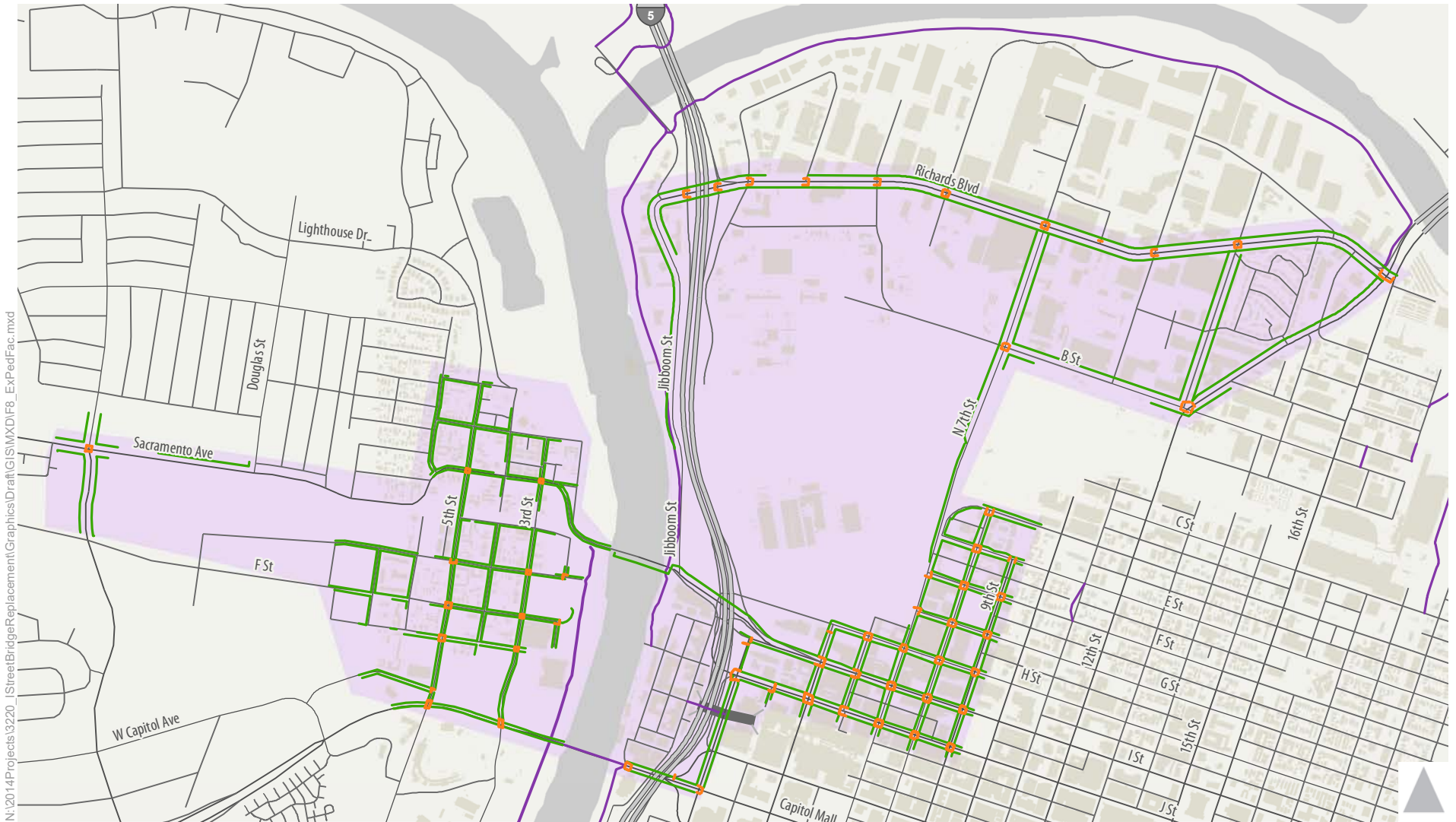
The model had previously been modified for the following projects.

- City of Sacramento General Plan Update
- American River Crossing Study
- Entertainment and Sports Complex EIR
- Downtown/Riverfront Streetcar Plan
- McKinley Village EIR

The additional modifications for this project included the following refinements.

- **Additional Land Use Detail** – Transportation analysis zones (TAZs) were added to the model to allow for more accurate loading of project trips to the transportation network. Land use also was modified to better represent planned projects in the study area, including the new Entertainment and Sports Complex.
- **Refined TAZ Loading** – Connections between the TAZ network and the transportation network were reviewed and adjusted as necessary to ensure that trips accurately loaded onto the transportation network.
- **Additional Transportation Network Detail** – Detail was added to the transportation network, particularly within the vicinity of the planned streetcar alignment.
- **Transportation Network Coding** – The coding of attributes in the model transportation network was reviewed for accuracy and adjusted as appropriate.

As a result of these changes and the forecasting process, the modified model produces forecasts approximating 2020 and 2040 conditions within the study area. Some analysis locations in the study area also were included in the recent *Railyards Specific Plan Update, KP Medical Center, MLS Stadium, & Stormwater Outfall Draft Subsequent Environmental Impact Report (Railyards*

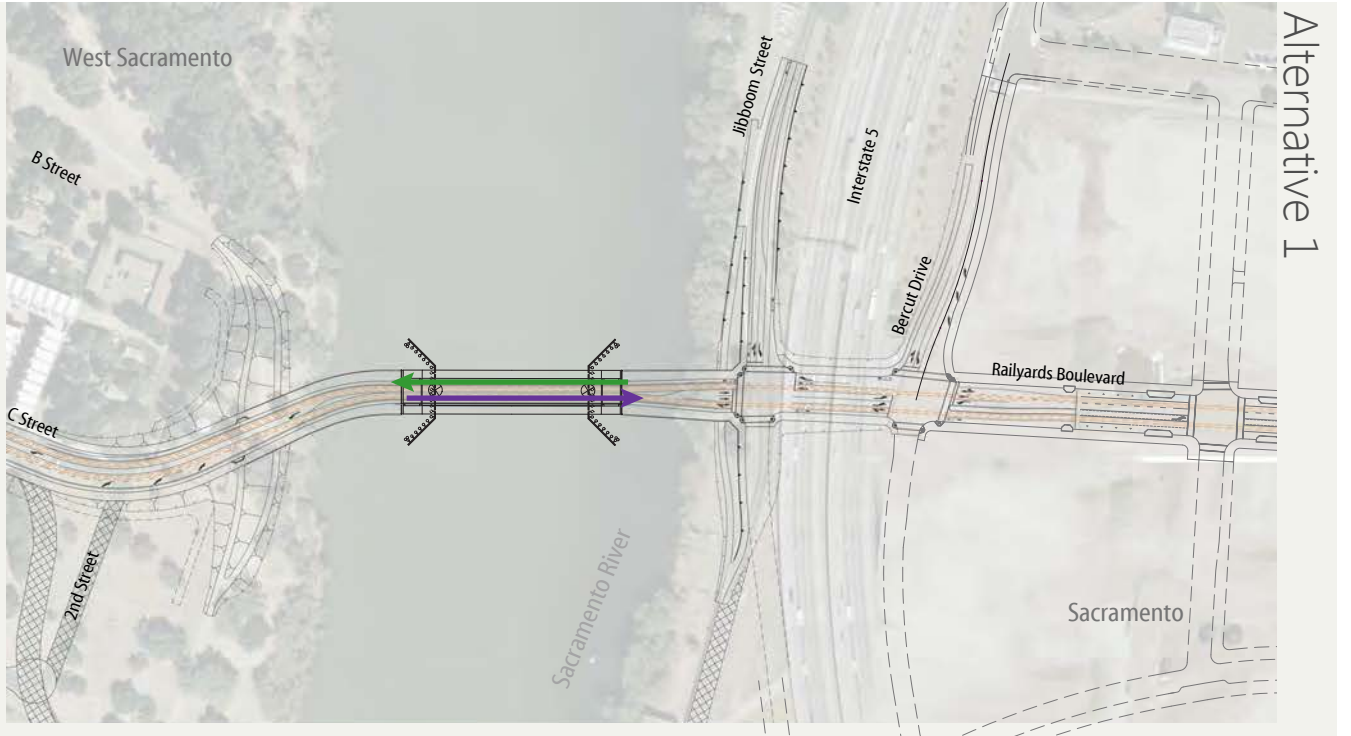


N:\2014\Projects\3220 - StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F8_ ExPedFac.mxd

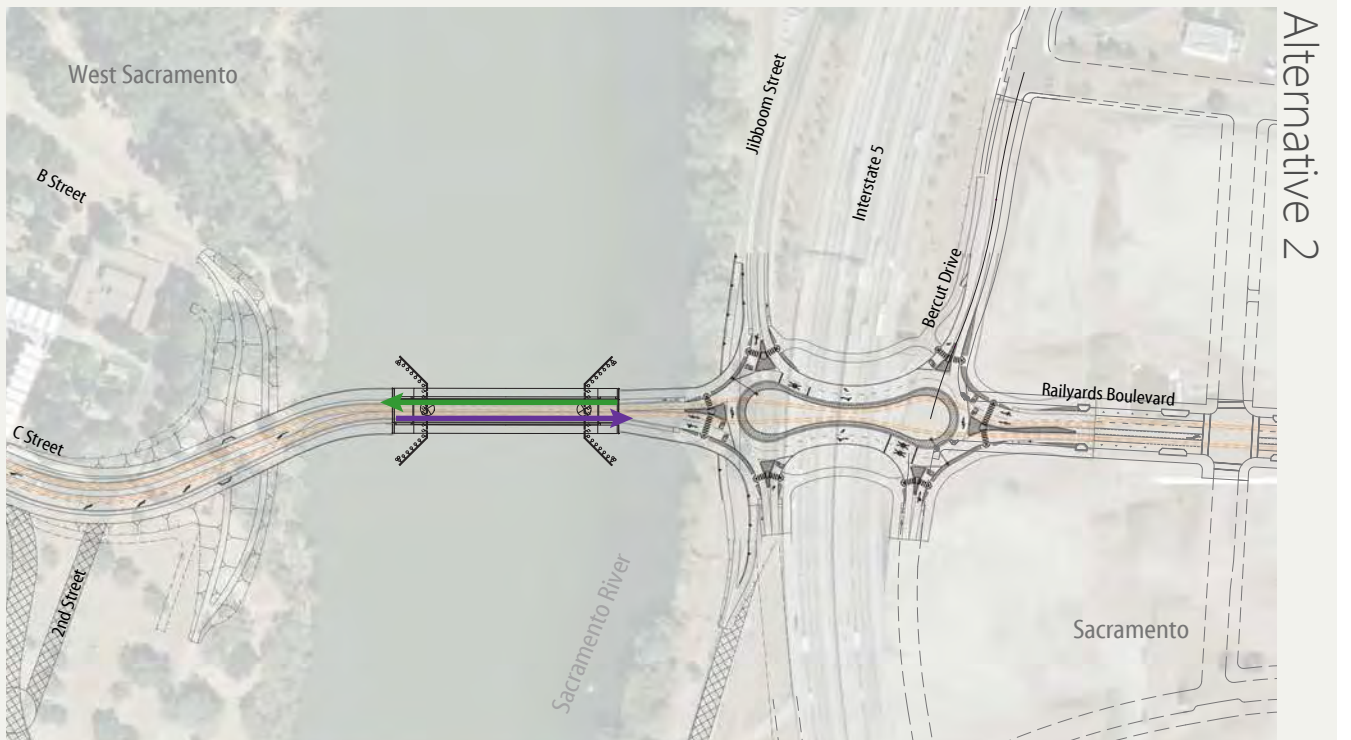
- Crosswalk
- Sidewalk
- Bicycle/Pedestrian Path
- Existing Roadway
- Study Area Pedestrian Corridor
- Pedestrian Undercrossing



Figure 2.5-8
Existing (2014)
Pedestrian Facilities



Alternative 1



Alternative 2

Alternative 1 - Signalized intersection at Railyards Boulevard at Jibboom Street and Bercut Drive.
 Alternative 2 - Roundabout intersection at Railyards Boulevard at Jibboom Street and Bercut Drive.

Roadway alignment provided by Mark Thomas & Company, Inc.

Not to Scale




-  1 Lane Westbound
-  1 Lane Eastbound
-  Streetcar Alignment



Figure 2.5-9
Build Alternatives

EIR) (City of Sacramento 2016). Reviewers interested in these locations should note that the traffic volume forecasts in the Railyards EIR relied on the SACMET model version developed for the I Street Bridge Replacement Project. As such, it contains the same background regional 2035 SACOG population and employment growth forecasts outside the study area as this traffic study. Within the Sacramento Railyards Specific Plan area, however, the Railyards EIR forecasting approach used higher levels of population and employment growth to capture expected build-out development levels. This approach was used to help size the ultimate roadway lanes within the plan area and was recognized as potentially overstating traffic volumes for a specific cumulative horizon year such as 2040. Another difference is that the specific plan recommends modifications in the plan area roadway network, such as no longer including the planned extension of 10th Street.

A comparison of cumulative daily traffic volumes on the I Street Bridge confirmed that the Railyards EIR forecast is slightly higher at 34,600 compared to 33,030 in Table 2.5-12 below. The 33,030 value is tied to the cumulative 2040 horizon year, while the 34,600 value represents conditions beyond the 2040 horizon year. In this example, the volume difference is not sufficient to change the planned roadway network within the study area, especially since the roadway network is not sized solely based on traffic volumes but is heavily influenced by other factors such as the land use context and the modal preferences for transit, bicycling, and walking in both cities. To verify that the difference in forecasts did not change the impact findings or mitigation in either study, a compatibility check was performed. The Railyards EIR does not identify mitigation measures beyond those that are proposed in this EIR.

More details about the model refinements and validation are included in Appendix F.

2.5.3.3 Existing (2014) Plus-Project Assessment

While the new bridge would not be constructed and open to traffic prior to 2020, this discussion provides some context for how the bridge may influence existing travel patterns. The basis for these changes is a travel forecasting analysis conducted using the modified base year SACMET model described above. The analysis reveals how existing traffic patterns could change in response to the new bridge.

Figure 2.5-10 shows the travel pattern of vehicle trips using the new bridge. The figure highlights the routes and roadways projected to be used by these trips, along with a bandwidth that represents the volume of traffic. Figure 2.5-11 shows the difference in daily volumes between the existing condition and when the new bridge is introduced.

2.5.3.4 Opening Year (2020) Traffic Operations

This section describes the impacts of alternatives under opening year 2020 conditions. Notable changes from existing conditions to both the no build and build alternatives in 2020 are the expected construction and opening of new roadways, including Railyards Boulevard from 7th Street to Bercut Drive, 5th Street to Railyards Boulevard, and 6th Street to Railyards Boulevard, in addition to the Entertainment and Sports Center in downtown Sacramento. Other changes may occur depending on available funding for transportation projects and market

conditions for land use development, which would largely be captured under the cumulative conditions analysis if they occur.

Bridge Roadway Volumes

Table 2.5-7 displays the daily traffic volume across the Sacramento River at each bridge under opening year 2020 conditions. The overall increase in demand volume crossing the river between existing conditions and year 2020 is approximately 20 percent. Comparing the No Build Alternative to the build alternatives, a new I Street Bridge would be able to serve a higher volume than the existing I Street Bridge. However, a portion of these additional trips would simply be shifted volume from the other bridges. A little over 5,000 new vehicle trips would be induced by the project.

Table 2.5-7. Daily Bridge Volumes, Opening Year (2020)

Bridge	Existing Conditions	2020 No Build	2020 Alternatives 1 & 2
I Street Bridge	12,730	17,330	25,430
Tower Bridge	15,670	28,400	27,770
Pioneer Bridge (US 50)	162,060	180,840	178,920
Total of Sacramento River bridge crossings	190,460	226,570	232,120
Difference from existing conditions	NA	36,110	41,660

NA = not applicable

Intersection Operations

The peak-hour intersection LOS operations under opening year 2020 are shown in Table 2.5-8 and in Figures 2.5-12a and 2.5-12b to support the discussion of avoidance and minimization measures below. An operational deficiency occurs when the LOS threshold is exceeded and the conditions are worse than the No Build Alternative. In general, an increase in demand volume throughout the network causes many of the intersections to operate worse than under existing conditions. Also, the opening of roadways of Railyards Boulevard, 5th Street, and 6th Street will shift some of the travel patterns to these new routes.



N:\2014\Projects\3220_I Street Bridge Replacement\Graphics\Draft\GIS\MXD\F10_ExpPP_Distribution\IStreetBridge.mxd

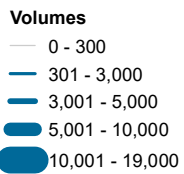
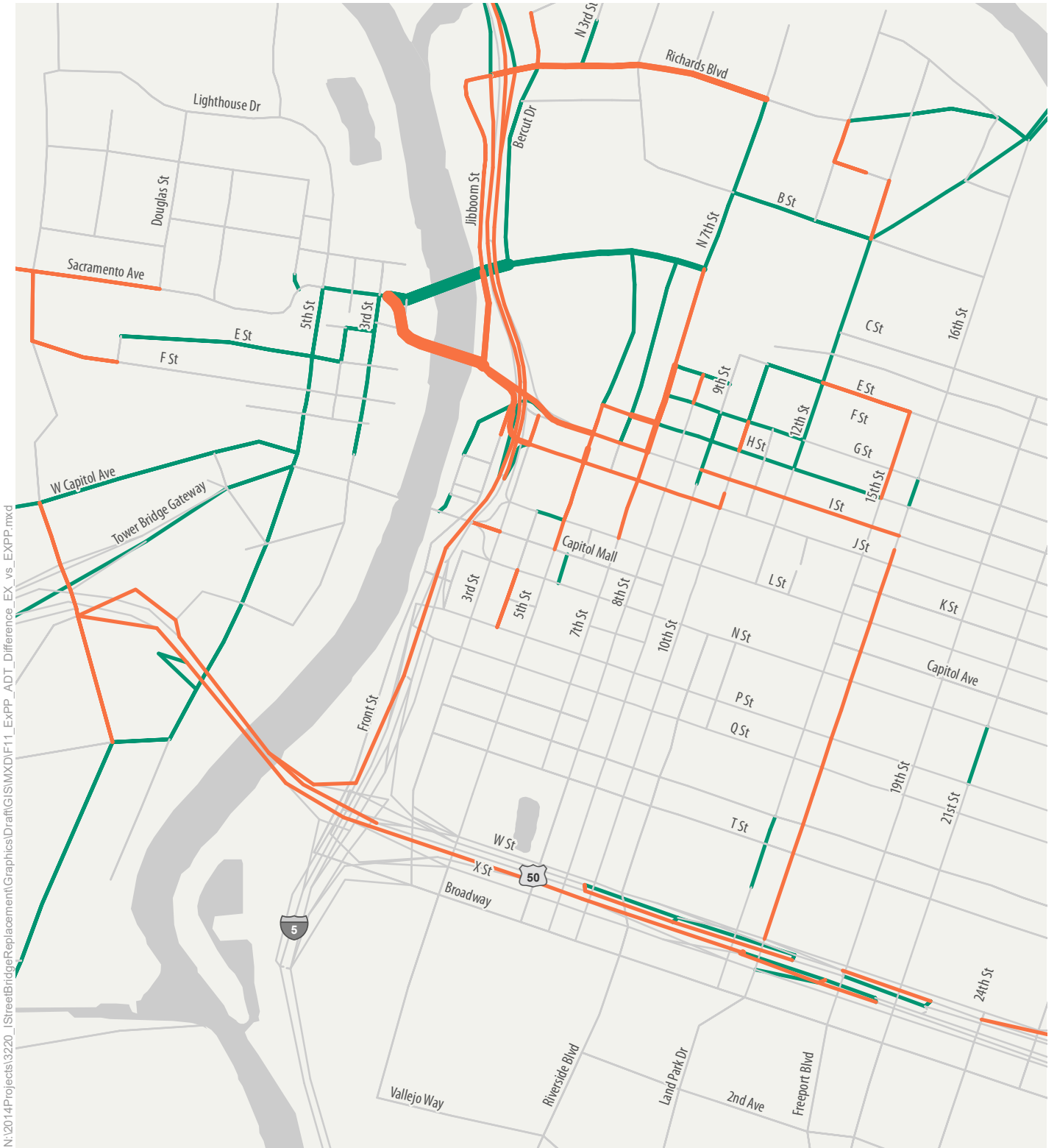


Figure 2.5-10

Existing Plus Project -
Distribution of Daily Traffic Volume
Using New I Street Bridge





N:\2014\Projects\3220_1\StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F11_ExpP_ADT_Difference_EX_vs_EXPP.mxd

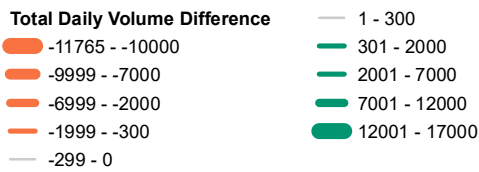
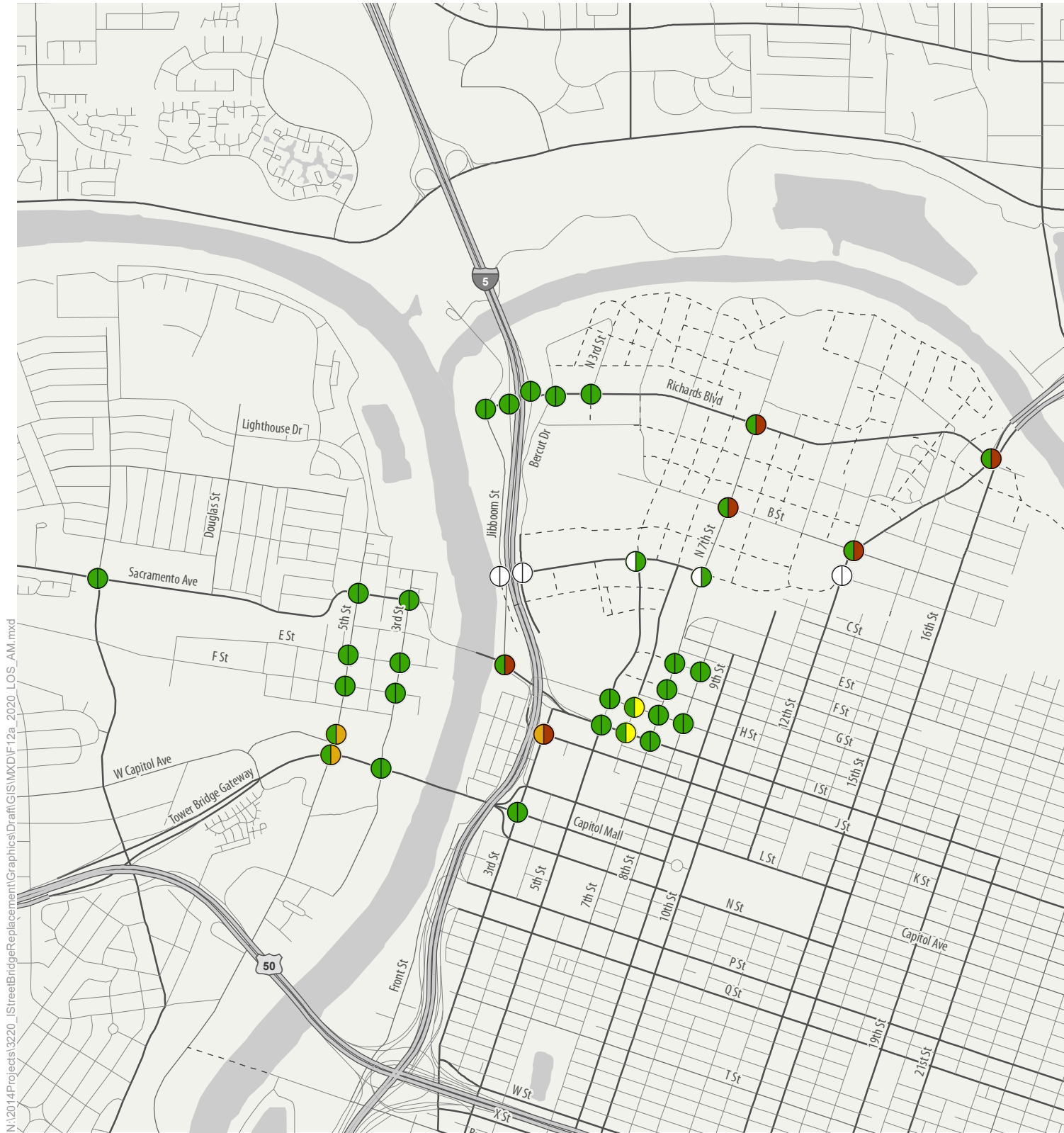


Figure 2.5-11

Existing Plus Project -
 Total Daily Volume Difference between Existing Condition and
 Existing Plus Project (New I Street Bridge)

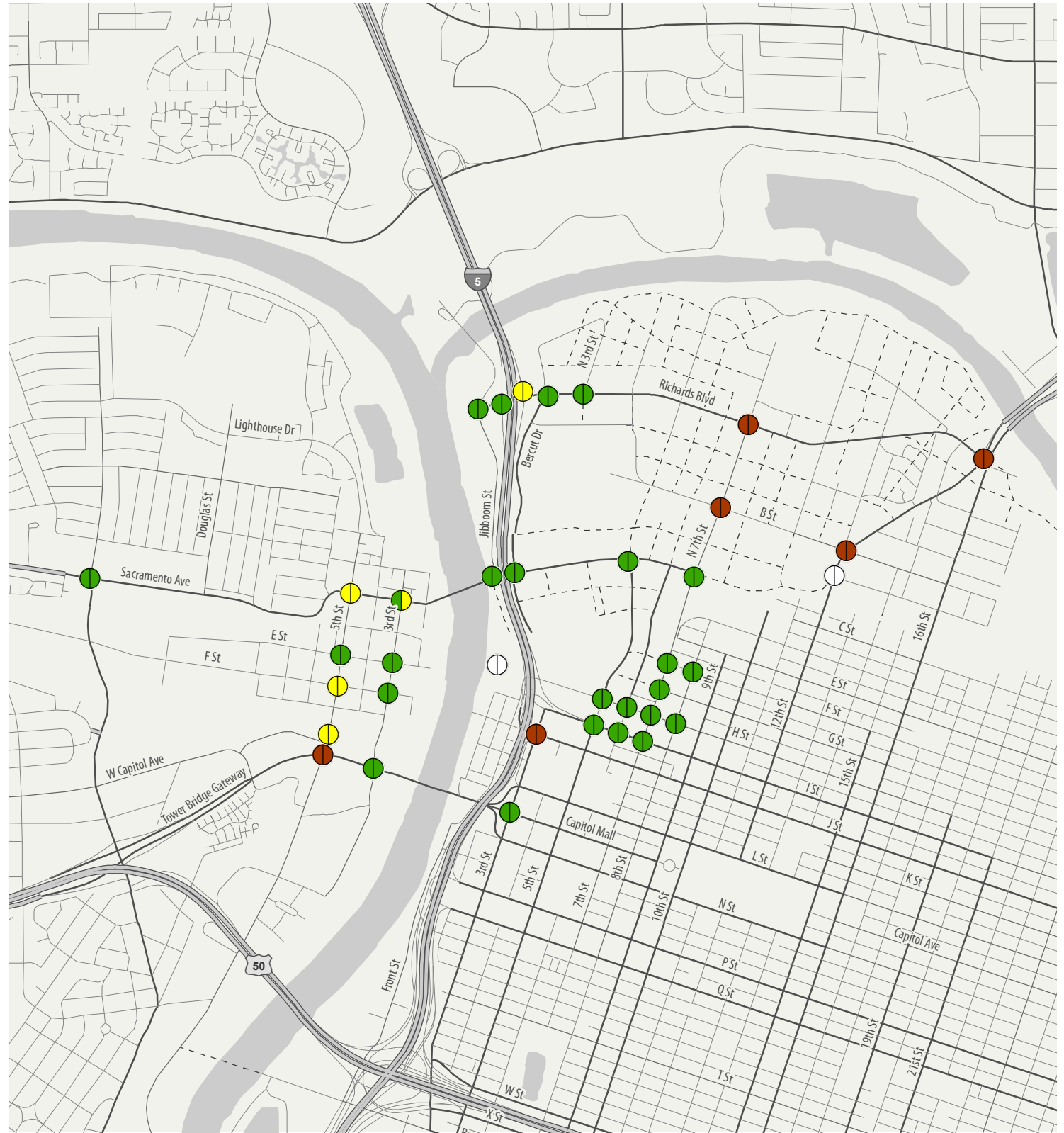




Level of Service
 ● A - C ● D ● E ● F
 ○ Intersection Does Not Exist in Analysis Year
 - - Planned Road

Existing (2014) & No Build (2020)

Existing No Build

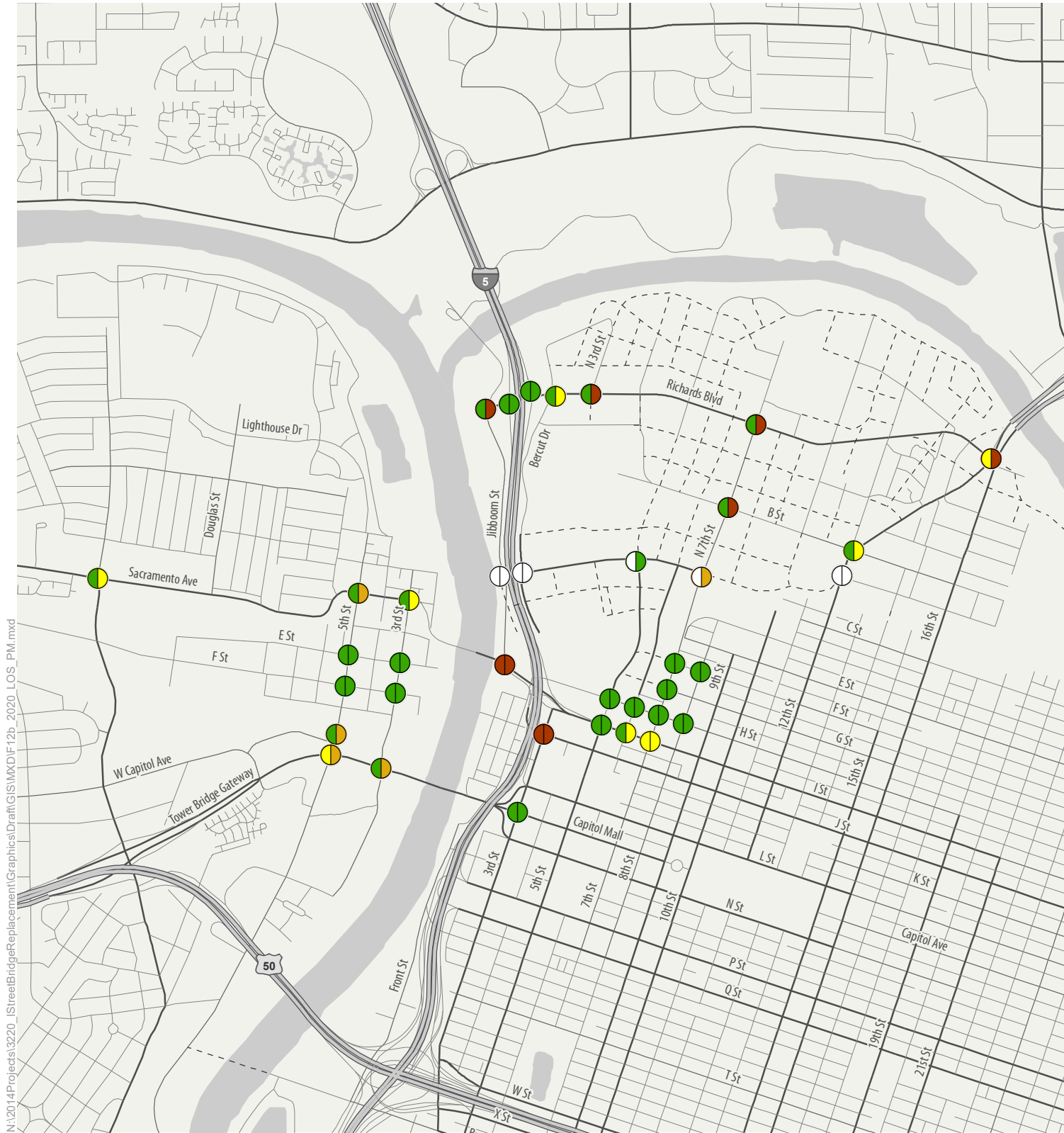


Build (2020)

Alternative 1 Alternative 2



Figure 2.5-12a
 2014 Existing Conditions & 2020 Alternatives
 AM Peak Hour Intersection LOS



Level of Service
 ● A - C ● D ● E ● F
 ○ Intersection Does Not Exist in Analysis Year
 - - Planned Road

Existing (2014) & No Build (2020)

Existing No Build



Build (2020)
 Alternative 1 Alternative 2

Figure 2.5-12b
 2014 Existing Conditions & 2020 Alternatives
 PM Peak Hour Intersection LOS



Table 2.5-8. Peak Hour Intersection Operations, Opening Year (2020)

Intersection	Traffic Control	LOS/Delay			
		Existing Conditions	2020 No Build	2020 Alternative 1	2020 Alternative 2
1. Jefferson Boulevard/ Sacramento Avenue	Signal	C/23 C/29	C/28 D/36	C/28 C/34	
2. 5th Street/ C Street	Signal	B/18 B/20	C/22 E/71*	D/41 D/35	D/46 C/31*
3. 3rd Street/ C Street	Signal	B/10 B/15	B/13 D/37*	C/29 C/24	D/36 B/15*
4. 5th Street/ E Street	Side-street stop	A/8 A/7	B/12 B/15	C/23 E/39	
5. 3rd Street/ E Street	Signal	A/7 A/6	B/11 B/11	B/13 B/12	
6. 5th Street/ F Street	Side-street stop	A/9 A/10	B/14 C/16	D/35 E/38	
7. 3rd Street/ F Street	Signal	A/10 A/8	B/12 B/10	B/13 B/11	
8. 5th Street/ West Capitol Avenue	Signal	C/33 C/33	E/71* E/58*	D/52* D/50*	
9. 5th Street/ Tower Bridge Gateway	Signal	C/34 D/45	E/78* E/68*	F/89* E/79*	
10. 3rd Street/ Tower Bridge Gateway	Signal	B/15 B/16	C/26 E/62*	C/23* E/70*	
11. Jibboom Street/ Richards Boulevard	Side-street stop	C/19 B/15	B/13 F/68*	A/9 B/14	
12. I-5 southbound ramps/ Richards Boulevard	Signal	B/19 C/20	E/57* C/28*	D/36* C/24*	
13. I-5 northbound ramps/ Richards Boulevard	Signal	B/14 B/15	B/17 B/17*	C/30* B/15*	
14. Bercut Drive/ Richards Boulevard	Signal	B/12 C/21	B/13 D/47*	D/43* D/53*	
15. North 3rd Street/ Richards Boulevard	Signal	B/18 C/32	B/17 F/126*	E/66* F/125*	
16. North 7th Street/ Richards Boulevard	Signal	C/25 B/20	F/116 F/142*	F/111 F/146*	
17. North 12th Street/North 16th Street Richards Boulevard	Signal	C/32 D/38	F/85* F/88*	F/87* F/86*	
18. North 7th Street/ North B Street	Signal	B/14 B/17	F/127* F/88*	F/148* E/77*	
19. North 12th Street/ North B Street	Signal	B/15 B/17	F/92 D/40	F/85 D/42	
20. North 7th Street/ F Street	Signal	A/9 A/9	B/14 B/12	B/14 B/13	
21. 8th Street/ F Street	All-way stop	A/6 A/6	A/8 A/7	A/8 A/7	
22. North 7th Street/ G Street	Signal	A/8 A/7	A/7 A/7	A/8 A/7	

Intersection	Traffic Control	LOS/Delay			
		Existing Conditions	2020 No Build	2020 Alternative 1	2020 Alternative 2
23. Jibboom Street/ I Street Bridge	Signal	C/23 F/97*	F/90* F/114*	-	
24. 5th Street/ H Street	Side-street stop (signalized) ⁵	A/9 A/7	B/10 B/13*	A/10 B/15*	
25. 6th Street/ H Street	Signal	A/9 A/8	D/36* A/9*	B/12 B/12*	
26. North 7th Street/ H Street	Signal	B/10 B/11	B/15 B/10*	B/13 A/9	
27. 8th Street/ H Street	Signal	A/8 A/8	A/9 A/9*	A/9 A/9	
28. 3rd Street/ J Street	Signal	E/64 F/94*	F/109* F/100*	F/94* F/93*	
29. 5th Street/ I Street	Signal	A/6 B/17	A/10 C/35*	A/8 C/27*	
30. 6th Street/ I Street	Signal	B/12 C/23	D/46* D/49*	B/18 D/46*	
31. 7th Street/ I Street	Signal	A/9 D/38	B/19 D/39*	B/17 D/37*	
32. 3rd Street/ Capitol Mall	Signal	C/24 C/21	C/26* C/27*	C/27* D/39*	
33. Jibboom Street/ Railyards Boulevard	Signal (roundabout) ⁶	-	-	B/11 B/17	B/14 C/23*
34. Bercut Drive/ Railyards Boulevard	Signal (roundabout) ⁶	-	-	B/18 C/34	A/6 F/137*
35. North 5th Street/ Railyards Boulevard	Signal	-	B/18 B/19	B/14 B/11	B/11* B/16
36. North 7th Street/ Railyards Boulevard	Signal	-	C/22 E/70*	C/30 E/71*	C/30 E/70
37. North 12th Street/ Railyards Boulevard	-	-	-	-	

Notes:

- ¹ Level of service (LOS)/delay is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop-controlled intersections, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ Traffic control is side-street stop-controlled under existing conditions and signalized in all 2020 scenarios for this noted intersection.
- ⁶ Traffic control is signalized in Alternative 1 and roundabout in Alternative 2 for these noted intersections.
- ⁷ LOS is based on the *Highway Capacity Manual* (Transportation Research Board 2010).

Under the no build scenario, the constraints at the intersection of Jibboom Street/I Street Bridge cause a ripple effect of queuing and delay at the surrounding bridge approach intersections. The lane configurations limit the efficiency of the traffic signal operations even more than existing conditions due to the higher demand volume.

The intersection of 5th Street/Tower Bridge Gateway and 5th Street/West Capitol Avenue remains clustered under this analysis year. The increase in demand volume creates queuing that increases delay at nearby intersections, notably at 3rd Street/Tower Bridge Gateway.

Under the build scenarios, the higher capacity of the new bridge allows more traffic to flow from the bridge to westbound on Tower Bridge Gateway. This travel pattern has multiple routes: C Street to 5th Street, 3rd Street to Tower Bridge Gateway, or any of the local roadways within the Washington District neighborhood. This added traffic within the local neighborhood causes an increase in westbound-left movements at the side-street stop-controlled intersections of 5th Street/E Street and 5th Street/F Street.

Intersection operations under all scenarios worsen for some intersections due to an increase in demand caused by the new bridge. The volume increases occur for conflicting movements at North 7th Street/Richards Boulevard, North 12th Street/North B Street, and North 12th Street/North 16th Street/Richards Boulevard.

The intersection of North 7th Street/North B Street performs worse in opening year 2020 conditions under all scenarios due to increased demand volume, split phasing of the northbound and southbound movements, and permitted left-turns for the eastbound and westbound movements.

Freeway Operations

Freeway operations under opening year 2020 are shown in Table 2.5-9 to support the discussion of avoidance and minimization measures below. An operational deficiency occurs when the LOS threshold is exceeded and the conditions are worse than the No Build Alternative. Most operations are the same as under existing conditions. One exception is the I-5 southbound weaving section between Garden Highway and Richards Boulevard. At this location, the build alternatives attract new trips that are using southbound I-5, which worsens the existing LOS F condition.

Table 2.5-9. Freeway Operations, Opening Year (2020)

Freeway Segment	Type	LOS/Density		
		Existing Conditions	2020 No Build	2020 Alternatives 1 & 2
I-5 Northbound				
1. J Street to L Street	Basic	D/27 D/28	D/28 D/31	D/27 D/30
2. L Street on-ramp	Merge	C/26 D/33	D/29 E/37	D/29 E/37
3. I Street to Richards Boulevard	Weave	C E	E F	D F
4. Between Richards Boulevard ramps	Basic	C/25 E/39	D/28 F	D/28 F
5. Richards Boulevard to Garden Highway	Weave	C F	D F	D F
I-5 Southbound				
1. Garden Highway to Richards Boulevard	Weave	E C	F E	<u>F</u> E
2. Between Richards Boulevard ramps	Basic	D/33 D/27	E/39 D/33	E/39 D/33
3. Richards Boulevard to J Street	Weave	E D	F F	F E
4. J Street to I Street	Basic	C/25 C/25	D/26 D/27	C/26 D/27
5. I Street on-ramp	Merge	C/26 D/32	D/29 D/35	C/28 E/35

Notes:

- 1 Level of service (LOS)/density is reported for basic and merge segments in the a.m. peak hour (top) and p.m. peak hour (bottom) for each freeway segment.
- 2 Density is measured in passenger car equivalents per lane per mile. Density was not calculated for weave segments or any segment with LOS F.
- 3 LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- 4 Freeway operations were analyzed using the *Highway Capacity Manual* (Transportation Research Board 2010) freeway analysis procedures. Weave segments were analyzed using the Leisch method.

The off-ramp queuing during the a.m. and p.m. peak hours in opening year 2020 conditions are shown in Table 2.5-10. The increase in demand volume causes the queues to extend onto the freeway mainline most notably for the I-5 southbound off-ramp to J Street under both no build and build alternatives. The intersection of 3rd Street/J Street where the I-5 northbound and southbound off-ramps meet operates at LOS F. Much of the queue at this location is due to the increase in eastbound right-turning vehicles with only a shared through-right lane.

Table 2.5-10. Off-Ramp Queues, Opening Year (2020)

Off-Ramp	Storage Length (feet)	Maximum Queue Length		
		Existing Conditions	2020 No Build	2020 Alternative 1 & 2
I-5 Northbound				
Off-ramp to Richards Boulevard	950	225	725	525
		125	350	225
I-5 Southbound				
Off-ramp to Richards Boulevard	1,050	275	>1,050	650
		200	300	225
Off-ramp to J Street	1,475	600	>1,475	>1,475
		700	>1,475	>1,475

Notes:

¹ Maximum queue length is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each off-ramp.

² Maximum queue length was determined using SimTraffic microsimulation software. Reported queues are rounded to the nearest 25 feet.

Vehicle Miles Traveled

The daily VMT for all trips in the Sacramento region are shown in Table 2.5-11. For 2020 build conditions, two different methods were used to estimate VMT. For the first method, the travel forecasting model trip assignment step was run in isolation. Under this method, all of the regional trip origins and destinations remain constant from the no build scenario. The only travel pattern change is the route that vehicle trips take between these origins and destinations since the short-term travel response to the bridge being opened is likely limited to route choices (i.e., individuals are not likely to change their work location because of a short relocation of the bridge). Over a longer period of time, other travel behavior may change, including destination locations and travel modes, which is represented by the full model run method in the table below. This full run likely overstates the level of travel change that would occur, while the assignment-only run may not fully capture the full range of travel behavior effects. Hence, both estimates are provided. Reviewers are cautioned to note that the modified SACMET model used to generate these forecasts represents the entire six-county SACOG region, and the network changes being made for this analysis are limited to a handful of links just a few hundred feet long.

Another method for estimating VMT changes between the no build and build scenarios is a direct estimation method based on induced travel elasticities. According to research by Susan Handy and Marlon Boarnet contained in a 2014 policy brief for the California Air Resources Board, short-term changes in VMT associated with changes in lane-miles range from about 0.20 to 0.60 when measured on a large area scale. Applying this elasticity range to the lane-mile change (a reduction of 0.67 lane-miles under the build scenario) results in a predicted decrease of between 548 and 1,643 vehicle miles of travel.

Table 2.5-11. Daily Regional Vehicle Miles Traveled, Opening Year (2020)

	Existing Conditions	2020 No Build	2020 Alternatives 1 & 2 (assignment only)	2020 Alternatives 1 & 2 (full model run)
Daily VMT	55,834,020	61,884,510	61,846,600	61,911,690
Difference from existing conditions	NA	+ 6,050,490	+ 6,012,580	+ 6,077,680
Difference from no build	NA	NA	- 37,910	+ 27,190

Notes:

NA = not applicable

¹ Regional vehicle miles traveled (VMT) were determined using the SACMET travel behavior model. Reported VMT includes intra-zonal trips.

Transit System

Transit under opening year 2020 would operate much the same as under existing conditions. The current I Street Bridge does not have enough roadway width clearance for buses to travel on, as this would be the case in the no build scenario. Under the build alternatives, buses would be able to operate on the new bridge, and it would accommodate planned streetcar service.

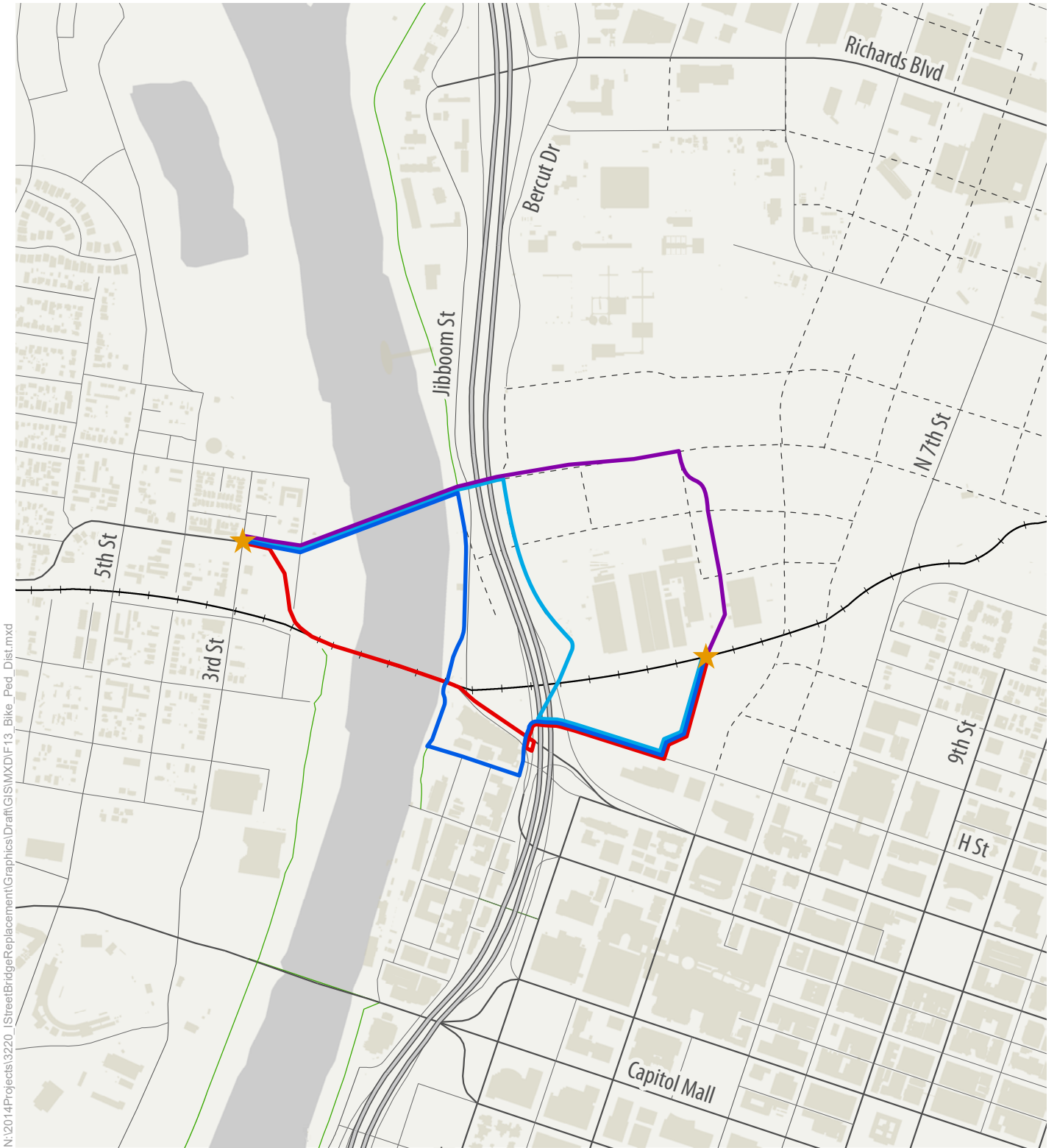
Bicycle Facilities

The bicycle facilities under opening year 2020 would include the addition of bike lanes along the new roadways of 5th Street, 6th Street, and Railyards Boulevard. Under the no build scenario, there are no bicycles facilities on the bridge and viaduct structure; bicycles would continue to share the narrow sidewalks with pedestrians. Under the build alternatives, standard bike lanes and a shared-use path would be included on the new bridge; they would connect to Railyards Boulevard and the Sacramento River Bike Trail on the Sacramento side, and to the River Walk Trail on the West Sacramento side. Because the new bridge is located farther north than the current I Street Bridge, some bicycling (and walking) distances may be longer, depending on the specific origin and destination. For major activity centers likely to attract bicycle and pedestrian trips, such as the Sacramento Valley Station, the travel distances under build scenarios would be similar to those under the no build scenario (see Figure 2.5-13).

Additional information about the project’s effects on recreational trails is provided under “Parks and Recreational Facilities” in Section 2.1, “Land Use.”

Pedestrian Facilities

Under the build alternatives, ADA compliant standard sidewalks and a shared-use path would be included on the new bridge; they would connect to Railyards Boulevard and the Sacramento River Bike Trail on the Sacramento side, and to the River Walk Trail on the West Sacramento side. This is an improvement over the current narrow sidewalks on the existing I Street Bridge. Travel distances may be affected slightly, as shown in Figure 2.5-13, depending on specific origins and destinations.



N:\2014\Projects\3220 - StreetBridgeReplacement\Graphics\Draft\GIS\MXD\F13_Bike_Ped_Dist.mxd

--- Planned Roadway



Destinations:
 3rd Street/C Street (West Sacramento)
 Sacramento Valley Station (Sacramento)

- No Build - 0.87 miles
- Build - Route 1 - 1.08 miles
- Build - Route 2* - 0.97 miles
- Build - Route 3* - 0.84 miles

** Planned routes may not be constructed by Opening Year 2020*



Figure 2.5-13



Opening Year 2020 Bicycle & Pedestrian Distance Comparison

Additional information about the project’s effects on recreational trails is provided under “Parks and Recreational Facilities” in Section 2.1, “Land Use.”

2.5.3.5 Design Year (2040) Traffic Operations

This section describes the impacts of alternatives under design year 2040 conditions. Many changes would occur in land use and the roadway network near the study area and throughout the region. The most notable changes in the study area are the full build-out of the roadway network in the Railyards and River District areas, a new American River bridge crossing connecting downtown Sacramento to Natomas, and a new Broadway Bridge south of the Tower Bridge connecting Sacramento and West Sacramento. As part of the roadway network modifications in the Railyards and River Districts, the 12th Street corridor would change substantially, with new intersection configurations at Richards Boulevard and North B Street.

Bridge Roadway Volumes

The daily traffic volume across the Sacramento River at each bridge under design year 2040 conditions is shown in Table 2.5-12. The overall increase in demand volume crossing the river between existing conditions and year 2040 would be more than 50 percent. Comparing the no build to the build alternatives, a new I Street Bridge would attract a higher volume than the existing I Street Bridge by about 7,500 daily trips.

Table 2.5-12. Daily Bridge Volumes, Design Year (2040)

Bridge	Existing Conditions	2040 No Build	2040 Alternatives 1 & 2
I Street Bridge	12,730	25,410	33,030
Tower Bridge	15,670	21,830	21,770
Pioneer Bridge (US 50)	162,060	212,420	210,120
Broadway Bridge	NA	28,890	28,710
Total of Sacramento River bridge crossings	190,450	288,550	293,630

NA = not applicable

Intersection Operations

The peak-hour intersection LOS operations under design year 2040 are shown in Table 2.5-13 and in Figures 2.5-14a and 2.5-14b to support the discussion of avoidance and minimization measures below. An operational deficiency occurs when the LOS threshold is exceeded and the conditions are worse than the No Build Alternative. The full build-out of the Railyards area roadway network will cause many travel patterns to shift to use new routes.

Table 2.5-13. Peak Hour Intersection Operations, Design Year (2040)

Intersection	Traffic Control	LOS/Delay			
		Existing Conditions	2040 No Build	2040 Alternative 1	2040 Alternative 2
1. Jefferson Boulevard/ Sacramento Avenue	Signal	C/23 C/29	E/65* F/95*	E/67* F/88*	
2. 5th Street/ C Street	Signal	B/18 B/20	F/111* F/143*	D/45* C/31*	C/34 C/30*
3. 3rd Street/ C Street	Signal	B/10 B/15	F/101* F/95*	D/48* C/33*	C/31* C/26*
4. 5th Street/ E Street	Side-street stop	A/8 A/7	D/27 D/26	E/37 F/72	
5. 3rd Street/ E Street	Signal	A/7 A/6	B/15 B/17	C/21 C/22	
6. 5th Street/ F Street	Side-street stop	A/9 A/10	D/29 E/46	F/72 F/79	
7. 3rd Street/ F Street	Signal	A/10 A/8	B/15 B/16	B/17 B/20	
8. 5th Street/ West Capitol Avenue	Signal	C/33 C/33	-	-	
9. 5th Street/ Tower Bridge Gateway	Signal	C/34 D/45	D/36 C/34	D/36 C/34	
10. 3rd Street/ Tower Bridge Gateway	Signal	B/15 B/16	C/32 C/32	C/33 C/34	
11. Jibboom Street/ Richards Boulevard	Side-street stop	C/19 B/15	B/12* F/90*	A/10* A/9	
12. I-5 southbound ramps/ Richards Boulevard	Signal	B/19 C/20	F/81* E/58*	E/67* C/31*	
13. I-5 northbound ramps/ Richards Boulevard	Signal	B/14 B/15	D/35* B/14*	C/21* B/17*	
14. Bercut Drive/ Richards Boulevard	Signal	B/12 C/21	D/41* E/65*	C/33* F/83*	
15. North 3rd Street/ Richards Boulevard	Signal	B/18 C/32	C/23* F/139*	B/16* F/145*	
16. North 7th Street/ Richards Boulevard	Signal	C/25 B/20	E/64 D/36	D/46 D/43	
17A. North 12th Street/ Richards Boulevard	Signal	C/32 D/38	E/69* D/40	E/61* E/66	
17B. North 16th Street/ Richards Boulevard	Signal	C/32 D/38	C/34 E/80*	C/33 E/79*	
18. North 7th Street/ North B Street	Signal	B/14 B/17	F/126* F/119*	F/120* F/110*	
19. North 12th Street/ North B Street	Signal	B/15 B/17	F/135* F/138*	F/135* F/153*	
20. North 7th Street/ F Street	Signal	A/9 A/9	B/20 B/13	C/21 C/20*	
21. 8th Street/ F Street	All-way stop	A/6 A/6	A/9 A/8	A/9 A/8*	

Intersection	Traffic Control	LOS/Delay			
		Existing Conditions	2040 No Build	2040 Alternative 1	2040 Alternative 2
22. North 7th Street/ G Street	Signal	A/8 A/7	A/10* A/10*	B/13* B/16*	
23. Jibboom Street/ I Street Bridge	Signal	C/23 F/97*	F/119* F/119*	-	
24. 5th Street/ H Street	Side-street stop (signalized) ⁵	A/9 A/7	D/44* D/50*	D/35* E/61*	
25. 6th Street/ H Street	Signal	A/9 A/8	E/57* E/56*	D/49* E/58*	
26. North 7th Street/ H Street	Signal	B/10 B/11	D/44* C/29*	D/35* C/31*	
27. 8th Street/ H Street	Signal	A/8 A/8	D/44* E/68*	B/20 E/68*	
28. 3rd Street/ J Street	Signal	E/64 F/94*	F/96* F/99*	F/88* E/78*	
29. 5th Street/ I Street	Signal	A/6 B/17	D/50* D/49*	D/52* D/51*	
30. 6th Street/ I Street	Signal	B/12 C/23	C/31* E/61*	C/31* E/66*	
31. 7th Street/ I Street	Signal	A/9 D/38	B/15 D/45*	B/15 D/51*	
32. 3rd Street/ Capitol Mall	Signal	C/24 C/21	C/26* D/39*	C/25* C/35*	
33. Jibboom Street/ Railyards Boulevard	Signal (roundabout) ⁶	-	F/102* F/81*	D/46* C/20*	C/25 A/8*
34. Bercut Drive/ Railyards Boulevard	Signal (roundabout) ⁶	-	F/200* F/310*	F/129* F/141*	F/66 F/115*
35. North 5th Street/ Railyards Boulevard	Signal	-	E/68* F/155*	D/55* F/81*	D/40 F/95*
36. North 7th Street/ Railyards Boulevard	Signal	-	D/41* F/127*	C/27 E/70*	C/26 F/96*
37. North 12th Street/ Railyards Boulevard	Free	-	A/7* A/7*	A/7* A/10*	

Notes:

- 1 Intersection 17 – North 12th Street/North 16th Street/Richards Boulevard under year 2040 conditions is analyzed as two separate intersections per the planned reconfiguration represented in the River District EIR: Intersection 17A – North 12th Street/Richards Boulevard, and Intersection 17B – North 16th Street/Richards Boulevard.
- 2 Level of service (LOS)/delay is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each intersection.
- 3 For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop-controlled intersections, the average control delay for the worst movement is reported in seconds per vehicle.
- 4 LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- 5 LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- 6 Traffic control is side-street stop-controlled under existing conditions and signalized in all 2040 scenarios for this noted intersection.
- 7 Traffic control is signalized in Alternative 1 and roundabout in Alternative 2 for these noted intersections.
- 8 LOS is based on the *Highway Capacity Manual* (Transportation Research Board 2010).

Under the no build scenario, an increase in demand volume at the intersection of Jibboom Street/I Street Bridge causes even more queuing and delay at the surrounding bridge approach intersections than under opening year 2020 conditions. This is due to the limited capacity of the lane configurations and the subsequent inefficiency with the traffic signal operations. The poor operations at Jibboom Street/I Street Bridge create a queue that disrupts upstream traffic flows along C Street and Railyards Boulevard; many study intersections are at LOS F, with average delay per vehicle over 100 seconds in both the a.m. and p.m. peak hour. The intersection of Jefferson Boulevard/Sacramento Avenue worsens to LOS E/F due to increases in demand, especially for conflicting movements.

Under the build scenarios, the local networks are accommodating higher peak-hour volumes. However, the increase in demand generates higher delays for select intersections. In West Sacramento, the westbound left-turn movements at the side-street stop-controlled intersections of 5th Street/E Street and 5th Street/F Street worsen to LOS E/F. A notable improvement occurs at the intersection of 5th Street/Tower Bridge Gateway due to the elimination of the 5th Street/West Capitol Avenue intersection, which increases green time and allows for better signal coordination along 5th Street and Tower Bridge Gateway.

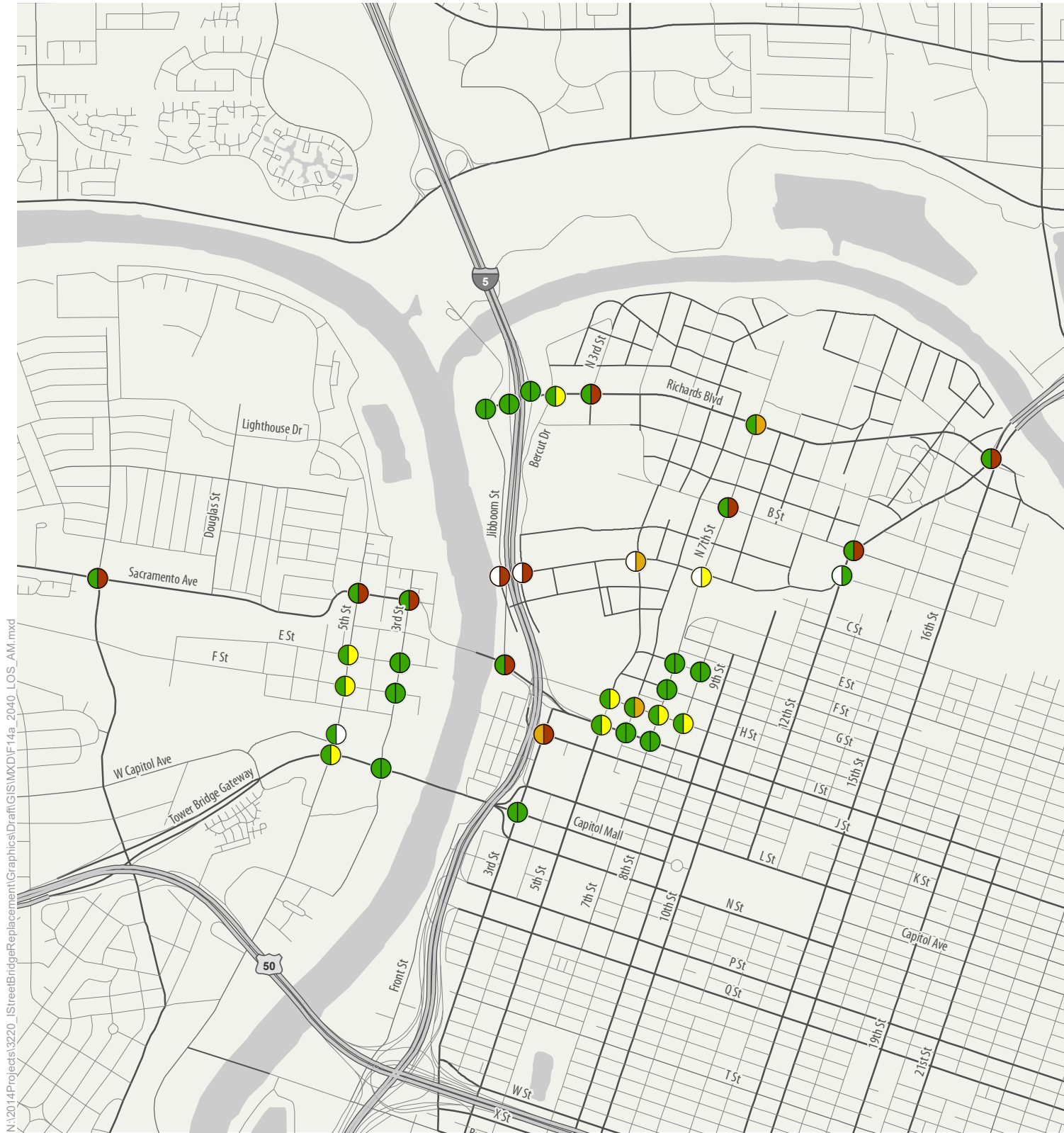
In Sacramento, the intersection of Bercut Drive/Richards Boulevard worsens under the build alternatives in 2040 conditions due to increased bridge traffic from West Sacramento heading onto I-5 northbound. This causes a significant increase in the northbound left-turn volume, which conflicts with other high-volume movements. The split phasing of the northbound and southbound directions contributes to inefficiency in the traffic signal operations. The queues in the westbound through movement also extend into the 3rd Street/Richards Boulevard intersection.

In addition, the intersections of North 7th Street/North B Street and North 12th Street/North B Street operate poorly due to high volumes for conflicting movements, inefficient signal operations caused by the lane configurations, permitted left-turn signal operations, and transit preemption.

The North 12th Street/North 16th Street/Richards Boulevard intersection was analyzed under the same lane configurations as existing conditions, which contributes to the poor operations given the large increase in peak-hour traffic demand. This intersection may operate better in the future once new lane configurations are developed as part of the planned Sutter's Landing Parkway Project.

Freeway Operations

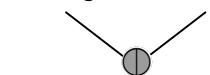
Freeway operations under design year 2040 are shown in Table 2.5-14 to support the discussion of avoidance and minimization measures below. An operational deficiency occurs when the LOS threshold is exceeded and the conditions are worse than the No Build Alternative. Operations benefit from the addition of a planned high-occupancy vehicle lane that will be constructed and open to traffic by 2040.



Existing (2014) & No Build (2040)

Level of Service
 ● A - C ● D ● E ● F
 ○ Intersection Does Not Exist in Analysis Year

Existing No Build



Build (2040)

Alternative 1 Alternative 2

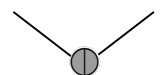
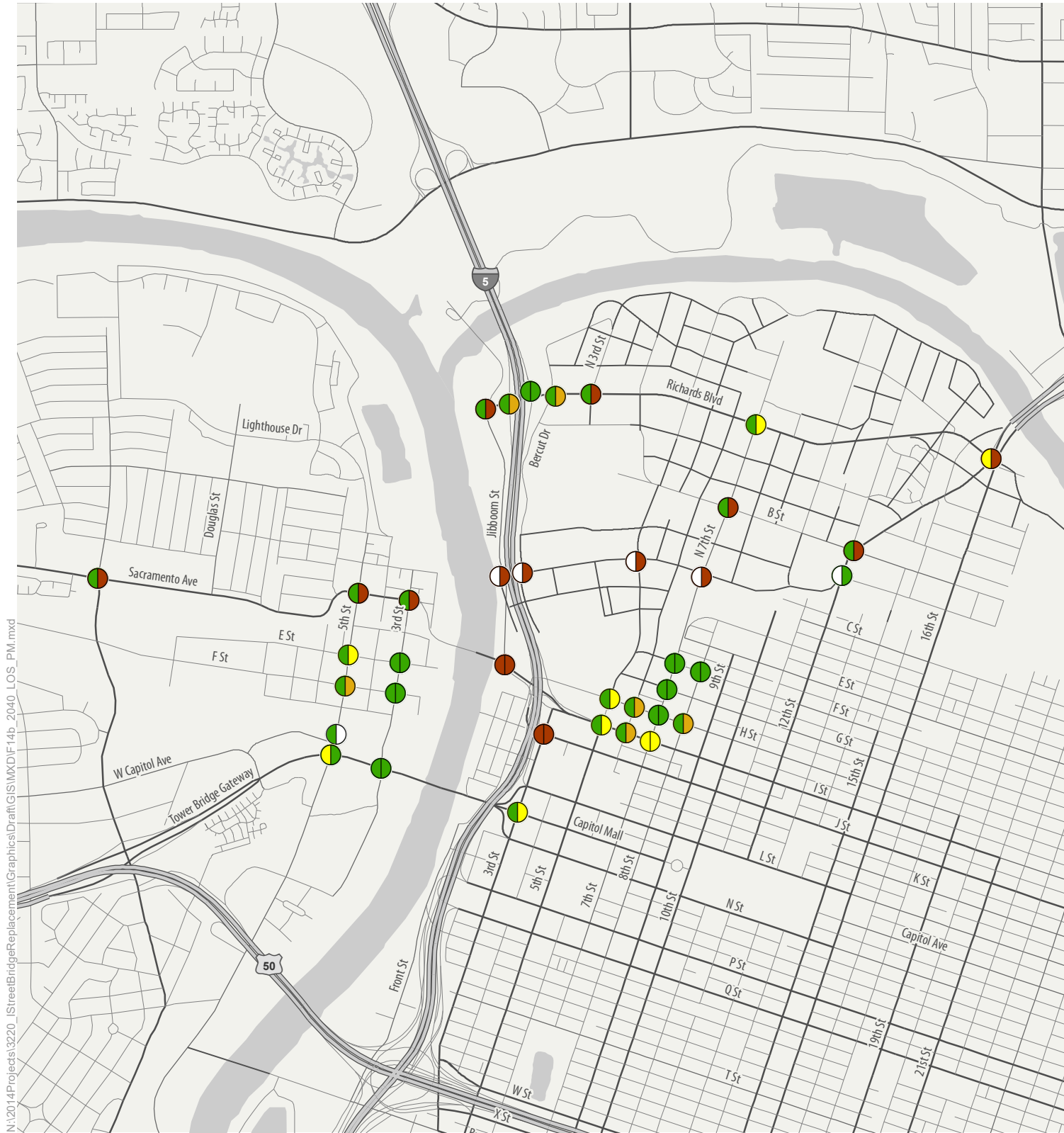


Figure 2.5-14a

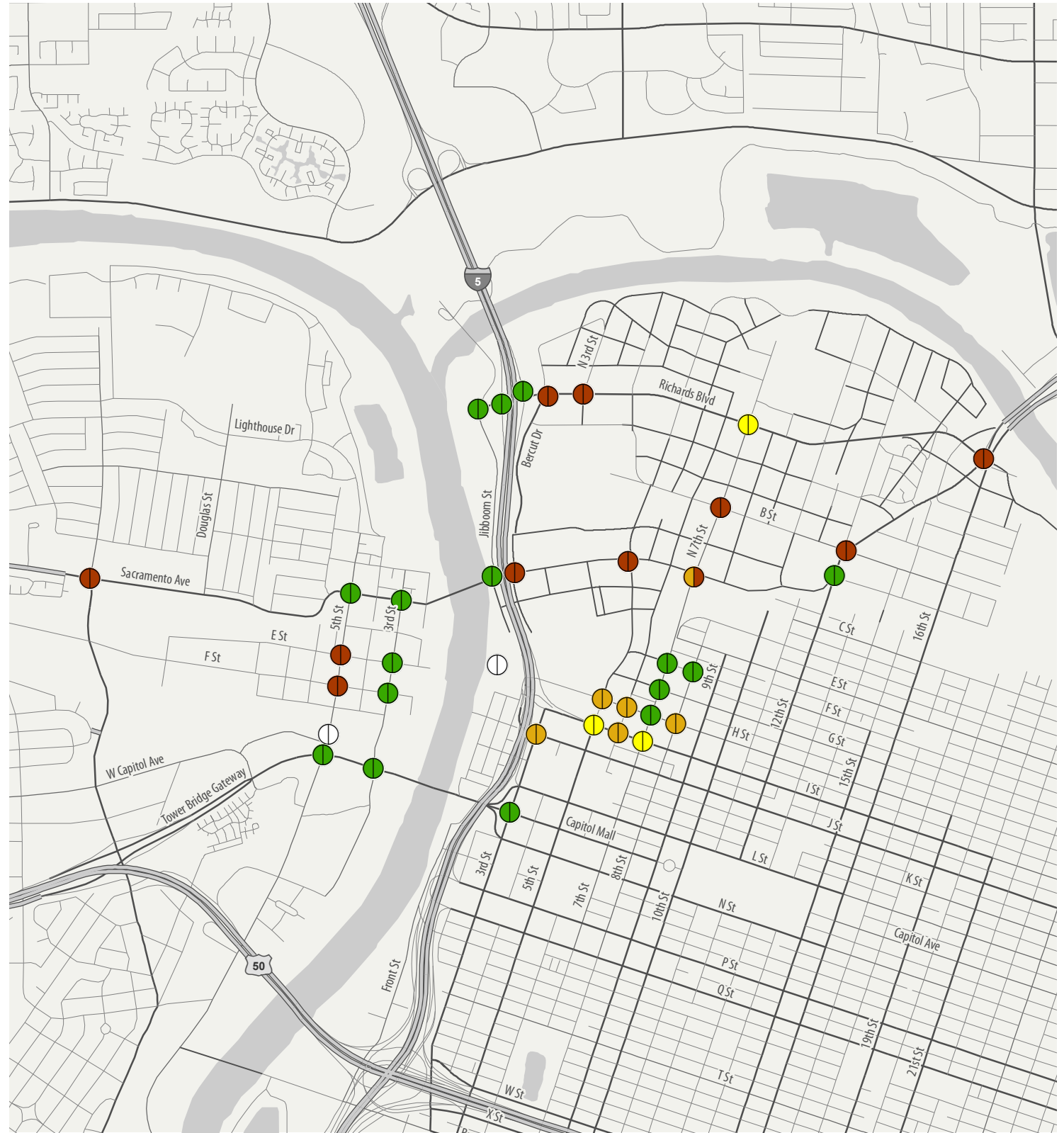
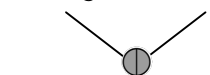
2014 Existing Conditions & 2040 Alternatives
 AM Peak Hour Intersection LOS



Existing (2014) & No Build (2040)

Level of Service
 ● A - C ● D ● E ● F
 ○ Intersection Does Not Exist in Analysis Year

Existing No Build



Build (2040)

Alternative 1 Alternative 2

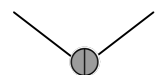


Figure 2.5-14b
 2014 Existing Conditions & 2040 Alternatives
 PM Peak Hour Intersection LOS

Table 2.5-14. Freeway Operations, Design Year (2040)

Freeway Segment	Type	LOS/Density		
		Existing Conditions	2040 No Build	2040 Alternatives 1 & 2
I-5 Northbound				
1. J Street to L Street	Basic	D/27 D/28	C/24 F	C/24 F
2. L Street on-ramp	Merge	C/26 D/33	C/27 F	C/27 F
3. I Street to Richards Boulevard	Weave	C E	D E	D E
4. Between Richards Boulevard ramps	Basic	C/25 E/39	C/26 F	C/26 F
5. Richards Boulevard to Garden Highway	Weave	C F	D F	D F
I-5 Southbound				
1. Garden Highway to Richards Boulevard	Weave	E C	F E	F E
2. Between Richards Boulevard ramps	Basic	D/33 D/27	D/29 D/30	D/29 D/31
3. Richards Boulevard to J Street	Weave	E D	E E	E E
4. J Street to I Street	Basic	C/25 C/25	C/23 C/26	C/22 D/26
5. I Street on-ramp	Merge	C/26 D/32	D/30 E/35	C/27 E/35

Notes:

- ¹ Level of service (LOS)/density is reported for basic and merge segments in the a.m. peak hour (top) and p.m. peak hour (bottom) for each freeway segment.
- ² Density is measured in passenger car equivalents per lane per mile. Density was not calculated for weave segments or any segment with LOS F.
- ³ Freeway operations were analyzed using *Highway Capacity Manual* (Transportation Research Board 2010) freeway analysis procedures. Weave segments were analyzed using the Leisch method.

Table 2.5-15 displays the off-ramp queues under 2040 conditions. Increases in demand volumes are sufficient to cause queuing on southbound I-5 off-ramps at Richards Boulevard and J Street to extend onto the mainline under all scenarios. Neither build alternative would increase the no build scenario queue lengths.

Table 2.5-15. Off-Ramp Queues, Design Year (2040)

Off-Ramp	Storage Length (feet)	Maximum Queue Lengths (feet)		
		Existing Conditions	2040 No Build	2040 Alternatives 1 & 2
I-5 Northbound				
Off-ramp to Richards Boulevard	950	225	600	400
		125	300	400
I-5 Southbound				
Off-ramp to Richards Boulevard	1,050	275	>1,050	>1,050
		200	950	725
Off-ramp to J Street	1,475	600	>1,475	1,300
		700	>1,475	>1,475

Notes:

¹ Maximum queue length is reported for the a.m. peak hour (top) and p.m. peak hour (bottom) for each off-ramp.

² Maximum queue length was determined using SimTraffic microsimulation software. Reported queues are rounded to the nearest 25 feet.

Vehicle Miles Traveled

The daily VMT for all regional trips under design year 2040 conditions are shown in Table 2.5-16. The VMT is projected to increase from existing conditions to design year 2040 conditions by about 35 percent. The VMT for the build alternatives under the design year is slightly lower than under the no build scenario; however, the difference is much less than even 1 percent of the overall VMT.

Table 2.5-16. Daily Regional Vehicle Miles Traveled, Design Year (2040)

	Existing Conditions	2040 No Build	2040 Alternatives 1 & 2
Daily VMT	55,834,020	75,412,970	75,403,720
Difference from existing conditions	NA	+ 19,578,950	+ 19,569,700
Difference from No Build Alternative	NA	NA	- 9,250

Notes:

NA = not applicable

¹ Regional vehicle miles traveled (VMT) were determined using SACMET travel behavior model. Reported VMT includes intrazonal trips.

Transit System

Transit under design year 2040 conditions would include a streetcar connecting from Sacramento to West Sacramento. Buses and streetcars would operate on the new bridge under the build alternatives and would be able to serve new areas within the Railyards District in Sacramento and Washington District in West Sacramento.

Bicycle Facilities

The bicycle facilities around the bridge approaches under design year 2040 would be similar to opening year 2020 conditions. The bicycle network beyond that area would expand in both cities, based on the master plans described above for the local “Regulatory Setting.” This largely involves modifications to existing roadways in West Sacramento, while many new roadways with bike facilities will be constructed in Sacramento as part of the *Sacramento Railyards Specific Plan* and *River District Specific Plan* developments.

Additional information about the project’s effects on recreational trails is provided under “Parks and Recreational Facilities” in Section 2.1, “Land Use.”

Pedestrian Facilities

The pedestrian circulation under design year 2040 would include the same connections as stated under opening year 2020 conditions. Additional facilities such as sidewalks and crossings would be constructed, consistent with the master plans described above for the local “Regulatory Setting.” Similar to the bicycle facilities, new pedestrian facilities will be provided as part of implementing the *Washington Specific Plan*, *Sacramento Railyards Specific Plan*, and *River District Specific Plan*.

Additional information about the project’s effects on recreational trails is provided under “Parks and Recreational Facilities” in Section 2.1, “Land Use.”

2.5.3.6 Construction-Related Effects

The construction activity would occur primarily north of the existing I Street Bridge and would not affect the physical or operational condition of the transportation network. The following construction elements could cause short-term impacts on local transportation networks.

- Construction of the new C Street alignment to the bridge, including access to 2nd Street in West Sacramento.
- Constructing the bridge across the Sacramento River.
- Constructing the Railyards Boulevard connection at Jibboom Street and Bercut Drive in Sacramento.

Disruptions and delays could affect drivers, transit service/riders, bicyclists, pedestrians, and Sacramento River users. These disruptions and delays likely would be caused by the movement of construction employees, equipment, and materials.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

Prepare a Transportation Management Plan

Please refer to the discussion of this measure in Section 2.3.1.4.

Implement Roadway and Freeway Improvements

5th Street/E Street, West Sacramento – Under 2040 conditions, construct westbound and eastbound left-turn lanes with at least 75 feet of storage. Install a traffic signal when warranted, due to increases in peak-hour volumes or to accommodate the planned streetcar. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS C or better.

This mitigation would increase crossing lengths for pedestrians and bicyclists, which would increase their exposure time to vehicles.

5th Street/F Street, West Sacramento – Under 2040 conditions, construct westbound and eastbound left-turn lanes with at least 75 feet of storage. Install a traffic signal when warranted, which was previously identified as mitigation for the Raley’s Landing project. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS C or better.

This mitigation would increase crossing lengths for pedestrians and bicyclists, which would increase their exposure time to vehicles.

5th Street/Tower Bridge Gateway, West Sacramento – Implement the planned modification of the 5th Street/West Capitol Avenue intersection, which would eliminate the vehicle connection to West Capitol Avenue. The proximity of this intersection to 5th Street/Tower Bridge Gateway creates inefficient signal operations at 5th Street/Tower Bridge Gateway and 3rd Street/Tower Bridge Gateway. Implementation of this measure would result in the following.

2020 operations after mitigation = LOS D or better based on 2040 conditions that reflect this configuration with higher peak hour volumes.

North 7th Street/B Street, Sacramento – Under 2020 conditions, widen North 7th Street to four lanes through the intersection. This capacity expansion is part of the *Sacramento Railyards Specific Plan*. Because the current right-of-way would not be sufficient for this proposed mitigation, adoption of a four-lane cross-section for North 7th Street as part of the *Sacramento Railyards Specific Plan* is required to accommodate this mitigation. Implementation of this measure would result in the following.

2020 operations after modification = LOS B in the a.m. peak hour.

Modifications that require construction of additional lanes would increase crossing length for pedestrians and bicyclists, which would increase their exposure time to vehicles.

Bercut Drive/Richards Boulevard, Sacramento – Under 2040 conditions, extend the southbound right-turn lane to provide 200 feet of storage. Implementation of this measure would result in the following.

2040 operations after modification = LOS F (72 seconds of delay) in the p.m. peak hour.

This modification may take away on-street parking spots.

North 3rd Street/Richards Boulevard, Sacramento – Under 2040 conditions, operation of this intersection is constrained by the downstream intersection of I-5 northbound ramps/Richards Boulevard and Bercut Drive/Richards Boulevard. Providing additional capacity for motorists heading northbound onto I-5 would improve operations along the corridor, including at North 3rd Street/Richards Boulevard. This could be addressed by providing a second right-turn lane from Richards Boulevard westbound onto I-5 northbound through converting a westbound through lane to a through-right shared lane. This modification is consistent with the I-5/Richards Boulevard Interchange Project Study Report improvement alternatives but would require ramp modifications that are subject to Caltrans approval and may create a more hazardous conflict zone between bicyclists and vehicles. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS F (104 seconds of delay) in the p.m. peak hour.

North 12th Street/North B Street, Sacramento – Under 2040 conditions, the vehicle traffic operations at this intersection are constrained by multimodal modifications planned for the intersection to better accommodate bicycle and pedestrian travel through the intersection, including a cycle track, bulb outs, and vehicle turn-movement restrictions. These modifications are consistent with the *Sacramento 2035 General Plan* for this area, where bicycle and pedestrian travel have high priorities. Physical mitigation to reduce vehicle delays would require taking space away from bicycles and pedestrians or from adjacent property to accommodate more vehicle lanes.

This impact may be lessened as part of the *Sacramento Railyards Specific Plan Update*. The recommended mitigation measure from the *Sacramento Railyards Specific Plan Update EIR* is to convert the Dos Rios Street leg of the intersection to a right-in/right-out configuration that does not operate as part of the traffic signal.

I-5 Southbound Weave Segment between Garden Highway and Richards Boulevard – Modify ramp meter signal timings at the Garden Highway and West El Camino Avenue southbound I-5 on-ramps to reduce a.m. peak-hour flows onto the mainline such that mainline flows in the weave segment are no higher than under 2020 no build conditions. Implementation of this measure would result in the following.

2020 operations after mitigation = a.m. peak hour LOS F (maximum service volume = 2,185)

Changing the ramp meter timing could cause queues to lengthen at the on-ramps, potentially affecting upstream arterial traffic operations on Garden Highway and West El Camino Avenue.

2.5.5 References Cited

- California Department of Transportation. 2016. *Local Development – Intergovernmental Review Program Interim Guidance*. November 9. Available: <http://www.dot.ca.gov/hq/tpp/documents/RevisedInterimGuidance11092016.pdf>. Accessed: February 27, 2017.
- _____. 2012. *Highway Design Manual*. Available: <<http://www.dot.ca.gov/hq/oppd/hdm-before-5-7-2012-change/oldhdmtoc.htm>>.
- _____. 2010. *Transportation Corridor Concept Report Interstate 5*. September. District 3. Available: <<http://www.dot.ca.gov/dist3/departments/planning/tcr/tcr5.pdf>>. Accessed: May 25, 2016.
- _____. 2009. *State Route 99 & Interstate 5 Corridor System Management Plan*. District 3. May. Available: <http://www.dot.ca.gov/hq/tpp/corridor-mobility/CSMPs/d3_CSMPs/i-5_sr-99/I5_SR99_final_csmp_FINAL.pdf>. Accessed: May 25, 2016.
- _____. 2002. *Guide for the Preparation of Traffic Impact Studies*. December. Available: <http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf>. Accessed: May 25, 2016.
- City of Sacramento. 2016. *City of Sacramento Bicycle Master Plan*. Approved on August 16, 2016. Available: <<https://www.cityofsacramento.org/Public-Works/Transportation/Programs-and-Services/Bicycling-Program>>. Accessed: February 27, 2017.
- _____. 2016. *Grid 3.0 Planning the Future of Mobility in the Sacramento Central City*. Approved on August 16, 2016. Available: <http://www.sacgrid.com/img/Grid3.0_FinalReport_080816.pdf>, Accessed: February 27, 2017.
- _____. 2016. *Railyards Specific Plan Update, KP Medical Center, MLS Stadium, & Stormwater Outfall Draft Subsequent Environmental Impact Report*. Available: <<http://www.cityofsacramento.org/Community-Development/Planning/Environmental/Impact-Reports/Railyards-Specific-Plan-EIR>>. Accessed: February 27, 2017.
- _____. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.
- _____. 2011. *River District Specific Plan*. Community Development Department and Economic Development Department. Adopted February 15, 2011. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Specific%20Plans>>. Accessed: May 10, 2016.

- _____. 2009. *Sacramento 2030 General Plan*. Available: <<http://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: October 17, 2016.
- _____. 2007. *Sacramento Railyards Specific Plan*. Adopted December 11, 2007. Design, Community & Environment, Berkeley, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Specific%20Plans>>. Accessed: May 10, 2016.
- _____. 2006. *City of Sacramento Pedestrian Master Plan*. City of Sacramento Department of Transportation. September. Available: <<http://portal.cityofsacramento.org/Public-Works/Transportation/Programs-and-Services/Pedestrian-Program>>. Accessed: July 31, 2015.
- City of West Sacramento. 2016. *City of West Sacramento General Plan 2035 Policy Document*. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 27, 2017.
- _____. 2014. *Transit-Oriented Development Strategy – Initial Analysis Report for the Washington Renaissance*. Draft. September 9. Available: <http://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=11017>. Accessed: May 25, 2016.
- _____. 2013. *2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan*. May. Prepared for City of West Sacramento. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=9388>>.
- _____. 2000. *City of West Sacramento General Plan – General Plan Policy Document*. Adopted March 2000. June. City of West Sacramento Community Development Department. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=3615>>. Accessed: May 10, 2016.
- _____. 1996. *Washington Specific Plan*. Adopted by the West Sacramento City Council on May 15, 1996. West Sacramento, CA. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=3639>>. Accessed: July 31, 2015.
- Fehr & Peers. 2015. *Traffic Data and Calculations*. Sacramento, CA.
- Fehr & Peers, ICF International, Dokken Engineering, AIM Consulting, and Endicott Communications, Inc. 2011. February. *Sacramento River Crossings Alternatives Study*. Summary Report. Prepared for City of Sacramento and City of West Sacramento. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdload.asp?BlobID=12857>>. Accessed: May 25, 2016.

Handy, Susan and Marlon G. Boarnet. 2014. *Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions*. Policy Brief. September 30. California Environmental Protection Agency, Air Resources Board. Available: <https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf>. Accessed: May 25, 2016.

Sacramento Area Council of Governments. 2016. *2016 Metropolitan Transportation Plan/Sustainable Communities Strategy*. February 18. Available: <<http://www.sacog.org/2016-mtpscs>>. Accessed: February 27, 2017.

_____. 2015. *Regional Bicycle, Pedestrian, and Trails Master Plan*. April 16. Available: <http://www.sacog.org/sites/main/files/file-attachments/bicycle_pedestrian_trails_master_plan_2015.pdf>. Accessed: May 25, 2016.

_____. 2012. *2035 Metropolitan Transportation Plan/Sustainable Communities Strategy*. April. Available: <<http://www.sacog.org/general-information/mtpscs-adopted-april-2012>>. Accessed: February 27, 2017.

Transportation Research Board. 2010. *Highway Capacity Manual*. Fifth edition. Available: <<http://hcm.trb.org/?qr=1>>. Accessed: May 25, 2016.

2.5.5.1 Personal Communications

Hajeer, Samar. Senior Engineer. City of Sacramento Transportation Division, Sacramento, CA. September 18, 2015. Email regarding LOS thresholds.

_____. Senior Engineer. City of Sacramento Transportation Division, Sacramento, CA. June 10, 2014. Phone call regarding consistency with VMT performance of the MTP/SCS.

2.6 Visual/Aesthetics

2.6.1 Regulatory Setting

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

CEQA establishes the policy of the state to take all action necessary to provide the people of the state “with...enjoyment of aesthetic, natural, scenic and historic environmental qualities” (California PRC Section 21001[b]).

2.6.2 Affected Environment

This section was prepared using information from the *Visual Impact Assessment* (VIA) technical report prepared for the project (ICF International 2015). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. The VIA assesses potential visual impacts of the proposed project based on guidance outlined in the *Visual Impact Assessment for Highway Projects* published by the FHWA (1988). The following key terms describe visual resources in a project area. The terms are used as descriptors and as part of a rating system to assess a landscape’s visual quality.

- *Visual character* includes attributes such as form, line, color, and texture and is used to describe, not evaluate visual resources.
- *Visual quality* is evaluated by identifying the vividness, intactness, and unity present in the project area.
- *Vividness* is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
- *Intactness* is the integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions.
- *Unity* is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

In addition to their use as descriptors, vividness, intactness, and unity are used more objectively as part of a rating system to assess a landscape’s visual quality.

Resource change is one of the two major variables that determine visual impacts. *Resource change* refers to the evaluation of the visual character and the visual quality of the visual resources that comprise the project corridor before and after construction of a proposed project. The other major variable is *viewer response*, the response of viewers to changes in their visual environment.

2.6.2.1 Project Location and Setting

The project location and setting provide the context for determining the type and severity of changes to the existing visual environment. The project setting is the *project corridor*, which is defined as the area of land that is visible from, adjacent to, and outside the highway right-of-way. The project corridor is determined by topography, vegetation, and viewing distance and, consequently, is larger than the project area.

The project region lies in the Sacramento Valley of northern California, between the Cities of Sacramento and West Sacramento, crossing the Sacramento River (Figure 1-1). The easternmost portion of the region is characterized by the Greater Sacramento Metropolitan region. The westernmost portion of the region primarily consists of the growing city of West Sacramento and outlying agricultural lands, which includes the Yolo Bypass. The landscape pattern is influenced by development sprawling from the cores of existing cities and the major roadways, such as Interstate 80 (I-80), US 50, I-5, and State Route 99. The region primarily supports developed, industrial, agricultural, and open space land uses. In addition to numerous creeks and irrigation channels, major water bodies in the region include Sacramento Ravine, the American River, the Deep Water Ship Channel, and the Yolo Bypass when flooded.

The proposed project is located roughly parallel to and between the existing I Street Bridge and the Sacramento River water intake structure (Figure 1-2). The eastern termini of the project intersect the Sacramento River Parkway and I-5, within Sacramento. The western termini of the project curve to intersect with 5th and C Streets in West Sacramento. The immediate project area is characterized by the Sacramento River (river), vegetated levee banks, and land uses on either side of the river. Primarily industrial and vacant land uses are located east of the river, and suburban residential and commercial land uses are located to the west. The project site is not located near a state scenic highway or other designated scenic corridor (California Department of Transportation 2015).

2.6.2.2 Visual Assessment Units

The river provides a clear boundary between the industrial land uses on the eastern side of the river, in Sacramento, and the suburban residential land uses on the western side, in West Sacramento. For this analysis, therefore, the area surrounding the project area has been subdivided into three visual assessment units based on specific vantage points and differing sensitivities of those affected by the proposed project. The three visual assessment units that were evaluated are listed and described below.

- Sacramento
- West Sacramento

- River

The visual assessment units and key view locations are shown in Figure 2.6-1. Key views were selected for their representation of the visual assessment unit within which they are located and the viewer groups affected.

The topography in the Sacramento and West Sacramento Visual Assessment Units is generally flat, with the exception of the raised levees that provide the greatest vertical relief within the project area. Commercial and industrial areas are larger in form and scale, compared to single-family and multifamily residential development. Within the River Visual Assessment Unit, the river is lower and existing bridge crossings are a common visual element. Transportation facilities, including elevated structures (I-5 and Jibboom Street viaduct), are also prominent in the Sacramento Visual Assessment Unit. Grassland areas in all Visual Assessment Units grow to a low to medium height; these areas have a fine-textured appearance where manicured and a medium-textured appearance where not manicured. Trees along the river, and trees and shrubs associated with residential and commercial landscaping, provide visual interest and natural diversity against the built environment. Trees and shrubs also provide seasonal visual interest with fall colors, bare branches in winter, and when in leaf in spring through early fall. Similarly, the color of the grasslands generally changes seasonally in correspondence to the amount of rain in the region; colors range from tan in summer or dryer, warmer months to green in winter or when cool air and rain have been present. In addition, most trees in the visual assessment units are deciduous, so they provide more views to surrounding areas when they are bare.

Sacramento Visual Assessment Unit

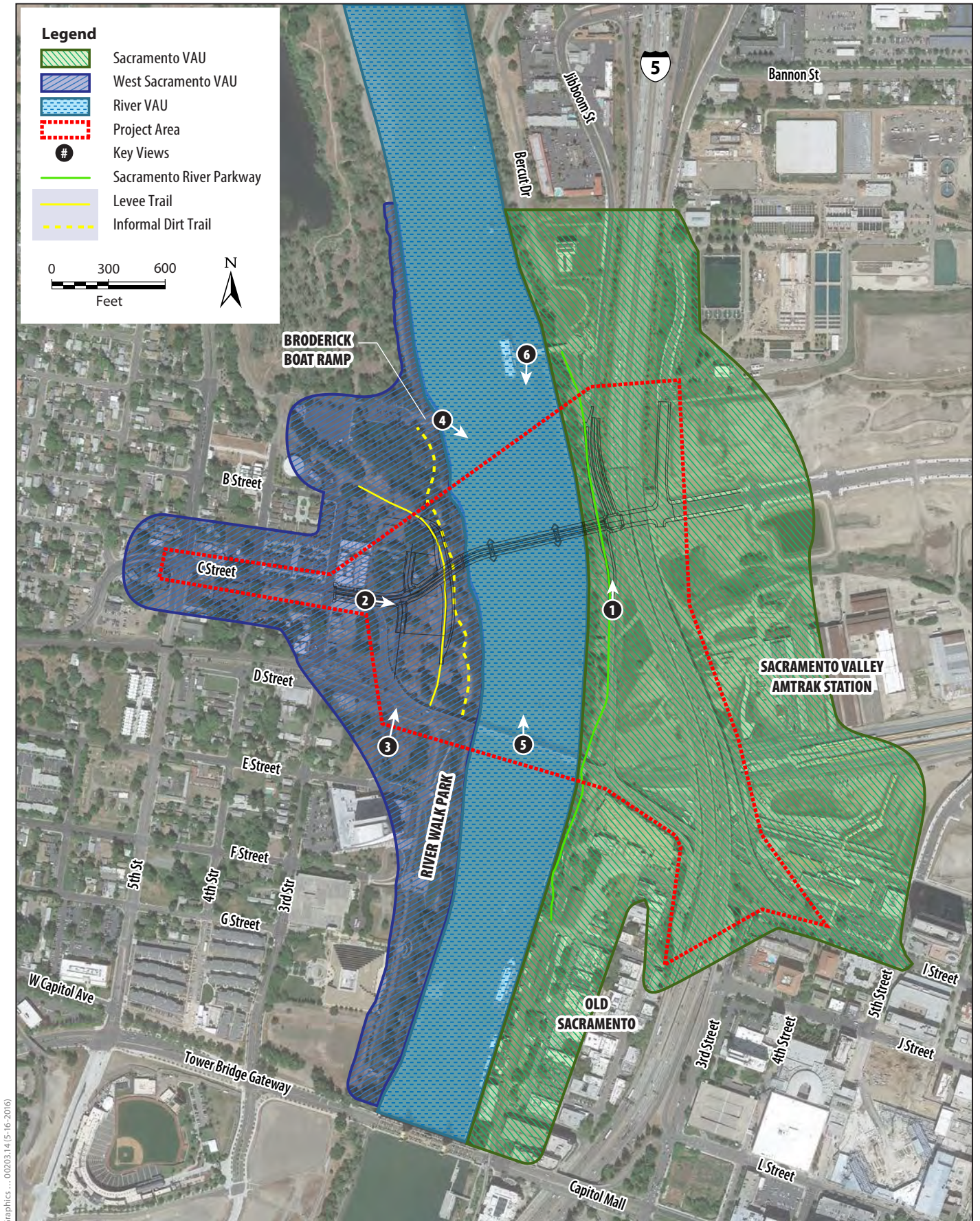
Transportation facilities, industrial, and undeveloped areas are primarily located east of the river. Transportation facilities consist of I-5, the Sacramento River Parkway, the Sacramento Valley Station, Amtrak, UPRR, and local roadways of downtown Sacramento. The industrial area consists of warehouses and infrastructure that include the Sacramento Water Treatment Plant, with its associated treatment ponds and infrastructure, and vacant warehouses and vacant land uses associated with the Sacramento Railyards. The undeveloped portion of this visual assessment unit is predominantly lands once associated with the Sacramento Railyards, which is slated for redevelopment and is currently experiencing some construction activities. Old Sacramento, a tourist destination, is located along the river and on the border of this visual assessment unit. The most prominent views of the site are available from the Sacramento River Parkway (refer to Key View 1, *Existing View*, in Figures 2.6-2a and 2.6-2b), Jibboom Street, and I-5, which all parallel the river. The Sacramento Valley Station has limited views through available gaps between existing transportation infrastructure, such as between freeway support columns and bridge decking. Similarly, views from the Sacramento Railyards are available between gaps in existing transportation infrastructure, such as between freeway support columns and bridge decking, and are limited. In addition, the waterfront area of Old Sacramento offers limited views toward the project. Aboveground utilities (e.g., roadway lights, traffic lights, and utility lines and poles), railroad tracks, and industrial and remnant railyard warehouses are prominent features in the viewshed. This visual assessment unit is well-lit; lighting is primarily associated with the freeway and local roadways, vehicles, the rail station, parking areas, and development within Old Sacramento and Sacramento. The Sacramento River Parkway and adjacent riverbanks are not well-lit.

The vividness of this visual assessment unit is moderate-low to moderate because the assortment of well-developed areas, industrial uses, and vacant lands creates a visually segmented area that is still transitioning compared to other established areas within the region. The intactness and unity are moderate-low because the area lacks smooth transition between downtown land uses and the Sacramento Railyards. In addition, transportation corridors segment downtown, Old Sacramento, and industrial areas from one another and create distinct land use pockets. However, these individual pocket areas are moderately intact and unified within and of themselves. The resulting visual quality of the Sacramento Visual Assessment Unit is moderate to moderate-low to moderate.

West Sacramento Visual Assessment Unit

The West Sacramento Visual Assessment Unit includes office and suburban residential, intermixed with light commercial, land uses. Multistory office buildings are located along River Walk Park. North of C Street, between 2nd and 4th Streets, is predominantly developed with two- and three-story multifamily and single-family residential infill intermixed with commercial spaces. On the edges of the infill development, such as north and east of McDowell Lane and west of 4th Street, older multifamily and single-family residential development remains intact. Older multifamily and single-family residential development also is located south of C Street. While infill development looks visually pleasing, older development ranges from properties being fairly well-kept to properties not maintained over time—where buildings and site features (e.g., fencing, driveways) are deteriorated and the properties have become visually degraded. Grassy vacant lots also are prominent in this visual assessment unit. Views of the project area are generally available from the Broderick Boat Ramp (refer to Key View 2, *Existing View*, in Figure 2.6-3), the formal levee trail, and the informal dirt trail along the waterfront. However, views of the project are largely obscured by mature trees along the levee. Views of the project area also are available, in a more limited manner, from the edges of single-family and multifamily residential development and where vacant lots allow views toward the project (refer to Key View 3, *Existing View*, in Figure 2.6-4). This visual assessment unit is somewhat well-lit. Lighting primarily is associated with the residential and commercial land uses, local roadways, vehicles, parking areas, and office buildings along River Walk Park. The Sacramento River Parkway and adjacent riverbanks are not well-lit.

The vividness of this visual assessment unit is moderate because development is less intense on this side of the river, vegetation is more lush and softens the scale of development, and development is set back from the river edge to allow for more open space along the river. The intactness and unity also are moderate because, while vacant lands are present, land uses transition more smoothly on the west side of the river. In addition, land uses are not segmented into pockets by transportation facilities. The resulting visual quality of the West Sacramento Visual Assessment Unit is moderate.



Graphics ... 0203.14 (5-16-2016)

**Figure 2.6-1
Visual Assessment Units and Key View Locations**

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Graphics ... 00203_14 (5-16-2016)

Figure 2.6-2a
Key View 1 (Bridge Closed): Existing View and Simulated Conditions —
from the Sacramento River Parkway looking north

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Figure 2.6-2b
Key View 1 (Bridge Opened): Existing View and Simulated Conditions —
from the Sacramento River Parkway looking north



Source: Mark Thomas & Company, June 2015.

Graphics ... 00203.14 (5-16-2016)

Figure 2.6-3
Key View 2: Existing View and Simulated Conditions —
from C Street looking east

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

**Figure 2.6-4
Key View 3: Existing View and Simulated Conditions —
from 2nd Street looking north**

River Visual Assessment Unit

The River Visual Assessment Unit is crossed by the proposed project. The river is lower than the project (refer to Key View 4, *Existing View*, in Figures 2.6-5a and 2.6-5b) and is crossed by the existing I Street /UPPR Bridge (refer to Key View 5, *Existing View*, in Figures 2.6-6a and 2.6-6b); the Sacramento water intake structure is located in the river channel (refer to Key View 6, *Existing View*, in Figures 2.6-7a and 2.6-7b). Vegetated levee slopes line the river and limit views to the adjacent Sacramento and West Sacramento Visual Assessment Units. Bridge structures are common in this area of the river to connect developed areas to the east and west and include the existing I Street /UPPR Bridge, Tower Bridge, and, while outside of the River Visual Assessment Unit, the Pioneer Memorial (I-80/US 50) Bridge. The Sacramento city skyline and multistory office buildings along River Walk Park can be seen rising above the canopies of trees along the riverbanks. Views of I-5 and Jibboom Street also are available where gaps in shoreline vegetation allow such views. Views of adjacent visual assessment units become more available in the late fall and winter after deciduous trees have lost their leaves, reducing the visual screening that tree canopies provide in the spring through early fall. This visual assessment unit is not well-lit because little lighting is associated with the river and adjacent riverbanks. However, some lighting is associated with bridge crossings and the intake structure. Most of the lighting in this visual assessment unit comes from adjacent visual assessment units and includes lighting from the Sacramento skyline, Old Sacramento, adjacent roadways, traveling vehicles and commuter trains, and office buildings along River Walk Park.

The vividness of this visual assessment unit is moderately high because the river provides a visual amenity and recreational resource within a highly developed area that is highly used and accessed. The river is mostly free from development encroachments except for the existing river crossings. Even with these encroachments, the intactness and unity also are moderately high because the crossings provide a visual and physical connection, and visual access, to the river within an urban environment. The resulting visual quality of the River Visual Assessment Unit is moderately high.

2.6.2.3 Viewers and Viewer Response

Two major types of viewer groups are of primary concern for highway projects: roadway neighbors and roadway users. Each viewer group has its own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group that help to evaluate their responses to visual changes. More detailed information on viewers and viewer response is provided in the VIA technical report prepared for this project (ICF International 2015).

Roadway Users (Views from the Road)

Roadway users are people who have views from the road. They can be subdivided into different viewer groups in two different ways—by mode of travel or by reason for travel. For example, subdividing roadway users by mode of travel may yield pedestrians, bicyclists, transit riders, car drivers and passengers, and truck drivers. Dividing roadway users or viewer groups by reason for travel creates categories like tourists, commuters, and haulers. It is also possible to use both

mode and reason for travel simultaneously, creating a category like bicycling tourists, for example.

This analysis considers the categories of roadway users listed below.

- Recreational travelers
- Local commuters
- Haulers
- Pedestrians
- Bicyclists

Roadway users come into direct visual contact with the proposed project but only briefly and in passing as they travel by the project area. Roadway users would have low sensitivity to visual changes resulting from the proposed project because they come in direct visual contact with the proposed project only while travelling through the area; consequently, views would be intermittent, and construction activities are typical in the project vicinity.

Roadway Neighbors (Views to the Road)

Roadway neighbors are people who have views to the road. They can be subdivided into different viewer groups by land use. For example, residential, commercial, industrial, retail, institutional, civic, educational, recreational, and agricultural land uses may generate roadway neighbors or viewer groups with distinct reasons for being in the corridor and therefore having distinct responses to changes in visual resources.

This analysis considers roadway neighbors in the categories listed below.

- Residents within the Sacramento and West Sacramento Visual Assessment Units.
- Workers within the Sacramento and West Sacramento Visual Assessment Units, including construction workers within the Sacramento Railyards area.
- Patrons of local businesses in the Sacramento and West Sacramento Visual Assessment Units.
- Roadway users within the Sacramento and West Sacramento Visual Assessment Units and crossing the River Visual Assessment Unit.
- Rail travelers within the Sacramento and West Sacramento Visual Assessment Units and crossing the River Visual Assessment Unit.
- Boaters in, and fisherman or recreationists on the edge of, the River Visual Assessment Unit.
- Recreationists using formal and informal trails within the Sacramento and West Sacramento Visual Assessment Units.

Roadway neighbors are the largest number of viewers who come into direct visual contact with the proposed project and constitute viewers with long-term, stationary views of the proposed

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Figure 2.6-5a
Key View 4 (Bridge Closed): Existing View and Simulated Conditions —
from the Sacramento River Parkway looking southeast

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Figure 2.6-5b
Key View 4 (Bridge Opened): Existing View and Simulated Conditions —
from the Sacramento River Parkway looking southeast

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Figure 2.6-6a
Key View 5 (Bridge Closed): Existing View and Simulated Conditions —
from the existing I Street Bridge looking north

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Graphics ... 00203_14 (5-16-2016)

Figure 2.6-6b
Key View 5 (Bridge Opened): Existing View and Simulated Conditions —
from the existing I Street Bridge looking north

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Graphics ... 00203_14 (5-16-2016)

Figure 2.6-7a
Key View 6 (Bridge Closed): Existing View and Simulated Conditions —
from the Sacramento River Water Intake Structure looking south

Existing View



Simulation



Source: Mark Thomas & Company, June 2015.

Figure 2.6-7b
Key View 6 (Bridge Opened): Existing View and Simulated Conditions —
from the Sacramento River Water Intake Structure looking south

project. Roadway neighbors' views of the project vary based on their location within the landscape and distance from the project site. The majority of roadway neighbors within the Sacramento and West Sacramento Visual Assessment Units have views that are generally focused on the immediate surrounding development. Most roadway neighbors do not have immediate and direct views of the project site unless very close to the site because vegetation, development, and transportation facilities limit views. The exception is within the River Visual Assessment Unit, where the river corridor allows more direct views. However, existing bridges and the intake structure create some visual disruption of views, depending on viewer location. Residents would have longer viewer exposure, while other neighbors would be in visual contact for shorter periods when passing by the site, in transit, or while working nearby.

Roadway neighbors would have moderate sensitivity to visual changes resulting from the proposed project because they are adjacent to the proposed project and have long-term, stationary views; but the project area is not a dominant focal point of their views.

Composite Viewer Group

For analytical purposes, a composite viewer group was created for this project. A composite viewer group is made up of all roadway neighbors and roadway users affected by the project. It is a proportional representation of the affected population. It not only represents a typical viewer but also includes the most critical attributes and concerns of the individual viewer groups from which it was assembled. For this project, the viewer groups that most typify the composite viewer group include recreational travelers, local commuters, haulers, residents, workers, boaters, and patrons of local businesses. These groups represent the largest viewer groups in direct visual contact with the proposed project. As the proposed project is located in an area that is undergoing new land development, all viewer groups are familiar with maintenance and construction activities occurring in the vicinity and close to the project area.

The composite viewer group is deemed to have moderate to moderate-low sensitivity to visual changes resulting from the proposed project. The composite viewer group is deemed to have moderate to moderate-low exposure to the proposed project. Roadway neighbors may view the project in a positive manner because of the improved connectivity it would provide. A very small subset of the larger viewer group may view the project negatively because they would be adversely affected by the 2nd Street access changes. This response would be attributed to the proposed project attributes largely in keeping with the visual character of other nearby overpasses, interchanges, and roadways. Therefore, while a small subset of neighbors in West Sacramento may have a high viewer response, the composite group viewer response would be moderate to moderate-low.

2.6.3 Environmental Consequences

No roadways within or near the Project area are designated in federal or state plans as a scenic highway or route worthy of protection for maintaining and enhancing scenic viewsheds (California Department of Transportation 2015). While elevated roadways in the study area provide scenic views out and over the river corridor and the city skyline, views are not highly unified or highly vivid because the area is transected by a number of transportation facilities and

land uses are disjunctive. Land uses have abrupt changes from one to the other, lacking gradual visual transitions. In addition, vegetation and development prevent expansive views. Therefore, although scenic views are available, the study area is not considered to have scenic vistas. Accordingly, the proposed project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway or substantially degrade a scenic vista. There would be no effect on such scenic resources in any visual assessment unit for all build alternatives.

2.6.3.1 Build Alternatives

Impacts from each roadway alternative would be comparable. All alternatives would include a new bridge, an intersection at Jibboom Street and Bercut Drive, a new C Street connection, removal of existing bridge approaches, and trail relocations. The primary difference between build Alternatives 1 and 2 is a different configuration for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection. Build Alternative 1 would have a signalized intersection whereas build Alternative 2 would use a roundabout. Both alternatives would introduce a new intersection where none presently exists, and the different intersection designs would not result in substantial visual differences from one another.

Visual Character and Visual Quality

Sacramento Visual Assessment Unit

Changes to residential access within the City of West Sacramento that are located in the West Sacramento Visual Assessment Unit would not be visible from the Sacramento Visual Assessment Unit. Therefore, this is not analyzed within the Sacramento Visual Assessment Unit. As noted above, both build alternatives would introduce a new intersection where none presently exists, and the different intersection designs would not result in substantial visual differences from one another. Therefore, visual impacts from construction and operation, viewer response to the impacts, and resource change within the Sacramento Visual Assessment Unit would be the same under both build alternatives.

Construction activities would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of all viewer groups. Temporary visual changes would result from removal of the existing Jibboom Street approaches to the existing I Street Bridge. Temporary falsework platforms would be required to construct the proposed bridge foundations and approach structures; these would be installed on or after April 15 and removed by October 31. In addition, temporary cofferdams would be required to construct the bridge piers within the water. Temporary visual changes due to construction signaling and signage also would occur. As shown in the existing views for Key View 1 (Figures 2.6-2a and 2.6-2b), vegetation is present along the river corridor; visual changes resulting from vegetation removal during construction would be isolated to the area immediately surrounding the proposed bridge, bridge approach, levee modifications, and realigned Sacramento River Parkway. Much of the affected area is currently unvegetated.

Temporary visual changes due to construction are not considered adverse due to the temporary nature of construction, transient nature of viewers passing by the project site, and viewers'

familiarity with heavy equipment in the project area for recent development in the project vicinity. However, construction would affect native trees and vegetation located along the river and the Sacramento River Parkway, in proximity to the bridge, which would be an adverse effect. The resulting visual quality would remain moderate to moderate-low with implementation of recommended avoidance, minimization, and mitigation measures that would ensure that plants are replaced onsite to help improve project aesthetics.

Once the bridge approaches are removed, the existing lattice steel bridge would remain. The existing bridge would appear to look the same and would continue to service rail transport. The primary difference would be that cars would no longer be seen crossing on the upper deck, even though the upper deck would remain intact. The largest visual change in the Sacramento Visual Assessment Unit associated with the proposed project is the introduction of a new bridge across the river that could be seen from various locations within the visual assessment unit. The proposed bridge would be most visible from multi-story buildings in Sacramento with views of the project site, from the Sacramento River Parkway (see Key View 1 in Figures 2.6-2a and 2.6-2b), and from I-5. Most views from multi-story buildings are likely to include the upper portions of the bridge that would be seen over the top of nearby trees and development.

As shown in Figure 2.6-2a, the simulation for Key View 1 depicts the proposed bridge in the closed position, as well as the Sacramento River Parkway realignment and removal of Jibboom Street. The bridge would obscure views toward the river and vegetated levees, as seen in this view. However, as shown in the simulation in Figure 2.6-2b, the bridge would allow such views when it is raised.

The bridge design has not been solidified, but it would be designed in a manner that carries forward elements from the nearby Tower and existing I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. The final bridge design has the potential to affect visual resources if the public and affected viewers do not favor the look of the proposed design. Implementation of the recommended avoidance, minimization, and mitigation measures would ensure that the public is engaged in the bridge design process—facilitating public acceptance of the proposed project, in addition to aiding in improving project aesthetics.

Summary

The vividness of the Sacramento Visual Assessment Unit would not be greatly affected by the proposed project, and the rating would remain moderate-low to moderate. The intactness would remain moderate-low because, although removal of Jibboom Street would reduce the amount of highway infrastructure to a degree, the proposed bridge and intersections would introduce new structures. However, these changes would be in keeping with the appearance of the project corridor. The resulting visual quality would remain moderate to moderate-low with implementation of the recommended avoidance, minimization, and mitigation measures.

As described in Section 2.6.2.3, “Viewers and Viewer Response,” the composite viewer response would be moderate-low. Viewers within the project area are familiar with existing bridges along this segment of the river, and the proposed bridge would be in keeping with the existing visual environment. In addition, the Sacramento River Parkway realignment, levee

modification, new intersection, and removal of the Jibboom Street viaduct structure would not greatly alter visual resources in the project area. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the Sacramento Visual Assessment Unit.

Both build alternatives would result in a resource change to this visual assessment unit that is moderate-low. When the resource change is considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate-low. Therefore, these permanent built changes would not result in adverse visual effects under either build alternative with implementation of the recommended avoidance, minimization, and mitigation measures.

West Sacramento Visual Assessment Unit

Build Alternatives 1 and 2 for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the Sacramento Visual Assessment Unit would not be visible from the West Sacramento Visual Assessment Unit. Therefore, visual impacts associated with these alternatives are not analyzed within the West Sacramento Visual Assessment Unit. Visual impacts from construction and operation, viewer response to the impacts, and resource change would be the same within the West Sacramento Visual Assessment Unit under both build alternatives.

Construction activities would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of all viewer groups. Temporary visual changes would result from removal of the existing C Street approach to the existing I Street Bridge. Also, temporary falsework platforms would be required to construct the proposed bridge foundations and approach structures; these would be installed on or after April 15 and removed by October 31. In addition, temporary cofferdams would be required to construct the bridge piers within the water. The existing C Street viaduct to the I Street Bridge and 2nd street south of C Street also would be removed during construction.

Construction activities would create temporary visual impacts on views seen of and from the project site during the construction period by the visual presence of construction activities and equipment. The new 2nd Street extension would require full acquisition of one single-family residence and partial acquisition of several others. This is not considered an adverse visual impact due to the temporary nature of construction, transient nature of viewers passing by the project site, and viewers' familiarity with heavy equipment in the project area for recent development within the project vicinity. Temporary visual changes due to construction signaling, signage, and lighting also would occur. As shown in the existing views for Key View 2 (Figure 2.6-3), vegetation is present along the river corridor, and visual changes resulting from vegetation removal during construction would be isolated to the area immediately surrounding the proposed bridge, bridge approach, and levee modifications. The resulting visual quality would be affected slightly but would remain moderate with implementation of the recommended avoidance, minimization, and mitigation measures.

Temporary visual changes due to construction are not considered adverse due to the temporary nature of construction, transient nature of viewers passing by the project site, and viewers' familiarity with heavy equipment in the project area for recent development in the project

vicinity. However, construction would affect native trees and vegetation located along the river and near formal and informal trails because of levee modifications, in proximity to the bridge, which would be an adverse effect. The resulting visual quality would be affected slightly but would remain moderate with implementation of the recommended avoidance, minimization, and mitigation measures.

The West Sacramento Visual Assessment Unit consists of mixed residential, commercial, and open space land uses just west of the vegetated levees along the river. The removal of the C Street viaduct to the I Street Bridge, removal of 2nd Street south of C Street, and creation of a cul-de-sac would not greatly alter views because no viewers are adjacent to the streets that would be directly affected. The proposed bridge would be visible primarily from levee trails, the river's shoreline, and local roadways that are directly next to the bridge—such as seen in Key View 2, *Simulated View*, from C Street (Figure 2.6-3). The bridge is not likely to be visible from locations further west because development, mature trees, and distance limit most other views of the bridge from this visual assessment unit. Views from the edge or the river would be available where gaps in riparian vegetation and river banks allow viewers standing at the water's edge to view the bridge, such as from River Walk Park. Intervening bridge infrastructure and riparian vegetation limit the availability of such views and also obscure views so that only smaller portions of the proposed bridge would be seen. As seen in the simulation, existing vegetation would obscure views of the bridge structure whether the bridge is up or down, even when close to the bridge. In addition, the water tower would be relocated close to its existing location; therefore, its relocation would not alter associated views. While the bridge type has been determined, the bridge design has not been solidified. However, it would be designed in a manner that carries forward elements from the nearby Tower and I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. Removal of the existing bridge approaches would reduce the amount of transportation infrastructure seen from within the visual assessment unit at certain locations, the simulation for Key View 3 (Figure 2.6-4). This would improve the quality of views from such locations. The existing I Street Bridge would remain in place, would appear to look the same, and would continue to service rail transport. The primary difference would be that vehicles would no longer be seen crossing on the upper deck, even though the upper deck would remain intact.

The bridge design has not been solidified, but it would be designed in a manner that carries forward elements from the nearby Tower and I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. The final bridge design has the potential to affect visual resources if residents of the two cities and affected viewers do not favor the look of the proposed design. Implementation of the recommended avoidance, minimization, and mitigation measures would ensure that the public is engaged in the bridge design process—facilitating public acceptance of the proposed project, in addition to aiding in improving project aesthetics.

The most visible features associated with the project seen from the West Sacramento Visual Assessment Unit would be the realigned C Street and the reconfigured residential connections to C Street. The realigned C Street would create a slightly wider bridge approach, compared to the existing C Street viaduct to the I Street Bridge, but it would be in keeping with the existing approach in scale and form because the proposed approach would curve in a similar manner to

the existing I Street Bridge approach. Implementation of either build alternative would modify the levee at the bridge touchdown, and these changes would include relocating the existing formal trail. This would not greatly alter views because, although relocated, the trail would remain to maintain visual access to the river and provide access to the new bridge. An informal trail along the riverbank would re-occur naturally over time from foot traffic as people walk off of the formal trail to access the river's edge.

Summary

The vividness of the West Sacramento Visual Assessment Unit would not be greatly affected by the proposed project. The rating would remain moderate but would be slightly affected by levee modifications and associated vegetation removal. The intactness would remain moderate because, although removal of the C Street viaduct to the I Street Bridge and 2nd Street would reduce the amount of roadway infrastructure to a degree, the proposed bridge and C Street connection would introduce new structures and roadway features. These changes would be in keeping with the appearance of the project corridor. The resulting visual quality would be affected slightly but would remain moderate with implementation of the recommended avoidance, minimization, and mitigation measures.

As described in Section 2.6.2.3, “Viewers and Viewer Response,” a very small subset of the larger viewer group may view the project negatively because they would be adversely affected by the 2nd Street access changes. However, many roadway neighbors and users may view the project in a positive manner because of the improved connectivity it would provide. Viewers within the project area are familiar with existing bridges along this segment of the river, and the proposed bridge would be in keeping with the existing visual environment. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the West Sacramento Visual Assessment Unit; the composite viewer response would be moderate.

Both build alternatives would result in a resource change to this visual assessment unit that is moderate-low. When the resource change is considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate. Therefore, these permanent built changes would not result in adverse visual effects under either build alternative with implementation of the recommended avoidance, minimization, and mitigation measures.

River Visual Assessment Unit

Build Alternatives 1 and 2 for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the Sacramento Visual Assessment Unit would not be visible from the River Visual Assessment Unit. Therefore, visual impacts associated with these alternatives are not analyzed within the River Visual Assessment Unit.

Construction activities would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of water-based viewers. Temporary falsework platforms would be required to construct the proposed bridge foundations and approach structures; these would be installed on or after April 15 and removed

by October 31. In addition, temporary cofferdams would be required to construct the bridge piers within the water. Although construction activities would be visible, boat traffic would still be allowed to pass; therefore, visual access along the river would not be impeded by restricted river access.

Construction activities would create temporary visual impacts on views seen of and from the project site during the construction period by the visual presence of construction activities and equipment. This is not considered adverse due to the temporary nature of construction, transient nature of boaters passing by the project site or fishing along the banks, and viewers' familiarity with heavy equipment in areas adjacent to the project for recent development within the project vicinity. Temporary visual changes due to construction signaling, signage, and lighting also would occur for boating safety.

As shown in the existing views for Key Views 4, 5, and 6 (Figures 2.6-5, 2.6-6, and 2.6-7), vegetation is present along the river corridor; visual changes resulting from vegetation removal during construction would be isolated to the area immediately surrounding the proposed bridge, bridge approach, levee modifications, and realigned trailways on both sides of the river. However, construction would affect native trees and vegetation located along the shoreline, in proximity to the bridge, which would be an adverse effect. The resulting visual quality would remain moderate-high with implementation of the recommended avoidance, minimization, and mitigation measures.

The largest visual change in the River Visual Assessment Unit associated with the proposed project is the introduction of a new bridge across the river that would be visible from various locations within the visual assessment unit. This visual assessment unit would have the most direct views toward the bridge. Views from the river's edge would be available at public access points, like the Broderick Boat Ramp. Views also are available to viewers standing at the water's edge, boaters on the river, rail passengers crossing the existing I Street Bridge that would remain for rail transport, and pedestrians on the water intake's public promenade. Once the bridge approaches are removed, the existing lattice steel bridge would remain. The existing bridge would appear to look the same and would continue to service rail transport. The primary difference would be that cars would no longer be seen crossing on the upper deck, even though the upper deck would remain intact. The proposed bridge would be most visible from areas north of the existing I Street Bridge because that portion of the river lacks other structures to obscure views of the project site, unlike views south of the existing bridge. South of the existing I Street Bridge, intervening bridge infrastructure and riparian vegetation would limit the availability of views and would obscure views so that only smaller portions of the proposed bridge would be seen. In addition, RSP likely would be added along the shoreline to prevent erosion near the bridge. However, the RSP would weather and darken, and would appear similar to other RSP installations along the river, with which water-based viewers are familiar.

As shown in Figure 2.6-5a, the simulation Key View 4 depicts river-level views of the proposed bridge in the closed position from the Broderick Boat Ramp. The bridge would obscure views toward the downtown skyline, the existing I Street Bridge, and vegetated levees. However, as shown in the simulation in Figure 2.6-5b, the bridge would allow partial views of the Sacramento skyline and vegetated levee banks when it is raised.

As shown in Figure 2.6-6a, the simulation Key View 5 depicts representative views of the proposed bridge in the closed position for rail travelers on the existing I Street Bridge. The bridge would obscure views toward the river, vegetated levees, and the water intake structure. However, because of a bend in the river farther north of the bridge, views down the river do not extend very far upstream of the water intake structure. While much of the bridge would be low profile, the towers of the bridge would add a vertical element that would make the bridge appear to be more visually prominent. When the bridge is raised, as shown in the simulation in Figure 2.6-6b, more views would be possible of the upstream portions of the river, vegetated levees, and the water intake structure.

As shown in Figure 2.6-7a, the simulation for Key View 6 depicts views of the proposed bridge in the closed position from the water intake structure’s public promenade. Because the bridge would be closer to viewers at this location, it would appear larger than the existing I Street Bridge. The new bridge would obscure views toward the existing I Street and Tower Bridges. The bridge towers also would partially obscure views of the western edge of Sacramento’s skyline. However, as shown in the simulation in Figure 2.6-7b, more direct views toward the existing I Street and Tower Bridges would be possible when the bridge is raised.

The bridge design has not been solidified, but it would be designed in a manner that carries forward elements from the nearby Tower and I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. The final bridge design has the potential to affect visual resources if the public and affected viewers do not favor the look of the proposed design. Implementation of the recommended avoidance, minimization, and mitigation measures would ensure that the public is engaged in the bridge design process—facilitating public acceptance of the proposed project, in addition to aiding in improving project aesthetics.

Summary

The vividness of the River Visual Assessment Unit would not be greatly affected by the proposed project because the bridge would be located and grouped with other similar structures, and the rating would remain moderate-high. The intactness and unity would remain moderate because the proposed bridge would introduce a new structure that would be located and grouped with other similar structures. The resulting visual quality would remain moderate-high with implementation of recommended avoidance, minimization, and mitigation measures.

As described in Section 2.6.2.3, “Viewers and Viewer Response,” the composite viewer response to the proposed project is likely to be moderate-low. Viewers within the project area are familiar with existing bridges along this segment of the river, and the proposed bridge would be in keeping with the existing visual environment. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the River Visual Assessment Unit.

Both build alternatives would result in a resource change to this visual assessment unit that is moderate-low. When the resource change is considered together with viewer response, the resulting visual impacts on scenic views and the existing visual character would be moderate-low. Therefore, these permanent built changes would not result in adverse visual effects under

either build alternative with implementation of the recommended avoidance, minimization, and mitigation measures.

Light and Glare

Sacramento, West Sacramento, and River Visual Assessment Units

Effects related to light and glare would be the same or very similar within all visual assessment units under both build alternatives. Nighttime construction would not occur; therefore, high-intensity nighttime lighting would not be needed. The resulting visual impacts on light and glare from construction would be low.

The bridge structure could be a source of glare depending on the color selection for the structure. The new bridge structure and removal of vegetation would slightly increase glare in the project area, but glare associated with the river is already a prominent visual element in the River Visual Assessment Unit and within the Sacramento and West Sacramento Visual Assessment Units where gaps in vegetation allow views of the river. In addition, the new bridge structure would shade the river's surfaces, slightly reducing reflective glare from the river within the River Visual Assessment Unit, which also could be seen from the Sacramento and West Sacramento Visual Assessment Units.

New bridge, roadway, and intersection lighting could include LED lighting for security and safety purposes. Impacts associated with LED lighting could affect sensitive receptors if not properly designed. LED lights can negatively affect humans by increasing nuisance light and glare, in addition to increasing ambient light glow, if shielding is not provided and blue-rich white light lamps are used (International Dark-Sky Association 2010a, 2010b, 2015). This would result in an adverse effect by creating a substantial source of nighttime light and glare that could negatively affect nighttime views in the area. However, project light and glare would not result in adverse visual effects under either build alternative with implementation of the recommended avoidance, minimization, and mitigation measures.

2.6.3.2 No Build Alternative

Under the No Build Alternative, the project would not be constructed and there would be no visual impacts associated with light and glare or to the existing visual character, visual quality, or affected viewer groups.

2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.4.

Work with Stakeholders to Determine Bridge Aesthetics

The project proponent will conduct a focused outreach effort and will conduct a public meeting or charrette session with public stakeholders to develop an aesthetic design approach to aid in reducing the visual impact of the proposed bridge. This measure will allow concerned viewers to contribute to creating a bridge that is visually appealing to the general public, while balancing the need for increased circulation access at this location. Affected stakeholders will be able to provide input on the preferred architectural style and coloring of the proposed bridge.

Implement Project Landscaping

The project proponent will install landscaping where space and safety considerations allow. This will improve the visual quality of the project corridor by improving corridor aesthetics and helping to reduce the apparent scale of new and reconfigured intersections, in addition to replacing some of the vegetation lost through construction. Prior to approval of the roadway design, the City of Sacramento and /or City of West Sacramento project landscape architect will review project designs to ensure that the following elements are implemented in the project landscaping plan.

- Design and implement low-impact development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips/medians between paved areas that catch and infiltrate runoff. In addition, pervious paving will be evaluated for use in the proposed project to improve infiltration and to reduce the amount of surface runoff from entering waterways and the storm water system. LID measures will not be used where infiltration could result in adverse environmental effects. LID measures, such as cobbled swales and aggregate mulching, can be used as an aesthetic design element to create an attractive view while reducing water use.
- Require construction contractors to incorporate native grass and wildflower seed to standard seed mixes, which may be non-native, for erosion control measures that will be applied to all exposed slopes. Wildflowers will provide seasonal interest to areas where trees and shrubs are removed and grasslands are disturbed. Only wildflower and grass species that are native will be incorporated into the seed mix, and under no circumstances will any invasive grass or wildflower plant species be used as any component in any erosion control measures. Species will be chosen that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas, and wetter species will be chosen for areas that will receive more moisture. If not appropriate to the surrounding habitat, wildflowers should not be included in the seed mix.
- Require the species list to include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of the roadside planting areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease. Evergreen groundcovers or low-growing plants, such as *Ceanothus* spp., should be used in areas where taller vegetation would potentially cause driving hazards by obscuring site distances. Species used will be native and indigenous to the project area and California. Native plant species can be used to create attractive spaces, high in aesthetic quality, that are not only drought-tolerant but also attract more wildlife than traditional landscape plant palettes. Use of native species promotes a

visual character of California that is being lost through development and reliance on non-native ornamental plant species.

- Use vegetative accents and screening to reduce the perceived scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Special attention should be paid to plant choices near residences to ensure that species chosen are of an appropriate height, and rely on evergreen species to provide year-round light screening from nuisance light, if applicable.
- Under no circumstances will any invasive plant species be used at any location.
- Plant vegetation within the first 6 months following project completion.
- Implement an irrigation and maintenance program during the plant establishment period and carried on, as needed, to ensure plant survival. However, design of the landscaping plan will try to maximize the use of planting zones that are water efficient. The design also may incorporate aesthetic features, such as cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, use a smart watering system in areas that are irrigated to evaluate the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, manage the irrigation system in such a manner that any broken spray heads, pipes, or other components are fixed within 1-2 days, or the zone or system will be shut down until it can be repaired.

Apply Minimum Lighting Standards

All artificial outdoor lighting and overhead street lighting is to be limited to safety and security requirements and the minimum required for driver safety. Lighting will be designed using Illuminating Engineering Society’s design guidelines and in compliance with International Dark-Sky Association–approved fixtures. All lighting will be designed to have minimum impact on the surrounding environment and will use downcast, cut-off type fixtures that are shielded and direct the light only toward objects requiring illumination. Therefore, lights will be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties or open spaces, or backscatter into the nighttime sky. The lowest allowable wattage will be used for all lighted areas, and the amount of nighttime lights needed to light an area will be minimized to the highest degree possible. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency, with daylight sensors or timers with an on/off program. Lights will provide good color rendering with natural light qualities, with the minimum intensity feasible for security, safety, and personnel access. Lighting, including light color rendering and fixture types, will be designed to be aesthetically pleasing.

LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Associations Fixture Seal of Approval Program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and that light spill does not affect sensitive residential viewers.

Lights along pathways and bridge safety lighting will use shielding to minimize offsite light spill and glare, and will be screened and directed away from adjacent uses to the highest degree possible. The amount of nighttime lights used along pathways will be minimized to the highest degree possible to ensure that spaces are not unnecessarily over-lit. For example, the amount of light can be reduced by limiting the amount of ornamental light posts to higher use areas and by using bollard lighting on travel way portions of pathways.

Technologies to reduce light pollution evolve over time; design measures that are currently available may help but may not be the most effective means of controlling light pollution once the project is designed. Therefore, all design measures used to reduce light pollution will use the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

2.6.5 References Cited

California Department of Transportation. 2015. *Officially Designated State Scenic Highways*.

Last updated: October 14, 2013. Available:

<<http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm>>. Accessed: June 22, 2015.

Federal Highway Administration. 1988. *Visual Impact Assessment for Highway Projects*.

(FHWA-HI-88-054.) U.S. Department of Transportation.

ICF International. 2015. *Visual Impact Assessment – I Street Bridge Replacement Project*.

November 5. Sacramento, CA.

———. 2016. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento*

and Yolo Counties. February 23. Sacramento, CA.

International Dark-Sky Association. 2010a. *Seeing Blue*. April. Nightscape 80: 8-12. Available:

<<http://www.darksky.org/assets/documents/SeeingBlue.pdf>>. Accessed: June 14, 2015.

———. 2010b. *Visibility, Environmental, and Astronomical Issues Associated with Blue-Rich White Outdoor Lighting*. Document date: May 4, 2010. Available:

<<http://www.darksky.org/assets/documents/Reports/IDA-Blue-Rich-Light-White-Paper.pdf>>. Accessed: June 14, 2015.

———. 2015. *IDA Issues New Standards on Blue Light at Night*. April. Nightscape 94: 10.

Available:

<http://www.darksky.org/assets/documents/Nightscape/IDA_April2015_LowRes.pdf>.

Accessed: June 14, 2015.

2.7 Cultural Resources

2.7.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including “historic properties,” “historic sites,” “historical resources,” and “tribal cultural resources.” Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (Section 106 PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The Section 106 PA implements the ACHP’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA’s responsibilities under the Section 106 PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

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 (in Section 4(f) terminology—historic sites). See Appendix A for specific information about Section 4(f).

The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

2.7.2 Affected Environment

The analysis in this section is based on the *Historic Property Survey Report*, which includes the *Archaeological Survey Report* (ICF International 2016a), and *Historical Resources Evaluation Report* (ICF International 2016b).

2.7.2.1 Area of Potential Effects

The Area of Potential Effects (APE) for the project was established by Caltrans in accordance with Stipulations VI.B.8 and VIII.A of the Section 106 PA. The APE for archaeological resources and the APE for architectural/built resources are not the same for the project and are described below.

Archaeological APE

The archaeological APE for the project consists of the area that would potentially be directly and physically affected by the project, the Area of Direct Impact (ADI). This area includes both the horizontal and vertical maximum extents of potential impacts. For this project, the ADI encompasses the project footprint, including areas of new construction and staging. The APE also encompasses the site boundaries of resources that may be affected by the undertaking.

The archaeological APE on the Sacramento (east) side of the river includes portions of the following: Jibboom Street, I Street, 2nd Street, the Sacramento Railyard, and the existing levee and American River Bike Trail. On the West Sacramento (west) side of the river, the APE includes portions of the I Street Bridge approach; portions of Kiline, B, C, 2nd, 3rd, 4th, and 5th Streets; and areas along the existing levee and adjacent park. Also included in the archaeological APE is the existing I Street Bridge.

Architectural APE

The architectural/built environment APE includes all existing rights-of-way and those parcels from which rights-of-way would be acquired where proposed project activities would directly or indirectly affect these areas. The ADI consists of the project footprint, including areas of new construction and staging. The areas of indirect impact take into consideration the maximum extent of potential visual and noise-related effects associated with the project on historic architectural and built resources. The architectural APE was established by ICF International (ICF) in consultation with Caltrans, in accordance with the Section 106 PA.

The architectural/built environment APE on the Sacramento (east) side of the river includes portions of the following: Jibboom Street, I Street, 2nd Street, the Sacramento Railyard, the existing Sacramento River east levee, and the American River Bike Trail. Although an approximate 80-foot segment of 2nd Street adjacent to the I Street Bridge approach is included in this APE, there is no potential for impacts on the nearby Old Sacramento Historic District because the roadway would be used only to allow construction equipment and vehicles to temporarily access the project site for the duration of project activities. Similarly, a small portion of I Street in Sacramento and C Street in West Sacramento is included in the APE, but there is no potential for impacts because work in these areas would be limited to minimal sidewalk

improvements and restriping of roadway surfaces. No ground disturbance would occur within the subject street and sidewalk segments. Finally, the architectural/built environment APE includes the I Street Bridge itself, as well as the project footprint of the new bridge spanning the Sacramento River between the City of Sacramento and the City of West Sacramento.

The term *APE* is used generally in this section to refer to both the archaeological and architectural APE, when not specified otherwise.

2.7.2.2 Research Methodology

An investigation for the cultural resources located in the project APE was conducted beginning in 2014. The investigation included a records search, Native American and historical society consultation, archaeological and architectural field surveys, and additional archival research.

Archival Research and Records Search

Two different California Historical Resources Information System (CHRIS) repositories cover the portion of California in which the APE is located. The North Central Information Center (NCIC) contains records for the Sacramento County portion of the APE, and the Northwest Information Center (NWIC) has those for Yolo County.

The records searches consulted the CHRIS base maps of previously recorded cultural resources and previously conducted cultural resources studies for the APE and all areas within 0.5 mile thereof. Additional sources of information, including previously conducted cultural resources surveys and historic maps (U.S. Geological Survey [USGS] and General Land Office), were selectively reviewed to determine areas with a high potential for the presence of historic-period and prehistoric sites.

The records searches identified four previously recorded cultural resources located within the APE—all but one located in Sacramento County. Of these resources, all are historic period—one is an archaeological resource and three are built environment resources. The archaeological resource has not previously been determined as eligible for listing in the NRHP or CRHR.

A buried urban landscape district that included all of downtown Sacramento appears to have been proposed by archaeologists as early as 1992; however, the site record indicates the district was refined and recorded as the Raised Streets and Hollow Sidewalks District (P-34-002358) in 2010. A portion of this District, which includes historic-era brick bulkheads and retaining walls that support the streets downtown, exists between I Street between 3rd and 5th Streets, outside the project's vertical APE. In this area, only striping and other surface area work is proposed to occur. Table 2.7-1 provides a summary of the previously recorded cultural resources within the APE identified during the records searches.

Additionally, the NCIC and NWIC have record of 260 previously recorded cultural resources located within 0.5 mile but outside the APE. Almost all of these (258) are located in Sacramento County, and almost all are built environment resources.

Table 2.7-1. Previously Recorded Cultural Resources in the APE

Trinomial Primary	Age	Type	Description	NRHP/CRHR Status	Recorder
CA-SAC-463H P-34-000490	Historic	BE	East Levee – Sacramento River	Not eligible/ Not eligible	JRP Historical Consulting; Wee and Rogers (1998)
P-57-000632	Historic	BE	Sacramento River West Levee segment	Not eligible/ Not eligible	Havelaar et al. (2010)
CA-SAC-658H P-34-000859	Historic	AR	Pioneer Flour Mill wharf: 518 pilings	Unevaluated/ Unevaluated	Allan (2002)
P-34-002349	Historic	BE	I Street Bridge	Listed/ Listed	Snyder (1981); Boghosian (1998)

AR-Archaeological, BE-Built Environment (Architectural).

Previous Cultural Resources Studies

The NCIC and NWIC have record of 24 previous cultural resources studies that have been conducted within some portion of the APE—17 were conducted in the Sacramento County portion of the APE, three in the Yolo County portion of the APE, and four in portions of the APE in both Sacramento and Yolo Counties. Additionally, the NCIC and NWIC have record of 81 previous cultural resources studies that have been conducted in areas within 0.5 mile but outside the APE—57 were conducted in Sacramento County and 24 in Yolo County. Few if any of the previous studies conducted in or in the vicinity of the APE included subsurface investigations.

Additional Background Research

The Cultural Resources chapter of the *Yolo County 2030 Countywide General Plan EIR* and the 1986 *Yolo County Historic Resources Survey* were also consulted as part of the effort to identify cultural resources in the study area (Yolo County 2009; Yolo County Community Development Agency and Les-Thomas Associates 1986). ICF found one resource—the Washington Water Company Water Tower—included in the 1986 survey (Yolo County Community Development Agency and Les-Thomas Associates 1986:219–220). All of the other previously recorded built environment resources in West Sacramento were identified through the NWIC CHRIS repository. Additional background research was conducted to arrive at a general understanding of the settlement and development of the project area. Research was largely conducted at the California State Library in Sacramento.

Shipwrecks Database

On May 18, 2015, the California State Lands Commission’s Shipwrecks Database (State Lands Commission 2009) was consulted to determine whether historic shipwrecks may be present in the APE or in the vicinity. The search generated a list of 24 shipwrecks, with latitude and longitude coordinates provided for 23 of these shipwrecks. These coordinates were plotted and overlaid with the APE. Eight of these shipwrecks were listed as being located within or immediately adjacent to the APE (Table 2.7-2).

Table 2.7-2. Shipwrecks Listed as Located in the APE

Ship Name	Type	Year Built	Year Sunk	Cause	County
<i>Flora</i>	Sternwheel steamboat	1885	1932	Burned	Yolo
<i>Jacinto</i>	Sternwheel steamboat	1889	1932	Burned	Yolo
<i>Sacramento</i>	Sternwheel steamboat	1914	1932	Burned	Yolo
<i>San Joaquin #2</i>	Unknown	1875	1932	Burned	Yolo
<i>San Joaquin #4</i>	Sternwheel steamboat	1885	1932	Burned	Yolo
<i>San Jose</i>	Sternwheel steamboat	1898	1932	Burned	Yolo
<i>Sterling</i>	Brig	1843	1855	Foundered	Sacramento
<i>Valetta</i>	Sternwheel steamboat	1901	1932	Burned	Yolo

Although shipwrecks are plotted in the APE, their locations appear to be inaccurate. This inaccuracy is likely due to the precision of the location data provided. Latitude and longitude coordinates given for the shipwrecks included only two decimal degrees. By definition, this level of precision results in an accuracy of between 800 and 1,000 meters (0.5 and 0.6 mile). Further research, involving an examination of both primary and secondary sources, revealed that all shipwrecks are located south of the APE. In the case of the *Sterling*, the State Lands Commission described the physical location in their 1988 report on historical sites and shipwrecks of the Sacramento River as at the foot of K Street (State Lands Commission 1988:43, 93). This revised location places the *Sterling* approximately 375 meters south of the APE. Meanwhile, the remaining ships listed as located in the APE (*Flora*, *Jacinto*, *Sacramento*, *San Joaquin #2*, *San Joaquin #4*, *San Jose*, and *Valetta*) were all destroyed in a single, destructive waterfront fire in 1932. A historic photo of this event depicts all these ships, which were moored on the west bank of the Sacramento River, as located between I and M Streets (Sacramento Public Library 1932). This location places the closest of the seven ships at approximately 150 meters south of the APE, with the remaining ships still further to the south.

Consultation with Interested Parties

On June 8, 2015, letters were sent describing the project and requesting any information on potential cultural resources in the APE to the California State Railroad Museum, the Center for California Studies, the Center for Sacramento History, the Sacramento County Historical Society, the West Sacramento Historical Society, the Yolo County Archives and Records Center, the Yolo County Historical Museum, the Yolo County Historical Society, and the Portuguese Historical & Cultural Society. Letters describing the project and requesting any information on potential cultural resources in the APE also were sent to Preservation Sacramento on July 9, 2015, and to the California Department of Parks Recreation on July 14, 2015. Follow-up phone calls were made on October 12, 2015, and January 29, 2016. Overall, none of the organizations contacted had any other resources to add to those identified as part of the *Historical Resources Evaluation Report*. In addition, no specific concerns were raised about potential adverse effects to cultural resources in the APE that might result from project implementation.

The Native American Heritage Commission (NAHC) was requested to conduct a Sacred Lands File database search for the APE on April 7, 2015. On April 28, 2015, the NAHC responded that the Sacred Lands File did not indicate any recorded sacred lands in the immediate vicinity of the APE. They also provided a list of 16 Native American contacts who may be interested in the project. On June 10, 2015, the City of Sacramento sent letters to all 16 representatives, providing project information and acting as initiation of consultation.

In a letter to ICF dated June 25, 2015, James Kinter of the Yocha Dehe Wintu Nation (YDWN) requested a site visit and additional project information. Daniel Fonseca of the Shingle Springs Band of Miwok Indians (Shingle Springs), in a letter to the City of Sacramento on June 30, 2015, requested completed records searches and cultural resources surveys for the project—in addition to requesting that the Shingle Springs Band of Miwok Indians be included as a consulting party for the identification of any potential Traditional Cultural Properties (TCPs) or Traditional Cultural Landscapes (TCLs) in the APE. On August 7, 2015, Gene Whitehouse of the United Auburn Indian Community of the Auburn Rancheria (UAIC) requested copies of archaeological reports and future environmental documents for the project, in addition to a site visit to the project to confirm the locations of suspected cultural resources.

On November 4, 2015, the City of Sacramento sent letters to the same 16 Native American representatives to whom the City had sent letters on June 10, 2015. These new letters invited the representatives to attend an onsite informational meeting for the project where details on project design and construction would be provided, questions taken regarding the project, and any concerns regarding traditional cultural properties or other cultural resources addressed. ICF archaeologist Robin Hoffman made follow-up phone calls to the 16 Native American representatives by on November 13, 2015. Mr. Hoffman asked whether the representatives would be attending and if they had any concerns or questions. In cases where the call was not answered, Mr. Hoffman left a voicemail.

An onsite information meeting was conducted in the West Sacramento portion of the APE on November 16, 2015. In attendance were representatives from YDWN, UAIC, City of Sacramento, City of West Sacramento, ICF, and Mark Thomas & Company. Zach Siviglia, lead project engineer, of Mark Thomas & Company provided detailed descriptions of project funding, purpose, design, and construction to all in attendance, while the group toured the West Sacramento portion of the APE. ICF archaeologist Robin Hoffman provided information on the archaeological studies to date for the project and furnished YDWN and UAIC representatives with maps showing the APE overlain onto historic maps. UAIC representative Tristan Evans informed Mr. Hoffman that UAIC knows of a TCP in or near the APE on both sides of the Sacramento River, as well as an archaeological site in or near the APE on both sides of the Sacramento River, and that UAIC would like to set up a meeting with the City of Sacramento to discuss these resources. YDWN Anthony Flores informed Hoffman that YDWN would like additional consultation and would be sending a letter to the City of Sacramento stating such.

Another onsite meeting was held with representatives from UAIC on November 14, 2016. The following day, UAIC also provided a sensitivity map.

Consultation is ongoing and will continue throughout the life of the project. Native American groups and individuals will be kept apprised of any developments concerning cultural resources. Appendix G presents documentation of the Native American consultation efforts to-date.

Field Methods

Pedestrian Survey

A survey of the recorded built environment cultural resources in the architectural APE was conducted on September 27, 2014, and April 4, 2015. The survey was conducted according to guidelines established in Caltrans' *Standard Environmental Reference*, Volume 2 – Cultural Resources, Chapter 7, “Built Environment Resources Evaluation and Treatment,” revised January 2, 2014. Monte Kim conducted the survey. Mr. Kim meets the qualifications of an Architectural Historian per Attachment 1 of the Section 106 PA. The survey effort included formal recordation of built-environment cultural resources in the architectural APE with digital photographs and handwritten notes.

An intensive archaeological pedestrian survey of all accessible portions of the APE was conducted on April 10 and 13, 2015. All portions of the APE were surveyed except for those in the Sacramento River. Parallel transects spaced at no more than 15 meters were walked, and the ground surface was inspected for archaeological material or evidence thereof. When ground visibility was poor, cleared areas and areas disturbed by rodents along and between the transect lines were checked with special attention.

Reconnaissance methods, consisting of inspecting targeted accessible areas, were used in areas of dense vegetation or steep slopes where access was limited. The principal area where reconnaissance survey methods were used was in the densely vegetated northernmost portion of the West Sacramento side of the APE. All portions of the APE were surveyed.

During the field survey, one previously recorded archaeological resource (CA-SAC-658H) was identified within the APE. A previously unrecorded feature of CA-SAC-658H was found in the APE, consisting of a raised concrete foundation and loading ramp located on the east bank of the Sacramento River. In addition to archaeological resources, no previously recorded TCPs or TCLs were recorded in the APE. The UAIC has stated that they know of a TCP located in or near the APE on each side of the Sacramento River, and of an archaeological site located in or near the APE on each side of the Sacramento River.

2.7.2.3 Cultural Resources Identified

Architectural/Built Environment

Nine architectural/built environment resources were identified within the APE. One of the nine resources is listed in the NRHP. In the process of conducting work on the Historical Resources Evaluation Report (ICF International 2016b), another resource was found to be eligible for listing in the NRHP/CRHR. These two resources are briefly described below. The remaining seven resources were found ineligible for listing in the NRHR or CRHR and are not considered historical resources for the purposes of CEQA.

The first resource is I Street Bridge, constructed in 1911, a double-deck, steel-swing bridge extending from Sacramento to West Sacramento. The bridge was listed in the NRHP in 1982 (National Register #82002233) and has significance under NRHP and CRHR Criterion A/1 in the area of transportation as the oldest bridge in the state that carries main line traffic across a major crossing. From the day it was built, the bridge has carried Southern Pacific's main line freight as well as its major transcontinental passenger service, the service identified today as the Amtrak *California Zephyr*. The bridge also has significance under NRHP and CRHR Criterion C/3 in the area of engineering. The I Street Bridge holds an important place in the history of swing bridge design, helping to prove that a center pier design could be used for very long and heavy railroad bridges. The bridge was among the first very heavy moveable bridges to use a center bearing design and showed the effectiveness of the engineering of this structure. The bridge is also listed in the CRHR and is considered to be a historical resource for the purposes of CEQA.

The second resource is a segment of the Sacramento River East Levee (P-34-000490). Although portions of the Sacramento River East Levee have been previously evaluated under the primary number P-34-000490, the portion in the project study area is a newly recorded segment. The subject segment is eligible for listing in the NRHP and the CRHR at the local level of significance under Criterion A/1 as a physical representation of the precedent set for flood control management in California between 1850 and 1911, more specifically flood control management policy and development in the Sacramento Valley. Levees, canals and drainages built within this timeframe are associated with early advances in water management in California that resulted in making settlement and expansion of infrastructure in the region possible. It set the standard for post-1911 efforts to achieve a more unified and standardized approach to levee construction in the Sacramento Valley. As part of the first Reclamation District, RD 1, it is a strong example of the pre-1911 era of flood control measures overseen by local interests. The levee segment is considered to be a historical resource for the purposes of CEQA.

Archaeological Resources

Archaeological resources identified in the APE during survey include one previously recorded resource (CA-SAC-658H).

CA-SAC-658H consists of 518 pilings associated with the Pioneer Flour Mill, which began operation in 1853. These pilings are located on the east bank of the Sacramento River from south of the I Street Bridge northward into the APE. During survey, a previously unrecorded feature of the site was found in the APE, consisting of a raised concrete foundation and loading ramp located on the east bank of the Sacramento River. No previous determinations of eligibility for listing in the NRHP or CRHR have been made for the resource.

Determination of Eligibility

The cultural resources studies were submitted to the SHPO with a letter dated December 27, 2016. As a result of consultation, in a letter dated February 7, 2017, the SHPO concurred with the eligibility determination of as stated above and summarized here:

- Consultation and identification efforts identified the I Street Bridge, a property listed in the National Register of Historic Places (NRHP), within the APE.
- Sacramento River East Levee Segment (P-34-00490) is individually eligible for listing in the NRHP.
- Seven other built-environment properties are not eligible for listing in the NRHP individually or as contributors to a potential NRHP eligible district.
- CA-Sac-658H, remnants of the Pioneers Flour Mill, is eligible for purposes of the project in accordance with Stipulation VII.C.4 of the Section 106 PA.

Copies of the consultation correspondence are included in Appendix G.

2.7.3 Environmental Consequences

2.7.3.1 Build Alternatives

A Finding of Effects (FOE) document was prepared and sent to the SHPO in accordance with Stipulations IX, X, and XI of the Section 106 PA. The discussions below apply equally to both build alternatives since they share the same footprint and would require similar ground disturbance and depth of excavation. In a letter dated October 9, 2018, the SHPO concurred that the project would not adversely affect the I Street Bridge, the Sacramento East Levee Segment, and CA-SAC-658H (see Appendix G). SHPO and Caltrans executed a project-specific Programmatic Agreement (project-specific PA) on March 22, 2019 to document the conditions by which project effects to these resources will be avoided, and to fulfill NHPA Section 106 requirements regarding the treatment of any previously unrecorded archaeological sites that might be encountered during test excavations or construction. The current finding for the project as a whole is “no adverse effect with standard conditions.” The FOE is included in Appendix G.

Identified Cultural Resources

Architectural/Built Environment

I Street Bridge

The proposed project would affect the NRHP-listed I Street Bridge, but the effect would not be adverse. The existing I Street Bridge over the Sacramento River would remain in place, but the approach structures leading up to the bridge from both directions and do not contribute to the bridge’s eligibility would be demolished. As a result, though the project would remove non-rail vehicular use of the bridge and modestly affect its integrity of design, the project would not adversely affect the characteristics of the property that qualify it for listing in the NRHP. Additionally, a condition to the project is proposed to require the development of an interpretive panel to be installed in Old Sacramento to document the vehicular uses of this bridge. Although the bridge is a protected resource type under Section 4(f), the proposed project would not result in a “use” of the resource. See Appendix A for additional discussion of Section 4(f). Therefore, the finding for the I Street Bridge is “no adverse effect without standard conditions.”

Sacramento River East Levee

No specific changes to the NRHP/CRHR-eligible segment of the Sacramento River East Levee are proposed by the project. Work along or adjacent to the levee segment would be limited to removal of existing I Street Bridge approach structures on the east side of the bridge as well as construction of the new proposed bridge. The proposed project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property. In addition, although the levee is a protected resource type under Section 4(f), the proposed project would not result in a “use” of the resource. See Appendix A for additional discussion of Section 4(f). Therefore, the finding for the Sacramento River East Levee is “no adverse effect without standard conditions.”

Archaeological Resources

A portion of historic-period archaeological site CA-SAC-658H is located within the project APE, but outside the ADI. No previous determinations of eligibility for listing in the NRHP or CRHR have been made for the resource. However, the resource is considered eligible for listing in the NRHP and CRHR for the purposes of this project. Proposed project activities would occur only at the loading ramp location, adjacent to the existing American River Bike Trail, and would consist of access routes with only temporary impacts. The closest ground-disturbing activities to the resource would be bike lane construction (approximately 10 feet northeast of the ramp at a depth of approximately 15 feet) and removal of the Jibboom Street approach superstructure (approximately 15 feet east of the ramp at a depth of approximately 3 feet). The former would include ground disturbance to a depth of approximately 15 feet, and the latter to a depth of 3 feet. An Environmentally Sensitive Area (ESA) will be established to ensure that resource CA-SAC-658H is not affected during project implementation. Therefore, the finding for known archaeological resources is “no adverse effect with standard conditions.”

Unidentified Cultural Resources

The existence of known archaeological sites and historic activities in the area make the project area moderately sensitive for archaeological resources. The soil types in the APE have increased sensitivity for buried prehistoric sites with little or no surface manifestation—these sites could also contain human remains. Because relatively less development has occurred on the West Sacramento portion of the APE, the potential for intact prehistoric resources in this area may be higher than in the Sacramento portion of the APE, where the American River channel was once located and heavy industrial development took place. Any prehistoric archaeological sites that have not been identified in the APE and vicinity may have both significance and integrity and, therefore, may qualify as historic properties under the NHPA.

Regarding historic-period archaeological resources, despite the underlying geology being fill material, the Sacramento portion of the APE experienced intense historic-period use and has potential for buried historic-period archaeological deposits with little or no surface manifestation. The same urban development (historic-period) that may have disturbed or destroyed any unidentified archaeological resources (particularly prehistoric), if present, may, in itself, have resulted in the creation of new historic-period archaeological sites that have been buried and as

yet identified. This same increased sensitivity follows for the West Sacramento portion of the APE, although historic-period development was somewhat less intensive.

As a result, it is possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for the proposed project. A project-specific PA and associated Cultural Resources Management Plan was prepared to address identification and mitigate effects to cultural resources if found during construction (see Section 2.7.4, “Avoidance, Minimization, and/or Mitigation Measures”).

2.7.3.2 No Build Alternative

The No Build Alternative would not result in project-related effects on either known or as-yet-unidentified archaeological resources because there would be no project-related excavation within archaeologically sensitive areas. Similarly, the No Build Alternative would not affect architectural/built-environment cultural resources.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Before any ground-disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors), to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements.

Develop Interpretative Display for the I Street Bridge

The project proponent will develop an interpretive display and erect the display in Old Sacramento at a site within clear view of the I Street Bridge. The display will focus on the removal of vehicular uses from the I Street Bridge, to interpret for future generations the vehicular uses of the bridge. The project proponents will also assemble a freestanding interpretive panel that documents the history of the joint railroad-automobile use of the I Street Bridge, emphasizing the non-rail uses. Details on the implementation on the interpretive display will be coordinated through Caltrans in consultation with SHPO.

Establish an Environmental Sensitive Area for Resource CA-SAC-658H

An Environmentally Sensitive Area (ESA) will be established to ensure that resource CA-SAC-658H is not affected during project implementation. Prior to construction, the construction contractor will install high-visibility orange construction fencing and/or flagging, as appropriate, along the perimeter of the area of direct impact (ADI) located within the APE to restrict access to the portion of CA-SAC-658H outside the ADI. Prior to installation of the ESA fencing, the Environmentally Sensitive Area Action Plan will be reviewed as a stipulation of the project-specific PA prepared for the project.

Implement a Programmatic Agreement for the Project

A project-specific PA between Caltrans, the City of Sacramento and the SHPO was developed for the project. The project-specific PA assures fulfillment of the NHPA requirements of Section 106 and ensures proper evaluation and treatment of any previously unknown archaeological resources uncovered during ground-disturbing construction activities. Additionally, the project-specific PA establishes responsibilities for the treatment of historic properties, the implementation of mitigation measures, and ongoing consultation efforts with Native American groups.

The project-specific PA includes development of a plan for archaeological test trenching within the APE on the West Sacramento side of the river, since this area has a high archaeological sensitivity for both historic-period and prehistoric material. A plan will be prepared for this work similar to a Caltrans Extended Phase I (XPI) Plan. Excavations will be conducted prior to construction, and will aid in the identification of unknown subsurface archaeological deposits that may be present within the APE. The project-specific PA also includes an Environmentally Sensitive Area Action Plan, as discussed above, for CA- SAC-658H. As part of the project-specific PA, a Cultural Resources Management Plan (CRMP) was prepared to Caltrans, City of Sacramento, and City of West Sacramento standards. The CRMP designates procedures for treatment of previously unidentified cultural resources encountered during test trenching or construction, including steps for the mitigation of resources that are determined eligible for the NRHP.

The CRMP specifies that a qualified archaeologist and a Native American monitor will be retained to monitor all initial ground disturbing activities (e.g., vegetation removal, grading, excavation, bridge construction). The purpose of the monitoring is to ensure that measures identified in the environmental document are properly implemented to avoid and minimize effects to cultural resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. Conditions for monitoring and project reporting are specified in the CRMP.

The project-specific PA is included in Appendix G as an attachment to the FOE.

Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

It is Caltrans' and the City of Sacramento's policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource.

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 shall be contacted. Pursuant to PRC Section 5097.98, if the remains are

thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The project proponent will work with the MLD to avoid the remains and, if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

2.7.5 References Cited

- Allan, James L. 2002. *Evaluation of Navigation Hazards in the Sacramento River, Sacramento and Yolo Counties*. Institute for Western Maritime Archaeology. Prepared for California State Lands Commission.
- Boghosian, Paula. 1998. *P-34-2349, I Street Bridge*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Dillon, James. 1975. *Old Sacramento Historic District*. National Register of Historic Places Inventory Nomination Form. On file, North Central Information Center, California State University, Sacramento, CA.
- Dougherty, John W. 2012. *P-34-4497, Archaeological features on I Street from 4th to 5th Streets*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Downey. 2010. *P-34-2358, Raised Streets and Hollow Sidewalks District*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Gross, C. 2003. *P-34-1000H (CA-SAC-689H)*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Havelaar et al. 2010. *P-57-000632*. California Department of Parks and Recreation DPR 523 site record. On file, North West Information Center, Sonoma State University, Rohnert Park, CA.
- ICF International. 2016a. *Archaeological Survey Report for the I Street Bridge Replacement Project, California Department of Transportation, District 3, Sacramento and Yolo Counties, California*. May. Prepared for Mark Thomas Company. Sacramento, CA.
- ICF International. 2016b. *Historical Resources Evaluation Report for the I Street Bridge Replacement Project, California Department of Transportation, District 3, Sacramento and Yolo Counties, California*. May. Prepared for Mark Thomas Company. Sacramento, CA.

- Page & Turnbull, Inc. 2009. *P-34-2358, Raised Streets and Hollow Sidewalks District*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Sacramento Public Library. 1932. *Fire on the Sacramento River between I and M Street Bridges*. Available:
<<http://cdm15248.contentdm.oclc.org/cdm/singleitem/collection/p15248coll1/id/1472/rec/2>>. Accessed: May 28, 2015.
- Sanborn Map Co. 1915. *Insurance Maps of Sacramento, California*, Vol. 1. Sanborn Map Co., New York. Available: <<http://www.proquest.com>>. Accessed: May 28, 2015.
- Sanborn Map Co. 1952a. *Insurance Maps of Sacramento, California*, Vol. 1. Sanborn Map Co., New York. Available: <<http://www.proquest.com>>. Accessed May 28, 2015.
- Sanborn Map Co. 1952b. *Insurance Maps of Sacramento, California*, Vol. 3. Sanborn Map Co., New York. Available: <<http://www.proquest.com>>. Accessed: May 28, 2015.
- Snell, Charles W. 1960. *Sacramento*. National Survey of Historic Sites and Buildings form. On file, North Central Information Center, California State University, Sacramento, CA.
- Snyder, John W. 1981. *I Street Bridge*. National Register of Historic Places Inventory Nomination Form. On file, North Central Information Center, California State University, Sacramento, CA.
- State Lands Commission. 1988 *A Map and Record Investigation of Historical Sites and Shipwrecks along the Sacramento River between Sacramento City and Sherman Island*. Prepared by Land Location and Boundary Section of the California State Lands Commission.
- State Lands Commission. 2009. Shipwreck Database. Available:
<http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp>. Accessed: May 18, 2015.
- Tremaine, Kim J. 2008. *P-34-2358, Raised Streets and Hollow Sidewalks District*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Wulzen, Warren. 2009. *P-34-4110H, CPRR Trestle over Lake Sutter Slough*. California Department of Parks and Recreation DPR 523 site record. On file, North Central Information Center, California State University, Sacramento, CA.
- Yolo County. 2009. *2030 Countywide General Plan*. Woodland: Planning and Public Works Department, pp. CO49–60.
- Yolo County Community Development Agency and Les-Thomas Associates. 1986. *Yolo County Historic Resources Survey*.

Physical Environment

2.8 Hydrology and Floodplain

2.8.1 Regulatory Setting

2.8.1.1 Federal Requirements

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

To comply, the following must be analyzed.

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

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

2.8.1.2 State Requirements

The *Central Valley Flood Protection Plan* (California Department of Water Resources 2012a) provides a comprehensive new framework for systemwide flood management and flood risk reduction in the Sacramento and San Joaquin River Basins. The CVFPB is the agency responsible for implementation of this plan. Projects are required to apply for an encroachment permit from the CVFPB if any of the following apply to a project or work plan.

- Project is within an Adopted Plan of Flood Control, as defined by CCR, Title 23, Section 4
- Project is within the flood control right-of-way for levees
- Project is near or on a regulated Central Valley stream
- Project may affect the current or future State Plan of Flood Control

2.8.1.3 Regional Requirements

City of Sacramento

Sacramento Area Flood Control Agency

The Sacramento Area Flood Control Agency (SAFCA) was formed in 1989 to address the Sacramento area’s vulnerability to catastrophic flooding. This vulnerability was exposed during the record flood of 1986, when Folsom Dam exceeded its normal flood control storage capacity and several area levees nearly collapsed under the strain of the storm. In response, the City of Sacramento, the County of Sacramento, the County of Sutter, the American River Flood Control District, and Reclamation District (RD) No. 1000 created SAFCA through a Joint Exercise of Powers Agreement to provide the Sacramento region with increased flood protection along the American and Sacramento Rivers.

City of Sacramento General Plan

The following policies from the *Sacramento 2035 General Plan* (City of Sacramento 2015) are applicable to this project with respect to hydrology and flooding.

Environmental Constraints

Goal 2.1 Flood Protection. Protect life and property from flooding.

Policy EC 2.1.11 New Development. The City shall require evaluation of potential flood hazards prior to approval of development projects and shall regulate development in urban and urbanizing areas per state law addressing 200-year level of flood protection.

Policy EC 2.1.12 New Development Design. The City shall require new development located within a special (100-year) flood hazard area to be designed to minimize the risk of damage in the event of a flood.

City of West Sacramento

West Sacramento Area Flood Control Agency

The City of West Sacramento and RD 900 and RD 537 make up the joint powers authority that forms the West Sacramento Area Flood Control Agency (WSAFCA). WSAFCA’s mission is to plan and build flood risk reduction facilities that protect the City of West Sacramento’s residents and property. WSAFCA is also the regional floodplain administrator carrying out duties associated with floodplain management and flood preparedness activities.

City of West Sacramento General Plan

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016), adopted in November 2016, outlines the following key goals and policies that relate to hydrology and water quality.

Health and Safety

Goal S-2. To prevent loss of life, injury, and property damage due to flooding.

Policy 1. The City shall continue to participate in the National Flood Insurance Program, and ensure that local regulations are in full compliance with standards adopted by the Federal Emergency Management Agency.

Goal PFS-4. To maintain an adequate level of service in the City's storm drainage system to accommodate runoff from existing and future development, prevent property damage due to flooding, and improve environmental quality.

Policy PFS-4.10. The City shall require new development to be designed to prevent the diversion of floodwaters onto neighboring parcels.

2.8.2 Affected Environment

This section is based on the analysis documented in the *Water Quality Assessment Report* prepared for this project (ICF International 2016) and the *I-Street Bridge Replacement Scour Analysis* also prepared for the project (Tetra Tech 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

2.8.2.1 Regional Hydrology

The project is located in the Sacramento River Basin, which has a total drainage area of approximately 27,000 square miles. Within the basin, the project site is located within the Lower Sacramento Valley Watershed. The basin drains the eastern slopes of the Coast Ranges, Mount Shasta, the western slopes of the southernmost region of the Cascades, and the northern portion of the Sierra Nevada. The Sacramento Valley Watershed is approximately 5,500 square miles (Sacramento River Watershed Program 2010).

According to the U.S. Geological Survey (USGS) National Watershed Boundary Dataset, the project area lies within three hydrologic units. The eastern bridge landing and Sacramento River are within Lake Greenhaven-Sacramento River (Hydrologic Unit Code [HUC] 180201630701). On the western landing, the area north of I Street is within Tule Canal-Toe Drain (HUC 180201630302), and the area south of I Street is within Toe Drain-Cache Slough (HUC 180201630606). (U.S. Geological Survey 2015).

2.8.2.2 Local Hydrology

Precipitation and Climate

The climate of Sacramento is Mediterranean, which is characterized as damp to wet mild winters and hot, dry summers. The rainy season generally occurs between October and April, and the total average annual rainfall is 17.59 inches (Table 2.8-1). (Western Regional Climate Center 2015a).

Table 2.8-1. Month Average Precipitation at the Sacramento Executive Airport

Monthly Average Total Precipitation (inches)												Total Annual
Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	
3.56	3.03	2.50	1.28	0.54	0.16	0.02	0.05	0.24	0.95	2.10	3.06	17.59

Source: Western Regional Climate Center 2015a.

The annual mean temperature is 61.0 °F, with the monthly daily average temperature ranging from 46.4 °F in December to 75.5 °F in July. Summer heat is generally moderated by the “Delta breeze” coming from the Sacramento-San Joaquin River Delta (Delta) and ultimately the San Francisco Bay, and temperatures cool down sharply at night. (Western Regional Climate Center 2015b.)

Surface Streams

Sacramento River

The I Street Bridge crosses the Sacramento River at approximately 0.75 mile downstream of its confluence with the American River. The Sacramento River is the largest river in California. The Sacramento River carries 31 percent of the State’s total surface water runoff. Primary tributaries to the Sacramento River are the Pit, Feather, and American Rivers. The headwaters of the Sacramento River are in the Klamath Mountains in northern California; the river flows 445 miles before joining the San Joaquin River 40 miles south of the City of Sacramento, which ultimately flows to San Francisco Bay.

The Sacramento River, beginning at the I Street Bridge, falls within the legal description of the Delta (California Department of Water Resources 1995). Before development of the Sacramento area, the river had a wide natural floodplain. Today, the river is heavily altered, with hydroelectric and water supply impoundments throughout the course of the river and a network of flood control levees through populated areas. (Sacramento River Watershed Program 2015.)

The preliminary results of the wetland delineation for the project indicate that the location of the ordinary high water mark (OHWM) in the Sacramento River was based on the elevation of 19 feet NGVD, or mean sea level, that was previously determined by the USACE at the I Street Bridge. Observations in the field further confirmed this location based on the presence of shelving, silt deposition, and wracking.¹ The average width of the Sacramento River at the OHWM is approximately 672 feet. The channel bottom is a natural substrate, presumably sand and sediment, but water turbidity makes visual confirmation of the composition difficult. The river banks are mostly steeply sloped and support riparian forest vegetation, with rip-rap near the bottom of the slope.

American River

The headwaters of the American River are the Sierra Nevada; the river flows 119 miles until converging with the Sacramento River. Similar to the Sacramento River, the American River is

¹ *Wracking* typically refers to lines of debris from past materials piled up on along the channel banks.

heavily modified by dams and diversions for hydroelectricity and irrigation demands. (U.S. Geological Survey 2015.)

The Lower American River originates from Folsom Lake, a man-made reservoir created by Folsom Dam 30 miles east of Sacramento. Folsom Lake is a multipurpose reservoir that stores water for irrigation; domestic, municipal, and industrial use; hydropower; recreation; water quality; and fisheries flows. Nimbus Dam, 7 miles downstream from Folsom Dam, stores water from Folsom Dam hydropower releases and re-regulates them via releases to provide for a steady flow downstream in the American River. This allows the release of water from Folsom Dam for power generation to fluctuate with daily power demands. The Lower American River has levees on its north and south banks for about 13 miles from the Sacramento River to Carmichael on the north end. Portions of the floodplain have been acquired by the City or County of Sacramento and are managed cooperatively as the American River Parkway. (Sacramento River Watershed Program 2015).

Storm Drainage System

The City of Sacramento owns and operates a combined sewer system (CSS) that conveys domestic and commercial wastewater and storm water runoff from the downtown Sacramento, East Sacramento, and Land Park areas. The City of Sacramento also owns and operates a separate sanitary sewer system that conveys domestic and commercial wastewater from parts of the city surrounding the CSS to the north, east, and south; the storm water is carried and discharged directly into local waterways within the Lower Sacramento River watershed. In the City of West Sacramento, storm water from north of I-80 is carried through a system of both surface ditches (in more residential areas) and pipes (in more commercial areas). Approximately 95 percent of the water (Harbor, Riske, Washington, and 5th Street Pump Stations) is then discharged (pumped) into the Yolo Bypass. Approximately 5 percent of the water (Lighthouse and Raley Pump Stations) is discharged into the Sacramento River. (City of West Sacramento 2003.)

The project area is served by the City of Sacramento's CSS to the Sacramento River, as well as a separate storm water system on the east side of the bridge and the City of West Sacramento's separate storm water system to the Yolo Bypass.

Floodplains

The eastern side of the I Street Bridge is located within 100-year Flood Zone AE (Figure 2.8-1). This zone is identified by the Federal Emergency Management Agency (FEMA) as a Special Flood Hazard Area (SFHA), an area subject to flooding during the 100-year storm event (1 percent annual chance of flooding) (Federal Emergency Management Agency 2012). The western side of the channel is protected from the 100-year flood by levees. Development in an SFHA is regulated by federal, state, and local agencies. Flood Zone AE applies to the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1 percent annual chance flood can be carried without substantial increases in flood elevations. The landings (or approaches) of the I Street Bridge are outside of the 100-year FEMA flood zone. They are within a Zone X (unshaded) or Zone C, which are areas subject to minimal flooding that are outside the 500-year flood zone (Federal Emergency Management Agency

2012). The surrounding area on the eastern end is designated as Flood Zone X5, which is a 500-year flood zone. Descriptions of flood zone designations are provided in Table 2.8-2.

Table 2.8-2. FEMA Flood Zone Designations in the Project Vicinity

Zone	Zone Description
AE	Areas with a 1-percent annual chance of flooding. Base flood elevations are determined and shown on Federal Emergency Management Agency flood maps.
X (unshaded) or C	Area of minimal flood hazard, usually depicted on Flood Insurance Rate Maps as above the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from the 100-year flood.
X5	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.

Source: Federal Emergency Management Agency 2012.

As required by the CVFPB, levees within urban areas of the Central Valley need to be able to provide for a 200-year flood event level of protection. The proposed project is located within the Lower Sacramento Regional Work Group of the Central Valley Flood Management Program Lower Sacramento River/Delta North Regional Flood Management Planning Region. The Lower Sacramento/Delta North Regional Working Group has branded itself as FloodProtect and released their regional flood management plan in July 2014.

Both Sacramento and West Sacramento have a history of serious flooding, beginning in the 1800s when the City of Sacramento was founded and continuing until the 1986 Folsom Dam flood. Prior to development, the area would have been flooded by seasonal runoff every year. Following the population growth in the area, flood control levees, weirs, and dams were constructed to protect the area from flooding. SAFCA is the agency responsible for maintaining flood protection along the American and Sacramento Rivers (California Department of Water Resources 2010).

The Lower Sacramento River/Delta North Flood Management Planning Region contains a number of flood control facilities—both locally owned and operated and State-owned and operated through the State Plan of Flood Control (SPFC). The closest SPFC facility to the project site is the Sacramento Weir, located on the Sacramento River just upstream of the confluence of the Sacramento and American Rivers. This structure allows excess water to be discharged into the Yolo Bypass via the Sacramento Bypass and to reduce pressure on downstream levees during high flows. Both the Sacramento and American Rivers are surrounded by SPFC levees. The Sacramento River Bank Protection Project (SRBPP) was initiated to evaluate the levees bordering the river and reduce stream bank erosion along the levees to minimize the threat of a flood along the Sacramento River. The USACE, Sacramento District is responsible for implementation of the project in conjunction with its non-federal partner, the CVFPB.

Municipal Supply

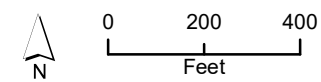
City of Sacramento drinking water comes from two main sources: surface water from the American and Sacramento Rivers (84 percent of total supply) and groundwater (16 percent of

Path: K:\Projects_1\mark_thomas\0203_14_1_St_Bridge\mapdoc\Hydro\FloodZones_20150626.mxd; User: 19016; Date: 2/7/2018



Legend

- Project Area
- 100-year Floodplains



Source: FEMA Portal 2014

Figure 2.8-1
FEMA Flood Zones within the Project Vicinity

total supply). Sacramento has two intake structures, one located on the American River and one located on the Sacramento River. Each feeds water to the E. A. Fairbairn Water Treatment Plant on the American River and the Sacramento River Water Treatment Plant on the Sacramento River (City of Sacramento 2015).

Similarly, the main source of drinking water for the City of West Sacramento is the Sacramento River. The surface water intake structure is located at Bryte Bend upstream of the confluence of the Sacramento and American Rivers. In addition to surface water, the City of West Sacramento operates two groundwater wells that primarily provide water during emergencies, such as drought periods. Water is treated to drinking water quality at the George Kristoff Water Treatment Plant (previously known as the Bryte Bend Water Treatment Plant) (City of West Sacramento 2010).

Many groundwater wells exist within the Sacramento River Basin, and most are used to supply individual domestic demands or small agricultural operations. The basin has an extensive system of both shallow and deep aquifers, which both Sacramento County and Yolo County depend on for domestic and agricultural water supply. Recent droughts indicate that water supplies in the Sacramento Valley are vulnerable to overdraft.

2.8.2.3 Groundwater Hydrology

Regional Groundwater Hydrology

The project site is within the larger Sacramento Valley Groundwater Basin. Each approach (or landing) of the I Street Bridge is located within a different subbasin. The eastern landing of the I Street Bridge is within the South American Subbasin, whereas the western landing is within the Yolo Subbasin.

The South American Subbasin is bounded on the east by the Sierra Nevada, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne Rivers. The subbasin is recharged by subsurface inflow from American River percolation and by precipitation on the valley floor. Groundwater levels declined consistently from the 1960s to 1980s but have since recovered, except for some wells within the vicinity of the City of Sacramento (California Department of Water Resources 2004).

Several sites of significant groundwater quality impairment are within the South American Subbasin, including three U.S. Environmental Protection Agency Superfund sites: Aerojet, Mather Field, and the Sacramento Army Depot. Other sites with groundwater quality impairment are the Kiefer Boulevard Landfill; an abandoned PG&E site on Jibboom Street near Old Sacramento; and the Southern Pacific Railroad and UPRR Union Pacific Railyards in downtown Sacramento, which are located adjacent to the project site (California Department of Water Resources 2004).

The Yolo Subbasin is bounded on the east by the Sacramento River, on the west by the Coast Ranges, on the north by Cache Creek, and on the south by Putah Creek. Similar to the South American Subbasin, the subbasin is recharged by subsurface inflow from American River percolation and by precipitation on the valley floor. During periods of drought, groundwater

levels decline, but long-term trends do not indicate any significant decline in water levels—except for localized pumping depressions in the vicinity of the Davis, Woodland, and Dunnigan/Zamora areas (California Department of Water Resources 2004).

Groundwater quality in the Yolo Subbasin is generally considered to be good for both agricultural and municipal uses, even though the water is hard to very hard overall (California Department of Water Resources 2004).

The primary source of groundwater recharge for both subbasins is applied irrigation water and direct rainfall. Recharge of aquifers typically occurs along the streambeds of creeks and canals. Recharge occurs naturally and also through reservoir releases, which can be used as effective conjunctive water use facilities to minimize groundwater overdraft and land subsidence.

Local Groundwater Hydrology

Groundwater is expected to vary seasonally. Groundwater was encountered during previous drilling explorations at a depth of approximately 15 to 25 feet below the ground surface (an elevation ranging from approximately 0 to 5.5 feet NAVD² 883 (GEI Consultants 2014).

Groundwater levels can vary over time in response to environmental, seasonal, and land use changes. For this reason, groundwater levels at the time of construction or in the future could differ from those indicated in previous boring logs (GEI Consultants 2014).

2.8.3 Environmental Consequences

This section describes potential impacts on hydrology and flooding that could result from the proposed project. The chapter identifies the impacts of the project to the extent that they are reasonably foreseeable, given the general level of project detail that is available at this time.

2.8.3.1 Build Alternatives

Water Surface Elevation

According to the preliminary hydraulic impact analysis for the project (MBK Engineers 2015), the new bridge would be designed according to the following criteria defined in the *FloodSAFE California Urban Levee Design Criteria* (California Department of Water Resources 2012b).

- Levees protecting urban areas are assumed to have a minimum crown elevation equal to the 1-in-200 Azimuth-over-Elevation Positioning (AEP) water surface elevation (WSE) plus 3 feet.
- Non-urban state/federal project levees are assumed to meet the authorized minimum elevation.

² The North American Vertical Datum of 1988. It is a datum used for mean sea level elevations that uses tidal bench marks from Canada, United States and Mexico.

- Levees act as weirs and do not breach if overtopped.

The bridge design was analyzed for impacts from the 200-year flood (Q200), 100-year flood (Q100), and 50-year flood (Q50). It was found that the proposed bridge results in a negligible increase in the peak WSE of 0.02 foot immediately upstream of the Project for all three of the flood events evaluated. Downstream of the project, there is a 0.06- to 0.07-foot reduction in the peak WSE. The reduction in WSE downstream of the project is due to a reduction in the peak flow in the Sacramento River downstream of the American River that is caused by the small increase in the WSE upstream of the project. The increase in WSE upstream of the project translates to an increase at the American River, thereby reducing the percentage of American River flow that goes downstream in the Sacramento River and increasing the percentage that flows upstream to the Sacramento Weir. As with the effect on the WSE, the effect on the flows is negligible.

Because changes in the water surface profile (water depth) would be negligible, there would be no significant floodplain encroachment.

Runoff from Added Impervious Surfaces

The proposed project would result in minor additional impervious surface with the potential to increase runoff volume in the Sacramento River. There are no impact acreage differences as a result of the City of Sacramento roadway design alternatives. Increases in impervious surfaces change the storm hydrograph by increasing flow velocity and the peak and quantity of storm runoff due to reduced natural infiltration (groundwater recharge) and uptake from native soils and vegetation. Further, if periodic maintenance of the bridge were to require in-water work, the potential would exist for sediment disturbance and turbidity. Hydromodification, the alteration of the hydrologic characteristics of coastal and noncoastal waters, could degrade water resources. However, according to regional Hydromodification Management Plan Maps, the project area is exempt from hydromodification requirements (Sacramento Stormwater Quality Partnership 2014). Because projects discharging directly, through drainage channels, or through pump stations, to the Lower American River or Sacramento River the project is exempt from the regulations of the Hydromodification Management Plan. Under the Construction General Permit, the project would be required to incorporate an approved Stormwater Pollution Prevention Plan (SWPPP) that describes post-construction measures, site design measures, Low Impact Development (LID) measures, and other permanent erosion control elements found in Caltrans' municipal separate storm sewer systems (MS4) program guidance documents, the Sacramento Stormwater Quality Partnership's Stormwater Quality Improvement Plan (SQIP), and the City of West Sacramento's Stormwater Management Program (SWMP), to ensure that storm water runoff does not cause soil erosion. Because the project involves more than 1 acre of newly created or replaced impervious area, permanent treatment BMPs need to be considered. Treatment BMPs could include bioretention areas and vegetated swales. In addition, erosion and sediment control BMPs such as drainage swales, geotextile, slope drains, mulch, stream bank stabilization, and sediment traps would be implemented to control any runoff from the project site. The Cities of Sacramento and West Sacramento perform a variety of maintenance activities for stormwater pollution prevention, including BMPs during bridge repair and measures that are required for maintenance activities in water bodies. Implementation of these measures would reduce or avoid permanent impacts on water quality from runoff.

Onsite Drainage Systems

During construction, utility improvements would involve relocation of some storm drains within Jibboom Street, Bercut Drive, C Street, and 2nd Street, which could temporarily affect the ability of water to drain in the surrounding area during a rain event. However, drainage would be re-routed to other active storm drain inlets during relocation activities. As is standard with all construction projects, the contractor would be required to install and maintain temporary BMPs to protect existing drainage inlets and storm drain systems, and to control any runoff or erosion from the project site that may discharge into the surrounding waterways.

During operation, new impervious surface and changes in topography could alter surface runoff drainage patterns and river flows. However, project drainage has been considered in the design. The proposed roadway drainage would be conveyed to the existing storm drain system installed within Railyards Boulevard and C Street. Railyards Boulevard currently drains storm water to the east along the roadway and then into a retention basin south of Railyards Boulevard. C Street drains storm water west along the roadway and then ultimately south beyond the project limits. Drainage from the bridge itself would be directed to drains located on the bridge and routed to the abutment, where it would enter the storm drainage system.

Scour

A scour analysis was performed for the proposed bridge based on five primary scour components of long-term degradation, bend scour, contraction scour, bedform scour, and local scour (pier scour, impinging scour) (Tetra Tech 2016). The maximum predicted scour at the piers is up to 40 feet. The scour analysis recommended that the design of bridge pier foundations be at or below the total depth of scour and that a detailed structural/geotechnical analysis be performed during final design to determine actual foundation depths, accounting for the given minimum scour elevations. The next phase of bridge design will include a 2-D hydraulic model to refine the scour analysis. The scour analysis also specified that the bridge abutments be protected from local scour using rock riprap or guide banks. The toe or apron of the riprap would serve as the base for the slope protection and would be carefully designed to resist scour while maintaining the support for the slope protection.

Floodplain Development

The proposed bridge replacement is designed to not exceed or expand the already-planned capacity of the approach roadways (i.e., no widening of approaches just to accommodate bridge flows). The primary function of the proposed bridge is local connectivity rather than regional travel and will primarily serve short local trips. Therefore, the project would not create new access to developed or undeveloped land and would not support incompatible floodplain development.

Traffic Interruptions from Flooding

Caltrans requires 2 feet of freeboard⁴ above the 50-year flood flow or conveying the 100-year flood flow; the CVFPB freeboard requirement is 2 feet above the 100-year flood flow. In addition to the *FloodSAFE California Urban Levee Design Criteria* (California Department of Water Resources 2012b), the new bridge would be designed according to hydraulic design criteria established in the Caltrans *Local Assistance Procedures Manual*. The criteria dictate that the facility be capable of conveying the base or Q100 and passing the Q50 “without causing objectionable backwater, excessive flow velocities or encroaching on through traffic lanes.” The same criteria also recommend a minimum freeboard clearance of 2 feet above the 50-year floodwater surface elevation (WSE50) to provide clearance for drift. Due to the potential for significant drift during high flows in this channel, increasing the freeboard clearance to 3 feet above the WSE50 is reasonable. Therefore, the risk of traffic interruptions from flooding on the proposed bridge is low.

2.8.3.2 No Build Alternative

Under the No Build Alternative, no bridge would be built and the existing I Street Bridge would continue to be a source of transportation across the Sacramento River between the cities of Sacramento and West Sacramento. Because this alternative does not alter existing conditions, the same hydrologic and hydraulic conditions would occur at the site. The drainage improvements such as RSP and improved storm drainage facilities that are associated with the proposed project design would not be realized.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed project would not result in an increased encroachment; therefore, no measures are necessary. An encroachment permit from the CVFPB would be obtained as part of the permitting process.

The new bridge and roadway approaches would involve minor additional impervious surface area compared to the existing structures, once construction is completed. Potential new surface flows from the project would be designed to mimic pre-project flows. Drainage system improvements would be designed to accommodate storm drain infrastructure capacities and prevent ponding. The proposed project will be designed in accordance with the objectives of Caltrans National Pollutant Discharge Elimination System (NPDES) permit requirements and related storm water requirements to reduce runoff and the volume of entrained sediment. The Caltrans MS4 Permit only covers work within the State's right-of-way. The City of Sacramento is currently covered under the Waste Discharge Requirements for the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Sacramento, and County of Sacramento Stormwater Discharges from Municipal Separate Storm Sewer Systems in Sacramento County (Sacramento County MS4 Permit) (NPDES No. CAS082597; Order No. R5-2015-0023). The City of West Sacramento is designated as a Traditional Small MS4 Permittee covered under the State Water Resources

⁴ *Freeboard* is the vertical distance from the design water surface elevation to the top of the channel or to the top of the channel lining.

Control Board's Phase II MS4 (Statewide Phase II MS4 Permit) (NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). In addition, the potential minimal increase in impervious area would not cause onsite or offsite flooding.

2.8.5 References Cited

- California Department of Water Resources. 2012a. *Central Valley Flood Protection Plan*. Available: <http://www.water.ca.gov/cvfmf/docs/2012%20CVFPP_June.pdf>. Accessed: May 16, 2016.
- _____. 2012b. *FloodSAFE California Urban Levee Design Criteria*. Available: <http://www.water.ca.gov/floodsafe/leveedesign/ULDC_May2012.pdf>. Accessed: May 16, 2016.
- _____. 2010. *Fact Sheet: Sacramento River Flood Control Project Weir and Flood Relief Structures*. Available: <<http://www.water.ca.gov/newsroom/docs/WeirsReliefStructures.pdf>>. Accessed: April 10, 2015.
- _____. 2004. *Bulletin 118: South American Subbasin*. Available: <http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/5-21.65.pdf>. Accessed: April 10, 2015.
- _____. 1995. *Sacramento-San Joaquin Delta Atlas*. July. Available: <http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/exhibits/nmfs/spprt_docs/nmfs_exh4_dwr_1995.pdf>. Accessed: May 10, 2016.
- City of Sacramento. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.
- City of West Sacramento. 2016. *City of West Sacramento General Plan 2035 Policy Document*. Adopted November 2016. City of West Sacramento Community Development Department. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 21, 2017.
- _____. 2010. *Water Quality: 2010 Consumer Confidence Report*. Available: <https://www.cityofwestsacramento.org/city/depts/pw/public_works_operations/environmental_prog/waterquality.asp>. Accessed: April 10, 2015.
- _____. 2003. *City of West Sacramento Stormwater Management Program (SWMP) Planning Document*. March. Prepared by Larry Walker Associates.
- Federal Emergency Management Agency. 2012. *Flood Insurance Rate Map. Sacramento County, California*. Panel 180 of 705.

GEI Consultants, Inc. 2014. *Preliminary Geotechnical and Foundation Report. I Street Bridge Replacement. Sacramento, California.* August. Submitted to Mark Thomas and Company. (Contract Number SA-14108.) Sacramento, CA.

ICF International. 2016. *Water Quality Assessment Report, I Street Bridge Replacement Project.* February 17. Prepared for California Department of Transportation. Sacramento, CA.

Sacramento River Watershed Program. 2015. *Sacramento River Basin.* Available: <<http://www.sacriver.org/aboutwatershed/>>. Accessed: April 10, 2015.

_____. 2010. *Sacramento Valley Subregion.* Available: <<http://www.sacriver.org/aboutwatershed/roadmap/watersheds/sacramento-valley-subregion>>. Accessed: April 10, 2015.

Sacramento Stormwater Quality Partnership. 2014. *Stormwater Quality Design Manual Integrated Design Solutions for Urban Development Protecting Our Water Quality.* May.

Tetra Tech. 2016. *I-Street Bridge Replacement Scour Analysis.* May 2. Prepared for MBK Engineers. Sacramento, CA.

U.S. Geological Survey. 2015. *National Watershed Boundary Dataset.* Available: <<http://nhd.usgs.gov/wbd.html>>. Accessed July 8, 2015.

Western Regional Climate Center. 2015a. *Sacramento Executive Airport: Monthly Total Precipitation (inches).* Available: <<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7633>>. Accessed: April 10, 2015.

_____. 2015b. *Sacramento Executive Airport: Normals, Means, and Extremes Temperatures.* Available: <<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7633>>. Accessed: April 10, 2015.

2.9 Water Quality

2.9.1 Regulatory Setting

2.9.1.1 Federal Requirements

Clean Water Act

In 1972, Congress amended the federal Water Pollution Control Act, making the addition of pollutants to waters of the United States from any point source¹ unlawful unless the discharge is in compliance with an NPDES permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections.

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the United States. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- 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 (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Standard Permits. There are two types of General Permits: Regional Permits and Nationwide Permits. Regional permits are issued for a general category of activities when they are similar and cause minimal environmental effects. Nationwide Permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the USACE’s Standard Permits. There are two types of Standard Permits: Individual Permits and Letters of Permission. For Standard Permits, the USACE decision to approve is

¹ A *point source* is any discrete conveyance such as a pipe or a man-made ditch.

based on compliance with the U.S. Environmental Protection Agency (EPA) Section 404 (b)(1) Guidelines (Guidelines) (40 CFR 230), and whether the permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if no practicable alternative exists that would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the United States and not cause any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent² standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the United States. In addition, every permit from the USACE, even if not subject to the Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in Section 2.17, “Wetlands and Other Waters.”

2.9.1.2 State Requirements

Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the State include more than just waters of the United States, such as groundwater and surface waters not considered waters of the United States. Additionally, it prohibits discharges of “waste” as defined and this definition is broader than the CWA definition of “pollutant.” Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (State Water Board) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and for regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, the RWQCBs designate beneficial uses for all water body segments and then set the criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the State Water Board identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and that the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires

² The EPA defines *effluent* as “wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.”

establishment of total maximum daily loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Board administers water rights; sets water pollution control policy; issues water board orders on matters of statewide application; and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires issuance of NPDES permits for five categories of storm water discharges, including MS4s. An *MS4* is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water.” The State Water Board has identified Caltrans as an owner/operator of an MS4 under federal regulations. The City of Sacramento is currently covered under Waste Discharge Requirements for the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Sacramento, and County of Sacramento Stormwater Discharges from Municipal Separate Storm Sewer Systems in Sacramento County (Sacramento County MS4 Permit) (NPDES No. CAS082597; Order No. R5-2015-0023). The City of West Sacramento is designated as a Traditional Small MS4 Permittee covered under the State Water Resources Control Board's Phase II MS4 (Statewide Phase II MS4 Permit) (NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). In addition, the Caltrans MS4 Permit only covers work in Caltrans rights-of-way, properties, facilities, and activities in the state. The State Water Board or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

As part of permit compliance, the Sacramento County MS4 Permittees developed a Sacramento Stormwater Quality Partnership and a Sacramento Stormwater Quality Improvement Program, which is a comprehensive program comprised of various program elements and activities designed to reduce stormwater pollution to Maximum Extent Practicable (MEP) and eliminate prohibited non-stormwater discharges through a NPDES municipal stormwater discharge permit. As part of Statewide Phase II MS4 Permit compliance, the City of West Sacramento developed a Stormwater Management Program (SWMP) Planning Document. This plan outlines stormwater requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects, project applicants will be required to follow the guidance contained in the SWMP.

The Caltrans MS4 permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012, and became effective on July 1, 2013. The permit has three basic requirements.

1. Caltrans must comply with the requirements of the Construction General Permit (CGP) (see below);
2. Caltrans must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges; and
3. Caltrans' storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures the State Water Board determines necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the statewide SWMP to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including selection and implementation of BMPs. Further, in recent years, hydromodification control requirements and measures to encourage low impact development have been included as a component of new development permit requirements. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

The CGP (Order No. 2009-0009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The CGP was amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ on February 14, 2011, and July 17, 2012, respectively. The permit regulates storm water discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the CGP. Construction activity that results in soil disturbances of less than 1 acre is subject to this CGP if the activity has the potential to result in significant water quality impairment, as determined by the RWQCB. Operators of regulated construction sites are required to develop SWPPPs; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the CGP.

The 2009 CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the risk level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with a DSA of less than 1 acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 Certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Waste Discharge Requirements

All projects resulting in discharges, whether to land or water, are subject to Section 13260 of the California Water Code. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, shall file a Report of Waste Discharge to obtain WDRs from the appropriate RWQCB. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process and wash-down wastewater. WDRs for discharges to surface waters also serve as NPDES permits. WDRs define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

The State Water Board issued the *Statewide General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality* (General WDRs; Order NO. 2003 - 0003 - DWQ) which prohibits the discharge of any waste to surface waters. Although a discharge may be eligible for coverage under the General WDRs, the RWQCB may elect to regulate the discharge under other WDRs or a conditional waiver. If the RWQCB has established WDRs or a conditional waiver, General WDRs are not applicable.

The Central Valley RWQCB issued *Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters* (Order No. R5-2013-0074, NPDES NO. CAG995001), which covers certain categories of dewatering which are either 4 months or less in duration or have a daily average discharge flow that does not exceed 0.25 million gallons per day (MGD). The Central Valley RWQCB also issued *Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge within the Central Valley Region* (Resolution R5-2013-0145), where such a waiver is not against the public interest, is conditional, and may be terminated by the Central Valley RWQCB at any time. Several categories covered by the Statewide General Order are nearly identical to those covered by Resolution R5-2013-0145. For those categories that are also covered by the Statewide General Order, the waiver only applies to those discharges that represent the very lowest threat to water quality. As a result,

categories for discharges of drilling muds/boring wastes, inert solid waste disposal, test pumping of fresh water wells, swimming pool discharges, construction dewatering discharges, and hydrostatic testing, are restricted to those instances which represent the lowest threat to water quality. Coordination with the RWQCB will be required prior to obtaining the appropriate dewatering permit, with consideration of the project schedule.

2.9.1.3 Regional Requirements

City of Sacramento

Sacramento Area Flood Control Agency

SAFCA was formed in 1989 to address the Sacramento area’s vulnerability to catastrophic flooding. This vulnerability was exposed during the record flood of 1986, when Folsom Dam exceeded its normal flood control storage capacity and several area levees nearly collapsed under the strain of the storm. In response, the City of Sacramento, the County of Sacramento, the County of Sutter, the American River Flood Control District, and RD No. 1000 created SAFCA through a Joint Exercise of Powers Agreement to provide the Sacramento region with increased flood protection along the American and Sacramento Rivers.

City of Sacramento General Plan

The following policies from the *Sacramento 2035 General Plan* (City of Sacramento 2015) are applicable to this project with respect to hydrology and water quality.

Environmental Resources

Goal ER 1.1 Water Quality Protection. Protect local watersheds, water bodies and groundwater resources, including creeks, reservoirs, the Sacramento and American rivers, and their shorelines.

Policy ER 1.1.3 Stormwater Quality. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City’s National Pollution Discharge Elimination System (NPDES) Permit.

Policy ER 1.1.4 New Development. The City shall require new development to protect the quality of water bodies and natural drainage systems through site design, (e.g., cluster development), source controls, storm water treatment, runoff reduction measures, best management practices (BMPs) and Low Impact Development (LID), and hydromodification strategies consistent with the city’s NPDES Permit.

Policy ER 1.1.5 Limit Stormwater Peak Flows. The City shall require all new development to contribute no net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event.

Policy ER 1.1.6 Post-Development Runoff. The City shall impose requirements to control the volume, frequency, duration, and peak flow rates and velocities of runoff from development projects to prevent or reduce downstream erosion and protect stream habitat.

Policy ER 1.1.7 Construction Site Impacts. The City shall minimize disturbances of natural water bodies and natural drainage systems caused by development, implement measures to protect areas from erosion and sediment loss, and continue to require construction contractors to comply with the City’s erosion and sediment control ordinance and stormwater management and discharge control ordinance.

Utilities

Goal U4.1 Adequate Stormwater Drainage. Provide adequate stormwater drainage facilities and services that are environmentally-sensitive, accommodate growth, and protect residents and property.

Policy U4.1.1 Adequate Drainage Facilities. The City shall ensure that all new drainage facilities are adequately sized and constructed to accommodate stormwater runoff in urbanized areas.

Policy U4.1.2 Master Planning. The City shall implement master planning programs to: Identify facilities needed to prevent 10-year event street flooding and 100-year event structure flooding; Ensure that public facilities and infrastructure are designed pursuant to approved basin master plans; Ensure that adequate land area and any other elements are provided for facilities subject to incremental sizing (e.g., detention basins and pump stations); Consider the use of “green infrastructure” and Low Impact Development.

Policy U4.1.3 Regional Stormwater Facilities. The City shall coordinate efforts with Sacramento County and other agencies in the development of regional stormwater facilities.

Policy U4.1.4 Watershed Drainage Plans. The City shall require developers to prepare watershed drainage plans for proposed developments that define needed drainage improvements per City standards, estimate construction costs for these improvements and comply with the City’s National Pollutant Discharge Elimination System (NPDES) permit.

Policy U4.1.6 New Development. The City shall require proponents of new development to submit drainage studies that adhere to City stormwater design requirements and incorporate measures, including “green infrastructure” and Low Impact Development (LID) techniques, to prevent on- or off-site flooding.

River District Specific Plan

The *River District Specific Plan* (City of Sacramento 2011) establishes planning and design standards for redevelopment of approximately 773 acres of land located at the confluence of the American and Sacramento Rivers, north of the downtown core of the City of Sacramento. The following goal and policy related to storm water are applicable to the project.

Utility Infrastructure

Goal II. Reduce water consumption and wastewater flows by implementing conservation techniques.

Policy IIa. Encourage the installation of techniques such as bioswales, permeable pavement, and greywater systems to reduce stormwater runoff.

Sacramento Railyards Specific Plan

The *Sacramento Railyards Specific Plan* (City of Sacramento 2016) addresses a 244-acre area in downtown Sacramento located immediately north of the Central Business District, east of the Sacramento River, south of North B Street, and west of the federal courthouse and the Alkali Flat neighborhood. Goals and polices from that plan that relate to hydrology and water quality are listed below.

Sustainability

Goal S-1. Maximize the use of sustainable development practices in the Plan Area.

Policy S-1.11. Encourage the installation of LID techniques, where appropriate, to prevent stormwater runoff and further pollution of Sacramento’s natural resources.

Policy S-1.12. Provide permeable surfaces if possible to reduce stormwater runoff.

Policy S-1.14. Reduce stormwater runoff through the capture and re-use of rainwater.

Utilities and Community Services

Goal CS-2. Provide for the sanitary sewage needs of the project while facilitating the City in complying with standards established by the City’s NPDES permit with the Regional Water Quality Control Board.

Policy CS-2.2. Offset the increased sanitary sewer flows into the combined sewer system through on-site detention of storm water flows, and discharge of retained storm water to the Sacramento River.

Goal CS-3. Provide a storm drainage system to serve the Plan Area that achieves the water quality provisions of the City’s municipal NPDES Stormwater Permit.

Policy CS-3.1. Provide for the separation of combined storm and sanitary sewer flows in the Plan Area.

Policy CS-3.2. Design the storm drainage system to meet the design criteria of the City’s Department of Utilities, Sacramento City design standards and the terms of the City’s NPDES permit.

City of Sacramento Stormwater Management and Control Code

The City Stormwater Management and Control Code (Chapter 13.16 of the City Code) is intended to control non-storm water discharges to the storm water conveyance system; eliminate discharges to the storm water conveyance system from spills, dumping, or disposal of materials other than storm water; and reduce pollutants in urban storm water discharges to the maximum extent practicable. Non-storm water discharges are prohibited except where the discharge is regulated under an NPDES permit. Discharges from specified activities that do not cause or contribute to the violation of any plan standard, such as landscape irrigation and lawn watering and flows from fire suppression activities, also are exempt from this prohibition. Discharges of

pumped groundwater not subject to an NPDES permit may be permitted to discharge to the storm water conveyance system upon written approval from the City and in compliance with the City's conditions of approval.

City of Sacramento Grading, Erosion, and Sediment Control Ordinance

The City of Sacramento Grading, Erosion, and Sediment Control Ordinance (Title 15, Chapter 15.88 of the City Code) sets forth rules and regulations to control land disturbances, landfill, soil storage, pollution, and erosion and sedimentation resulting from construction activities. With limited exceptions, grading approval must be received from the City Department of Utilities before construction. All project applicants, regardless of project location, are required to prepare and submit separate erosion and sediment control plans applicable to the construction and post-construction periods. The ordinance also specifies other requirements, such as written approval from the City for grading work within the right-of-way of a public road or street, or within a public easement.

Sacramento Stormwater Quality Improvement Plan

The Sacramento Stormwater Management Program is a comprehensive program consisting of various program elements and activities designed to reduce storm water pollution to the maximum extent practicable and eliminate prohibited non-storm water discharges in accordance with federal and state laws and regulations. These laws and regulations are implemented through NPDES municipal storm water discharge permits. In 1990, the County of Sacramento and the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova, collectively known as the Sacramento Stormwater Quality Partnership, applied for and received one of the first areawide NPDES MS4 storm water permits in the country and began development of core storm water management program elements and activities to address local urban runoff water quality problems. As part of the program, a *Stormwater Quality Improvement Plan* (Sacramento Stormwater Quality Partnership 2009) was prepared in compliance with the MS4 permit as a comprehensive plan that describes the Partnership's Stormwater Management Program.

City of West Sacramento

City of West Sacramento General Plan

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) was adopted in November 2016. The following key goals and policies in the plan relate to hydrology and water quality.

Public Facilities and Services Element

Goal PFS-4. To maintain an adequate level of service in the City's storm drainage system to accommodate runoff from existing and future development, prevent property damage due to flooding, and improvement environmental quality.

Policy 1. Where practical and economical, the City shall upgrade existing drainage facilities as necessary to correct localized flooding problems.

Policy PFS-4.2. The City shall continue to expand and develop stormwater drainage facilities to accommodate the needs of existing and planned development.

Policy PFS-4.4. The City shall, through a combination of drainage improvement fees and other funding mechanisms, ensure that new development pays its fair share of the costs of drainage system improvements

Goal S-2. To prevent loss of life, injury, and property damage due to flooding

Policy S-2.25. The City shall cooperate with other responsible agencies in ensuring that levees surrounding the city are maintained and improved to provide either i) a minimum 200-year flood protection level: or ii) the minimum level of flood protection for urban areas, as defined by an appropriate State or Federal agency, whichever level is higher. Priority shall be given to the levees protecting people and property within the existing city limits.

Natural Resources Element

Goal NCR-4. To preserve and protect water quality in the City’s natural water bodies and drainage systems and the area’s groundwater basin

Policy NCR-4.5. The City shall not approve new development that has a significant potential for adversely affecting water quality in the city’s natural water bodies and drainage systems including the Sacramento River, the Deep Water Ship Channel, Lake Washington, or groundwater basin.

Policy NCR-4.6. The City shall require new development to protect the quality of water resources and natural drainage systems through site design, source controls, runoff reduction measures, best management practices (BMPs), and Low Impact Development (LID).

Policy NCR-4.7. The City shall control pollutant sources to natural water bodies and drainage systems from construction activities through the use of stormwater protection measures in accordance with Federal, State, and local regulations such as the City’s grading ordinance and National Pollutant Discharge Elimination System (NPDES) permit.

Washington Specific Plan

The *Washington Specific Plan* (City of West Sacramento 1996) defines a vision for redeveloping the 194-acre urban area of West Sacramento bounded by Tower Bridge Gateway, the Sacramento River, A Street, and portions of 6th and 8th Streets. Key goals and policies that relate to hydrology and water quality are found in the Public Facilities and Services element and are the same as those in the *City of West Sacramento General Plan* (see above).

City of West Sacramento Municipal Code

The following regulations of the City of West Sacramento Municipal Code regarding hydrology and water quality are applicable to the project.

Title 13, Public Services

Chapter 13.10 – Urban Stormwater Quality Management and Discharge Control. This chapter contains the following regulations and requirements to prevent, control, and reduce stormwater pollutants.

- 13.10.130 – requirement to prevent, control, and reduce stormwater pollutants
- 13.10.140 – compliance with BMPs
- 13.10.150 – requirement to eliminate illegal discharges
- 13.10.170 – watercourse protection
- 13.10.180 – damage to the storm drain system
- 13.10.190 – requirement to remediate
- 13.10.200 – requirement to monitor and analyze
- 13.10.210 – containment and notification of spills
- 13.10.220 – authority to inspect
- 13.10.230 – authority to sample, establish sampling devices, and test
- 13.10.240 – City inspection of stormwater conveyance system

Title 15—Buildings and Construction

Chapter 15.08 – Grading. Establishes standards for the preparation of sites and construction activities to protect the health, safety and general welfare of the public by protecting against unwarranted or unsafe grading, drainage works or other aspects of site development. The following provisions in Chapter 15.08 are applicable.

- 15.08.180 Erosion control – basic design principles and standards to be incorporated into grading operations to control erosion and reduce sedimentation.
- 15.08.280 Runoff control – performance standards for a surface runoff control plan if required by the City manager or designee.
- 15.08.300 Environmental standards – compliance requirements for CEQA and other environmental laws.

Chapter 15.50 – 200 Year Flood Protection. Includes the following requirements for 200-year flood protection.

- 15.50.060 – No building permit until compliance demonstrated:

No building permit shall be issued in connection with the construction of any new structure until the applicant for the building permit demonstrates to the satisfaction of the floodplain administrator that: (1) prior to occupancy, the structure will have 200 year flood protection; and (2) any improvements constructed or measures implemented by the applicant to ensure 200-year flood protection will not significantly increase the risk of flooding or the effect of flooding on any adjacent or nearby properties. An applicant shall demonstrate compliance either by the construction of flood management improvements or other mitigation measures beyond those set forth in Title 18, or the payment to the City

of an in-lieu flood management fee established by resolution of the City Council. The fees shall be paid at the time of issuance of building permits.

15.50.080 – requirements for coordination with Title 18. In the event of any conflict, the more stringent requirements will apply.

City of West Sacramento Urban Stormwater Quality Management and Discharge Control Ordinance

The City of West Sacramento Grading, Erosion, and Sediment Control Ordinance (Title 13, Chapter 13.10 of the City Code) sets forth rules and regulations to protect and promote the health, safety, and general welfare of the citizens of the city by controlling non-storm water discharges to the storm water conveyance system; by eliminating discharges to the storm water conveyance system from spills, dumping, or disposal of materials other than storm water; and by reducing pollutants in urban storm water discharges to the maximum extent practicable.

City of West Sacramento Stormwater Management Program Planning Document

The City of West Sacramento developed the *Stormwater Management Program Planning Document* (2003) to address storm water quality within the City’s jurisdiction. The SWMP addresses a wide variety of activities conducted in urbanized areas of the city that are sources of pollutants in storm water. This planning document was developed to comply with the State Water Board’s Small MS4 General Permit.

2.9.2 Affected Environment

This section is a summary of the analysis documented in the *Water Quality Assessment Report* prepared for this project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. The proposed project is located within the jurisdictional boundaries of the Central Valley RWQCB.

2.9.2.1 Topography and Geology/Soils

Topography

The project is located in the northern portion of the Central Valley, called the Sacramento Valley, which drains into the Delta. The valley boundaries are Lake Shasta to the north, the Coast Ranges to the west, the Sierra Nevada to the east, and the Delta to the south. The valley floor itself is relatively flat with the exception of the Sutter Buttes. (Ceres 2014).

The project site is relatively flat. Based on the Natural Resources Conservation Service (NRCS) soil unit map, slopes within the project area are from 0 to 2 percent (Natural Resources Conservation Service 2015). Therefore, a 1-percent slope was assumed for the water quality analysis.

Geology/Soils

Regional Geology/Soils

Sacramento and the project site are situated within the Great Valley geomorphic province of California. The Great Valley is a gently-sloping to flat alluvial plain east of the Coast Ranges and west of the Sierra Nevada. It is a northwest-trending structural trough that was formed by the westward tilting of the Sierra Nevada block.

Local Geology/Soils

The general vicinity of the project site is reclaimed land that was filled-in in during the 1860's and 1900's. The magnitude of fill material that was placed at that time is unknown (GEI Consultants 2014). According to the NRCS Web Soil Survey, the upper 5 feet of the project site is underlain by soils assigned to the following types (Natural Resources Conservation Service 2015; GEI Consultants 2014; ICF International 2016).

- Orthents-Urban land complex, 0 – 2 percent slopes (Sacramento County)
- Urban land (Sacramento County)
- Lang sandy loam (Yolo County)
- Lang sandy loam, deep (Yolo County)
- Sycamore silt loam (Yolo County)

Based on the *Preliminary Geotechnical and Foundation Report* for the project (GEI Consultants 2014), the structure and composition of subsurface soils along the west end of the river embankment were sampled during levee evaluations on the crest and in the vicinity of the West Sacramento levee. The analysis found approximately 15 feet of loose sand and silt in the embankment, which was underlain by an approximately 9-foot layer of clay, followed by an approximately 16-foot layer of sandy silt, and then a 35-foot layer of sand and silt. On the east end of the river embankment, core samples found approximately 6 feet of loose sand with silt underlain by approximately 10 feet of loose sand, followed by approximately 50 feet of sand and silt, which was underlain by an approximately 23-foot layer of medium-dense to very-dense gravel, followed by a clay layer.

Soil Erosion Potential

Extensive erosion has occurred from the Sacramento and American Rivers and other tributaries that run across the Central Valley toward the Delta (Ceres 2014). The banks of the Sacramento River channel are particularly vulnerable to erosion during high winter flows. In 1960, the SRBPP was authorized to help prevent erosion of the Sacramento River banks. The SRBPP evaluates the levees bordering the river to reduce stream bank erosion along the levees and minimize the threat of a flood along the Sacramento River. The USACE, Sacramento District is responsible for implementation of the SRBPP in conjunction with its non-federal partner, the CVFPB. (U.S. Army Corps of Engineers 2015.)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion, in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K at the project site range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The weighted average soil erodibility K factor for the soils at the project site is 0.27 (Natural Resources Conservation District 2015). Therefore, the potential for erosion at the site is moderate.

2.9.2.2 Surface Water

Surface Water Quality Objectives/Standards and Beneficial Uses

Beneficial uses represent the services and qualities of a water body (i.e., the reasons the water body is considered valuable). Water quality in a typical surface water body is influenced by processes and activities that take place within the watershed. Because of the urbanized nature of the project vicinity, surface water quality in the project area is directly affected by storm water runoff from adjacent streets; highways; and properties using fertilizers, pesticides, metals, hydrocarbons, and other pollutants. Typically, pollutant levels in the ocean are highest following the first storm flows of the season, when constituents accumulated during the dry season are flushed into the river.

The Central Valley RWQCB has delineated region-wide and water body-specific beneficial uses, and has set numeric and narrative water quality objectives for several substances and parameters in numerous surface waters in its region. Beneficial uses for the Sacramento River are designated in the Central Valley RWQCB Basin Plan (Central Valley Regional Water Quality Control Board 2011), as shown in Table 2.9-1.

Table 2.9-1. Designated Beneficial Uses for the Sacramento River

Water Body	Designated Beneficial Use
Sacramento River (Colusa Basin Drain to I Street Bridge)	Municipal and domestic supply, agricultural (irrigation), contact recreation, non-contact recreation, warm freshwater habitat, cold freshwater habitat, warm freshwater fish migration, cold freshwater fish migration, warm freshwater fish spawning, cold freshwater fish spawning, wildlife habitat, navigation

Source: Central Valley Regional Water Quality Control Board 2011.

Regional Surface Water Quality

Water in the Sacramento River Basin is generally considered to be relatively clean and acceptable for a variety of beneficial uses. Because most of the water in the Sacramento River and its major tributaries, such as the Feather and American Rivers, is derived from melting snow that enters the rivers by managed discharges of water from reservoirs, much of the Sacramento River and its large tributaries have low concentrations of dissolved minerals. Although water quality of the Sacramento River is good most of the year, seasonal events—such as agricultural runoff or runoff from historical mining operations—may affect this quality. Some water quality concerns related to these events are listed below (Sacramento River Watershed Program 2015).

- Erosion of stream channels and uplands, and increased turbidity and changes in sediment deposition patterns.
- Rising water temperatures from the loss of riparian canopy cover, streamflow diversions, and waste discharges.
- Mercury and methylmercury levels from legacy mining sites that can be absorbed into and accumulate in the aquatic food chain.
- Aquatic toxicity from agricultural chemical use, including organophosphate pesticides in the Sacramento Valley.

List of Impaired Waters

Table 2.9-2 shows Section 303(d)-listed impairments for the Sacramento River based on the 2010 California Integrated Report (State Water Resources Control Board 2011).

Table 2.9-2. Section 303(d)-Listed Impairments for the Sacramento River

Reach	Section 303(d)-Listed Impairments	Source	TMDL Completion
Sacramento River (Knights Landing to the Delta)	Chlordane	Agriculture	Est. 2021
	DDT (dichlorodiphenyltrichloroethane)	Agriculture	Est. 2021
	Dieldrin	Agriculture	Est. 2021
	Mercury	Resource extraction	Est. 2012
	PCBs (polychlorinated biphenyls)	Unknown	Est. 2021
	Unknown toxicity	Unknown	Est. 2019

TMDL = total maximum daily load

Source: State Water Resources Control Board 2011.

Construction General Permit Risk Level Assessment

Beneficial uses and status of impaired water bodies are used to determine permit requirements. A construction site risk-level assessment was performed for the project SWPPP, with a resultant Risk Level 2 (medium level). The risk level was determined based on the procedure described in the CGP and based on two major elements: (1) project sediment risk (the relative amount of sediment that can be discharged, given the project and location details); and (2) receiving water risk (the risk that sediment discharges pose to the receiving waters). Project sediment risk is determined by multiplying the R, K, and LS factors from the RUSLE to obtain an estimate of project-related bare ground soil loss expressed in tons/acre. Receiving water risk is based on whether a project drains to a sediment-sensitive water body. A *sediment-sensitive water body* is on the most recent Section 303d list for water bodies impaired for sediment; has an EPA-approved TMDL implementation plan for sediment; or has the beneficial uses of COLD, SPAWN, and MIGRATORY.

Tables 2.9-3 and 2.9-4 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors.

Table 2.9-3. Summary of Sediment Risk

RUSLE Factor	Value	Method for Establishing Value
R	105	EPA website: http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm .
K	0.14	Weighted average for surface layer of soil map units.
LS	0.20	Field observations and LS Table from Sediment Risk Factor Worksheet in General Permit. Calculation assumes 1% slope (based on Natural Resources Conservation Service data) and 300-foot slope length.
Total predicted sediment loss (tons/acre)		2.94
Overall Sediment Risk		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Low sediment risk = < 15 tons/ acre		
Medium sediment risk = > 15 and < 75 tons/acre		
High sediment risk = > 75 tons/acre		

RUSLE = Revised Universal Soil Loss Equation

Table 2.9-4. Summary of Receiving Water Risk

Receiving Water Name	303(d) Listed for Sediment-Related Pollutant ^a	TMDL for Sediment-Related Pollutant ^a	Beneficial Uses of COLD, SPAWN, and MIGRATORY ^a
Sacramento River	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Overall receiving water risk			<input type="checkbox"/> Low <input checked="" type="checkbox"/> High

^a If “yes” is selected for any option, the receiving water risk is high.

2.9.2.3 Groundwater

Groundwater Quality Objectives/Standards and Beneficial Uses

Beneficial uses of groundwater are designated in the Central Valley RWQCB Basin Plan. Unless otherwise designated, all groundwater in the Sacramento Valley is considered suitable, or at a minimum potentially suitable, for the following beneficial uses (Central Valley Regional Water Quality Control Board 2011).

- Municipal and domestic (MUN)
- Agricultural (AGR) – irrigation (IRR) and stock watering
- Industrial process (PROC)³
- Industrial service supply (IND)⁴
- Existing water quality

³ *Process* is industrial use that depends on water quality.

⁴ *Service supply* is industrial use that is not dependent on water quality.

Groundwater Quality

Several sites of significant groundwater quality impairment are within the South American Subbasin, including three U.S. Environmental Protection Agency Superfund sites: Aerojet, Mather Field, and the Sacramento Army Depot. Other sites with groundwater quality impairment are the Kiefer Boulevard Landfill; an abandoned PG&E site on Jibboom Street near Old Sacramento; and the Southern Pacific Railroad and UPRR Railyards in downtown Sacramento, which are located adjacent to the project site (California Department of Water Resources 2004).

Groundwater quality in the Yolo Subbasin is generally considered to be good for both agricultural and municipal uses, even though the water is hard to very hard overall (California Department of Water Resources 2004).

2.9.3 Environmental Consequences

2.9.3.1 Build Alternatives

There are two roadway design alternatives for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the City of Sacramento, but both alternatives would result in the same permanent and temporary impacts on water quality and impervious surfaces. Therefore, the impacts of these alternatives are not discussed separately in this chapter.

Construction

Construction of the proposed project would involve land-disturbing activities, stockpiling, equipment use and storage, and potential spills that could result in temporary impacts on water resources within the project site or nearby. These activities have the potential to violate water quality standards or WDRs if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. Sources of sediment include earthwork, excavation, embankment/fill construction, in-water work, uncovered or improperly covered stockpiles, unstabilized slopes, and construction equipment not properly cleaned or maintained.

The delivery, handling, and storage of construction materials and wastes (e.g., concrete debris), as well as the use of heavy construction equipment, could result in storm water contamination and thereby affect water quality. Construction activities may involve the use of chemicals and operation of heavy equipment that could result in accidental spills of hazardous materials (e.g., fuel and oil) during construction activities; these spills could enter the groundwater aquifer or nearby surface water bodies via runoff or storm drains. Constituents in fuel, oil, and grease can be acutely toxic to aquatic organisms and/or bioaccumulate in the environment. Staging areas or building sites can be sources of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in storm water include toxicity to aquatic organisms, such as bioaccumulation, and potential contamination of drinking supplies.

Substrate

In-channel construction and maintenance activities for the proposed bridge may alter the structure and composition of the river bed (or substrate). In-water construction work such as installation of temporary cofferdams and pile driving would disturb the bottom substrate over the stiff clay layer in the Sacramento River channel, which could remobilize sediments as well as contaminants adsorbed to the sediments. Non-soluble contaminants with a tendency to adsorb to sediments (as opposed to soluble contaminants, which have the tendency to be readily diluted in water) can accumulate in the substrate over time. Non-soluble contaminants that are known to be present in the Sacramento River include polychlorinated biphenyls (PCBs), mercury, pesticides and insecticides (i.e., dieldrin, chlorodane, DDT), and other unknown toxicities (State Water Resources Control Board 2011). The resuspension of contaminants found in bottom substrate can remobilize these contaminants and release them into the water column, degrading water quality. In addition, resuspended particulate material could be transported to other locations in the Sacramento River as a result of flow patterns and tidal currents, thus leading to potential degradation of water quality beyond the immediate project area.

Currents, Circulation, or Drainage Patterns

During construction, utility improvements would involve relocation of some storm drains within Jibboom Street, Bercut Drive, C Street, and 2nd Street, which could temporarily affect the ability of water to drain in the surrounding area during a rain event. However, drainage would be re-routed to other active storm drain inlets during relocation activities. As is standard with all construction projects, the contractor would be required to install temporary BMPs to protect existing drainage inlets and storm drain systems, and to control any runoff or erosion from the project site that may discharge into the surrounding waterways.

Suspended Particulates (Turbidity)

During construction, potential short-term increases in turbidity would result from soil erosion and suspended solids being introduced into the Sacramento River, from both in-water and land construction activities. This could violate water quality standards or WDRs related to turbidity and have the potential to result in physiological, behavioral, and habitat effects on aquatic life (ICF International 2016). Implementation of the SWPPP, LID measures, permanent erosion control elements found in Caltrans' MS4 program guidance documents, and the Cities of Sacramento and West Sacramento stormwater guidance measures, will minimize the potential for construction-related surface water pollution and ensure that water quality in the Sacramento River will not be compromised by erosion and sedimentation during construction.

Proposed Bridge

In-water construction activities in the Sacramento River would directly disturb sediment along the river bed and result in a temporary increase in turbidity in the immediate project area and potentially downstream. The potential for disturbance of riverbed sediments and associated increases in sedimentation and turbidity in the Sacramento River are anticipated to be greatest during extraction of temporary trestles and cofferdams installed during in-water work for bridge construction. These activities would result in greater disturbance to riverbed sediments than

would occur during pile driving for piers and the bridge fender system; these piles would be driven only and not extracted (ICF International 2016).

Dewatering may be needed for (1) removal of water from within the CIDH piles after they complete pile driving and prior to pouring the concrete inside the CIDH pile cage; and/or (2) removal of the water that is displaced as the concrete is poured.

The first instance involves partial or complete dewatering without any new contaminants. The discharge of turbid water would be prevented by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration area, and/or treating the water in a manner to ensure compliance with water quality requirements prior to discharging water back to the Sacramento River or any canal, ditch, wetland, or other aquatic habitat. This type of dewatering would occur if the casings were dewatered partially before pouring concrete or if cofferdams are used and dewatering is needed to rescue fish. If casings remain on for at least 1–2 days after the work is completed, sediments would settle in the casings before the casings are pulled.

The second instance requires preventing the discharge of concrete to the Sacramento River by diverting and properly disposing of water displaced from within CIDH piles as concrete is being poured. The water likely would contain uncured concrete. Compliance with either a State or Regional Board Low Threat Discharge Permit or other unique dewatering WDRs may not be needed if the water within the encasements that comes in contact with the cement is pumped out, placed in a container, and hauled to a hazardous waste facility where it would be properly treated and disposed of. However, if dewatering operations involves discharging to the Sacramento River and/or nearby storm drain systems a Low-Threat Discharge To Surface Water Permit may be necessary and provisions within the approved 401 Permit may also be applicable in order to describe required monitoring processes, thresholds, and treatment of constituents associated with concrete (e.g., pH, hardness, turbidity) prior to discharging. If the water is discharged to land, such as to temporary infiltration basins, the project would need to obtain a General Dewatering Permit for land discharges (Order NO. 2003 - 0003 - DWQ). For example, water could be treated and neutralized within Baker steel tanks and then allowed to infiltrate in basins or used for dust control.

Roadway Modifications

Construction activities occurring on land adjacent to the river channel could cause erosion of sediments and contribute to short-term increases in turbidity in the river. Land-disturbing activities (e.g., vegetation clearing, excavation, and grading) could result in erosion and subsequent soil deposition to the river, which would increase river turbidity. There are no impact acreage differences as a result of the City of Sacramento roadway design alternatives.

Construction of the proposed project would disturb more than 1 acre of land. Because the project is on and adjacent to the Sacramento River, the Construction General Permit requires SWPPP erosion and sediment control BMPs would be implemented and maintained to prevent or minimize sediment and suspended solids from entering the river.

Oil, Grease, and Chemical Pollutants

The use of heavy construction equipment or construction-related materials can introduce pollutants of concern or toxic chemicals to the project site, which has the potential to violate water quality standards or WDRs. In addition, some of these pollutants can accumulate in stream sediments with lethal and sublethal consequences for fish and other aquatic species, particularly during “first-flush” rain events (ICF International 2016). The project would be consistent with municipal storm water programs for the Cities of Sacramento and West Sacramento, and Caltrans, and would include post-construction design measures, such as LID and vegetative areas to allow for infiltration and water quality treatment. Proposed BMPs will address vehicle tracking control, non-storm water management, and waste management practices and will be based on the best conventional and best available technology. These BMPs include vehicle and equipment fueling and maintenance, spill prevention, hazardous and concrete waste management, and material storage and delivery.

Proposed Bridge

Construction chemicals may be accidentally spilled into watercourses during in-water work. A typical construction site uses many chemicals or compounds, including gasoline, oils, grease, paint, solvents, lubricants, and other petroleum products. Many petroleum products contain a variety of toxic compounds and impurities; they tend to form oily films on the water surface, altering oxygen diffusion rates. Concrete, soap, trash, and sanitary wastes are other common sources of potentially harmful materials at construction sites. Wash water from equipment and tools and other waste accidentally spilled on the construction site can lead to the introduction of pollutants into surface waters or seepage into groundwater. The impact of toxic construction-related materials on water quality depends on the duration and time of activities. Construction occurring in the dry season is less likely to cause soil and channel erosion or runoff of toxic chemicals into a stream. However, low summer flows are less able to dilute pollutants that do enter the watercourse.

Roadway Modifications

The construction contractor would be required to regularly inspect and maintain the BMPs to ensure that they are in good working order, as required in the CGP SWPPP. The contractor would implement appropriate hazardous material management practices, spill prevention, and other good housekeeping measures to reduce the potential for chemical spills or releases of contaminants, including any non-storm water discharge to drainage channels. Implementation of these measures would minimize the potential for surface water and groundwater contamination.

Water Temperature

Remobilization of nutrients found in bed sediments during construction could release increased nutrients into the water column, causing an algal bloom. However, remobilization of these nutrients would be temporary and would not be in sufficient quantities to cause algal blooms in the river due to its continual flow.

Operations and Maintenance

Substrate

Maintenance activities have the potential to alter the structure and composition of the river bed (or substrate) in a similar manner as described above for construction. Since in-channel maintenance work is expected to be infrequent, the potential for adverse effects is minimal.

Currents, Circulation, or Drainage Patterns

During operation, new impervious surface and changes in topography could alter surface runoff drainage patterns and river flows. However, project drainage has been considered in the design. The proposed roadway drainage would be conveyed to the existing storm drain system installed within Railyards Boulevard and C Street. Railyards Boulevard currently drains storm water to the east along the roadway and then into a retention basin south of Railyards Boulevard. C Street drains storm water west along the roadway and then ultimately south beyond the project limits. Drainage from the bridge itself would be directed to drains located on the bridge and routed to the abutment, where it would enter the storm drainage system.

Turbidity/Suspended Sediment

During operation, long-term water quality impacts are attributable to changes in storm water drainage and/or loss of riparian vegetation. The proposed project would result in a permanent loss of 1.88 acres of levee slope vegetation (1.13 acres in West Sacramento and 0.75 acre in Sacramento) for RSP and permanent structures. Vegetation along slopes can help reduce the potential for erosion during rain events.

The proposed project would result in added impervious surface with the potential to increase runoff volume in the Sacramento River. Increases in impervious surfaces change the storm hydrograph by increasing flow velocity and the peak and quantity of storm runoff due to reduced natural infiltration (groundwater recharge) and uptake from native soils and vegetation. Further, if periodic maintenance of the bridge were to require in-water work, the potential would exist for sediment disturbance and turbidity. The project design will incorporate CGP SWPPP post-construction measures, site design measures, LID measures, and other permanent erosion control elements found in Caltrans' MS4 program guidance documents, the Sacramento Stormwater Quality Partnership's SQIP, and the City of West Sacramento's SWMP, to ensure that storm water runoff does not cause soil erosion. Implementation of these measures would reduce or avoid permanent impacts on water quality.

Oil, Grease, and Chemical Pollutants

Post-construction roadway operations can introduce pollutants of concern or toxic chemicals to the project site, which has the potential to violate water quality standards or WDRs.

Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons are common pollutants in road runoff, and roadside landscaping can introduce pesticides and fertilizers. These pollutants are typically washed off the roadway surfaces by rainfall and enter storm water runoff. Urban runoff

from vehicles on bridges can be discharged into streams during rain events, in vehicle accidents, and through normal wear and tear. Runoff in significant quantities occurs only during heavy storms that in turn cause these pollutants to be greatly diluted. These storms cause some high flows in the drainage systems, which dilute the pollutants as they are carried from the source.

Overall, post-construction bridge and roadway runoff is not expected to adversely affect water quality in the Sacramento River, as runoff would be collected and diverted via ducts and culverts to a storm drain system rather than to the river itself.

Water Temperature

Temperature can be affected if water of a different temperature is discharged directly into waters or if water depths are substantially changed in a river, resulting in seasonal changes in air temperature and solar radiation with a greater (with lower water levels) or lesser (with greater water levels) influence on river water temperatures. Vegetative canopy cover (overhanging vegetation) maintains cooler temperatures in the underlying water. Removal of streamside vegetation may affect water temperatures. In addition, new overwater structures, such as the new bridge, could alter underwater light conditions and resulting water temperatures. Because of the height of the new bridge over the water, ambient light levels generally would be expected to penetrate into the water, thereby minimizing the effect of bridge shading on aquatic habitats in the Sacramento River.

Erosion and Accretion Patterns

Proposed Bridge

The preliminary hydraulic impact analysis for the project (MBK Engineers 2015) shows that the effects of the proposed bridge on hydraulics is minimal, thus any changes to existing erosion or accretion patterns are expected to be minimal. Potential impacts of the proposed project on erosion patterns also are discussed in the “Turbidity/Suspended Sediment” section above.

Roadway Modifications

The project design also will include permanent erosion control elements to ensure that storm water runoff does not cause soil erosion, thus reducing or avoiding permanent impacts on water quality.

Groundwater Recharge

As previously described, groundwater was found at a depth of approximately 15 to 25 feet below the ground surface. Roadway improvements and utility installation and trenching would require excavation to depths of only a few feet.

Any increases in impervious area related to the project would not appreciably influence water infiltration into the groundwater aquifer or cause a widespread, regional change in groundwater levels. Changes to groundwater occurrence and levels due to project operation, if groundwater levels are affected at all, would not detrimentally affect regional groundwater production or

change the existing water quality. Groundwater dewatering would not be necessary for project operation and maintenance activities.

2.9.3.2 No Build Alternative

Under the No Build Alternative, no bridge would be built and the existing I Street Bridge would continue to be a source of transportation across the Sacramento River between the Cities of Sacramento and West Sacramento. Because this alternative does not alter existing conditions, there would be no associated impacts on water quality.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

Three different MS4 permits apply to the project: (1) Caltrans General NPDES MS4 Permit that covers statewide Caltrans municipal storm water discharges (Order No. 2012-0011-DWQ), (2) Sacramento County MS4 Permit for the City of Sacramento (Sacramento County MS4 Permit; NPDES No. CAS082597; Order No. R5-2015-0023), and (3) State Water Board's Small MS4 Permit for the City of West Sacramento (Statewide Phase II MS4 Permit; NPDES Order No. 2013-001-DWQ; General Permit No. CAS000004). These permits regulate the storm water and non-storm water discharges associated with project construction activities and discharges within the jurisdiction of each permit. The permits require controls be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. The Caltrans General permit also serves as a State of California WDR. Compliance with this permit requires implementation of BMPs that achieve the performance standards of best available technology and economically achievable/best conventional pollutant control technology to reduce or eliminate storm water pollution. BMPs will be implemented during construction and operations to limit sediments and pollutants from affecting drainages and to diminish erosion in the project area. BMPs are described further below.

Implement Measures to Protect Water Quality during Construction

Compliance with regulatory permits and municipality programmatic requirements is anticipated during all construction field activities, including project staging and storage area usage. As a result, no water quality impacts are anticipated for the duration of the project. In support of this effort, the project is expected to be regulated under the CGP, Order No. 2009-0009-DWQ, and all associated adopted amendments. The CGP is applicable for all construction projects where operations, such as clearing, grubbing, grading and excavation, disturbs 1 acre or more of land. Compliance with the CGP requires the project proponent/construction contractor to prepare a SWPPP. The SWPPP includes conditions for final stabilization of the project area, including staging areas, which will require review and approval by the RWQCB prior to acceptance of the project's Notice of Termination. Implementation of the SWPPP begins when construction operations start and continues until the project is complete, field activities have finished, and the Notice of Termination is approved.

The approved SWPPP includes (and is not limited to) the following elements.

- Project Description – The Project description includes maps and other information related to construction activities and potential sources of pollutants.
- Minimum Construction Control Measures – These measures may include limiting construction access routes, stabilizing areas denuded by construction, and using sediment controls and filtration.
- Erosion and Sediment Control – The SWPPP is required to contain a description of soil stabilization practices, control measures to prevent a net increase in sediment load in storm water, controls to reduce tracking sediment onto roads, and controls to reduce wind erosion.
- Non-Storm Water Management – The SWPPP includes provisions to reduce and control discharges other than storm water.
- Post-Construction Storm Water Management – The SWPPP includes a list of storm water control measures that provide ongoing (permanent) protection for water resources.
- Waste Management and Disposal – The SWPPP includes a waste management section, including, for example, equipment maintenance waste, used oil, and batteries. All waste must be disposed of as required by state and federal law.
- Maintenance, Inspection, and Repair – The SWPPP requires an ongoing program to ensure that all controls are in place and operating as designed.
- Monitoring – This provision requires documented inspections of the control measures.
- Reports – The contractor will prepare an annual report on the construction project and submit this report on July 15 each year. This report will be submitted to the State Water Board on the Storm Water Multiple Application and Report Tracking System website.
- Training – The SWPPP provides documentation on the training and qualifications of the designated Qualified SWPPP Developer and Qualified SWPPP Practitioner. Trained personnel must perform inspections, maintenance, and repair of construction site BMPs.
- Construction Site Monitoring Program – The SWPPP includes a Construction Site Monitoring Program detailing the procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, and pH and bioassessment.

The following minimum BMPs would be necessary for the project to comply with the CGP.

- Soil stabilization
 - Hydroseeding
 - Geotextiles, mats, plastic covers, and erosion control blankets
 - Hydraulic mulch

- Sediment control
 - Fiber rolls
 - Silt fence
 - Sediment trap
 - Gravel bag berm
 - Check dams
 - Storm drain inlet protection
- Tracking control practices
 - Temporary construction entrance
- Non-storm water controls
 - Dewatering operations
 - Material and equipment use over water
 - Clear water diversion
 - Temporary stream crossing
 - Potable water/irrigation
- Water management and materials pollution control
 - Concrete waste management
 - Hazardous waste management and contaminated soil management

The project proponent and construction contractor are required to follow the conditions and provisions stipulated in the applicable water quality permits and associated water quality/storm water programmatic documents. With that understanding, at this time, no additional measures are anticipated. However, changes to project field variables during construction, including implementation of minimization and avoidance measures related to permit compliance, could result in additional measures being required and implemented.

Implement Measures to Protect Water Quality during Project Operation and Maintenance

The project design will incorporate Construction General Permit SWPPP post-construction measures, site design measures, LID measures, and other permanent erosion control elements found in Sacramento Stormwater Quality Partnership's SQIP, the City of West Sacramento's SWMP, and Caltrans' MS4 program guidance documents. The NPDES MS4 permits contains provisions to reduce, to the maximum extent practicable, pollutant loadings from the facility once construction is complete. Thus, design features or BMPs would be developed and incorporated into the project design and operations prior to project construction. These measures would reduce the suspended particulate loads, and thus pollutants associated with the particles, from entering waterways. Under the Sacramento County MS4 Permit, storm water mitigation measures are required to be incorporated into project design plans for Planning Priority Projects.

These include development projects or land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Traditional permittees, such as City of West Sacramento, are required to comply with Section E of the Statewide Phase II MS4 Permit, which specifies requirements for site design measures⁵, LID design standards, alternative post-construction stormwater management program, and operations and management requirements for post construction stormwater management. Additionally, an operation and maintenance program would be implemented for permanent control measures.

Low-impact development measures are proposed to reduce the rate of runoff, filter pollutants, and allow infiltration into the ground. The proposed measures would address peak-flow attenuation impacts and can include structural measures, such as detention, underground storage, and non-structural measures, through the modification of proposed treatment BMPs to accommodate flow and volume control.

Caltrans-approved treatment BMPs/low-impact development measures that have been studied and verified to remove targeted design constituents and provide general pollutant removal include the following.

- Biofiltration systems
- Infiltration devices
- Detention devices
- Dry weather flow diversion
- Gross solids removal devices (GSRDs)
- Media filters
- Multi-chamber treatment train
- Wet basins

The project proponent would be responsible for maintaining the treatment BMPs discussed above. The Maintenance Stormwater Coordinator would be involved in the design review of any permanent storm water treatment BMPs and would need to approve any such devices at the end of the plans, specifications, and estimate phase. The Caltrans Maintenance Unit would be able to provide guidance on the following project-related issues to ensure that BMPs function as needed.

- Drainage patterns (particularly known areas of flooding and debris)
- Stability of slopes and roadbed (help to determine whether the Project can be built and maintained economically)
- Possible material borrow or spoil sites
- Concerns of the local residents

⁵ Site design measures are implemented to reduce site runoff. Examples of these measures include stream setbacks and buffers, soil quality improvement and maintenance, tree planting and preservation, rooftop and impervious area disconnection, porous pavement, green roofs, vegetated swales, and rain barrels and cisterns.

- Existing and potential erosion problems
- Facilities within the right-of-way that will affect design
- Special problems such as deer crossings and endangered species
- Whether facilities are safe to maintain
- Known environmentally sensitive areas
- Frequency of traction sand use and estimate of sand quantity applied annually

BMPs will address soil stabilization, sediment control, wind-erosion control, non-storm water management, vehicle tracking control, and waste management practices and will be based on the best available technology. Implementation of these measures will ensure that storm water runoff would reduce or avoid permanent impacts on water quality. Because project proponent and the construction contractor must comply with conditions stipulated in the MS4 permit for the project, and an operation and maintenance program would be implemented for permanent control measures, no additional measures are required during operation and maintenance.

2.9.5 References Cited

California Department of Water Resources. 2004. *Bulletin 118: South American Subbasin*.

Available:

<http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/5-21.65.pdf>. Accessed: April 10, 2015.

Central Valley Regional Water Quality Control Board. 2011. *Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins*. Available:

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf.

Accessed: April 10, 2015.

Ceres. 2014. *Sacramento Valley Bioregion – An Overview*. Available:

<http://ceres.ca.gov/geo_area/bioregions/Sacramento_Valley/about.html>. Accessed: April 10, 2015.

City of Sacramento. 2016. *Sacramento Railyards Specific Plan*. October. Approved by the City of Sacramento on November 10, 2016.

_____. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA.

Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.

_____. 2011. *River District Specific Plan*. Community Development Department and Economic Development Department. Adopted February 15, 2011. Sacramento, CA. Available:

<<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Specific%20Plans>>. Accessed: May 10, 2016.

City of West Sacramento. 2016. City of West Sacramento General Plan 2035 Policy Document. Adopted November 2016. City of West Sacramento Community Development Department. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 21, 2017.

_____. 2010. *Water Quality: 2010 Consumer Confidence Report*. Available: <https://www.cityofwestsacramento.org/city/depts/pw/public_works_operations/environmental_prog/waterquality.asp>. Accessed: April 10, 2015.

_____. 2003. *City of West Sacramento Stormwater Management Program Planning Document*. March. Prepared by Larry Walker Associates.

_____. 1996. *Washington Specific Plan*. Adopted by the West Sacramento City Council on May 15, 1996. West Sacramento, CA. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobdownload.asp?BlobID=3639>>. Accessed: July 31, 2015.

GEI Consultants, Inc. 2014. *Preliminary Geotechnical and Foundation Report – I Street Bridge Replacement*. August. Submitted to Mark Thomas and Company. (Contract Number SA-14108.) Sacramento, CA.

ICF International. 2016. *Water Quality Assessment Report, I Street Bridge Replacement Project*. February 17. Prepared for California Department of Transportation. Sacramento, CA.

MBK Engineers. 2015. *Technical Memorandum: Preliminary Hydraulic Analysis for I Street Bridge Replacement Project*. Sacramento, CA.

Natural Resources Conservation Service. 2015. *Web Soil Survey*. U.S. Department of Agriculture. Available: <<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>>. Accessed: April 10, 2015.

Sacramento River Watershed Program. 2015. *Sacramento River Basin*. Available: <<http://www.sacrriver.org/aboutwatershed/>>. Accessed: April 10, 2015.

Sacramento Stormwater Quality Partnership. 2009. *Stormwater Quality Improvement Plan for the County of Sacramento and the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova*. November. Submitted to State of California Regional Water Quality Control Board, Central Valley Region. Available: <[http://www.beriverfriendly.net/docs/files/File/2009_SQIP/SQIP-\(Nov09\)-MainDocument.pdf](http://www.beriverfriendly.net/docs/files/File/2009_SQIP/SQIP-(Nov09)-MainDocument.pdf)>. Accessed: May 11, 2016.

State Water Resources Control Board. 2011. *2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) — Statewide*. Available: <http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml>. Accessed: April 10, 2015.

U.S. Army Corps of Engineers. 2015. *Sacramento River Bank Protection Project*. Available: <http://www.spk.usace.army.mil/Missions/CivilWorks/SacramentoRiverBankProtection.aspx>. Accessed: April 10, 2015.

2.10 Geology/Soils/Seismic/Topography

2.10.1 Regulatory Setting

2.10.1.1 Federal Requirements

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 Caltrans Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans’ projects. Structures are designed using Caltrans’ Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge’s category and classification will determine its seismic performance level and which methods are used to estimate the seismic demands and structural capabilities. For more information, please see Caltrans’ Division of Engineering Services, Office of Earthquake Engineering, SDC.

2.10.1.2 State Requirements

Alquist-Priolo Earthquake Fault Zoning Act

California’s Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (PRC Section 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce risks 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 occupancy¹ 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 purposes of the act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be identified clearly by a trained geologist at the ground surface, or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Bryant and Hart 2007).

¹ With reference to the Alquist-Priolo Act, a *structure for human occupancy* is defined as one “used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year” (CCR Title 14, Div. 2, Section 3601[e]).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (PRC Sections 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 within seismic hazard zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans. Geotechnical investigations conducted within Seismic Hazard Zones must incorporate standards specified by California Geological Survey Special Publication 117a, *Guidelines for Evaluating and Mitigating Seismic Hazards* (California Geological Survey 2008).

Clean Water Act Section 402 General Permit for Construction and Other Land Disturbance Activities (Order No. 2009-009-DWQ)

The CWA is discussed in detail in Section 2.9, “Water Quality.” However, because CWA Section 402 is directly relevant to grading activities, additional information is provided herein.

Section 402 of the CWA mandates that certain types of construction activity comply with the requirements of EPA’s NPDES program. EPA has delegated to the State Water Board the authority for the NPDES program in California, where it is implemented by the state’s nine RWQCBs.

Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the 2009 CGP (Order 2009-009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. GCP applicants are required to prepare a Notice of Intent and a SWPPP, and to implement and maintain BMPs to avoid adverse effects to receiving water quality as a result of construction activities, including earthwork.

Coverage under the GCP is obtained by submitting permit registration documents to the State Water Board that include a risk-level assessment and a site-specific SWPPP identifying an effective combination of erosion control, sediment control, and non-storm water BMPs. The GCP requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

Because the proposed project would result in disturbance of an area greater than 1 acre, the project applicant will need to obtain coverage under the NPDES General Construction Activity Storm Water Permit and obtain a state NPDES Stormwater Permit from the Central Valley RWQCB.

2.10.1.3 Local Requirements

City of Sacramento General Plan

The *Sacramento 2035 General Plan* (City of Sacramento 2015) addresses seismic and geologic hazards as discussed below.

Environmental Constraints

Goal EC 1.1 Hazards Risk Reduction. Protect lives and property from seismic and geologic hazards and adverse soil conditions.

Policy EC 1.1.1 Review Standards. The City shall regularly review and enforce all seismic and geologic safety standards and require the use of best management practices (BMPs) in site design and building construction methods.

Policy EC 1.1.2 Geotechnical Investigations. The City shall require geotechnical investigations to determine the potential for ground rupture, ground-shaking, and liquefaction due to seismic events, as well as expansive soils and subsidence problems on sites where these hazards are potentially present.

City of West Sacramento General Plan

The following goals and policies in the *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) relate to geology and seismic hazards.

Safety Element

Goal S-3. To prevent loss of life, injury, and property damage due to geologic and seismic hazards.

Policy S-3.2. The City shall require new development seeking a discretionary permit to prepare a geotechnical report or other appropriate analysis, and incorporate appropriate mitigation measure to ensure new structures are able to withstand the effects of seismic activity, including liquefaction.

Policy S-3.8. The City shall require utility providers to design utility lines to withstand seismic forces, be accessible for repair, and contain safety features such as automatic shutoff valves, switches, and expansion joints.

Policy S-3.10. The City shall work with responsible agencies to regularly inspect and repair area levees, as needed, to ensure structural integrity in the event of seismic activity.

2.10.2 Affected Environment

This section is primarily a summary of the analysis documented in the *Preliminary Geotechnical and Foundation Report I Street Bridge Replacement Sacramento, California* prepared for the project (GEI Consultants 2014). This report was based on existing data and reports, rather than site-specific geotechnical investigation. The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. Where data from other sources have been used, those sources are cited.

2.10.2.1 Regional Geology

Sacramento and the project site are situated within the Great Valley geomorphic province of California. The Great Valley is a gently-sloping to flat alluvial plain east of the Coast Ranges and west of the Sierra Nevada. It is a northwest-trending structural trough that was formed by the westward tilting of the Sierra Nevada block.

The Sacramento Valley in general is underlain by alluvial, lacustrine, and marine sedimentary deposits that have accumulated as the structural trough formed and the adjacent mountain ranges were elevated. The thickness of the sediments varies from a thin veneer along the valley margins to thousands of feet at the axis of the trough (GEI Consultants 2014).

2.10.2.2 Site Geology

According to the *Geologic Map of the Sacramento Quadrangle* (Wagner et al. 1981) and the *Geologic Map of Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills* (Helley and Harwood 1985), the site is immediately underlain by Holocene- (less than 11,000 years old) age alluvial deposits. The natural alluvial deposits in the area typically consist of unconsolidated silt, sand, and gravel, which were deposited by the complex Sacramento and American River system. Recent alluvial deposits are horizontally bedded, channeled, and relatively thin. These recent alluvial deposits are underlain by older (Pleistocene-age) alluvium of the Riverbank and/or Turlock Lake Formations estimated to be between 11,000 and 1.8 million years old. The deeper formations consist of semi-consolidated silt, sand, and gravel deposited as alluvial fans by the streams and rivers that drained the Sacramento Valley and Sierra Nevada. The general vicinity of the site is reclaimed land that was filled-in from approximately the 1860s to the 1900s. The magnitude of the fill material that was placed at that time is unknown (GEI Consultants 2014).

No protected natural landmarks, “outstanding examples of major geological features,” or protected topographic and geologic features are in the project area (National Park Service 2016).

2.10.2.3 Primary Seismic Hazards

The State of California considers two aspects of earthquake events primary seismic hazards: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic ground shaking.

Surface Fault Rupture

The risk of fault rupture in the project area is very low because no faults are mapped at or near the project site. The nearest fault is the Dunnigan Hills Fault to the east, near Woodland (GEI Consultants 2014).

Strong Ground Shaking

Based on the results of the Caltrans' seismic design procedures, a maximum considered (975-year return period) peak ground acceleration (PGA) of 0.262g is estimated for the site. This is a relatively low level of ground-shaking hazard for California (Merriam and Shantz 2007) (GEI Consultants 2014).

2.10.2.4 Secondary Seismic Hazards

Secondary seismic hazards refers to seismically induced landsliding, liquefaction, and related types of ground failure. These hazards are addressed briefly below.

Liquefaction

Liquefaction is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater.

There is a risk of liquefaction at the project site. The historic exploratory borings revealed that the project site is underlain by clean to silty sands in a loose to medium-dense condition below the groundwater table. The clean to silty sand layer starts at an approximate elevation of 0 to 10 feet (NAVD 88) and ranges from 35 to 45 feet thick. This soil layer was found to be prone to liquefaction. Liquefaction analyses were performed on several historical explorations that include this silty sandy layer (GEI Consultants 2014).

2.10.2.5 Erosion

Maps by the NRCS indicate that the upper 5 feet of the project site is underlain by soils assigned to the Lang sandy loam as well as Sycamore silty loam on the west embankment and Orthents on the east embankment with ground slopes from 0 to 2 percent (GEI Consultants 2014).

The Lang and Sycamore soils have a moderate susceptibility to sheet and rill erosion by water. The Lang soils are more susceptible to wind erosion (Natural Resources Conservation Service 2016).

The river bottom material is potentially susceptible to scour (GEI Consultants 2014).

2.10.2.6 Expansive Soil

A review of the bore log data indicates that the plasticity of the soils ranges from low to moderate.

2.10.3 Environmental Consequences

2.10.3.1 Build Alternatives

The discussions below apply equally to both build alternatives since they share the same footprint and would require similar ground disturbance.

Seismic Hazards and Slope Instability

The risk of strong seismic ground shaking in the project area is low. Compliance with the appropriate building regulations will ensure that the bridge foundations, bridge, roadways, and other project features are not damaged as a result of seismic activity. The project will comply with Caltrans' SDC to ensure that earthquake design and construction measures are implemented.

There is a risk of secondary seismic hazards related to slope instability and liquefaction because of the slope of the river banks, the potential for river erosion, and the potential for liquefaction. Liquefaction or excessive erosion could cause bridge damage or failure. This would be a significant impact. Site-specific field exploration and laboratory testing, including cone penetration tests and borings, would be necessary to develop final geotechnical engineering properties and design criteria for bridge foundations, project retaining wall, earthwork, and pavement design. This work will be performed as part of the final bridge design process. As described in the geotechnical report (GEI Consultants 2014), this work will include at least one exploration at each bent and abutment location, explorations in the Sacramento River channel at planned bent locations, and seismic testing to develop a refined site-specific shear wave velocity of design (V_{s30}). Accordingly, seismic hazards will be evaluated further and addressed during final design. All structures will be designed using the Caltrans' SDC to meet the minimum seismic requirements for highway bridges designed in California.

Erosion

Ground-disturbing earthwork associated with construction at the project site may increase soil erosion rates and/or loss of topsoil. Compliance with the erosion-related requirements applicable to the project will ensure that the construction activities do not result in significant erosion. These requirements are described in the Caltrans' *Construction Site Best Management Practices (BMPs) Manual* and the *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual*.

Expansive Soil

Expansive soil, as defined in Table 18-1 of the Uniform Building Code (1994), do not appear to be extensive in the project area but could occur locally; the potential impact on project structures would be evaluated during final design. All construction and engineered fills will comply with Caltrans' Standard Specifications, and all construction will compact the roadway subgrade in accordance with Caltrans' Standard Specifications.

2.10.3.2 No Build Alternative

There are no known seismic issues related to the existing bridge, roads, or other structures. The No Build Alternative would not result in adverse effects related to strong ground motion, liquefaction, slope instability, or seismic settlement.

Because the No Build Alternative would not involve soil disturbance, soil erosion would not increase.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.10.5 References Cited

Bryant and Hart. 2007. *Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps*. (Special Publication 42.) Interim Revision. California Geological Survey. Sacramento, CA.

California Geological Survey. 2008. *Guidelines for Evaluating and Mitigating Seismic Hazards*. (Special Publication 117a.) Sacramento, CA.

City of Sacramento. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.

City of West Sacramento. 2016. *City of West Sacramento General Plan 2035 Policy Document*. Adopted November 2016. City of West Sacramento Community Development Department. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 21, 2017.

GEI Consultants. 2014. *Preliminary Geotechnical and Foundation Report I Street Bridge Replacement Sacramento, California*. (Contract Number SA-14108.) Rancho Cordova, CA. Prepared for Mark Thomas and Company, Sacramento, CA.

- Helley, E. J. and D. S. Harwood. 1985. *Geologic Map of Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California*. (Miscellaneous Field Studies Map MF-1790.) U.S. Geological Survey, Reston, VA. Available: <<https://www.google.com/search?q=http%3A%2F%2Fpubs.usgs.gov%2Fmf%2F1985%2F1790%2F>>. Accessed: May 11, 2016.
- Merriam and Shantz. 2007. *Caltrans Deterministic PGA Map Fault Identification Numbers (FID) Shown September 2007*. Division of Engineering Services and Geotechnical Services and Division of Research and Innovation GeoResearch Group. Available: <http://www.dot.ca.gov/hq/esc/earthquake_engineering/sdc/documents/2007%20Caltrans%20Deterministic%20PGA%20Map.pdf>. Accessed: May 4, 2016.
- National Park Service. 2016. *National Natural Landmarks Program, California*. Available: <<http://www.nature.nps.gov/nnl/state.cfm?State=CA>>. Accessed: May 18, 2016.
- Natural Resources Conservation Service. 2016. *Web Soil Survey, Soil Properties and Qualities (Wind Erodibility Group and K Factor, Whole Soil)*. Last revised: unknown. Available: <<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>>. Accessed: May 5, 2016.
- Wagner, D. L., C. W. Jennings, T. L. Bedrossian, and E. J. Bortugno. 1981. *Geologic Map of the Sacramento Quadrangle, California Geological Survey, Regional Geologic Map No. 1A, 1:250,000 scale*. Last revised: unknown. Available: <<http://www.quake.ca.gov/gmaps/RGM/sacramento/sacramento.html>>. Accessed: May 10, 2016.

2.11 Paleontology

2.11.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

The Paleontological Resources Preservation Act (16 USC 470aaa) prohibits excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

According to 23 USC 1.9(a), the use of federal-aid funds must be in conformity with federal and state law.

Appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state are authorized by 23 USC 305, in compliance with 16 USC 431–433 above and state law.

Under California law, paleontological resources are protected by CEQA.

2.11.2 Affected Environment

The regional and local geology of the project area are described in Section 2.10, “Geology/Soils/Seismic/Topography.” As described in that section, the geologic unit immediately underlying the project site is Holocene- (less than 11,000 years old) age alluvial deposits.

2.11.2.1 Paleontological Sensitivity

The assessment of paleontological sensitivity (i.e., the potential to contain scientifically important paleontological resources) followed standard Caltrans’ criteria (California Department of Transportation 2014). Caltrans’ criteria use three categories to describe the likelihood that a geologic unit contains significant fossil materials—high potential, low potential, and no potential, as defined in Table 2.11-1.

Table 2.11-1. California Department of Transportation Paleontological Sensitivity Terminology

Caltrans' Sensitivity Designation	Characteristics of Geologic Units in This Category
High potential (high sensitivity)	<p>This category consists of rock units known to contain important vertebrate, invertebrate, or plant fossils anywhere within their geographic extent, including sedimentary rock units that are suitable for the preservation of fossils, as well as some volcanic and low-grade metamorphic rock units.</p> <p>This category includes rock units with the potential to contain abundant vertebrate fossils; a few significant fossils (large or small vertebrate, invertebrate, or plant fossils) that may provide new and significant taxonomic, phylogenetic, ecologic, and/or stratigraphic data; areas that may contain datable organic remains older than Recent, including Neotoma (sp.) middens; and areas that may contain unique new vertebrate deposits, traces, and/or trackways. Fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and caves) are given special consideration and ranked as highly sensitive.</p>
Low potential (low sensitivity)	<p>This category includes sedimentary rock units that are potentially fossiliferous but have not yielded significant fossils in the past; have not yet yielded fossils, but have the potential to contain fossil remains; or contain common and/or widespread invertebrate fossils of species whose taxonomy, phylogeny, and ecology are well understood.</p> <p><i>Note that sedimentary rocks expected to contain vertebrate fossils are considered highly sensitive, because vertebrates are generally rare and found in more localized strata.</i></p>
No potential (no sensitivity)	<p>This category includes rock units and deposits either too young to contain fossils or of intrusive igneous origin, most extrusive igneous rocks, and moderate- to high-grade metamorphic rocks.</p>

Source: California Department of Transportation 2014.

The paleontological sensitivity of the alluvial deposits is likely low because of the young age of the unit (i.e., less than 11,000 years old). Paleontological resources are considered to be older than 5,000 radiocarbon years (Society of Vertebrate Paleontology 2010). However, it is possible that the lower portion of the unit could contain paleontological resources.

2.11.3 Environmental Consequences

2.11.3.1 Build Alternatives

If fossils are present in the project area, they could be damaged by earth-disturbing activities (i.e., excavation and grading) during construction. Although the paleontological sensitivity of the Holocene alluvial deposit is likely low, the lower portion of the unit could contain fossils. Substantial damage to or destruction of significant paleontological resources, as defined by the Society of Vertebrate Paleontology (2010), would be an adverse effect.

2.11.3.2 No Build Alternative

No ground disturbance would occur under the No Build Alternative; therefore, paleontological resources would not be affected.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

Subsequent to public review, this section is updated to indicate that provisions related to the protection of paleontological resources are contained in Caltrans' 2015 Standard Specifications number 14-7.03, Discovery of Unanticipated Paleontological Resources. Specification 14-7.03 states the following.

If unanticipated paleontological resources are discovered at the job site, do not disturb the resources and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Secure the area
3. Notify the Engineer

The Department investigates the discovery and modifies the dimensions of the secured area if needed. Do not move paleontological resources or take them from the job site. Do not resume work within the radius of discovery until authorized.

The project proponent will comply with Caltrans standard specifications related to the discovery and protection of paleontological resources. In addition, implementation of the following measures would further reduce the effect of ground disturbance on paleontological resources.

Educate Construction Personnel in Recognizing Fossil Material

All construction personnel will receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that construction personnel can recognize fossil materials in the event that any are discovered during construction.

Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

2.11.5 References Cited

California Department of Transportation. 2014. *California Department of Transportation, Standard Environmental Reference*. Volume 1, Chapter 8, "Paleontology." Available: <http://www.dot.ca.gov/ser/vol1/sec3/physical/Ch08Paleo/chap08paleo.htm>. Accessed: December 5, 2014.

Society of Vertebrate Paleontology. 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. Last revised 2010. Available: <http://vertpaleo.org/The-Society/Governance-Documents/SVP_Impact_Mitigation_Guidelines.aspx>. Accessed: May 5, 2016.

2.12 Hazardous Waste/Materials

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, in addition to the investigation and mitigation of waste releases, air and water quality, human health, and land use.

2.12.1 Regulatory Setting

2.12.1.1 Federal Requirements

The primary federal laws regulating to hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as “Superfund,” is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle-to-grave” regulation of hazardous waste generated by operating entities. Other federal laws include the following.

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

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

2.12.1.2 State Requirements

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could affect groundwater and surface water quality. California regulations that address waste management and prevention and cleanup of

contamination include Title 22 Division 4.5 *Environmental Health Standards for the Management of Hazardous Waste*, Title 23 *Waters*, and Title 27 *Environmental Protection*.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.12.2 Affected Environment

This section is a summary of the analysis documented in the *Initial Site Assessment (ISA) Update* prepared for the project (Blackburn Consulting 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. Table 2.12-1 contains a list of technical reports related to hazardous waste and contamination that were prepared for the project.

Table 2.12-1. Hazardous Waste/Contamination Reports Prepared for the Proposed Project

Report	Author	Date	Type & Coverage
Initial Site Assessment (ISA) Update	Blackburn Consulting	March 2016	Comprehensive; project footprint
Radius Map with GeoCheck	Environmental Data Resources, Inc.	April 2015	Agency database search, historical aerial maps, Sanborn maps and topographic maps; project footprint
Hazardous Materials Survey Final Report	Entek Consulting Group (Appendix E of ISA)	May 2015	Asbestos-containing materials, lead-containing paint; bridge and approach structures

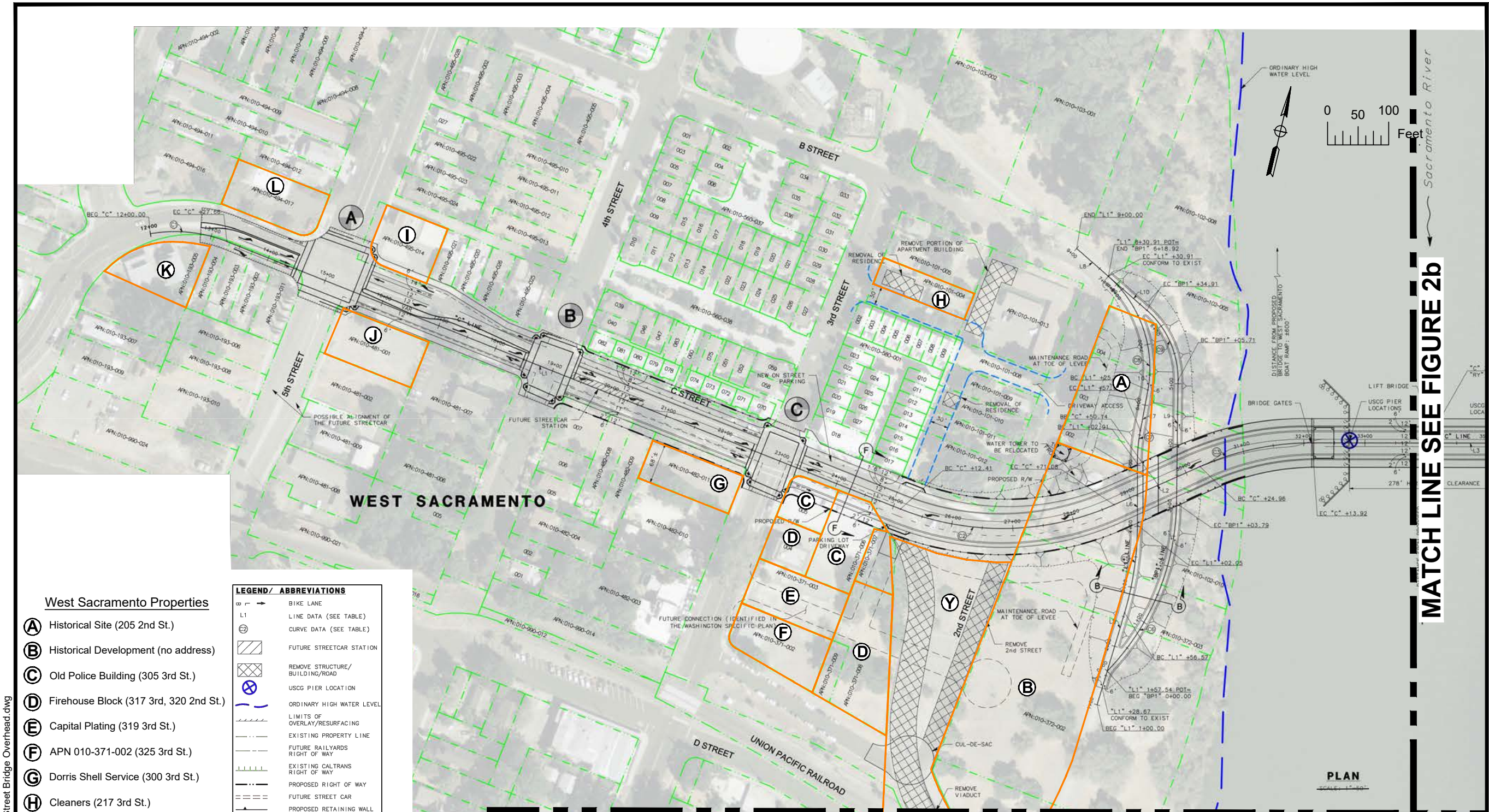
2.12.2.1 Hazardous Waste/Materials in Study Area

The methodology and identification of hazardous waste/materials potentially present in the study area, as discussed in the ISA and the other reports prepared for the project (Table 2.12-1), are presented below. The ISA study area, which comprises proposed acquisitions and adjacent parcels, and potential hazardous waste sites are shown in Figure 2.12-1a–c.

Site Reconnaissance and Access Limitations

A site visit was conducted on December 3, 2014, that included a visual survey of the project area. Another site visit was conducted on June 1, 2015. Due to private property access restrictions, onsite inspection of building interiors and other structures could not be completed. Observation of acquisition parcels was limited to those areas visible from publicly accessible areas (i.e., roads).

On May 5, 2015, the existing I Street Bridge and its associated approaches proposed for demolition were surveyed for asbestos-containing materials (ACM) and lead-containing paint (LCP). All accessible areas of the bridge structure and roadway approaches were included in the survey. The bridge control house was not accessible and was not included in this survey. Bulk samples were collected of various materials suspected to contain asbestos and lead by using a



West Sacramento Properties

- (A) Historical Site (205 2nd St.)
- (B) Historical Development (no address)
- (C) Old Police Building (305 3rd St.)
- (D) Firehouse Block (317 3rd, 320 2nd St.)
- (E) Capital Plating (319 3rd St.)
- (F) APN 010-371-002 (325 3rd St.)
- (G) Dorris Shell Service (300 3rd St.)
- (H) Cleaners (217 3rd St.)
- (I) Martinez Gulf Station (424 C St.)
- (J) Gary's Mohawk Station (427 C St.)
- (K) Golden Eagle Garage (519 & 521 C St.)
- (L) Hudson Oil Station (500 C St.)
- (Y) Caltrans ROW at Bridge Approach

LEGEND/ ABBREVIATIONS	
	BIKE LANE
	LINE DATA (SEE TABLE)
	CURVE DATA (SEE TABLE)
	FUTURE STREETCAR STATION
	REMOVE STRUCTURE/BUILDING/ROAD
	USCG PIER LOCATION
	ORDINARY HIGH WATER LEVEL
	LIMITS OF OVERLAY/RESURFACING
	EXISTING PROPERTY LINE
	FUTURE RAILYARDS RIGHT OF WAY
	EXISTING CALTRANS RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	FUTURE STREET CAR
	PROPOSED RETAINING WALL
	BEGIN BRIDGE / END BRIDGE
	POINT OF COMPOUND CURVE
	POINT OF REVERSING CURVE
	BEGIN CURVE / END CURVE
	CONTROL POINT
	APPROXIMATE PARCEL BOUNDARIES
	CROSS SECTION LOCATION

Source: I Street Bridge Replacement Geometric Approval drawings provided by Mark Thomas & Company, September, 2016

MATCH LINE SEE FIGURE 2c

INITIAL SITE ASSESSMENT
I Street Bridge Replacement Project
Sacramento, California

File No. 2584.x
September 2016

MATCH LINE SEE FIGURE 2b

9/20/2016 2584.x Fig2 ISA I Street Bridge Overhead.dwg

Graphics...00203.14 (9/21/16)AB

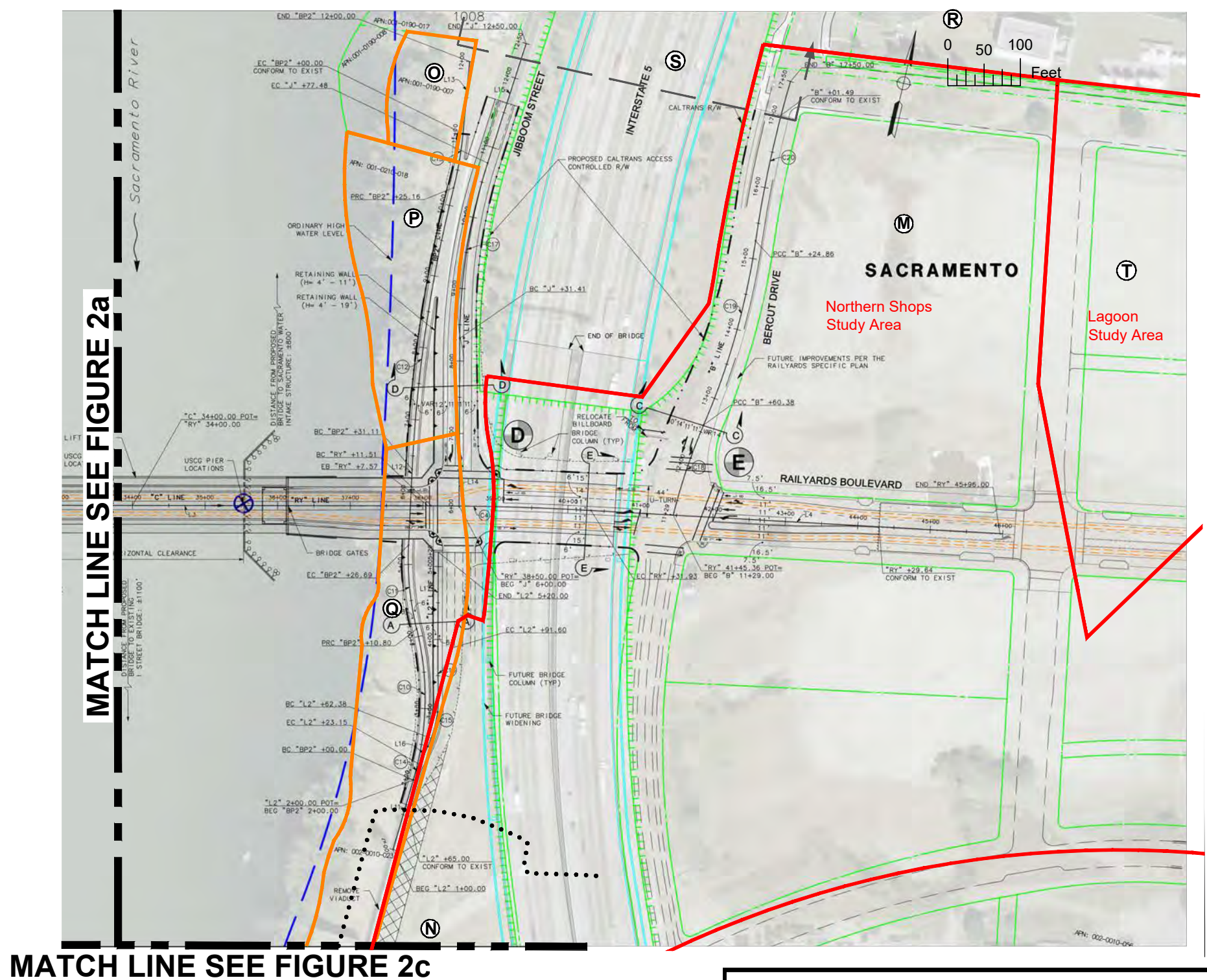
Figure 2.12-1a
ISA Study Area and Potential Hazardous Waste Sites

LEGEND/ ABBREVIATIONS	
	BIKE LANE
L1	LINE DATA (SEE TABLE)
	CURVE DATA (SEE TABLE)
	FUTURE STREETCAR STATION
	REMOVE STRUCTURE/ BUILDING/ROAD
	USCG PIER LOCATION
	ORDINARY HIGH WATER LEVEL
	LIMITS OF OVERLAY/RESURFACING
	EXISTING PROPERTY LINE
	FUTURE RAILYARDS RIGHT OF WAY
	EXISTING CALTRANS RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	FUTURE STREET CAR
	PROPOSED RETAINING WALL
BB/EB	BEGIN BRIDGE / END BRIDGE
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSING CURVE
BC/EC	BEGIN CURVE / END CURVE
290	CONTROL POINT
	APPROXIMATE PARCEL BOUNDARIES
	CROSS SECTION LOCATION

- Approximate Sacramento Railyard Property Boundaries
- Approximate Former Manufactured Gas Plant Boundaries
- Approximate Former Associated Metals Property Boundaries

SACRAMENTO PROPERTIES

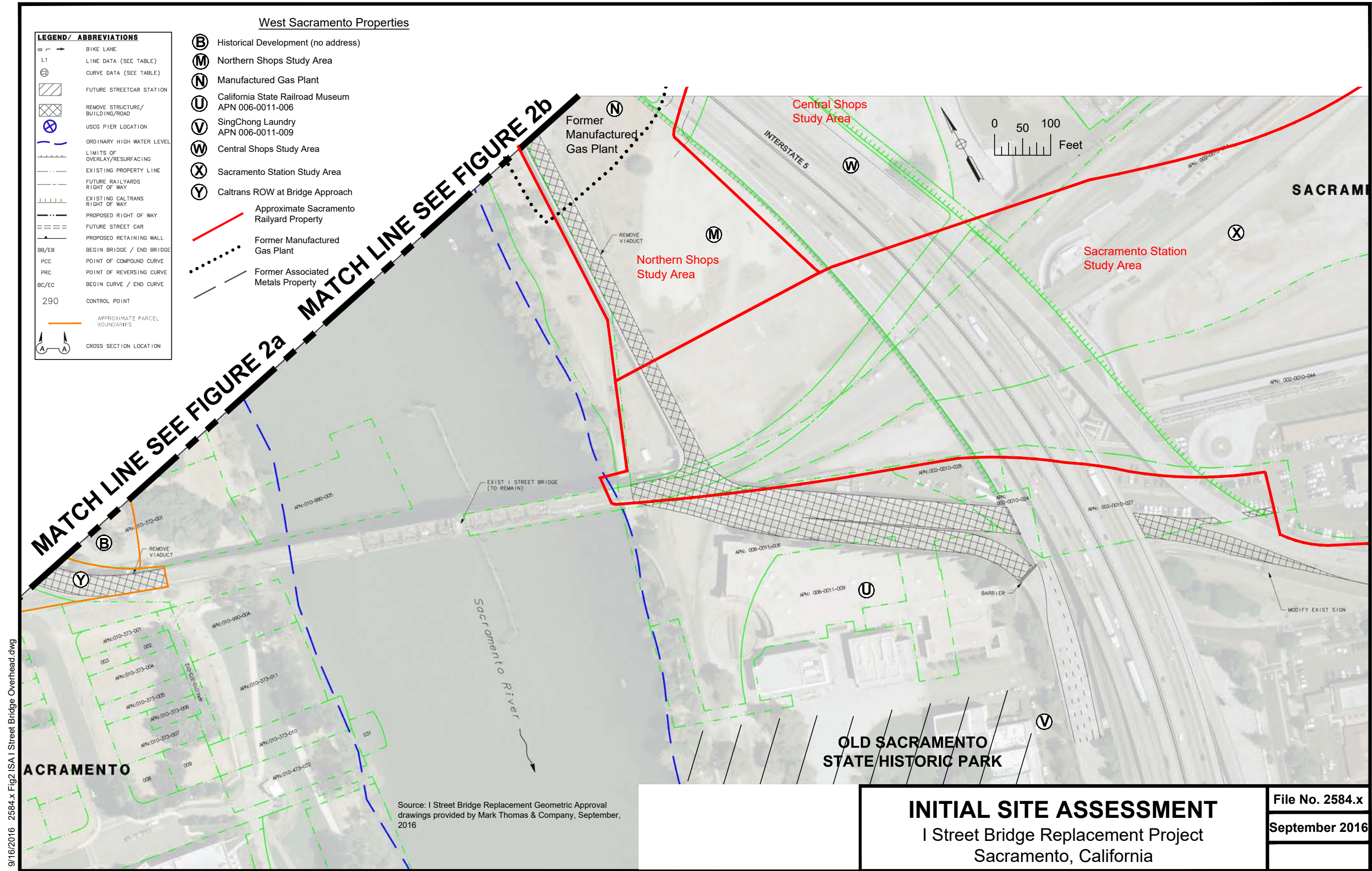
- Northern Shops Study Area
- Manufactured Gas Plant
- APN 001-0190-007
- APN 001-0210-018
- APN 001-0010-023
- Water Treatment Plant
- Former Associated Metals
- Lagoon Study Area



Source: I Street Bridge Replacement Geometric Approval drawings provided by Mark Thomas & Company, September, 2016

INITIAL SITE ASSESSMENT I Street Bridge Replacement Project Sacramento, California	File No. 2584.x
	September 2016

Figure 2.12-1b
ISA Study Area and Potential Hazardous Waste Sites



Graphics...00203.14 (9/21/16) AB

9/16/2016 2584.x Fig2 ISA I Street Bridge Overhead.dwg

Figure 2.12-1c
ISA Study Area and Potential Hazardous Waste Sites

power drill and coring tube, cutting the materials with a razor knife, or using other hand tools. Destructive sampling to look in existing cavities was not used.

Interviews

Interviews were not conducted for the properties located in West Sacramento because owner/tenant information was not available at the time of the survey.

An interview with Ruth Cayabyab of the Department of Toxic Substances Control (DTSC) regarding the current regulatory status of the Sacramento Railyards property (Railyards) was conducted. Ms. Cayabyab provided information on the current and upcoming regulatory actions pertaining to the Railyards and specifically the areas affected by the proposed project.

Asbestos-Containing Materials

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61[M]) and Federal Occupational Safety and Health Administration (OSHA) classify ACMs as any materials or products that contain more than 1 percent of asbestos. Nonfriable ACMs are classified by the NESHAPs as either Category I or II material, including materials sometimes found in bridges, rail shims, pipes, pipe coverings, expansion joint facings, and certain cement products.

Regulated ACMs, which are a hazardous waste when friable, are classified as any materials that contain more than 1 percent of asbestos by dry weight and have any of the following attributes.

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure);
- A Category I material that has become friable;
- A Category I material that has been subjected to sanding, grinding, cutting, or abrading; or
- A Category II nonfriable material with a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing any amount of asbestos are subject to certain requirements of the California Division of Occupational Safety and Health (Cal/OSHA) asbestos standard found in 8 CCR 1529. Typically, removal or disturbance of more than 100 square feet of materials containing more than 1 percent of asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the materials contain 1 percent or less of asbestos. When the asbestos content of materials exceeds 1 percent, virtually all requirements of the standard become effective.

Materials containing more than 1 percent of asbestos are also subject to NESHAPs. Regulated ACMs (friable ACMs and nonfriable ACMs that will become friable during demolition operations) must be removed from structures before they are demolished. Certain nonfriable ACMs and materials containing 1 percent or less of asbestos may remain in highway structures, such as guardrail and bridges, during demolition; however, waste handling/disposal issues and Cal/OSHA work requirements may make this cost-prohibitive. With respect to potential worker

exposure, notification, and registration requirements, Cal/OSHA defines *ACMs* as construction materials that contain more than 1 percent of asbestos (8 CCR 341.6).

A total of 14 bulk samples were collected during the May 5, 2015 survey for ACM. Sample testing revealed that ACM is present in the railing gaskets and the fastener sealants of the west roadway approach and the southeast roadway approach.

Lead-Containing Paint

Construction activities, including demolition, that disturb materials or paints containing any amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in 8 CCR 1532.1. *Deteriorated paint* is defined by 17 CCR 35022 as “a surface coating that is crackling, chalking, flaking, chipping, peeling, not intact, failed, or otherwise separating from a component.” Demolition of a deteriorating LCP component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams before disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring or respiratory protection may be required during demolition of materials coated with LCP.

The May 5, 2015 LCP survey investigated existing paints and applied coatings associated with the existing bridge to determine whether lead was present in these materials. Three paints/locations were determined to have paint containing more than 5,000 parts per million (ppm) of lead and are classified as lead-based paint: silver and black paint on the metal bridge structure and white paint on the metal northeast approach. In addition, the gasket located at the base of the light boxes on the northeast approaches was determined to be pure lead.

Asbestos-Containing Materials and Lead-Containing Paint in Buildings and Residences

The May 5, 2015 ACM/LCP survey did not include buildings within the project area. Typically, pre-demolition surveys for occupied buildings are conducted at a later date. Regardless, any structure constructed pre-1980 has the potential to contain ACM/LCP materials.

Aerially Deposited Lead

Aerially deposited lead (ADL) can be found in the surface and near-surface soils along nearly all roadways because of the historical use of tetraethyl lead in motor vehicle fuels. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in shoulder areas and has high solubility when subjected to the low pH conditions of waste characterization tests. Shoulder soils along urban and heavily travelled rural highways are commonly above the soluble threshold limit concentration criteria.

ADL could be encountered during construction and grading activities within the proposed project limits in West Sacramento along C Street and 2nd Street, and at the bridge approach/viaduct leading from C Street. A majority of the area adjacent to C Street is covered sidewalk; therefore, an ADL assessment would be limited to areas with exposed soils in that area.

ADL also could be encountered during construction and grading activities within the proposed project limits in Sacramento at the bridge approach/viaduct leading from I Street; and along Jibboom Street and Bercut Drive, which have been present in various alignments since 1916 and, therefore, have the potential to be contaminated with ADL. An ADL assessment was conducted in 2009 for portions of Jibboom Street north of the current project limits. The 2009 ADL assessment results indicate that soils from the tested area would be classified as either nonhazardous or as soil acceptable for management in accordance with DTSC and the RWQCB.

In addition, the bridge landing will be located within the Sacramento Railyards. This area is not likely to exhibit elevated concentrations of ADL from typical automobile emissions; however, historical operations at the Railyards have contaminated the site with metals, including lead.

Yellow and White Traffic Striping

Yellow and white traffic striping and markings are located along C Street, across the existing I Street Bridge, and along Jibboom Street. Caltrans studies have determined that yellow/white thermoplastic striping and painted markings may contain elevated concentrations of lead and chromium, depending on the age of the striping (manufactured before 2005) and painted markings (manufactured before 1997). Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead and/or chromium.

Polychlorinated Biphenyls

PCBs are mixtures of synthetic chemicals with similar chemical structures. Because of their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications, including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other applications. PCBs were later found to have a number of harmful effects. PCBs were so stable that, once released into the environment, they could persist for decades. More than 1.5 billion pounds of PCBs were manufactured in the United States prior to cessation of production in 1979.

Portions of proposed right-of-way acquisitions are within the footprint of historical industrial development and were found to be contaminated, in part, with PCBs.

2.12.2.2 Hazardous Waste/Material Conditions by Parcel

Environmental Data Resources (EDR) performed a search of federal, state, and local databases for the project footprint and the surrounding area (Appendix E in Blackburn Consulting 2016). The search included a review of county, state, and federal databases for sites located within the project area and within a 1-mile radius from the approximate outline of the project area.

The project requires temporary and permanent property acquisitions along C Street, 3rd Street, and 2nd Street within the City of West Sacramento; and along Railyards Boulevard, Jibboom Street, Bercut Drive, and I Street within the City of Sacramento. Each acquisition parcel with known and/or potential recognized environmental conditions (RECs)¹ is described below. Parcels adjacent to the project area, but not slated for acquisition, are summarized below in Table 2.12-2.

West Sacramento –Acquisition Sites with Known/Potential Recognized Environmental Conditions

APN 010-102-005: 205 2nd Street, Site A in Figure 2.12-1a

This parcel is currently developed as a levee and gravel access road. Proposed improvements include improvements to the levee road at the west half of the parcel. The site contained a boat building, dwelling unit, and out buildings from as early as 1915 until sometime after 1970 when the structures were demolished. Since that time, only the levee remains. Although the records search indicates that a Phase I Environmental Site Assessment was conducted, the report was not located; and no findings were reported in the database search.

Although no specific hazardous material issues are identified, historical site development can be an indication of potential contamination sources such as leach fields, septic tanks, buried heating oil tanks, and pesticide usage; and plans for construction and/or partial acquisition should account for that potential. The REC risk for this parcel is considered low.

APNs 010-102-010, 010-372-003, and 010-372-002 Historical Development, Site B in Figure 2.12-1a

The proposed project would improve the levee road at the west half of these parcels. These parcels are currently developed as a levee and gravel access road. The West Sacramento River Walk water tower, slated for relocation as part of the proposed project, is located on APN 010-102-010. These parcels are not listed in a regulatory database; however, historical topographic and Sanborn maps from 1915 and 1950 indicate that dwellings and out buildings were at one time present on the parcels.

Although no specific hazardous material issues were identified, historical site development can be an indication of potential contamination sources such as leach fields, septic tanks, buried heating oil tanks, and pesticide usage; and plans for construction and/or partial acquisition should account for that potential. The REC risk for this parcel is considered low.

¹ The term *Recognized Environmental Condition* (REC) is defined in ASTM International E1527-13 as, “The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (1) due to any release to the environment, (2) under conditions indicative of a release to the environment or (3) under conditions that pose a material threat of a future release to the environment.” <https://www.astm.org/Standards/E1527.htm>.

The Washington Firehouse Block: 305 3rd Street, Sites C and D in Figure 2.12-1a

The Washington Firehouse is located at 305 to 317 3rd Street. The site consists of three parcels, but owners have agreed to develop the parcels as one site. The site is an EPA Brownfields Targeted Site and has been assessed under this program (Ecology and Environment, Inc. 2000). The focus of the report was on the potential impact from the adjacent property, Capitol Plating. Migration of contamination across/beneath the property boundary was suspected because surface water runoff from Capitol Plating drains onto the site and discharges into the storm drain at the Firehouse site. The report concludes that activities at Capitol Plating appear to have contaminated soil and groundwater beneath the Washington Firehouse property. Nickel and lead in surface and near-surface soils exceed remedial goals, and groundwater at the property boundary is contaminated with nickel, cadmium, and chromium above their respective maximum contaminant levels. Proposed acquisition is planned for the parcels located at 305 C Street, which are discussed below.

APNs 010-371-005 and 010-371-006: 305 3rd Street, Site C in Figure 2.12-1a

Acquisition of right-of-way from the north edge of these parcels is proposed. The parcels are currently improved with a parking lot and are immediately north of the Washington Firehouse structure. The site is listed in the CA HAZNET database. Impacts include soil impacts of nickel and lead and groundwater impacts of nickel, lead, cadmium, and chromium. These parcels were originally developed in 1915 as the Town Hall until 1952, when the site was cleared. In 1957, a new structure was identified on the Sanborn map as the Town Police Station. Structures on the site were razed sometime after 1993.

The REC risk for these parcels is considered high. Therefore, a Phase II assessment within the proposed acquisition area is recommended prior to property acquisition and construction of the proposed project.

APN 010-101-004: 217/219 3rd Street, Site H in Figure 2.12-1a

The proposed project would remove the residence at this parcel to provide access for parcels to the east. The site is listed in the EDR Historical Cleaners database as a laundry at 223 3rd Street (Sung Lee) in 1923. Sanborn maps from 1915 also identify two laundry facilities at 225 and 217 3rd Street. The 1915 Sanborn map identifies a washer/dryer at the 225 3rd Street site. On the 1950 Sanborn map, the laundry at 217 has become a dwelling, and the laundry at 225 is an unidentified structure. The parcel at 225 3rd Street is cleared/undeveloped in 1957.

Neither address listed on the Sanborn maps correspond with the database listing; however, the laundry at 217 3rd Street appears to be where the possible removal of the residence is proposed. The laundry at 217 3rd Street did not appear to have a washer/dryer associated with the site. Due to the limited information available for this site, an owner/tenant interview is recommended to determine site history. If additional information is not available, a Phase II assessment may be needed. The REC risk for this parcel is considered low.

Existing Caltrans Right-of-Way: C Street Site Y in Figure 2.12-1a

Acquisition of right-of-way from the north edge of this vacant parcel is proposed. Although this parcel was not identified in the EDR records search, it is adjacent to the Washington Firehouse, which has documented soil and groundwater contamination.

The REC risk for this parcel is considered moderate due to the proximity to the Firehouse block with known soil and groundwater contamination.

APN 010-482-011: 300 3rd Street, Site G in Figure 2.12-1a

Acquisition of right-of-way from the north edge of this parcel is proposed. The parcel is currently vacant and the ground is cleared. This site is listed in the EDR US Historical Auto Station database and is identified as a service station in 1928, 1966, and 1975. Likely potential RECs include underground storage tanks (USTs), total petroleum hydrocarbon (TPH)-gasoline, TPH-diesel, TPH-motor oil.

Due to the limited information available for this site, a detailed review of existing records at Yolo County Environmental Health Services (YCEHS) and the Central Valley RWQCB and an owner/tenant interview is recommended to determine site history. If additional information is not available, a Phase II assessment may be needed. The REC risk for this parcel is considered high.

APN 010-495-014: 424 C Street and 624 5th Street, Site I in Figure 2.12-1a

Minor roadway improvements (overlay/resurfacing) are proposed for the south edge of this parcel. The parcel is currently developed as what appears to be the original service station garage structure and parking lot, and is listed in the EDR US Historical Auto Station and CA HAZNET databases. One 8,000-gallon gasoline, one 10,000-gallon gasoline, one 5,000-gallon gasoline, and one 550-gallon waste oil UST were registered at this site. In 1987, under Yolo County Environmental Health Services (YCEHS) supervision, the four USTs were removed. The inspection report indicated that the tanks were tight, and no odors or visible contamination were noted. No additional information was located.

Proposed improvements adjacent to this parcel would include overlay and resurfacing of the roadway, and no portion of the parcel would be acquired. Based on the records review, site observations, and the location of the former USTs, residual, shallow soil, or groundwater contamination in the planned construction zone is not anticipated. As a result, the REC risk for this parcel is considered low.

APN 010-481-001: 427 C Street, Site J in Figure 2.12-1a

The site is listed in the CA LUST, CA US HIST CORTESE, and HIST UST databases. The property was developed as an automobile service station from 1953 until 1990. Today, the parcel is a vacant lot being used as a community garden. Three USTs were removed from the facility in August 1990 under YCEHS supervision. Soil samples obtained from beneath the locations of the former tanks contained detectable concentrations of petroleum hydrocarbons. Subsequent excavation of contaminated soil and sampling at the excavation limits in October 1990 indicated

that the bulk of contaminated soil was removed. Partial site acquisition is proposed along the north edge of the parcel for minor improvements (overlay/resurfacing).

Since proposed improvements adjacent to this parcel would be surficial, including only overlay and resurfacing, no further assessment is required. The REC risk is considered low.

APN 010-193-005: 521 C Street and 519 C Street, Site K in Figure 2.12-1a

Minor improvements are proposed for the northeast edge of the parcel. The site is partially occupied by a residence and the Golden Eagle Garage building and “decorative” gas pumps. The site is listed in the EDR US Historical Auto Station database and CA UST database. One 750-gallon gasoline, one 500-gallon gasoline, and one 250-gallon gasoline UST were registered at this site. An *Application for Permit to Abandon USTs* was submitted in July 1987 for removal of the three USTs. The inspection report indicated that two steel tanks (one 550-gallon and one 750-gallon) were removed, and both USTs were tight and soil clean. The 250-gallon UST is not discussed. The site diagram is not legible due to poor Xerox quality. No closure letter for this facility was located during the review.

Since improvements adjacent to this parcel would be surficial, including only overlay and resurfacing, no further assessment is required and the REC risk is considered low.

APN 101-494-017: 500 C Street Site L in Figure 2.12-1a

Minor roadway improvements/partial site acquisition is proposed at the southeast corner of the parcel. This site was developed as a service station since 1966. Two 12,000-gallon gasoline, one 8,000-gallon (type unknown), and one 550-gallon waste oil USTs were registered at this site. The USTs were located at the east edge of the parcel. During tank removal in 1987, soil contamination and odors were detected. Laboratory results indicated that gasoline-range petroleum hydrocarbons and elevated levels of benzene, toluene, ethylbenzene, xylene (BTEX) were present. Upon YCEHS written authorization, the soil was stockpiled, aerated, and placed back into the excavation area. A No Further Action letter was issued in 1987 by YCEHS.

Since improvements adjacent to this parcel would be surficial, including only overlay and resurfacing, the REC risk is considered low and no further assessment is required.

Sacramento – Acquisition Sites with Known/Potential Recognized Environmental Conditions

Sacramento Railyards

The Railyards consist of approximately 240 acres historically developed as a locomotive maintenance and rebuilding facility from the 1860s to the early 1990s. Previous operations at the site resulted in underlying soil and groundwater impacts. In 1988, Southern Pacific Transportation Company (SPTCo) entered into the 1988 Enforceable Agreement with DTSC, which addresses environmental impacts. UPRR entered into a merger with SPTCo in 1996 and acquired the Railyards in 1998. Pursuant to the 1988 Enforceable Agreement, UPRR has investigated and remediated soil and groundwater contamination at the Railyards. In addition,

UPRR has certain continuing obligations under the 1988 Enforceable Agreement, including remediation of groundwater, soil vapor, and ongoing operation and maintenance responsibilities. DTSC acts as the lead agency for the clean-up efforts.

The Railyards has been divided into study areas to facilitate investigation and remediation of soil and groundwater. The study areas were identified based on past operations and affected media.

The soil study areas include the following.

- Lagoon
- Central Shops
- Central Corridor
- Car Shop Nine
- Lagoon Northwest Corner
- Northern Shops
- Sacramento Station

The groundwater study areas include Lagoon and South Plume.

Because of the unique constituents of concern and need for additional investigation of the soil and groundwater conditions, a new study area, Manufactured Gas Plant (MGP), was created.

Soil in the Lagoon, Northern Shops, Central Corridor, Car Shop Nine, and portions of Sacramento Station have been remediated under their respective remedial action plans (RAPs), and certified under DTSC oversight. A land use covenant (LUC) was issued in 2015 for these study areas, and DTSC concluded that these areas, as remediated and when used in compliance with the environmental restrictions of the LUC, do not present an unacceptable risk to present and future human health or safety or the environment. The LUC outlines approved land use and provisions for soil, soil vapor, and groundwater management. Provisions of the LUC include, in part, the following.

1. No activities that will disturb the soil shall be allowed on the Property without a soil management plan (SMP) approved in writing by the DTSC.
2. Any soil brought to the surface shall be managed in compliance with all applicable provisions of state and federal law and a SMP approved in writing by DTSC.
3. No extraction of groundwater except as approved in advance in writing by DTSC in a groundwater management plan (GMP).
4. Vapor intrusion mitigation management is required for enclosed structures or buildings.

Groundwater and soil vapor impacts beneath the property are in the process of being remediated by and are the continuing obligation of UPRR, and contamination in these media will be addressed by the final remedies in the RAPs for the Central Shops soil, South Plume groundwater, future Lagoon groundwater, and future MGP soil and groundwater study areas.

Groundwater monitoring wells, groundwater and soil vapor extraction wells, and related groundwater and soil vapor extraction remediation systems (collectively called *remediation systems*) have been and may continue to be installed as part of remediation in the South Plume and Lagoon groundwater study areas, and in the MGP soil and groundwater study area.

The proposed project is located in part, within, and/or adjacent to the Northern Shops, MGP, and Sacramento Station study areas, which are discussed below.

Northern Shops Study Area, Site M in Figure 2.12-1b

The new bridge approach is proposed to connect with Railyards Boulevard in the Northern Shops study area (NSA). Soils in the NSA were investigated and remediated under the RAP for the Northern Shops approved by DTSC in 2000. Additional soil removal for previously inaccessible soil was completed in 2012–2013 when the Mainline Track and Track 150 were removed. During removal of contaminated soil below Track 150, a UST, boilers, pipelines, and bunker fuel were found and removed. Soil contaminated with bunker fuel was excavated to the water table.

The REC risk is considered high for this parcel. Soil in the NSA is certified as clean, and there are no requirements for additional soil investigations. However, groundwater assessment remediation activities continue, and all work in this area must comply with the 2015 LUC, Railyards Projects – Soil & Groundwater Management Plan (2015), in addition to property owner approvals and agreements. Additional characterization and groundwater remediation for this area will be addressed as part of the Lagoon groundwater study area remedy. The 2015 LUC requires that vapor mitigation measures approved by DTSC be implemented for any enclosed structures or buildings.

Manufactured Gas Plant Study Area, Site N in Figure 2.12-1b

The limits of the proposed project extend through the MGP site boundaries. The former MGP study area is located in the western portion of the Railyards and includes areas within the Sacramento River levee located between the Railyards and the Sacramento River. The MGP was identified in 2003 during excavation of contaminated soil associated with the NSA. A Final Remedial Investigation Report was prepared to characterize the occurrence of potentially hazardous substances. Soil, soil vapor, and groundwater at the MGP area are contaminated. Soil contamination includes metals, TPHs, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Groundwater (in both sand and gravel zones) chemicals of concern include TPHs, VOCs, SVOCs, and metals. The study also identified VOCs and SVOCs in the soil vapor. This is currently an open case, with DTSC as lead agency. The overall REC risk for this site is considered high.

If soil remedy is complete and soils are certified prior to construction of the proposed project, the proposed project must comply with resulting LUC and/or guidance documents. If site characterization is not complete, a Phase II assessment within the depth and area of the proposed project area will be necessary prior to construction.

Sacramento Station Study Area, Site X in Figure 2.12-1c

Removal and/or demolition of existing bridge approach and viaduct structures are to occur within this study area. The soil was contaminated with metals and TPH. Groundwater contamination includes metals, SVOCs, and TPH. The soil remedy for the Sacramento Station study area was selected in 1989. Soil removal was completed in the early 1990s, and an LUC was recorded in 1994. The Sacramento Station is certified as having its remedy complete. The property is restricted to use as prescribed in the LUC and the Railyards Soil and Groundwater Management Plan.

All work must comply with the 1994 LUC, Railyards Projects – Soil & Groundwater Management Plan (2015); and property owner approvals and agreements. The REC risk for this site is considered moderate.

APNs 001-019-017, 001-210-018, and 002-010-023 Adjacent to Jibboom Street, Sites O, P, and Q in Figure 2.12-1b

Right-of-way acquisition is proposed for these three parcels located along the west side of Jibboom Street. The sites are not listed in searched databases; however, the area has been adjacent to industrial operations at the Railyards and Associated Metals/Jibboom Street Junkyard. A portion of the existing levee, although not within the Railyards, was remediated as part of the Railyards cleanup. This area is identified as the “Levee Excavation” (located west of the NSA, adjacent to a bike path). In 2008, a small portion of the levee was excavated due to visible impacts (black staining and strong odor) found during excavation of the Lagoon-13 site. Approximately 4,200 cubic yards of soil contaminated with metals and petroleum hydrocarbons were removed from the levee. Confirmation samples were below remedial goals. Remediation of the levee excavation is complete at this location.

Soils outside the remediated area could be contaminated, and the REC risk for this parcel is considered high. Therefore, it is recommended that a Phase II subsurface investigation be completed prior to property acquisition to evaluate the site’s potential for metals, TPH, and PCB impacts for all construction activities that would result in soil excavation within the proposed right-of-way adjacent to Jibboom Street at these parcels. Based on the findings of the Phase II investigation, a soils management plan and health and safety plan may be necessary.

Adjacent Sites with Known/Potential Recognized Environmental Conditions

Sites adjacent to the proposed project with known or potential RECs are summarized below in Table 2.12-2.

Table 2.12-2. Adjacent Sites with Known/Potential Recognized Environmental Conditions

APN/Name	Address	Type of Contamination	Conclusion/Recommendation	Map I.D.
City of West Sacramento				
010-371-004	317 3rd Street	Underground storage tanks; potential groundwater or soil contamination	If acquired, a detailed review of existing environmental records at YCEHS and the RWQCB to determine current status of compliance should be completed; if additional information is not available, conduct a Phase II assessment within the proposed acquisition area.	Site D in Figure 2.12-1a
010-371-008	320 2nd Street	Migration of soil and/or groundwater contamination across/beneath the property boundary from Capitol Plating	If acquired, a detailed review of existing environmental records at YCEHS and the RWQCB to determine current status of compliance should be completed; if additional information is not available, conduct a Phase II assessment within the proposed acquisition area.	Site D in Figure 2.12-1a
010-371-003	319 3rd Street	Contaminated soil with elevated levels of chromium, nickel and lead. Contaminated soil extends offsite to the east and south. Shallow groundwater is contaminated with chromium, hexavalent chromium, nickel, copper and 1, 2-DCA and extends offsite (minimally).	If acquired, a detailed review of existing environmental records at YCEHS and the RWQCB to determine current status of compliance should be completed; if additional information is not available, conduct a Phase II assessment within the proposed acquisition area.	Site E in Figure 2.12-1a
010-371-002	325 3rd Street	Documented soil and groundwater contamination adjacent to site (Capitol Plating)	If acquired, a detailed review of existing environmental records at YCEHS and the RWQCB to determine current status of compliance should be completed; if additional information is not available, conduct a Phase II assessment within the proposed acquisition area.	Site F in Figure 2.12-1a
City of Sacramento				
Sacramento Filtration Plant/City of Sacramento	101 Bercut Drive	Underground storage tank; contaminated soils from site cleanup, asbestos-containing materials, and radioactive water waste	If extensive construction or site acquisition is planned, a Phase II assessment may be necessary	Site R in Figure 2.12-1b

APN/Name	Address	Type of Contamination	Conclusion/Recommendation	Map I.D.
Associated Metals Company (Jibboom Street Junkyard)	230–260 Jibboom Street	Contaminated with copper, lead, PCBs, and zinc; Superfund site	Previous investigation and remediation of this Superfund site did not include areas of the site between Jibboom Street and the west edge of Bercut Drive. Recommend a Phase II assessment if ground-disturbing construction activities would occur in this area. Document a management procedure to notify workers that this section of right-of-way was a Superfund site, with some potential for encountering subsurface contamination.	Site S in Figure 2.12-1b
002-010-027	904 2nd Street	Site of historical cleaners/laundry facilities and listed in the Historical Cleaners database in 1923, 1933, 1937, 1942, and 1956	Removal of the existing bridge access structures/ramp is proposed for the area immediately north of (adjacent to) this parcel. It does not appear that project improvements will affect this parcel.	Site V in Figure 2.12-1c
006-011-006 and -009	111 I Street	The site is listed in the Sacramento County multiple listing service (MLS) database.	Removal of the existing bridge access structures/ramp is proposed for the area immediately north (adjacent) of this parcel. It does not appear that project improvements will affect this parcel.	Site V in Figure 2.12-1c

RWQCB = Central Valley Regional Water Quality Control Board
 YCEHS = Yolo County Environmental Health Services

2.12.2.3 Summary of Potentially Hazardous Materials/Waste Conditions

In summary, the ISA and site investigation reports identified the following potentially hazardous materials/waste conditions that could be encountered during construction of the proposed project.

- Potential contamination is associated with removal or modification of facilities or structures.
 - ACM may be encountered during demolition of bridge structures or residences.
 - LCP associated with painted bridge structures or utility openings may be encountered during demolition.
 - Potential hazardous materials may be associated with historic homes (e.g., ACM, LCP, leach fields, septic tanks, and heating oil).
- Potential contamination is associated with ground disturbance or roadway maintenance.
 - There is potential for encountering ADL during construction and grading activities in West Sacramento along C Street, 2nd Street, and at the bridge approach/viaduct leading from C Street. In addition, the existing I Street Bridge approach in Sacramento leading from I Street, and along Jibboom Street and Bercut Drive, which have been present in various alignments since 1916 and, therefore, have the potential to be contaminated with

ADL. Historical operations at the Railyards have contaminated the site with metals including lead.

- Exposure to lead or chromium may be associated with removal of existing yellow/white traffic striping.
- Contamination is associated with identified potentially hazardous waste facilities/sites.
 - In West Sacramento, past soil and/or groundwater contamination is possible due to historical laundry facilities and previous activities at the location and vicinity of Capitol Plating and the Washington Firehouse parcels.
 - A gasoline release is associated with a leaking UST located on an adjacent parcel in West Sacramento.
 - A historic auto yard/gasoline station is located in West Sacramento.
 - At the MGP in Sacramento, site characterization and soil remediation are not complete within the depth and area of proposed project activities.
 - In Sacramento at the Jibboom Street parcels, past soil and/or groundwater contamination was due to historical laundry facilities and previous activities at the location and vicinity of the Railyards and the Associated Metals/Jibboom Street Junkyard.

2.12.3 Environmental Consequences

2.12.3.1 Build Alternatives

There are two roadway design alternatives for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the City of Sacramento, but both alternatives would require similar ground disturbance and would result in the same potential impacts involving hazards and hazardous materials. Therefore, the impacts of these alternatives are not discussed separately in this section.

Soil and/or Groundwater Contamination

Humans and the environment could be exposed to soil and/or groundwater contamination as a result of construction activities. Acquisition of right-of-way from parcels with the potential to contain soil/groundwater contamination previously discussed above are identified on Figure 2.12-1a–c and listed below in Table 2.12-3.

Table 2.12-3. Parcels with the Potential for Soil and/or Groundwater Contamination

Assessor's Parcel Number/Name	Address	Risk of Recognized Environmental Conditions	Map I.D.
010-371-005/ Washington Firehouse Block	305 3rd Street	High	Site C in Figure 2.12-1a
010-371-006/ Washington Firehouse Block	305 3rd Street	High	Site C in Figure 2.12-1a
010-482-011 300	3rd Street	High	Site G in Figure 2.12-1a

Assessor's Parcel Number/Name	Address	Risk of Recognized Environmental Conditions	Map I.D.
Existing Caltrans right-of-way	C Street	Moderate	Site Y in Figure 2.12-1a
Northern Shops study area	Sacramento Railyards	High	Site M in Figure 2.12-1b
Manufactured Gas Plant study area	Sacramento Railyards	High	Site N in Figure 2.12-1b
Sacramento Station study area	Sacramento Railyards	Moderate	Site X in Figure 2.12-1c
001-019-017	Adjacent to Jibboom Street	High	Sites O, P, and Q in Figure 2.12-1b
001-210-018	Adjacent to Jibboom Street	High	Sites O, P, and Q in Figure 2.12-1b
002-010-023	Adjacent to Jibboom Street	High	Sites O, P, and Q in Figure 2.12-1b

The risk of recognized RECs for 10 parcels located within the project area is considered high to moderate. Of the eight high-risk sites, five of have documented soil and/or groundwater contamination. The two medium-risk sites are located within or adjacent to the project footprint. Although some of these cases are considered closed, testing for contaminants should be conducted prior to property acquisition and construction of the proposed project in order to determine the extent and nature of possible contamination and identify and implement appropriate avoidance and containment measures. During construction of the project, the potential for human exposure (i.e., construction workers) to existing contaminated soil and/or groundwater would occur mainly during ground-disturbing and dewatering activities.

Previously Unknown Hazardous Materials

The potential exists for exposure of construction workers or nearby sensitive land uses to previously unknown hazardous materials during construction activities. The project area generally has a moderate risk of previously unreported hazardous materials that could be discovered during construction of the proposed project.

Known Hazardous Materials

The project area generally has the potential for hazardous materials in the form of asbestos-containing material (ACM) and lead-containing paint (LCP) at bridge approaches; aerially deposited lead (ADL) along C Street, 2nd Street at the bridge approach/viaduct leading from I Street, and along Jibboom Street and Bercut Drive; lead or chromium in yellow/white traffic striping; and PCBs. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading, demolition/replacement of structures, and/or roadbed resurfacing at any of the areas known to contain hazardous substances.

The Initial Site Assessment identified areas of moderate concern that would be affected by the project. These areas and topics of concern include the following

- ACM is in the railing gaskets and the fastener sealants of the west roadway approach and the southeast roadway approach.
- Silver and black LCP is on metal bridge structures and white LCP is on metal of the northeast approach.
- The gasket located at the base of the light boxes on the northeast approach of the bridge is pure lead.
- ADL is along C Street, 2nd Street, and the bridge approach/viaduct leading from C Street, Sacramento Railyards.
- Yellow and white traffic striping and markings are located along C Street, across the existing I Street Bridge, and along Jibboom Street.
- Potential copper, lead, PCBs, and zinc are in parcels adjacent to Jibboom Street.
- Historical development may contain leach fields, septic tanks, buried heating oil tanks, and residual pesticides.

Hazardous Conditions

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction would involve the use of heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area.

2.12.3.2 No Build Alternative

No construction would take place under the No Build Alternative; therefore, there would be no potential to expose workers or nearby land uses to soil contamination or hazardous materials from construction activities. The No Build Alternative would not result in right-of-way acquisition or construction disturbance. Therefore, this alternative would not result in any direct effect regarding hazardous sites.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

Conduct Phase II Site Assessments

The project proponent will conduct a Phase II assessment within the proposed acquisition area of the parcels described below.

- APNs 010-371-005 and 010-371-006 to assess the site for possible soil/groundwater contamination.
- Existing Caltrans right-of-way and C Street Site Y for previous ADL impacts and metals within the depth of construction as metals could potentially originate from historical Capitol Plating operations.

- APNs 001-019-017, 001-210-018, and 002-010-023 to evaluate the site’s potential for metals, TPH, and PCB impacts for all construction activities that will result in soil excavation within the proposed right-of-way adjacent to Jibboom Street at these parcels. Based on the findings of the Phase II investigation, a soils management plan and health and safety plan may be necessary.

The Phase II assessment will include sampling and laboratory analysis to confirm the presence of hazardous materials and may include the following.

- Surficial soil and water samples
- Testing of underground storage tanks
- Subsurface soil borings
- Groundwater monitoring well installation, sampling, and analysis (may be appropriate on neighboring properties as well to determine the presence of contamination)
- Asbestos, lead, and other regulated material testing

Conduct a Detailed Review of Existing Records

To determine the site history for APN 010-482-011, the project proponent will conduct a detailed review of existing records at Yolo County Environmental Health Services and the Central Valley RWQCB and conduct an owner/tenant interview, if possible. If additional information is not available, the project proponent will conduct a Phase II assessment within the proposed acquisition area.

Develop and Implement Plans to Address Worker Health and Safety

The project proponent will develop and implement the necessary plans and measures required by Caltrans and federal and state regulations, including a health and safety plan, BMPs, and/or an injury and illness prevention plan. The plans will be prepared and implemented to address worker safety when working with potentially hazardous materials, including potential ACMs, LCPs, lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity.

Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow/White Traffic Striping

As required by Caltrans’ standard special provisions, the construction contractor will sample and test yellow/white traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. The stripes will be disposed of at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the project proponent and the construction contractor. Implementing this measure will minimize potential effects from these hazardous materials.

Perform Soil Testing and Appropriately Dispose of Soils Contaminated with ADL

The project proponent will conduct soil testing for ADL contamination in the project area along C Street, 2nd Street, and at the bridge approach/viaduct leading from C Street in West Sacramento; and within the proposed project limits in Sacramento at the bridge approach/viaduct leading from I Street, and along Jibboom Street and Bercut Drive.

Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by DTSC. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting, and reusing of soil will also be conducted following Caltrans' standard special provisions.

Develop a Lead and Asbestos Abatement Plan

For the structures proposed to be removed or renovated as part of the project, a hazardous materials survey will be conducted prior to demolition or significant renovation. If lead or asbestos is found in these structures, an abatement plan will be developed prior to removal or renovation. The abatement plan will provide for a California-certified asbestos consultant and California Department of Health Services—certified lead project designer to prepare hazardous materials specifications for abatement of the ACM and LCP. This specification should be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work. The project proponent will retain a California-licensed asbestos abatement contractor to perform the abatement of any asbestos-containing construction materials and LCP deemed potentially hazardous. Abatement of hazardous building materials will be completed prior to any work on these structures.

Comply with the Land Use Covenant for the Northern Shops and Sacramento Station Study Areas

The land use covenant (LUC) outlines approved land use and provisions for soil, soil vapor, and groundwater management. These provisions include the Northern Shops study area and Sacramento Station study area sites. The project proponent will comply with the provisions of the LUC, including the following.

1. No activities that will disturb the soil shall be allowed on the property without a soil management plan (SMP) approved in writing by the Department of Toxic Substances Control (DTSC).
2. Any soil brought to the surface shall be managed in compliance with all applicable provisions of state and federal law and a SMP approved in writing by DTSC.
3. No groundwater will be extracted, except as approved of in advance in writing by DTSC in a groundwater management plan.
4. Vapor intrusion mitigation management is required for enclosed structures or buildings.

Comply with the Land Use Covenant or Guidance Documents for the Manufactured Gas Plant Study Area

If soil remedy is complete and soils are certified prior to construction in the Manufactured Gas Plant study area, the project proponent will comply with the resulting LUC and/or guidance documents. If site characterization is not complete, the project proponent will conduct a Phase II assessment within the depth and area of construction improvements.

2.12.5 References Cited

Blackburn Consulting. 2016. *Initial Site Assessment I Street Bridge Replacement Project*. Prepared for Mark Thomas and Company. March. West Sacramento, CA.

Entek Consulting Group, Inc. 2015. *Hazardous Materials Survey Final Report*. Prepared for Blackburn Consulting. May. Rocklin, CA.

Ecology and Environment, Inc, 2000. *Washington Firehouse Brownfields Site Investigation, Sampling and Analysis Report*. February. West Sacramento, CA.

2.13 Air Quality

2.13.1 Regulatory Setting

The federal CAA, as amended, is the primary federal law that governs air quality, while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by EPA and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and California ambient air quality standards (CAAQS) have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO); nitrogen dioxide (NO₂); ozone (O₃); particulate matter, which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5}); and sulfur dioxide (SO₂). In addition, national and state standards exist for lead (Pb); and state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel “conformity” requirement under the CAA also applies.

Conformity Requirement

The conformity requirement is based on CAA Section 176(c), which prohibits the USDOT and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS.

“Transportation conformity” applies to highway and transit projects and takes place on two levels: the regional—or planning and programming level—and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO₂, O₃, PM₁₀ and PM_{2.5}, and in some areas (although not in California), SO₂. California has attainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for Pb; however, Pb is not currently required by the CAA to be covered in transportation conformity

analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity analyses use travel demand and emission models to determine whether the implementation of those projects would conform to emission budgets or other tests at various analysis years, showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and “open-to-traffic” schedule of a proposed transportation project are the same as described in the RTP and the FTIP, the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.13.2 Affected Environment

This section is a summary of the analysis documented in the *Air Quality Study Report* (Terry A. Hayes Associates 2016). This report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

2.13.2.1 Topography and Climate

The project is located in Sacramento and Yolo Counties, California, which are located entirely within the Sacramento Valley Air Basin (SVAB). The SVAB includes Sacramento, Shasta, Tehama, Butte, Glenn, Colusa, Sutter, Yuba, and Yolo Counties, as well as parts of Solano and Placer Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The San Joaquin Valley Air Basin lies to the south.

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

Prevailing wind in the Sacramento Valley is generally from the southwest due to marine breezes flowing through the Carquinez Strait. The Carquinez Strait is the major corridor for air moving into the Sacramento Valley from the west. Incoming airflow strength varies daily, with a pronounced diurnal cycle. Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when mountains on the valley's western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 miles per hour (mph). This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of ozone precursors—reactive organic gases (ROG) and nitrogen oxides (NO_x)—throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall, when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in summer.

2.13.2.2 Existing Air Quality

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards (AAQS) that the State of California and the federal government have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). Table 2.13-1 shows the state and federal standards for a variety of pollutants.

Table 2.13-1. California and National Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards ^a	
			Primary	Secondary
Ozone	1-hour	0.09 ppm	None ^b	None ^b
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate matter (PM10)	24-hour	50 µg/m ³	150 µg/m ³	150 µg/m ³
	Annual mean	20 µg/m ³	None	None
Fine particulate matter (PM2.5)	24-hour	None	35 µg/m ³	35 µg/m ³
	Annual mean	12 µg/m ³	12.0 µg/m ³	15 µg/m ³
Carbon monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur dioxide ^c	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 µg/m ³	None	None
	Calendar quarter	None	1.5 µg/m ³	1.5 µg/m ³
	3-month average	None	0.15 µg/m ³	0.15 µg/m ³
Sulfates	24-hour	25 µg/m ³	None	None
Visibility-reducing particles	8-hour	- ^d	None	None
Hydrogen sulfide	1-hour	0.03 ppm	None	None
Vinyl chloride	24-hour	0.01 ppm	None	None

ppm = parts per million

µg/m³ = micrograms per cubic meter

^a National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

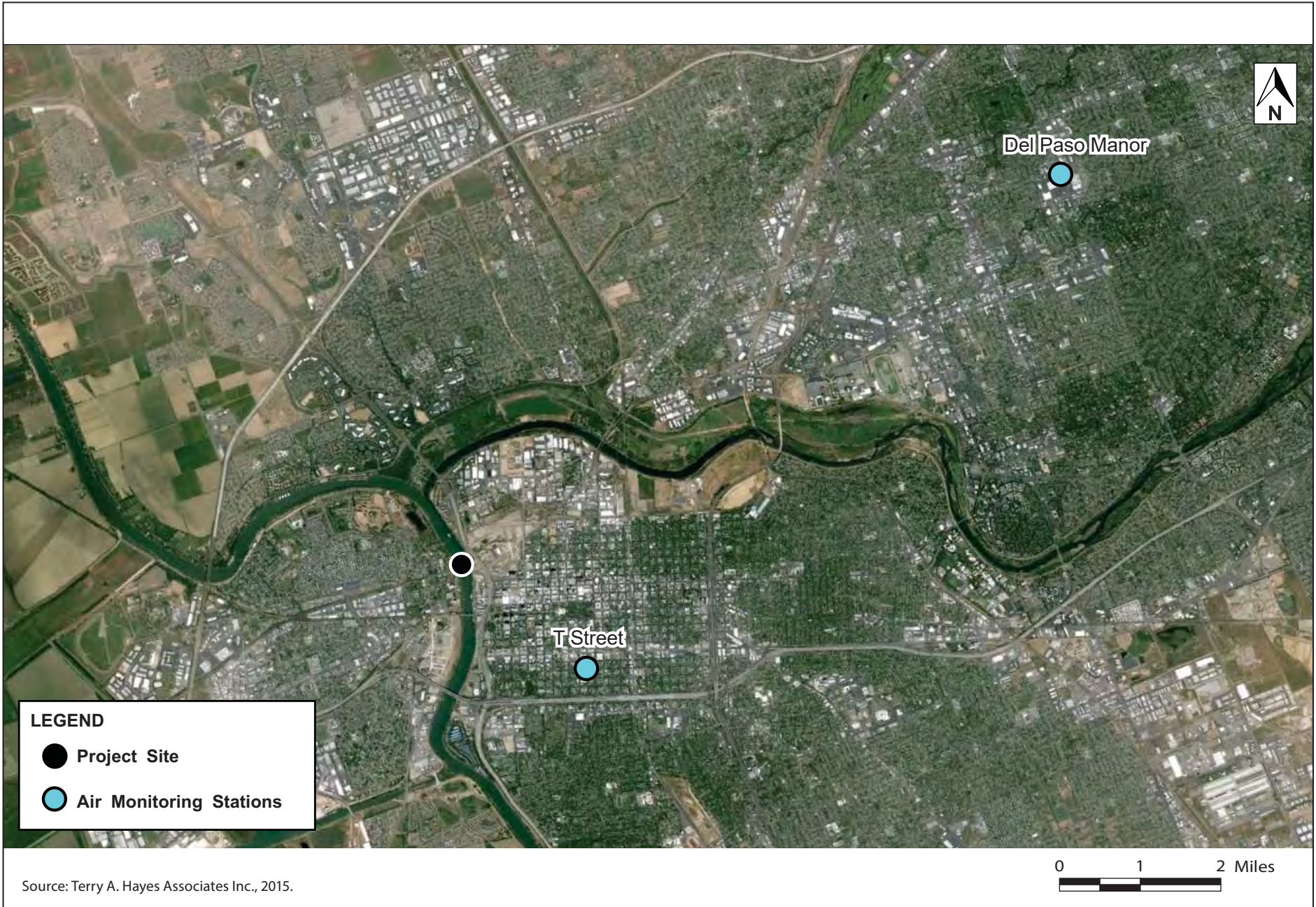
^b The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was used for such a long period and is a benchmark for State Implementation Plans.

^c The annual and 24-hour NAAQS for sulfur dioxide apply only for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

^d CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70%.

Source: California Air Resources Board 2016a.

The monitoring station closest to the project area is the Sacramento T Street monitoring station, approximately 1.4 miles southeast of the proposed project (see Figure 2.13-1). Air quality monitoring data from the Sacramento T Street monitoring station are summarized in Table 2.13-2. The Draft EIR/EA included air quality monitoring data for the 4 years from 2011–2014 for which complete data was available at the time the project analysis was conducted. The data was updated for the Final EIR/EA to include monitoring data for the five most recent years available.



Graphics ... 002033.14 (5-27-2016)

Figure 2.13-1
Air Monitoring Stations

As shown in Table 2.13-2, no standards were exceeded for CO, NO₂, or SO₂ between 2013 and 2017. However, the Sacramento T Street monitoring station has experienced 1 violation of the state 1-hour O₃ standard, 14 violations of the state 8-hour O₃ standard, 13 violations of the federal 8-hour O₃ standard, 53 violations of the state PM10 standard, and 5 violations of the federal PM2.5 standard during the 6-year monitoring period.

Table 2.13-2. Ambient Air Quality Monitoring Data Measured at the Sacramento T Street Monitoring Station

Pollutant	Pollutant Concentration & Standards	Calendar Year				
		2013	2014	2015	2016	2017
CO	Maximum 1-hr concentration (ppm)	2.4	1.9	2.2	2.4	1.9
	Days > 35.0 ppm (federal 1-hr standard)	0	0	0	0	0
	Maximum 8-hr concentration (ppm)	2.1	1.7	2.0	2.1	1.8
	Days > 9.0 ppm (federal 8-hr standard)	0	0	0	0	0
O ₃	Maximum 1-hr concentration (ppm)	0.091	0.085	0.092	0.094	0.107
	Days > 0.09 ppm (state 1-hr standard)	0	0	0	0	1
	Maximum state 8-hr concentration (ppm)	0.068	0.072	0.077	0.075	0.078
	Days > 0.070 ppm (state 8-hr standard)	0	4	4	3	3
	Days > 0.070 ppm (federal 8-hr standard)	0	3	4	3	3
NO ₂	Maximum 1-hr concentration (ppm)	0.0593	0.0647	0.0553	0.0551	0.0587
	Days > 0.18 ppm (state 1-hr standard)	0	0	0	0	0
	Days > 0.188 ppm (federal 1-hr standard)	0	0	0	0	0
SO ₂	Maximum 24-hr concentration (ppm) /a/	0.0016	0.0049	0.0082	0.0089	0.0059
	Days > 0.04 ppm (state 24-hr standard)	0	0	0	0	0
PM10	Maximum 24-hr concentration (µg/m ³)	53.1	105.7	57.8	50.3	149.9
	Days > 50 µg/m ³ (state 24-hr standard)	21	4	6	1	21
	Days > 150 µg/m ³ (federal 24-hr standard)	0	0	0	0	0
	Annual arithmetic mean (µg/m ³)	n/a	n/a	n/a	19.6	n/a
	Exceed state standard (20 µg/m ³)	n/a	n/a	n/a	n/a	n/a
PM2.5	Maximum 24-hr concentration (µg/m ³)	39.2	26.3	36.3	24.4	44.5
	Days > 35 µg/m ³ (federal 24-hr standard)	2	0	1	0	2
	Annual arithmetic mean (µg/m ³)	10.0	8.0	9.5	7.6	9.1
	Exceed state standard (12 µg/m ³)	No	No	No	No	No
	Exceed federal standard (12.0 µg/m ³)	No	No	No	No	No

n/a = Data not available either due to air monitoring stations not recording pollutant concentrations or data entry not being relevant to the specific NAAQS/CAAQS standards mentioned in a given row.

Note:

Sulfur dioxide and carbon monoxide data were not available at the Sacramento T Street air monitoring station. Therefore, historical carbon monoxide and sulfur dioxide data were used from the next closest available air monitoring station (i.e., Sacramento-Del Paso Manor).

Sources: California Air Resources Board 2018. United States Environmental Protection Agency 2018.

As shown in Table 2.13-3, the EPA designates Sacramento County as a severe nonattainment area for the federal 8-hour O₃ standard, a nonattainment area for the federal PM2.5 standard, and unclassified/attainment for the federal Pb and NO₂ standards. The portion of the County that includes the project area is also designated as maintenance for the federal PM10 and CO standards. The EPA designates Yolo County as a severe nonattainment area for the federal 8-hour O₃ standard; a nonattainment area for the federal PM2.5 standard; and

unclassified/attainment for the federal PM10, Pb, and NO₂ standards. The portion of the County that includes the project area is also designated as maintenance for the federal CO standard (U.S. Environmental Protection Agency 2016).

The area designations made by the ARB for the state and federal standards of O₃, CO, PM10, PM2.5, Pb and NO₂ in Sacramento and Yolo Counties are also listed in Table 2.13-3.

Table 2.13-3. Federal and State Attainment Status of the Project Area in Yolo and Sacramento Counties

Pollutant	Yolo		Sacramento	
	Federal	State	Federal	State
Ozone (8 hr)	Nonattainment/severe	Nonattainment	Nonattainment/severe	Nonattainment
CO	Maintenance ^a	Attainment	Maintenance ^a	Attainment
PM10	Unclassified/attainment	Nonattainment	Maintenance	Nonattainment
PM2.5	Nonattainment	Unclassified	Nonattainment	Attainment
Pb	Unclassified/attainment	Attainment	Unclassified/attainment	Attainment
NO ₂	Unclassified/attainment	Attainment	Unclassified/attainment	Attainment

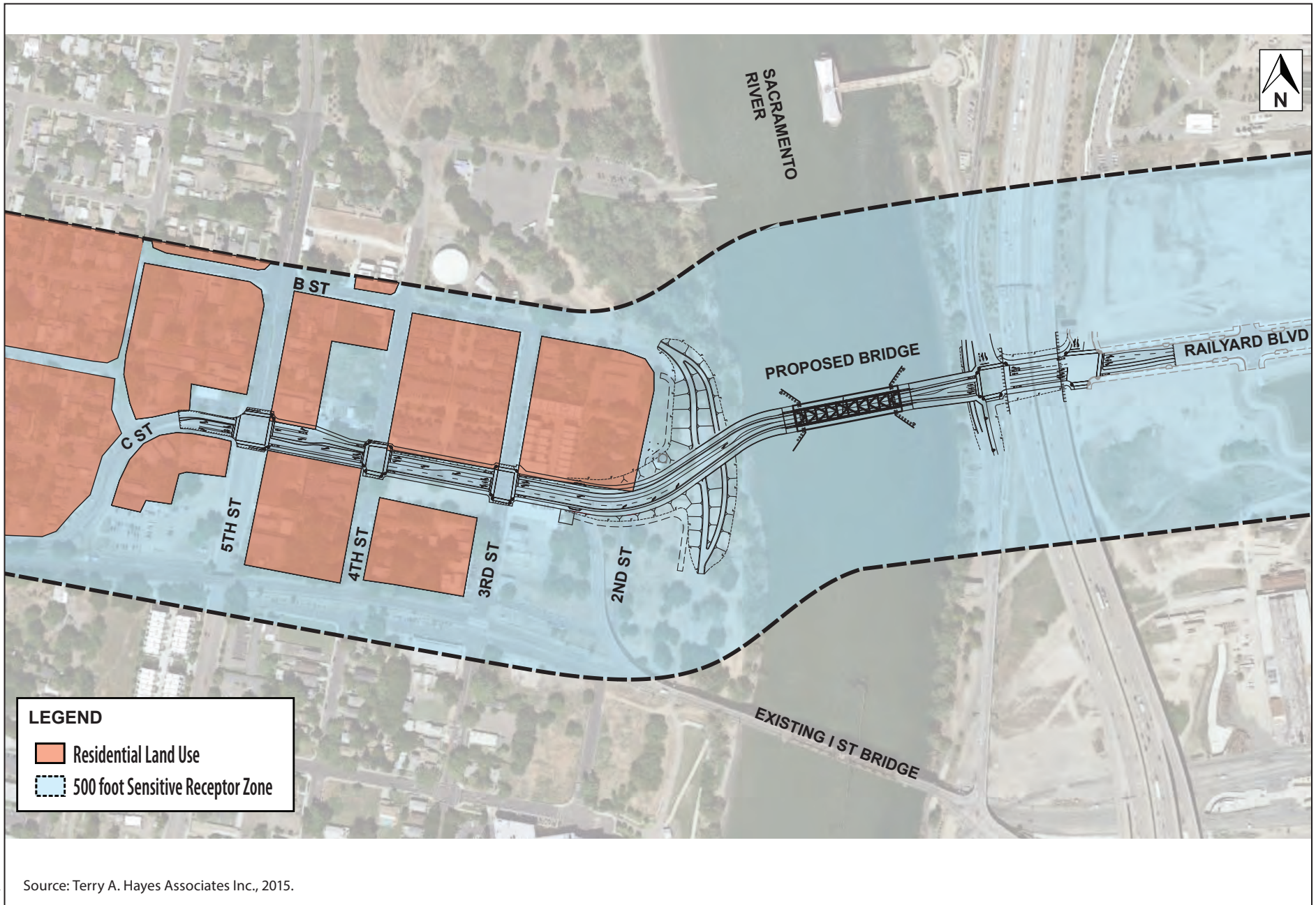
^a Designation applies to a portion of the county, including the project area.

Sources: U.S. Environmental Protection Agency 2016; California Air Resources Board 2018.

2.13.2.3 Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. According to the ARB (2005), sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Primary pollutants of concern to sensitive receptors are CO; diesel particulate matter (DPM); 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).

The project area is located within an existing urban environment that includes a number of sensitive receptors, such as single-family and multifamily homes and recreational land uses. Sensitive receptors near the project area are shown in Figure 2.13-2. Please refer to the *Air Quality Study Report* (Terry A. Hayes Associates 2016) for a detailed description of sensitive receptors.



**Figure 2.13-2
Sensitive Receptors**

2.13.3 Environmental Consequences

2.13.3.1 Build Alternatives

Regional and Project-Level Conformity

As discussed above, federally funded projects must demonstrate compliance with the SIP through regional and project level conformity analyses. However, not all federally funded projects must complete a conformity analysis. The CAA lists certain types of highway and roadway transit projects that are exempt from the conformity requirements (40 CFR 93.126). Bridge reconstruction projects that do not add additional travel lanes, such as the proposed project, are among those listed in the CAA as exempt from conformity. A quantitative hot-spot analysis is required only for projects identified as a project of air quality concern (POAQC), as defined in 40 CFR 93.123(b)(1). The project does not meet any of the project types considered to be a POAQC by EPA’s final rule. The project underwent interagency consultation through SACOG’s Project Level Conformity Group (PLCG), which, on May 29, 2018, issued concurrence that the project is not a POAQC. Appendix G contains the documentation submitted to SACOG’s PLCG used to support its concurrence, as well as the concurrence response. Consequently, while the proposed project is federally funded, it may proceed toward implementation without a conformity analysis. Since the proposed project is exempt from regional transportation conformity, an evaluation of the current Metropolitan Transportation Plan and Metropolitan Transportation Improvement Program is not necessary. Because the project is not a POAQC, neither a CO nor a particulate matter hotspot analysis (i.e. project level conformity analysis) is required. On July 5, 2018, FHWA provided their project-level conformity determination. FHWA found that the project conforms with the SIP in accordance with 40 CFR Part 93. The letter is included in Appendix G.

Additional Environmental Analysis

Roadway Vehicle Emissions

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emissions of ROG, NO_x, CO, PM₁₀, and PM_{2.5} for existing year (2014), construction year (2020), and design year (2040) with- and without-project conditions were evaluated using emission factors from the ARB’s EMFAC2014 model and vehicle activity data provided in the Traffic Technical Data and Calculations prepared for the project (Fehr and Peers 2015).

Since the two build alternatives differ only on the control type at the intersections of Jibboom Street and Bercut Drive with Railyards Boulevard, the traffic operations vary only in the local area near these intersections. As a result, one set of VMT conditions were modeled; the corresponding emissions results are representative of both build alternatives.

For 2020 build alternative conditions, two different methods were used to estimate VMT. The first method is where the travel forecasting model trip assignment step is run in isolation. Under this method, referred to as the “Assignment Only with Build Trip Distance” scenario, all of the

regional trip origins and destinations remain constant from the no build scenario. Over a longer period of time, other travel behavior may change, including destination locations and travel modes, which are represented by the “Full Model Run” scenario. Note that the 2040 analysis is based only on the full traffic model run, as the assignment-only run was not developed for 2040 conditions. Refer to the traffic analysis in Section 2.5, “Traffic and Transportation/Pedestrian and Bicycle Facilities,” for a detailed explanation of traffic modeling.

Table 2.13-4 summarizes the modeled emissions by VMT scenario and compares build alternative emissions to no build and existing conditions. The differences in emissions between with- and without-project conditions represent emissions generated directly from 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.

Emissions associated with implementation of the project were obtained by comparing with-project emissions to without-project emissions. Because Caltrans has statewide jurisdiction, and the setting for projects varies so extensively across the state, Caltrans has not developed, 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 Caltrans, Caltrans is not required to adopt those thresholds in Caltrans’ documents. Nevertheless, Sacramento Metropolitan Air Quality Management District (SMAQMD) and Yolo Solano Air Quality Management District (YSAQMD) thresholds of significance are provided for reference.

Table 2.13-4. Estimated Criteria Pollutant Emissions from Operation of I Street Bridge Replacement Project

Emission Source	VOC		NO _x		CO	PM2.5		PM10	
	tpy	ppd	tpy	ppd	tpy	tpy	ppd	tpy	ppd
2014 Existing Operational Emissions									
Existing Conditions	1,407	8,074	12,016	68,946	37,958	636	3,651	1,306	7,497
2020 Future Operational Emissions									
No Build	669	3,837	7,552	43,334	23,092	587	3,367	1,333	7,648
Build (Full Model Run)	669	3,837	7,557	43,365	23,101	587	3,368	1,333	7,651
(% Change from 2020 No Build Alternative)	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
(% Change from 2014 Existing Conditions)	(52%)	(52%)	(37%)	(37%)	(39%)	(8%)	(8%)	2%	2%
Net Change from 2020 No Build Alternative	0	0	5	31	9	0	1	0	3
Net Change from 2014 Existing Conditions	(738)	(4,237)	(4,459)	(25,581)	(14,857)	(49)	(283)	27	154
Build (Assignment Only with Build Trip Distance)	668	3,834	7,547	43,308	23,082	587	3,367	1,332	7,645
(% Change from 2020 No Build Alternative)	(0.1%)	(0.1%)	(0.1%)	(0.1%)	0.0%	0.0%	0.0%	(0.1%)	0.0%
(% Change from 2014 Existing Conditions)	(53%)	(53%)	(37%)	(37%)	(39%)	(8%)	(8%)	2%	2%
Net Change from 2020 No Build Alternative	1	3	(5)	(57)	(10)	0	0	(1)	(3)
Net Change from 2014 Existing Conditions	(739)	(4,240)	(4,469)	(25,638)	(14,876)	(49)	(284)	(26)	(148)
2040 Future Operational Emissions									
No Build	243	1,394	2,441	14,008	10,739	628	3,601	1,537	8,822
Build	243	1,394	2,441	14,009	10,737	628	3,601	1,537	8,821
(% Change from 2020 No Build Alternative)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
(% Change from 2014 Existing Conditions)	(83)	(83)	(80)	(80)	(72)	(1)	(1)	18	18
Net Change from 2020 No Build Alternative	0	0	0	1	(2)	0	0	0	(1)
Net Change from 2014 Existing Conditions	(1,164)	(6,680)	(9,575)	(54,937)	(27,221)	(8)	(50)	231	1,324
SMAQMD CEQA Significance Thresholds ^a	--	65	--	65	--	15	82	14.6	80
YSAQMD CEQA Significance Thresholds ^a	10	--	10	--	--	--	--	--	80

tpy = tons per year

ppd = pounds per day

^a These thresholds would only apply to the portion of project emissions generated within each air district.

Source: Emission rates from the CARB EMFAC2014 model.

Construction Emissions

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 construction-related activities. Exhaust emissions from construction equipment also are expected and would include CO, NO_x, VOCs, directly-emitted PM (PM₁₀ and PM_{2.5}), and toxic air contaminants such as DPM. Ozone is not directly emitted from construction activities; it is a regional pollutant that is formed from NO_x and VOCs in the presence of sunlight and heat.

Construction emissions were estimated using the SMAQMD's Roadway Construction Emissions Model (RCEM) Version 8.1.0. Construction of the build alternatives involves the same general level of activity. Therefore, one model run was used to evaluate construction emissions for all build alternatives. It was assumed construction would begin in 2018 and require approximately 30 months (2.5 years). Construction would occur in seven phases due to the scale of the proposed project and the need to minimize traffic impacts and maintain traffic during construction.

Table 2.13-5 shows the estimated daily emissions associated with each construction phase, as well as maximum daily emissions during periods when activities among multiple phases would overlap. In the project area, the regulation of air quality on the east side of the Sacramento River is under the jurisdiction of the SMAQMD. The regulation of air quality on the west side of the Sacramento River is under the jurisdiction of the YSAQMD. Based on information provided by the project engineers, it was assumed that 50 percent of daily emissions would be generated within each jurisdiction. Daily emissions would vary and typically be less than the maximum emissions presented in the table.

Construction activities are subject to requirements found in Standard Specifications Section 14, "Environmental Stewardship." Section 14-9.02 includes specifications relating to air pollution control by complying with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under contract, including air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 addresses dust control and palliative requirements. Implementation of Caltrans' Standard Specifications and measures to control dust during construction would help to minimize air quality impacts from construction activities.

Table 2.13-5. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Build Alternatives (ppd)

Emission Source	VOC		NO _x		CO	PM2.5		PM10	
	tpy	ppd	tpy	ppd	tpy	tpy	ppd	tpy	ppd
Grubbing/land clearing	0.01	2.0	0.06	21	0.03	0.02	6.2	0.07	26
Grading/excavation	0.31	5.7	3.6	65	2.2	0.43	7.8	1.5	28
Drainage/utilities/subgrade	0.03	1.5	0.32	15	0.29	0.11	5.0	0.46	21
Paving	0.05	1.4	0.44	14	0.38	0.02	0.7	0.02	0.70
Movable span	0.45	3.4	4.2	31	3.6	0.75	5.7	2.9	22
Approach span	0.47	6.2	3.7	48	3.3	0.67	8.8	2.5	33
Bridge demolition	0.08	1.5	0.72	13	0.60	0.49	8.9	2.2	41
Potential overlapping emissions (both air quality districts)	1.3	17	12	159	9.4	2.0	27	7.4	104
Potential overlapping emissions (SMAQMD) ^a	0.64	8.4	5.9	80	4.7	0.98	14	3.7	52
Potential overlapping emissions (YSAQMD) ^a	0.64	8.4	5.9	80	4.7	0.98	14	3.7	52
SMAQMD CEQA Significance Threshold	--	--	--	85	--	14.6	82	15	80
YSAQMD CEQA Significance Threshold	10	--	10	--	--	--	--	--	80
Exceeds threshold?	No		No	No		No	No	No	No

tpy = tons per year

ppd = pounds per day

^a Total emissions for each air district were calculated assuming a 50/50 split of total project emissions between the SMAQMD and YSAQMD.

Source: Emission rates from Roadway Construction Emissions Model (RCEM) Version 8.1.0.

Asbestos

Naturally occurring asbestos (NOA) can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. According to *A General Location Guide for Ultramafic Rock in California*, no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) are within a 25-mile vicinity of the project area (California Department of Conservation 2000). Although it is not anticipated that construction activity would encounter NOA, the project dust control measures would effectively control unanticipated NOA exposure through a variety of required control measures, including watering.

Regarding structural asbestos, NESHAP regulations require an owner or operator of a demolition or renovation project to thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos prior to the commencement of that project. Four viaduct structures being removed as part of the project date to the 1930s and 1950s and have elements that could contain asbestos (Blackburn Consulting

2016). Per the NESHAP regulations and SMAQMD Rule 902 (Asbestos), the proposed project would be required to develop and implement an Asbestos Abatement Plan. Refer to Section 2.12, “Hazards” for a complete discussion of asbestos hazards and related avoidance, minimization, and/or mitigation measures.

Lead

ADL has been found to occur in soils adjacent to highways and high use roadways. The lead is presumably from the historical use of leaded gasoline and subsequent exhaust emissions. ADL could be encountered during construction and grading activities within the proposed project limits in West Sacramento along C Street and 2nd Street, and at the bridge approach/viaduct leading from C Street (Blackburn Consulting 2016). A majority of the area adjacent to C Street is covered sidewalk; therefore, an ADL assessment would be limited to areas with exposed soils in that area.

ADL could be encountered during construction and grading activities within the proposed project limits in Sacramento at the bridge approach/viaduct leading from I Street. The bridge landing within the Sacramento City limits is located within an area under evaluation as part of the Sacramento Railyards remediation and is not likely to exhibit concentrations of elevated ADL; however, Jibboom Street and Bercut Drive, in various alignments, have been present since 1916 and therefore have the potential to be contaminated with ADL. Testing indicates that soils from the assessment area would be classified as either non-hazardous or as soil acceptable for management.

The I Street Bridge and its associated approaches are proposed for demolition or modification. Testing identified three locations with paint containing more than 5,000 ppm of lead: silver paint on the metal bridge structure, black paint on the metal bridge structure, and white paint on the metal northeast approach. In addition, the gasket located at the base of the light boxes on the northeast approaches was determined to be pure lead.

The proposed project would be required to develop and implement a Lead Abatement Plan. Refer to Section 2.12, Hazards, for a complete discussion on lead hazards and related avoidance, minimization, and/or mitigation measures.

Mobile Source Air Toxics

Average annual daily traffic (AADT) on the I-Street Bridge under 2040 design year conditions is forecasted to reach 33,030. Accordingly, based on the FHWA’s 2016 mobile source air toxics (MSAT) guidance, the proposed project has low potential for meaningful differences in MSAT emissions among project alternatives (Level 2 Analysis) (AADT is below 140,000), and a qualitative analysis of MSAT emissions is required (U.S. Federal Highway Administration 2016). A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, between the build alternatives and the No Build Alternative. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives*, found at:

www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/methodology/methodology00.cfm.

There could be localized differences in MSAT from the indirect effects of the project, such as associated access traffic, emissions of evaporative MSAT (e.g., benzene) from parked cars, and emissions of DPM from delivery trucks (modified depending on the type and extent of the associated development). Travel to other destinations would be reduced with subsequent decreases in emissions at those locations.

Because the estimated VMT under each of the build alternatives are nearly the same, varying by less than 1 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various build alternatives. For all alternatives, emissions are virtually certain to be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future than they are today.

The travel lanes contemplated as part of the build alternatives will have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSATs would be higher under certain alternatives than others. The localized differences in MSAT concentrations would likely be most pronounced along the new/expanded roadway sections that would be built at the bridge touchdown locations. However, the magnitude and the duration of these potential increases cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Further, under all alternatives, overall future MSAT emissions are expected to be substantially lower than today due to implementation of the EPA's vehicle and fuel regulations.

In sum, under all build alternatives in the design year it is expected there would be no appreciable difference in MSAT emissions in the study area relative to the no build alternative due to the less than 1 percent difference in VMT. There also could be increases in MSAT levels in a few localized areas where VMT increases. However, EPA's vehicle and fuel regulations will bring about significantly lower MSAT levels for the area in the future than today.

2.13.3.2 No Build Alternative

Under the No Build Alternative, higher demand volume under opening (2020) and design year (2040) conditions would cause increased congestion and delay on the traffic network surrounding the existing I Street Bridge, likely resulting in worsened air quality. Also, lack of ADA compliance, non-standard and non-continuous sidewalks, and lack of bicycle facilities would continue to discourage walking and bicycling on the existing I Street Bridge.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

Implement Control Measures for Construction Emissions of Fugitive Dust

Caltrans' Standard Specification Section 14, "Environmental Stewardship" addresses the construction contractor's responsibility on many items of concern, such as air pollution; protection of lakes, streams, reservoirs, and other waterbodies; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.02 includes specifications relating to air pollution control for work performed under a contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust. Caltrans' Standard Specifications are incorporated into all Caltrans' construction contracts.

Sacramento Metro Air Quality Management District

Additional measures to control dust in Sacramento County will be borrowed from SMAQMD's recommended list of dust control measures and implemented to the extent practicable when the measures have not already been incorporated in, and do not conflict with, the requirements of Caltrans' Standard Specifications, special provisions, the NPDES permit, the Biological Opinions, the CWA Section 404 permit, CWA Section 401 Certification, and other permits issued for the project. The following measures are taken from SMAQMD's (2016) CEQA Guide and represent their basic control measures for fugitive dust.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 mph.
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

Yolo Solano Air Quality Management District

Additional measures to control dust in Yolo County will be borrowed from YSAQMD's recommended list of dust control measures and implemented to the extent practicable when the measures have not already been incorporated in, and do not conflict with, the requirements of Caltrans' Standard Specifications, special provisions, the NPDES permit, the Biological Opinions, the CWA Section 404 permit, CWA Section 401 Certification, and other permits issued for the project. The following measures are taken from YSAQMD's Construction Dust Mitigation Measures (Yolo Solano Air Quality Management District 2007).

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch.
- Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

Sacramento Railyards Specific Plan

Construction activity within the *Sacramento Railyards Specific Plan* area will comply with the mitigation measures contained in the adopted *Mitigation Monitoring Plan* for the Railyards development (City of Sacramento 2016). Wet suppression and wind speed reduction are the two most common methods used to control open dust sources at construction sites because a source of water and material for wind barriers tend to be readily available on a construction site.

Develop a Lead and Asbestos Abatement Plan

Please refer to the discussion of this measure in Section 2.12.4.

2.13.5 Climate Change

Climate change is analyzed in Chapter 3. Neither EPA nor FHWA has issued explicit guidance or methods to conduct project-level GHG analysis. As stated on FHWA's climate change website (<http://www.fhwa.dot.gov/hep/climate/index.htm>), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will aid 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 additional requirements are set forth in California legislation and executive orders on climate change, the issue is addressed in the Chapter 3 of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

2.13.6 References Cited

- Blackburn Consulting. 2016. *Initial Site Assessment I Street Bridge Replacement Project*. Prepared for Mark Thomas and Company. March. West Sacramento, CA.
- California Air Resources Board. 2016a. *Ambient Air Quality Standards*. Last Revised: May 4, 2016. Available: <<http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>>. Accessed: May 10, 2016.
- _____. 2018. *Area Designations Maps/ State and National*. Last Revised: December 28, 2018. Available: <<http://www.arb.ca.gov/desig/adm/adm.htm>>. Accessed: May 15, 2018.
- _____. 2018. *Aerometric Data Analysis and Management System (ADAM): Top 4 Summary*. Available: <<http://www.arb.ca.gov/adam/topfour/topfour1.php>>. Accessed: September 17, 2018.
- _____. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.
- California Department of Conservation. 2000. *A General Location Guide for Ultramafic Rock in California*. Division of Mines and Geology. August. (Open-File Report 2000-19.)
- City of Sacramento. 2016. *Mitigation Monitoring Plan for the Sacramento Railyards Specific Plan Update, KP Medical Center, MLS Stadium, and Stormwater Outfall Projects*. Adopted November 10. Sacramento City Council Resolution 2016-0379. Exhibit B.
- Fehr & Peers. 2015. *Traffic Data and Calculations*. Sacramento, CA.
- Sacramento Metropolitan Air Quality Management District. 2016. *CEQA Guide to Air Quality Assessment*. March.
- Terry A. Hayes Associates, Inc. 2016. *Air Quality Study Report – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. November. Culver City, CA.
- U.S. Environmental Protection Agency. 2016. *The Green Book Nonattainment Areas for Criteria Pollutants*. Last Revised: April 22, 2016. Available: <<https://www3.epa.gov/airquality/greenbook/>>. Accessed: May 10, 2016.
- _____. 2018. *Monitor Values Report*. Available: <<https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>>. Accessed: September 17, 2018.

U.S. Federal Highway Administration. 2016. *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Available: <http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/2016msat.pdf>. Accessed: December 6, 2016.

Yolo-Solano Air Quality Management District. 2007. *Handbook for Assessing and Mitigating Air Quality Impacts*. July 11.

2.14 Noise

2.14.1 Regulatory Setting

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

2.14.1.1 California Environmental Quality Act

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

2.14.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NACs) that are used to determine when a noise impact would occur. The NACs differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.14-1 lists the NACs for use in the NEPA 23 CFR 772 analysis.

Table 2.14-1. Noise Abatement Criteria for NEPA Analysis

Activity Category	NAC (hourly A-weighted noise level, Leq[h])	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ^a	67 (Exterior)	Residential.
C ^a	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (e.g., water resources, water treatment, and electrical), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

Leq(h) = hourly equivalent sound level

NAC = noise abatement criterion.

^a Includes undeveloped lands permitted for this activity category.

Source: 23 CFR 772.

Figure 2.14-1 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.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
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

Figure 2.14-1. Noise Levels of Common Activities

According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011* (referred to herein as the Traffic Noise Analysis Protocol), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12-dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. A predicted sound level is defined as "approaching" the NAC when it is within 1 dBA of the NAC.

If it is determined that the project will result in noise impacts, potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated into the project.

The Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5-dBA reduction in the future noise level must be achieved for an

abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include the noise reduction design goal, residents' acceptance, and the cost per benefited residence. To meet the noise reduction design goal, a barrier must provide at least 7 dB of noise reduction at one or more benefited receptors. This design goal applies to any receptor and is not limited to affected receptors.

2.14.2 Affected Environment

This section is a summary of the analysis documented in the *Noise Study Report* (NSR) (ICF International 2015) prepared for the proposed project. The NSR discusses potential noise impacts and related noise abatement measures associated with construction and operation of the I Street Bridge Replacement Project. The NSR was prepared to comply with 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise*, and Caltrans' noise analysis policies as described in the Traffic Noise Analysis Protocol. The NSR is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

2.14.2.1 Land Uses and Sensitive Receptors

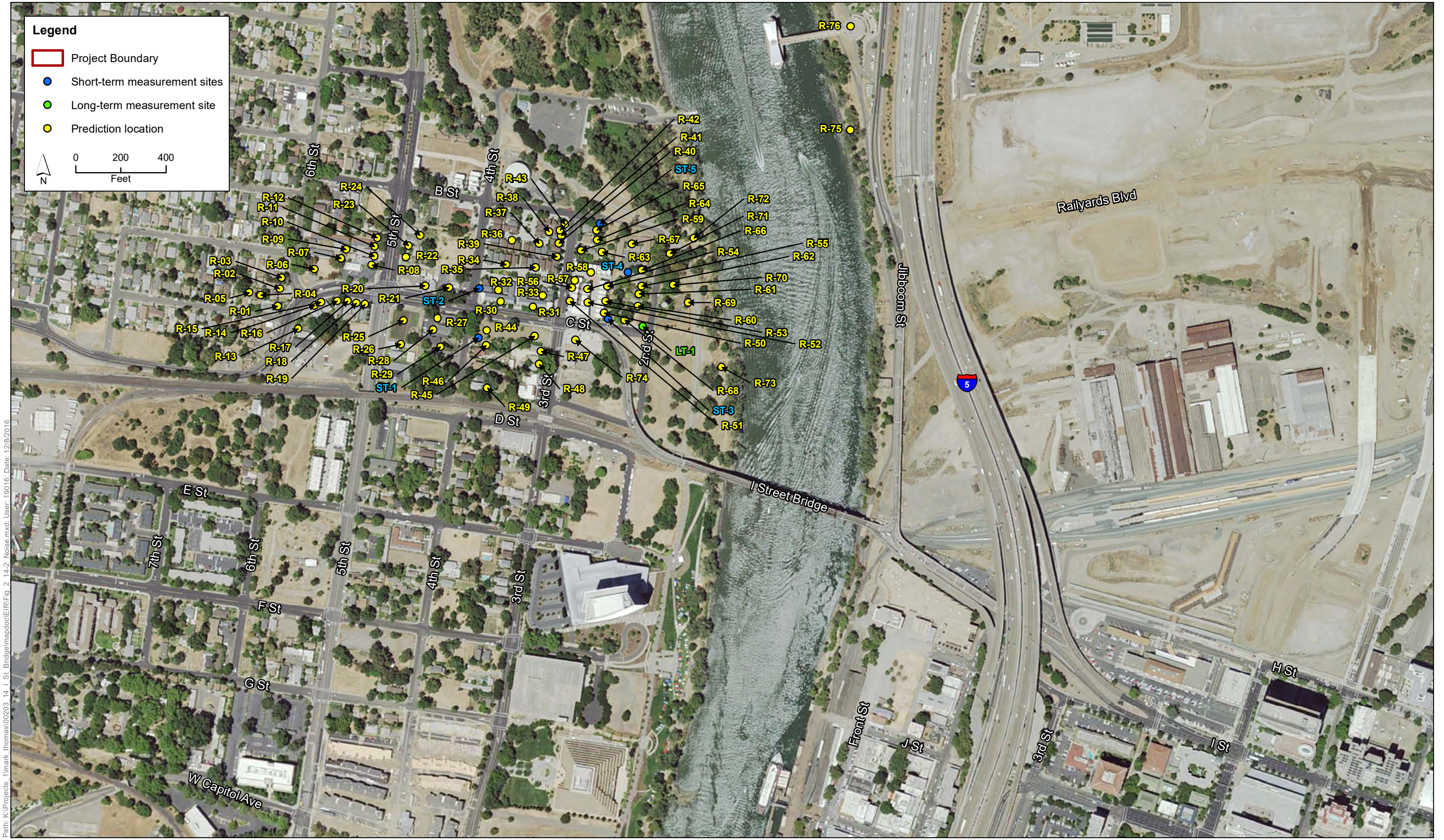
A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts resulting from the proposed project. Single-family and multifamily residences were identified as Activity Category B land uses in the project area. Outdoor recreational uses and parks were identified as Activity Category C land uses. Several commercial (Activity Category F) and undeveloped (Activity Category G) land uses are not subject to noise impacts, as noted above in Table 2.14-1.

Although all land uses were evaluated in this analysis, as required by the Traffic Noise Analysis Protocol, noise abatement was considered only for areas of frequent human use that would benefit from a lower noise level. Accordingly, the impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards and common use areas at multifamily residences.

2.14.2.2 Noise Monitoring

The existing noise environment was characterized based on the short- and long-term noise monitoring that was conducted in the project area.

Long-term (24-hour) monitoring was conducted at one location. The purpose of the long-term noise measurement was to determine the changes in noise levels within the project area throughout a typical day. Sound level data were collected on Monday, April 20, 2015. The monitoring was located on a power pole near the northwest corner of 2nd Street and C Street. The long-term monitoring location is shown in Figure 2.14-2.



Path: K:\Projects\1\mark_thomas\0203_14_I_Street_Bridge\mapdoc\ER\Fig 2.14-2_Noise.mxd; User: 19016; Date: 12/8/2016

Figure 2.14-2
Noise Measurement and Prediction Locations

Results of short-term noise monitoring are shown in Table 2.14-2. All measurements were 15 minutes in duration. Traffic noise was observed to be the dominant ambient noise source at all sites. Short-term monitoring locations are shown in Figure 2.14-2.

Table 2.14-2. Summary of Short-Term Measurements

Receptor	Address	Land Uses/ Activity Category	Start Date/ Time	Leq
ST-1	4th Street & C Street	Undeveloped / G	4/16/15 1:44 PM	57.0
ST-2	281 4th Street	Residential / B	4/16/15 11:25 AM	58.7
ST-3	Vacant lot, 2nd Street	Undeveloped / G	4/16/15 11:50 AM	59.4
ST-4	212 2nd Street	Residential / B	4/16/15 2:38 PM	50.3
ST-5	End of B Street	Residential / B	4/16/15 2:11 PM	51.1

Leq = equivalent sound level

2.14.3 Environmental Consequences

The proposed project is a Type 1 project as defined in 23 CFR 772 because it would physically alter both the vertical and horizontal alignment of an existing highway. To determine whether the project would result in a noise impact that requires consideration of noise abatement, traffic noise levels under existing and design year (2040) conditions were predicted using the FHWA Traffic Noise Model (TNM), Version 2.5. TNM is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010. Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, receptors, and ground type. Three-dimensional representations of these inputs were developed using computer-aided design drawings, aerials, and topographic contours provided by the project engineer. Traffic data for the project were obtained from the Traffic Technical Data and Calculations prepared by Fehr & Peers (2015) for the project.

2.14.3.1 Build Alternatives

All land surrounding the Railyards Boulevard/Jibboom Street/Bercut Drive intersection is undeveloped. As such, impacts on noise-sensitive land uses are limited to West Sacramento and noise impacts are the same under both design alternatives within Sacramento.

Traffic Noise

Predicted design year build condition traffic noise levels are compared with existing conditions and design year no build conditions. The comparison with existing conditions is included in the analysis to identify traffic noise impacts according to 23 CFR 772. The comparison to without-project conditions indicates the direct effect of the project.

Traffic noise levels for design year no build conditions range from 49 to 73 dBA Leq(h) (hourly equivalent sound level). Under design year build conditions, predicted traffic noise levels range from 49 to 74 dBA Leq(h). This range of noise levels applies to both build alternatives. Traffic noise levels would approach or exceed the NAC for residential uses (Activity Category B) and

park uses (Activity Category C). Because traffic noise impacts are predicted to occur at Activity Category B and Activity Category C land uses in the project area, noise abatement must be considered.

Construction Noise

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by provisions in Section 14-8.02, “Noise Control” of the Caltrans Standard Specifications, which states the following.

- Do not exceed 86 dBA L_{max} at 50 feet from the job site activities from 9 p.m. to 6 a.m.
- Equip an internal combustion engine with the manufacturer-recommended muffler.

Two types of short-term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site, which would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved onsite, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. A high single-event noise exposure potential at a maximum level of 87 dBA L_{max} (maximum instantaneous noise level) from trucks passing at 50 feet would exist. However, the projected construction traffic would be minimal when compared to existing traffic volumes on other affected streets, and the associated long-term noise level change would not be perceptible. Therefore, construction-related worker commutes and equipment transport noise impacts would be short term and would not be adverse.

The second type of short-term noise impact would be caused by construction activities. Construction is performed in distinct steps, each of which has its own mix of equipment and consequently its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.14-3 lists typical construction equipment noise levels (in L_{max}) recommended for noise impact assessments, based on a distance of 50 feet between the equipment and a noise receptor.

Typical noise levels at 50 feet from an active construction area range up to 91 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavation machinery such as backfillers, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Table 2.14-3. Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA Lmax at 50 feet)	Suggested Typical Maximum Sound Levels for Analysis (dBA Lmax at 50 feet)
Pile drivers	81 to 96	93
Rock drills	83 to 99	96
Jackhammers	75 to 85	82
Pneumatic tools	78 to 88	85
Pumps	74 to 84	80
Scrapers	83 to 91	87
Haul trucks	83 to 94	88
Cranes	79 to 86	82
Portable generators	71 to 87	80
Rollers	75 to 82	80
Dozers	77 to 90	85
Tractors	77 to 82	80
Front-end loaders	77 to 90	86
Hydraulic backhoe	81 to 90	86
Hydraulic excavators	81 to 90	86
Graders	79 to 89	86
Air compressors	76 to 89	86
Trucks	81 to 87	86

dBA = A-weighted decibels

Lmax = maximum instantaneous noise level

Source: Bolt, Beranek & Newman 1987.

In addition to standard construction equipment, bridge construction would require the use of pile drivers. As shown in Table 2.14-3, pile driving generates noise levels of up to 96 dBA Lmax at 50 feet.

Construction of the proposed project is expected to require the use of pile drivers, earthmovers, bulldozers, paving machines, water trucks, dump trucks, concrete trucks, rollers, and pickup trucks. Noise associated with the use of construction equipment is estimated between 79 and 89 dBA Lmax at a distance of 50 feet from the active construction area for the grading phase. As seen in Table 2.14-3, the maximum noise level generated by each earthmover is assumed to be approximately 86 dBA Lmax at 50 feet from the earthmover in operation. Each bulldozer would generate approximately 85 dBA Lmax at 50 feet. The maximum noise level generated by water trucks and pickup trucks is approximately 86 dBA Lmax at 50 feet from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA.

Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 91 dBA Lmax (at a distance of 50 feet from an active construction area).

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with provisions in Section 14-8.02, “Noise Control” of the Caltrans Standard Specifications and applicable local noise standards. Construction noise would be short term, intermittent, and typically overshadowed by local traffic noise.

2.14.3.2 No Build Alternative

Under the No Build Alternative, noise levels associated with traffic would increase in the future, as traffic associated with growth increases. No adverse effect would be due to increased traffic noise from the bridge improvements, however, because the project would not be built in the design year.

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

2.14.4.1 Noise Abatement Evaluation under 23 CFR 772

According to 23 CFR 772(13)(c), federal funding may be used for the following abatement measures.

- Construction of noise barriers, including acquisition of property rights, either within or outside the highway right-of-way. Landscaping is not a viable noise abatement measure.
- Traffic management measures including, but not limited to, traffic control devices and signage for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
- Alteration of horizontal and vertical alignments.
- Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely affected by traffic noise.
- Noise insulation of Activity Category D land use facilities. Post-installation maintenance and operational costs for noise insulation are not eligible for federal-aid funding.

Among these options, noise barriers are the only feasible abatement measure for the proposed project. Noise barriers are evaluated for feasibility based on achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated. 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 following is a discussion of noise abatement evaluated for the project. The discussion applies to all design options for the I Street/I-5 interchange. Locations of evaluated noise-sensitive receivers are shown in Figure 2.14-2.

West of 6th Street, between California Street and Elizabeth Street

The traffic noise modeling results indicate that noise levels of up to 68 dBA Leq(h) are predicted at four residential outdoor use areas located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 4 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

A noise barrier would not be feasible along 6th Street due to driveway access requirements to residences in this area. Therefore, a noise barrier was not considered further.

North of C Street, between 6th Street and 5th Street

The traffic noise modeling results indicate that noise levels of up to 67 dBA Leq(h) are predicted at one residential outdoor use area located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 5 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

A noise barrier would not be feasible along C Street due to driveway access requirements to residences in this area. Therefore, a noise barrier was not considered further.

East of 6th Street/C Street, between California Street and 5th Street

The traffic noise modeling results indicate that noise levels of up to 72 dBA Leq(h) are predicted at seven residential outdoor use areas located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 5 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

A noise barrier would not be feasible along 6th Street/C Street due to driveway access requirements to residences in this area. Therefore, a noise barrier was not considered further.

South of C Street, between 5th Street and 4th Street

The traffic noise modeling results indicate that noise levels of up to 71 dBA Leq(h) are predicted at eight multifamily residential units located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 5 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

There are no outdoor areas of frequent human use that would benefit from a lowered noise level at the apartment units. Furthermore, a noise barrier would not be feasible along C Street because the façade of the apartment building is adjacent to a public sidewalk. Therefore, a noise barrier was not considered further.

North of C Street, between 4th Street and 3rd Street

The traffic noise modeling results indicate that noise levels of up to 70 dBA Leq(h) are predicted at eight multifamily townhouse units located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 4 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

There are no common outdoor areas of frequent human use facing C Street that would benefit from a lowered noise level at the townhouse units. Furthermore, a noise barrier would not be feasible along C Street because the façade of the building is adjacent to a public sidewalk. Therefore, a noise barrier was not considered further.

South of C Street, between 4th Street and 3rd Street

The traffic noise modeling results indicate that noise levels of up to 66 dBA Leq(h) are predicted at one residential outdoor use area located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 4 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

A noise barrier would not be feasible along C Street or 3rd Street due to driveway access requirements to residences in this area. Therefore, a noise barrier was not considered further.

North of C Street, between 3rd Street and 2nd Street

The traffic noise modeling results indicate that noise levels of up to 69 dBA Leq(h) are predicted at two multifamily townhouse units located along this segment of the project. This traffic noise level exceeds the NAC for residential use (Activity Category B). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 4 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

The individual townhouse units have balconies that face east toward the future I Street Bridge alignment; however, there are no common outdoor areas of frequent human use facing C Street that would benefit from a lowered noise level. A noise barrier would not be feasible because of access requirements to the realigned 2nd Street, which would pass along the eastern façade of the townhouse units. Therefore, a noise barrier was not considered further.

Matsui Waterfront Park, Jibboom Street

The traffic noise modeling results indicate that noise levels of up to 73 dBA Leq(h) are predicted at recreational outdoor and park uses at Matsui Waterfront Park located along this segment of the project. This traffic noise level exceeds the NAC for outdoor recreational use (Activity Category C). Therefore, traffic noise impacts are predicted to occur at this location and noise abatement must be considered. Traffic noise levels would increase by up to 2 dB relative to existing conditions, which would not result in a substantial increase in noise levels.

A noise barrier would not be feasible along Jibboom Street due to roadway access requirements to parking lots at Matsui Waterfront Park. Furthermore, I-5 is a significant source of traffic noise in this area. For noise abatement measures to be effective, they would need to be designed to reduce noise from traffic on I-5, and improvements to I-5 are not included in the project. Therefore, a noise barrier was not considered further.

2.14.4.2 Measures to Minimize Noise Effects from Construction

Standard Caltrans procedures include implementation of the following measures to minimize the temporary noise effects from construction.

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- The construction contractor will implement appropriate additional noise measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

2.14.5 References Cited

Bolt, Beranek & Newman, Inc. 1987. *Noise Control for Buildings and Manufacturing Plants*.

Fehr & Peers. 2015. Raw “cube” Traffic Data. Prepared for City of Sacramento. September. Roseville, CA.

Fehr & Peers. 2015. *Traffic Technical Data and Calculations*. Sacramento, CA.

ICF International. 2015. *Noise Study Report – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. July. Sacramento, CA.

2.15 Energy

2.15.1 Regulatory Setting

NEPA (42 USC Part 4332) requires identification of all potentially significant impacts on the environment, including energy impacts.

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.

2.15.2 Affected Environment

The proposed replacement of the I Street Bridge is regionally important in order to reduce future traffic congestion, improve operations and safety, and comply with current Caltrans and local agency design standards.

2.15.3 Environmental Consequences

2.15.3.1 Build Alternatives

Each of the build alternatives would require temporary energy consumption during construction, including fuel for construction and personnel equipment and vehicles, and electricity for night lighting. During operation of the project, the build alternatives would improve overall network performance compared to no build conditions, which would improve fuel efficiency. The new bicycle and pedestrian crossing also may encourage non-automobile transport. The build alternatives would not result in direct, indirect, or unavoidable impacts on energy demand or energy resources. When balancing the energy used during construction and operation against the energy saved by relieving congestion and other transportation efficiencies, the project would not result in substantial energy impacts.

2.15.3.2 No Build Alternative

The No Build Alternative would not result in substantial energy impacts, although as noted, continued congestion and other transportation inefficiencies under the No Build Alternative would result in increased energy demands. Interchange improvements would not be implemented.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

Biological Environment

2.16 Natural Communities

This section discusses natural communities of special concern. The focus is on biological communities, not individual plant or animal species, which are discussed in Sections 2.18, 2.19, and 2.20. 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 2.20, “Threatened and Endangered Species.” Wetlands and other waters are discussed in Section 2.17.

2.16.1 Regulatory Setting

2.16.1.1 Local Requirements

City of Sacramento Heritage Tree Ordinance

The City Heritage Tree Ordinance (City of Sacramento Municipal Code, Title 12, Chapter 12.64) defines a heritage tree as follows.

- Any tree or any species with a trunk circumference of one hundred (100) inches [diameter of 32 inches] or more, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
- Any native *Quercus* species, *Aesculus californica* or *Platanus racemosa*, having a circumference of thirty-six (36) inches [diameter of 11.5 inches] or greater when a single trunk, or a cumulative circumference of thirty-six (36) inches or greater when a multi-trunk.
- Any tree thirty-six (36) inches in circumference [diameter of 11.5 inches] or greater in a riparian zone. The riparian zone is measured from the center line of the watercourse to thirty (30) feet beyond the high water line.
- Any tree, grove of trees or woodland trees designated by resolution of the city council to be of special historical or environmental value or of significant community benefit.

The ordinance states that, during construction activity on any property on which a heritage tree is located, unless the express written permission of the director is first obtained, no person shall:

- Change the amount of irrigation provided to any heritage tree from that provided prior to the commencement of construction activity.
- Trench, grade, or pave into the dripline area of a heritage tree, or trim roots.
- Change, by more than 2 feet, grade elevations within thirty (30) feet of the dripline area of a heritage tree.

- Park or operate any motor vehicle within the dripline area of any heritage tree.
- Place or store any equipment or construction materials within the dripline area of any heritage tree.
- Attach any signs, ropes, cables or any other items to any heritage tree.
- Cut or trim any branch of a heritage tree for temporary construction purposes.
- Place or allow to flow into or over the dripline area of any heritage tree any oil, fuel, concrete mix, or other deleterious substance.

In addition, the ordinance states that none of the following activities shall be performed without a tree permit.

- Removal of any heritage tree.
- Pruning or spraying of any heritage tree greater than 12 inches in circumference.
- Disturbing the soil or placing any chemical on the soil within the dripline of any heritage tree.

The project area supports heritage trees in the City of Sacramento that would be affected by implementation of the project and would be subject to the City of Sacramento Heritage Tree Ordinance.

City of West Sacramento Tree Preservation Ordinance

The City's Tree Preservation Ordinance is found in the West Sacramento Municipal Code, Title 8 (Health and Safety), Chapter 24 (Tree Preservation). The City protects heritage and landmark trees, as defined in the ordinance, and requires tree permits for activities that would affect such trees.

A *heritage tree* is defined as follows.

- Any living tree with a trunk circumference of 75 inches (diameter of 24 inches) or more, or
- Any living native oak (any species of the genus *Quercus*) with a trunk circumference of 50 inches (diameter of 16 inches) or more, both measured 4.5 feet above ground level. The circumference of multi-trunk trees is based on the sum of the circumference of each trunk.

A *landmark tree* is defined as a tree or stand of trees that is especially prominent, stately, or of historical significance as designated by the City Council. Trees that are too small in diameter to meet the size threshold of either a heritage or landmark tree but are located within the public right-of-way (typically 12.5 feet from the curb) also are protected by the ordinance.

It is unlawful in West Sacramento to perform any of the following acts with respect to a heritage or landmark tree without a tree permit issued by the City's tree administrator.

- Move, remove, cut down, poison, set fire to or permit fire to burn in proximity to, or perform or fail to perform any act that results in the unnatural death or destruction of a landmark or heritage tree.
- Perform any activity that will interfere with or retard the natural growth of any landmark or heritage tree.

- Perform any work or permit any work to be performed within the dripline area of a landmark or heritage tree.
- Trim or prune any branch of a landmark or heritage tree that is 5 inches or more in diameter.
- Change the appropriate amount of irrigation or drainage water provided to any landmark, heritage, or street tree. Trench, grade, pave, or otherwise damage or disturb any exposed roots within 1 foot outside the dripline area of any landmark, heritage, or street tree.
- Park or operate any motor vehicle within 1 foot outside the dripline area of any landmark, heritage, or street tree.
- Place or store any equipment or construction materials within 1 foot outside the dripline area of any landmark, heritage, or street tree.
- Place, apply, or attach any signs, ropes, cables, or other items to any landmark, heritage, or street tree.
- Place or allow to flow any oil, fuel, concrete mix, or other deleterious substance into or over within 1 foot outside the dripline area of any landmark, heritage, or street tree.

Tree permits require the applicant to replace a removed tree with a living tree on the property or within West Sacramento in a location approved by the tree administrator. The applicant also must replace the replacement tree if it dies any time within 3 years of the initial planting. Replacement is not required if a tree is removed because it poses a risk or hosts a plant parasite.

Replacement trees are required at a ratio of 1:1 (i.e., 1-inch diameter of replacement plant for every 1-inch diameter of tree removed). Replacement trees may be a combination of 15-gallon trees, which are the equivalent of a 1-inch-diameter tree, or 24-inch box trees, which are the equivalent of a 3-inch-diameter tree. If a property owner is unable to replace the tree on his or her property or within an area approved by the tree administrator, the tree administrator shall require the property owner to pay an in-lieu fee to the city. An in-lieu fee payment is not required if the tree needs to be removed solely because it poses a risk to persons or property, or if the tree acts as a host for a plant that is parasitic. In-lieu fees will be set by City Council resolution and be used to purchase and plant trees elsewhere in West Sacramento.

The project area supports heritage trees in West Sacramento that would be affected by implementation of the project and would be subject to the City of West Sacramento Tree Preservation Ordinance.

2.16.2 Affected Environment

This section is based on the *Request for Preliminary Jurisdictional Determination of the Delineation of the Proposed I Street Bridge Project, Sacramento and Yolo Counties, California* (ICF International 2016a) and *Natural Environment Study Report* (ICF International 2016b) prepared for the proposed project. The reports are available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. This section presents findings of these reports as they relate to natural communities within the biological study area (BSA).

The BSA generally comprises all permanent and temporary project impact areas, as shown in Figure 2.16-1. The BSA consists of the Sacramento River, riparian woodland and open space with bike/pedestrian trails along the Sacramento River, local roads, elevated roads (viaducts) and bridge approach structures, residential areas, and commercial development. The BSA has a relatively high level of historical and ongoing disturbance.

The BSA supports both a common natural community and natural communities of special concern. *Common vegetation communities* are habitats with low species diversity that are widespread, reestablish naturally after disturbance, or support primarily non-native species. These communities generally are not protected by agencies unless the specific site is habitat for or supports special-status species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed). The only common natural community in the BSA is ruderal woodland.

Natural communities of special concern are vegetation communities considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these communities important. The California Natural Diversity Database (CNDDDB) contains a current list of rare natural communities throughout the state. The habitats in the BSA that meet the criteria for natural communities of special concern are cottonwood riparian forest, riparian forest/shrub wetland, and perennial stream. Perennial stream, although not a vegetation community, is included as a natural community of special concern because it is important wildlife and fish habitat, and is regulated by resource agencies. Riparian forest/shrub wetland and perennial stream are waters of the United States and are discussed in Section 2.17.

2.16.2.1 Cottonwood Riparian Forest

Cottonwood riparian forest in the BSA occurs along the upper banks and floodplains of the Sacramento River (Figure 2.16-1). The overstory of riparian forest is predominantly mature Fremont cottonwood (*Populus fremontii*) trees associated with valley oak (*Quercus lobata*) and black walnut (*Juglans californica* var. *hindsii*). Other riparian tree species observed include Oregon ash (*Fraxinus latifolia*), boxelder (*Acer negundo* var. *californicum*), and black willow (*Salix gooddingii*). The riparian understory on the waterside of the levee is primarily rip-rap with non-native annual grasses and forbs; however, there are also patches of more typical riparian species, such as narrow-leaf willow (*Salix exigua*), Himalayan blackberry (*Rubus armeniacus*), and mugwort (*Artemisia douglasiana*). The invasive red sesbania (*Sesbania punicea*) shrub was observed in the riparian forest on the Sacramento side of the river. One blue elderberry shrub (*Sambucus nigra* ssp. *caerulea*), habitat for the federally threatened valley elderberry longhorn beetle (VELB), was found in riparian habitat on the Sacramento side of the river. One area of riparian forest that exhibited positive indicators of all three federal wetland criteria is discussed in Section 2.17.2.2, “Riparian Forest/Shrub Wetland.”

2.16.2.2 Wildlife Migration Corridors

The BSA consists of predominantly disturbed and developed areas along both sides of the Sacramento River, with a narrow band of riparian habitat along the river. Despite these existing conditions, the open water portion of the river serves as a migration corridor for aquatic species; and, even though limited, the riparian habitat can be used by birds and other wildlife for

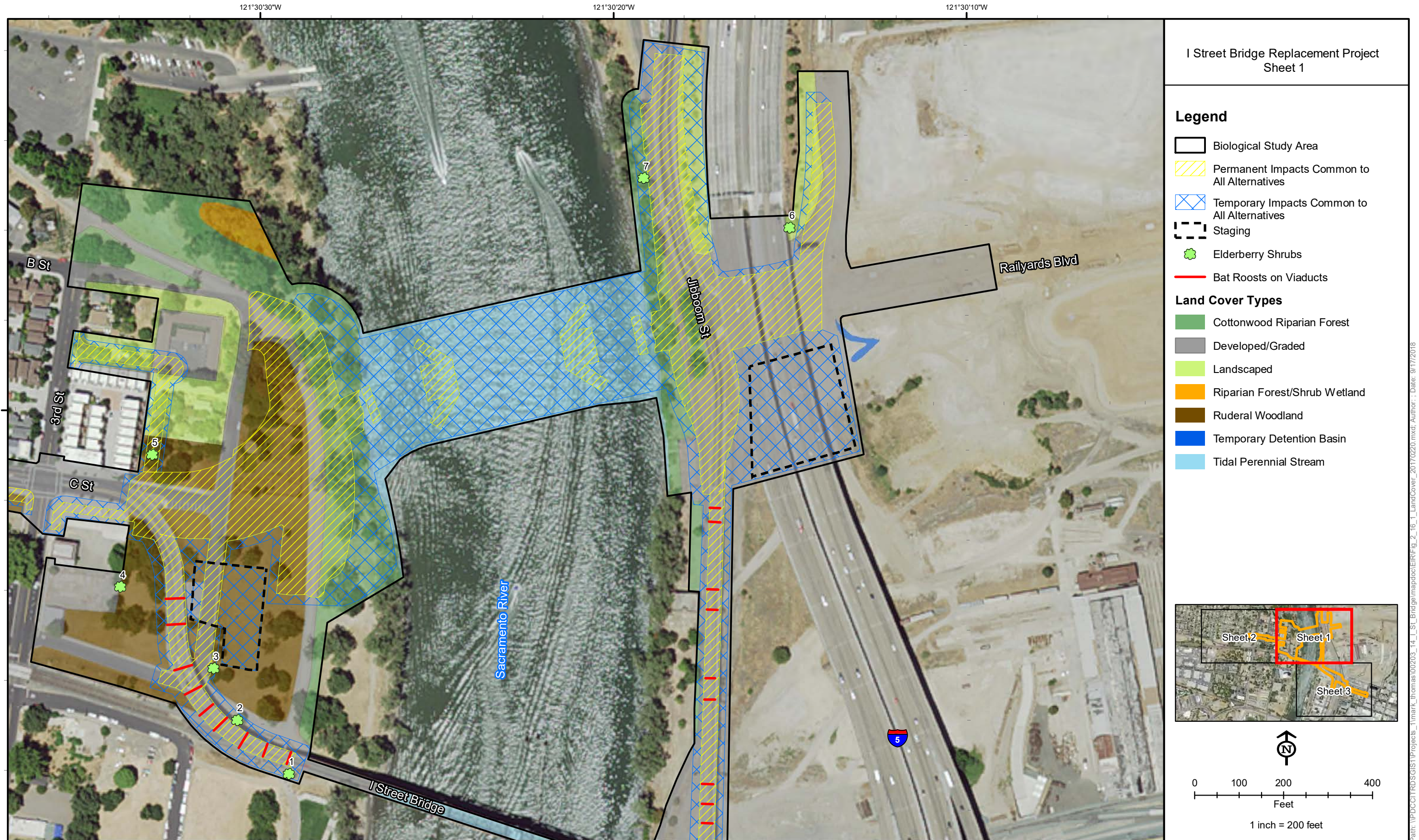


Figure 2.16-1
Impacts on Landcover Types and Sensitive Biological Resources in the Biological Study Area

121°31'0"W

121°30'50"W




121°30'40"W

38°35'20"N






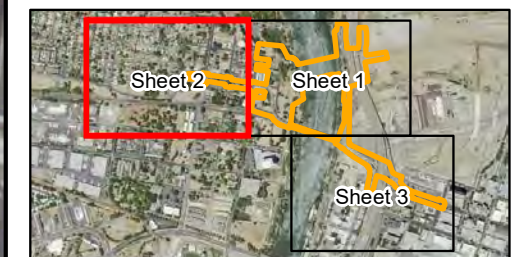
I Street Bridge Replacement Project
Sheet 2

Legend

-  Biological Study Area
-  Permanent Impacts Common to All Alternatives
-  Temporary Impacts Common to All Alternatives

Land Cover Types

-  Developed/Graded
-  Landscaped
-  Ruderal Woodland



1 inch = 200 feet

Path: \\PDC\ITRDS\GIS1\Projects_1\mark_thomas\00203_14_I_Street_Bridge\mapdoc\EIR\Fig_2_16_1_LandCover_20170220.mxd; Author: ; Date: 9/17/2018

Figure 2.16-1
Impacts on Landcover Types and Sensitive Biological Resources in the Biological Study Area

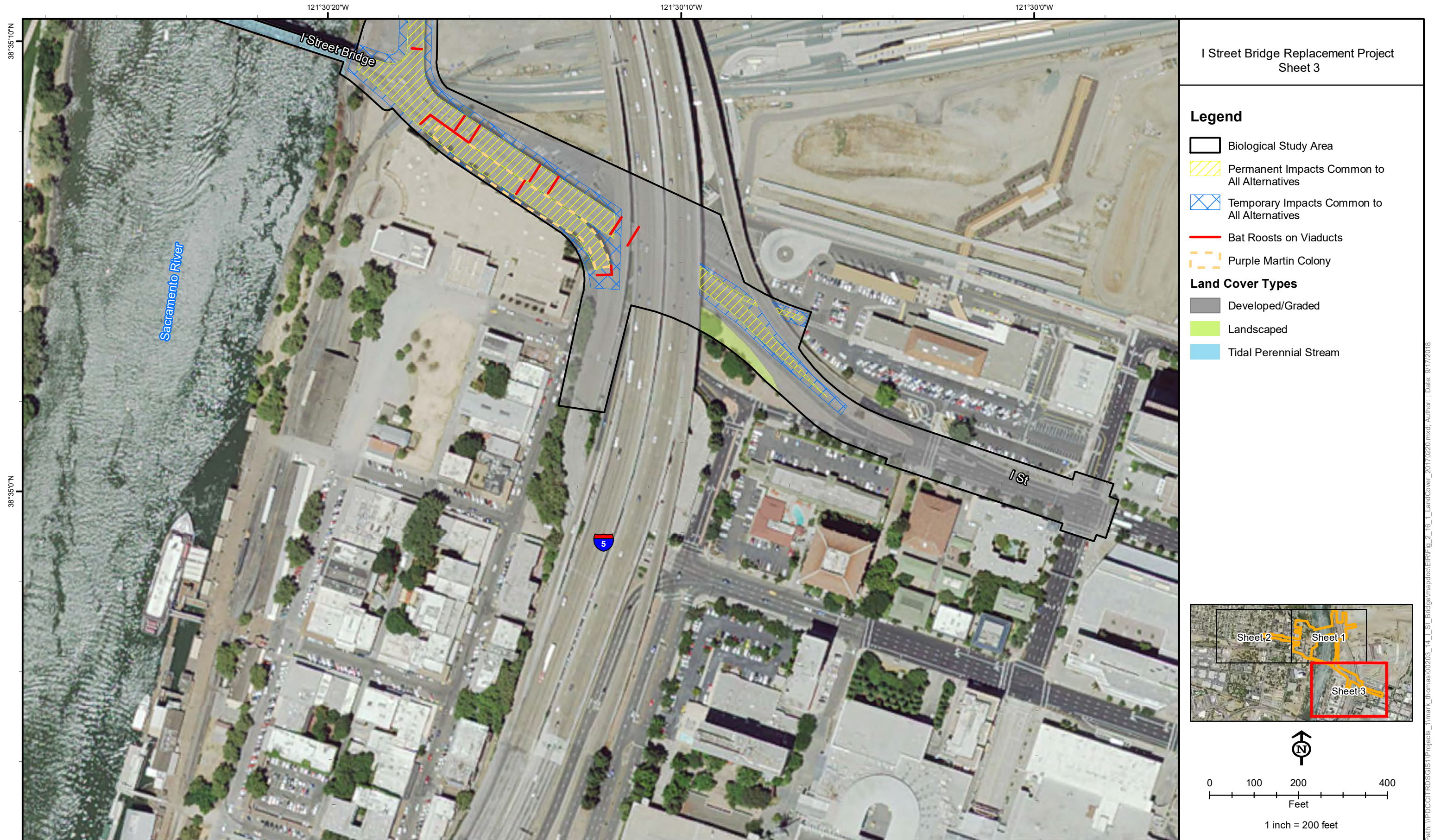


Figure 2.16-1
Impacts on Landcover Types and Sensitive Biological Resources in the Biological Study Area

dispersing along the Sacramento River corridor. Fish passage and migration within the Sacramento River are discussed below.

The Sacramento River is wide and deep and provides unimpeded passage for migratory and resident fish species in the BSA. Although the existing I Street Bridge is supported on three in-water piers, the existing piers do not confine flows or create hydraulic conditions (e.g., shallow water depths or excessive water velocities) that adversely affect the upstream or downstream passage of fish or other aquatic organisms in the Sacramento River. Fish passage is a primary constituent element of critical habitat for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the southern distinct population segment (DPS) of North American green sturgeon—all of which occur in the BSA (see Section 2.20, “Threatened and Endangered Species”).

2.16.3 Environmental Consequences

2.16.3.1 Build Alternatives

There are two roadway design alternatives for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the City of Sacramento, but both alternatives would result in the same permanent and temporary impacts on cottonwood riparian forest, the only non-wetland vegetation community in the BSA that would qualify as a natural community of special concern. Therefore, the impacts of these alternatives are not discussed separately in this section. Native trees present within this community type are discussed below.

The following assumptions were used in assessing the magnitude of possible impacts on cottonwood riparian forest.

- Impacts on riparian forest were determined by overlaying preliminary footprints for permanent project features and temporary work areas (e.g., access roads, falsework, equipment staging) onto aerial photographs of mapped habitats (Figure 2.16-1). Impact acreages presented in this section are intended to provide a worst-case scenario; actual impacts are expected to be less based on avoidance of trees and other vegetation within temporary work areas. An error on Figure 2.16-1 is corrected in this Final EIR/EA. A portion of the project footprint described in Chapter 1, *Project Description*, and analyzed in this EIR/EA, was inadvertently omitted from Sheet 1 of Figure 2.16-1 in the Draft EIR/EA and is now shown. The project impacts discussed in this document are not affected.
- Riparian forest was generally mapped as polygons based on canopy cover and includes both treed and treeless areas. Impacts within these habitats are approximate and do not account for canopy that extends outside the project footprint from a tree that could be removed by the project.
- Temporary construction impacts within riparian habitats may include some tree trimming, but removal of trees will be avoided to the extent practical.
- Temporary construction (e.g., temporary access roads) that requires tree removal within riparian forest habitats will be mitigated at the same ratio as permanent impacts to account for the time required for habitat regeneration.

The only common natural community that would be affected by the proposed project is ruderal woodland. The loss of ruderal woodland vegetation in the BSA is not considered an adverse effect from a botanical standpoint, because this habitat supports nonnative and invasive plant species and is not considered a sensitive community type. Wetlands and other waters of the United States are discussed in Section 2.17.

Cottonwood Riparian Forest

Implementation of the proposed project would result in a loss of cottonwood riparian habitat. Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result from construction activities related to the abutments for the two fixed-span bridge approach structures on both the City of Sacramento and City of West Sacramento sides, residential access in West Sacramento, temporary access roads, and roadway approaches (Figure 2.16-1).

Construction of the proposed project would result in permanent loss of up to 1.44 acres of cottonwood riparian forest within the area designated as the limits of disturbance. Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result from activities related to construction of two fixed-span bridge approach structures, the bikeway along Jibboom Street in the City of Sacramento, and the new residential access road connecting B Street and 3rd Street in the City of West Sacramento (Figure 2.16-1). The riparian area between the permanent footprint of the bridge abutments and the bikeway on the City of Sacramento side or the road on the City of West Sacramento side also would be considered permanently removed. In this area, vegetation would be removed during construction of the adjacent structures and overhead bridge, and would be unlikely to revegetate after construction due to low clearance under the bridge and shading from the bridge. Temporary disturbance of up to 1.52 acres of riparian forest would occur during construction of the proposed project. Temporary impacts would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access.

The proposed project could result in indirect impacts on riparian habitat from shading of habitat by the new bridge approach structures on both river banks. The extent of potential shading effects on areas north and south of the bridge depends on the width and height of the new approach structures above the existing vegetation and the orientation of the structures relative to the sun's path. During part of the year, the north side of the new structures would be more shaded than the south side. However, the height of the proposed structures would allow adequate light to penetrate most of the adjacent vegetation during much of the year and would be unlikely to cause a loss of, or a shift in, the species composition of riparian vegetation adjacent to the new structures. Further discussion of potential shading impacts and loss of shaded riverine aquatic (SRA) cover habitat is provided in Section 2.19, "Animal Species."

Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and declining distribution. CDFW has adopted a no-net-loss policy for riparian habitat values. The USFWS mitigation policy identifies California's riparian habitats in Resource Category 2 (habitat is of high quality that is relatively scarce or becoming scarce on a national basis or in the ecoregion), and no net loss of existing habitat value is recommended (46 Federal

Register [FR] 7644). Additionally, riparian forest contains native trees that are subject to the tree preservation ordinances of the City of Sacramento and City of West Sacramento.

State and federal agencies will require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian forest vegetation is considered adverse because this vegetation provides a variety of important ecological functions and values.

Table 2.16-1 summarizes the impacts on cottonwood riparian forest.

Table 2.16-1. Impacts on Cottonwood Riparian Forest

Land Cover Type	Proposed Project	
	Permanent Impact Area (acres)	Temporary Impact Area (acres)
Cottonwood riparian forest	1.44	1.52

Protected Trees

The BSA contains native trees that would qualify for protection under the tree preservation ordinances of the City of Sacramento and the City of West Sacramento. Protected trees known to occur in the BSA are Oregon ash, California black walnut, western sycamore, Fremont’s cottonwood, valley oak, black willow, arroyo willow, boxelder, coast redwood, southern magnolia, tree of heaven, and black locust. Tree of heaven and black locust are invasive species, but the trees included meet the heritage tree size criterion.

Construction of the proposed project would result in the removal of up to 22 heritage trees in the City of Sacramento and 45 heritage trees in the City of West Sacramento. Trees would be removed for the construction of abutments for the two fixed-span bridge approach structures on both the City of Sacramento and City of West Sacramento sides, the bikeway along Jibboom Street in Sacramento, and the C Street connection to 3rd Street in West Sacramento.

Additional temporary impacts on heritage trees could occur during construction due to trimming of trees for construction access. However, the protection measures in each city’s heritage tree ordinance would be implemented to avoid impacts on protected trees outside of the permanent impact area.

The tree ordinances of the City of Sacramento and City of West Sacramento require avoidance, minimization, and compensatory mitigation for the loss of heritage trees.

All of the protected trees within the City of Sacramento are located in the cottonwood riparian forest habitat, and mitigation for the loss of these trees would be accomplished through implementation of mitigation for the loss of riparian habitat. Similarly, the loss of protected trees in the City of West Sacramento that are within cottonwood riparian forest habitat would be mitigated based on the loss of riparian habitat and implementation of compensatory mitigation. The loss of protected trees in the City of West Sacramento that are in ruderal woodland or landscaped habitat would be mitigated based on the City of West Sacramento Tree Preservation Ordinance requirements, as described in compensatory mitigation below.

Habitat Fragmentation

The BSA consists of habitats along existing transportation corridors (i.e., roads and bridges). Modification and loss of habitat resulting from the proposed project will not result in the isolation of habitat or separation of previously continuous habitat into smaller patches. Therefore, the proposed project is not expected to result in habitat fragmentation, and fragmentation is not discussed further.

2.16.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect natural communities.

2.16.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will ensure that the project avoids, minimizes or mitigates effects on cottonwood riparian forest in and adjacent to the construction area and compensates for the loss of riparian habitat and protected trees that would be caused by the proposed project. Additional measures may be agreed upon during the project permitting process.

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The project proponent and/or their contractor will install orange construction fencing between the construction area and adjacent sensitive biological resource areas. Sensitive biological resources that occur adjacent to the construction area that could be directly affected by the project include natural communities of special concern; special-status wildlife habitats for valley elderberry longhorn beetle; nest sites of Swainson's hawk, purple martin, or other migratory birds; roosting bats; and protected trees to be avoided.

Barrier fencing around sensitive areas will be installed as one of the first orders of work and prior to equipment staging. Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the orange construction fencing, and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans and described in the specifications. To minimize the potential for snakes and other ground-dwelling animals from being caught in the orange construction fencing, the fencing will be placed with at least a 1-foot gap between the ground and the bottom of the orange construction fencing. The exception to this condition is where construction barrier fencing overlaps with erosion control fencing and must be secured to prevent sediment runoff. Barrier fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.

Conduct Environmental Awareness Training for Construction Employees

The project proponent will retain a qualified biologist to conduct environmental awareness training for construction crews before project implementation. The awareness training will be provided to all construction personnel and will brief them on the need to avoid effects on sensitive biological resources (e.g., native trees, natural communities of special concern, and special-status species habitats in and adjacent to the construction area). The education program will include a brief review of the special-status species with the potential to occur in the BSA (including their life history and habitat requirements, and photographs of the species). The training will identify the portions of the BSA in which the species may occur, as well as their legal status and protection. The program also will cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. This will include the steps to be taken if a sensitive species is found within the construction area (i.e., notifying the crew foreman, who will call a designated biologist). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each crew member. The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period.

Conduct Periodic Biological Monitoring

The project proponent will retain a qualified biological monitor for the project who will visit the site a minimum of once per week to ensure that fencing around environmentally sensitive areas is intact and that activities are being conducted in accordance with the agreed upon project schedule and agency conditions of approval. The monitor will provide the project proponent with a monitoring log for each site visit.

Certain activities will require a biological monitor to be present for the duration of the activity or during the initial disturbance of an area to ensure that impacts on special-status species are avoided. The activities that require specific monitoring are identified in Sections 2.17, 2.18, 2.19, and 2.20.

Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (including SRA Cover)

The project proponent will compensate for the permanent loss of up to 1.44 acres of riparian forest. In addition, any unavoidable loss of riparian forest in the temporary work area will be mitigated. The project proponent will implement onsite and, if necessary, offsite compensation measures and/or purchase mitigation bank credits to compensate for losses of cottonwood riparian forest on the waterside slope of the existing levees, including riparian forest supporting SRA cover habitat (as described in Section 2.20, “Threatened and Endangered Species,” portions of the cottonwood riparian forest in the BSA also provide SRA cover habitat for fish). Onsite compensation will be used to the maximum extent practicable. Compliance with the USACE levee vegetation policy (U.S. Army Corps of Engineers 2014), the Urban Levee Design Criteria

(California Department of Water Resources 2012), or other engineering constraints may limit the ability to achieve full onsite compensation. Therefore, offsite compensation and/or purchase of mitigation bank credits may be needed to achieve no net loss of existing in-kind riparian and SRA cover habitat values. Each of these options is discussed below.

- 1. Onsite and/or Offsite Restoration and/or Enhancement along the Sacramento River.** Riparian habitat restoration and/or enhancement onsite or offsite should occur in the same year construction is completed. For onsite or offsite replacement plantings, the project proponent will prepare 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 for the mitigation plantings will be similar to those removed from the project area and will include native species, such as Fremont cottonwood, valley oak, black walnut, Oregon ash, boxelder, and black willow. The final planting plan will be developed based on results of the arborist survey for species to be removed (see additional discussion below). All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established. Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent 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.
- 2. Mitigation Bank Credit Purchase.** If this option is chosen, the project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid. The mitigation will be approved by CDFW and may be modified during the permitting process. Mitigation can be in the form of creation and/or preservation credits. If mitigation is in the form of restoration/creation credits, the mitigation will be at a minimum ratio of 1:1 (1 acre of restored or created riparian habitat for each acre of riparian habitat removed). If mitigation is in the form of preservation credits, the mitigation will be at a minimum ratio of 2:1 (2 acres of preserved riparian habitat for each acre of riparian habitat removed). The final compensation ratio will be approved by CDFW in order to result in no net loss of riparian habitat. The project proponent will purchase riparian habitat credits from an approved mitigation bank near the project, such as the Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, or Elsie Gridley Mitigation Bank. Replacement riparian forest habitat will include trees species that would support nesting Swainson's hawk (i.e., oak, cottonwood) and will occur within the range of nesting Swainson's hawk within the Sacramento Valley.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90 percent design plans for the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint. Riparian forest compensation will be consistent with the requirements of the City of West Sacramento and City of Sacramento tree ordinances to ensure compensation for losses of individual protected trees.

In addition to mitigating for the loss of riparian forest habitat, specific measures will be included to satisfy National Marine Fisheries Service requirements and compensate for the loss of SRA

cover (area and linear feet). However, the acreage will not be duplicated, such that the acreage of riparian forest habitat restored for SRA cover mitigation will apply toward riparian forest habitat mitigation requirements. SRA cover mitigation will include the following riparian replacement requirements.

- Replace the 890 linear feet and 0.44 acre of affected SRA cover vegetation (see Section 2.19.3.1, “Loss of Shaded Riverine Aquatic Cover”) at a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected and 3 acres replaced for every acre affected) by planting native riparian trees in temporary impact areas and along existing onsite or offsite unshaded banks along the Sacramento River.
- Plant native riparian trees onsite to the maximum extent practicable, followed by planting on adjacent reaches of the Sacramento River to minimize the need for purchasing offsite mitigation bank credits.
- Plant riparian trees that are intended to provide SRA cover along the water’s edge at summer low flows up to the OHWM and at sufficient densities to provide shade along at least 85 percent of the bank’s length when the trees reach maturity. This will ensure that riparian plantings intended for SRA cover mitigation will contribute to instream SRA cover when they are inundated during winter/spring flows and overhead cover (shade) during summer flows when they approach maturity.
- Monitor and evaluate the revegetation success of riparian plantings intended for SRA cover mitigation as described above.
- If mitigation for SRA cover is in the form of offsite mitigation bank credits, credits will need to be purchased from an approved mitigation bank within the approved service area for the project that provides riparian forest floodplain conservation credits as off-site compensation for impacts on state- and federally listed fish species, designated critical habitat, and essential fish habitat for Pacific salmon.

Compensate for Loss of Protected Trees not in Riparian Habitat

Within 1 year prior to construction, the project proponent will have a certified arborist conduct a preconstruction inventory of all heritage trees to be removed within the areas defined as ruderal woodland and landscaped land cover types. The inventory will include the location, species, and diameter of all trunks; approximate height and canopy diameter; and approximate age, in support of a tree permit for removal of the heritage trees. All conditions of the tree permit will be implemented.

The project proponent will mitigate the loss of protected trees using one or a combination of the two following options.

- Because it is unlikely that adequate space will be available in the project area for tree planting after construction, pay an in-lieu fee to the City of West Sacramento, which would be used to purchase and plant trees elsewhere in West Sacramento. Replacement trees will be required at a ratio of 1:1 (i.e., 1-inch diameter of replacement tree planted for every 1-inch diameter of tree removed). Replacement trees will be of the same species, except for the replacement of tree of heaven and black locust, which are invasive species and will be

replaced with native tree species. Mitigation will be subject to approval by the City's tree administrator and will take into account species affected, replacement species, location, health and vigor, habitat value, and other factors to determine fair compensation for tree loss. Replacement trees will be monitored annually for 3 years to document vigor and survival. If any of the replacement trees die within 3 years of the initial planting, the project proponent will plant additional replacement trees and monitor them until all trees survive for a minimum of 3 years after planting.

- If feasible, plant replacement trees at or near the location of the tree removal, following the same replacement ratio, species, monitoring, and tree survival requirements described for the option above.

2.16.5 References Cited

California Department of Water Resources. 2012. *Urban Levee Design Criteria*. May. Available: http://www.water.ca.gov/floodsafe/leveedesign/ULDC_May2012.pdf. Accessed: February 16, 2015.

ICF International. 2016a. *Request for Preliminary Jurisdictional Determination of the Delineation of the Proposed I Street Bridge Project, Sacramento County and Yolo County, California*. May 3. Sacramento, CA. Letter to Mr. Mark Fugler, U.S. Army Corps of Engineers, Sacramento District, Regulatory Division.

———. 2016b. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. February 23. Sacramento, CA.

U.S. Army Corps of Engineers. 2014. *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures*. (Technical Letter No. ETL 1110-2-583.) April. Washington, D.C.

2.17 Wetlands and Other Waters

2.17.1 Regulatory Setting

2.17.1.1 Federal Requirements

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the CWA (33 USC 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by USACE with oversight by EPA.

The USACE issues two types of 404 permits: General and Standard Permits. There are two types of General Permits: Regional Permits and Nationwide Permits. Regional Permits are issued for a general category of activities when they are similar and cause minimal environmental effect. Nationwide Permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard Permits. There are two types of Standard Permits: Individual Permits and Letters of Permission. For Standard Permits, the USACE decision to approve is based on compliance with EPA's Section 404(b)(1) Guidelines (40 CFR 230) and on whether permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative that would have less adverse effects. The Guidelines state that USACE may not issue a permit if a least environmentally damaging practicable alternative to the proposed discharge would have lesser effects on waters of the United States and would not result in any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as FHWA or Caltrans as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds that (1) there is no practicable alternative

to the construction; and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

2.17.1.2 State Requirements

At the state level, wetlands and waters are regulated primarily by the State Water Board, the RWQCBs, and CDFW. CFGC Sections 1600–1607 require any agency proposing 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 CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement (LSAA) is required. CDFW 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 USACE may or may not be included in the area covered by an LSAA obtained from CDFW.

The RWQCBs were established under the Porter-Cologne Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities that may result in a discharge to waters of the United States. This is most frequently required in tandem with a Section 404 permit request. Please see Section 2.9, “Water Quality” for more details.

2.17.2 Affected Environment

A delineation of potential jurisdictional wetlands and other waters of the United States within the BSA was performed on April 8, 2015 (ICF International 2016a). The delineation was conducted using the routine onsite determination method described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the supplemental procedures and wetland indicators provided in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008). Results of the delineation were submitted to the USACE on May 6, 2015. The USACE responded on July 7, 2016, concurring with the delineation. The Preliminary Jurisdictional Determination Form was signed by the City of Sacramento on July 18, 2016.

This section is a summary of the analysis documented in the Wetland Delineation Report prepared for this project (ICF International 2016a). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>. The following wetlands and waters of the United States and waters of the State were delineated in the BSA and are considered jurisdictional by the USACE, RWQCB, and CDFW.

2.17.2.1 Perennial Stream

Perennial streams have flows year-round. The Sacramento River is the only perennial stream in the BSA. All perennial stream in the BSA is unvegetated open water. The river averages 672 feet

wide at the OHWM in the BSA. The river banks are levees that are mostly steeply sloped and support riparian forest vegetation, with rip-rap near the bottom of the slope. Additional information about the perennial stream is provided in the wetland delineation report.

2.17.2.2 Riparian Forest/Shrub Wetland

Riparian forest/shrub wetland in the BSA consists of an area within riparian habitat that meets all three federal wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology). The riparian forest/shrub wetland is located in the northern portion of the BSA, on the west side of the Sacramento River within a low area. The vegetative composition of riparian forest/shrub wetlands is predominantly cottonwood but also includes buttonwillow (*Cephalanthus occidentalis* var. *californicus*), boxelder, and narrow-leaf willow.

2.17.3 Environmental Consequences

2.17.3.1 Build Alternatives

Both of the build alternatives would result in the same permanent and temporary effects on waters of the United States and waters of the State in perennial stream. Figure 2.16-1 depicts the location of perennial stream within the BSA for each alternative. The project would not affect wetlands.

Effects on non-wetland waters were considered to be permanent if construction of the proposed project would result in placement of permanent fill into perennial stream. Permanent fill would result from construction of bridge fixed-spans and moveable spans, a bridge fender system, and installation of RSP around bridge abutments and piers and along the shoreline adjacent to the bridge.

Temporary impacts on perennial stream would occur due to installation of two cofferdams and approximately 141 temporary trestle piles during construction to construct the bridge.

Additional indirect impacts caused by erosion or sedimentation could occur in portions of wetlands or other waters that lie outside the project footprint.

Perennial drainage in the BSA qualifies as both a water of the United States and a water of the State, which are regulated under the CWA and the Porter-Cologne Act, respectively. Therefore, the project proponent will comply with the CWA by obtaining a permit from the Sacramento District of the USACE, and will comply with the Porter-Cologne Act by obtaining a permit from the Central Valley RWQCB before discharging fill into, or excavating within, federally or state-regulated waters. The project proponent will obtain an individual permit from the Corps or authorization under a Nationwide Permit to comply with Section 404 of the CWA. The project proponent will also obtain water quality certification from the Central Valley RWQCB to comply with Section 401 of the CWA and the Porter-Cologne Act.

Impacts on non-wetland waters are common to all build alternatives and are shown in Table 2.17-1.

Table 2.17-1. Impacts on Wetlands and Other Waters

Water Type	Temporary (acres)	Permanent (acres)
Riparian forest/shrub wetland	0	0
Perennial stream	0.10	1.85

2.17.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect wetlands or other waters.

Because both build alternatives would have the same effect on waters of the United States, the least environmentally damaging alternative is the No Build Alternative. However, it is not a practicable alternative, it does not satisfy the need and purpose of the project, and it would result in the continuation of the traffic and transit operational deficiencies currently experienced, as described in Section 2.5.

2.17.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid, minimize, and mitigate the permanent and temporary and indirect effects on waters of the United States and waters of the State that would be caused by project construction, as listed in Table 2.17-1. The compensatory measures mitigate the permanent loss of non-wetland waters of the United States and waters of the State in compliance with the CWA and Porter Cologne Act.

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Environmental Awareness Training for Construction Employees

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Periodic Biological Monitoring

Please refer to the discussion of this measure in Section 2.16.4.

Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands

The project proponent and/or their construction contractor will comply with all construction site BMPs specified in the *Water Quality Assessment Report* prepared for the project (ICF International 2016b) and the final SWPPP that will be developed for the project, as well as any other permit conditions to minimize introduction of construction-related contaminants and

mobilization of sediment in the Sacramento River and the riparian forest/shrub wetland near the construction area. Broadly, these BMPs will address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices. The BMPs will be based on the best conventional and best available technology.

The proposed project is subject to storm water quality regulations established under the NPDES, described in Section 402 of the federal CWA. In California, the NPDES program requires that any construction activity disturbing 1 or more acres comply with the statewide General Permit, as authorized by the State Water Board. The General Permit requires elimination or minimization of non-storm water discharges from construction sites and development and implementation of a SWPPP for the site. The primary elements of the SWPPP include the following.

- Description of site characteristics—including runoff and streamflow characteristics and soil erosion hazard—and construction procedures
- Guidelines for proper application of erosion and sediment control BMPs
- Description of measures to prevent and control toxic materials spills
- Description of construction site housekeeping practices

In addition to these primary elements, the SWPPP specifies that the extent of soil and vegetative disturbance would be minimized by control fencing or other means and that the extent of soil disturbed at any given time would be minimized. The SWPPP must be retained at the construction site.

The BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable; they are subject to review and approval by the project proponent. The project proponent will perform routine inspections of the construction area to verify that the BMPs are properly implemented and maintained. The project proponent will notify contractors immediately of a noncompliance issue and will require compliance.

The BMPs will include, but are not limited to, the following.

- All earthwork or foundation activities involving wetlands or the intermittent vegetated stream will occur in the dry season (between May 1 and October 31). All in-water work within the Sacramento River will be conducted between May 1 and November 30 to minimize or avoid potential impacts on sensitive life stages (migration, spawning, egg and embryo incubation, and rearing) of special-status fish species.
- 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 will be performed at least 300 feet from all streams. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands.
- Develop a hazardous material spill prevention control and countermeasure plan before construction begins. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment and to preventing and responding to spills. The plan also will identify the parties responsible for monitoring a spill response.

During construction, any spills will be cleaned up immediately according to the spill prevention control and countermeasure plan. The project proponent will review and approve the contractors' spill prevention control and countermeasure plan before allowing construction to begin.

- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Take any surplus concrete rubble, asphalt, or other rubble from construction to a local landfill.
- Prepare and implement an erosion and sediment control plan for the proposed project that will include the following provisions and protocols. The SWPPP for the project will detail the applications and type of measures and the allowable exposure of unprotected soils.
 - 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.
 - Apply temporary erosion control measures, such as sandbagged silt fences, throughout construction of the proposed project and remove them after the working area is stabilized or as directed by the engineer. 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 roads will be swept daily following construction activities.
 - The contractor will conduct periodic maintenance of erosion and sediment control measures.
 - Plant an appropriate seed mix of native species on disturbed areas upon completion of construction.
 - Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
 - Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. 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.
 - Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
 - Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas as necessary.
 - Avoid earth or organic material from being deposited or placed where it may be directly carried into the channel.

The project proponent also will obtain a 401 Water Quality Certification from the Central Valley RWQCB, which may contain additional BMPs and water quality measures to ensure the protection of water quality.

Compensate for Loss of Perennial Stream

The project proponent will comply with any regulatory requirements determined as part of the state (Section 401 Water Quality Certification or WDRs, LSAA) and federal (Section 404 and Section 10 permits) processes for the work that would occur in the Sacramento River. The project proponent will compensate for the permanent fill of up to 1.85 acre of other waters of the United States in the Sacramento River by purchasing mitigation bank credits, which can be in the form of preservation and/or creation credits using the following minimum ratios.

- A minimum of 2:1 (2 acres of mitigation for each acre filled), for a total of up to 3.7 acres, if credits are for preservation of habitat; or
- A minimum of 1:1 (1 acre of mitigation for each acre filled), for a total of up to 1.85 acre, if credits are for creation of habitat.

The actual compensation ratios will be determined through coordination with the Central Valley RWQCB and USACE as part of the permitting process. The project proponent will compensate for permanent loss of perennial stream by implementing one or a combination of the following options.

- Purchase credits for created riparian stream channel at a USACE- approved mitigation bank with a service area that encompasses the project area, such as the Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, or Elsie Gridley Mitigation Bank. The project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Compensate out-of-kind for loss of perennial stream by implementing compensatory mitigation for cottonwood riparian forest impacts described in Section 2.16, “Natural Communities” (*Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]*). The acreage restored or created to compensate for loss of perennial stream will be added to the acreage restored or created for loss of riparian habitat.

2.17.5 References Cited

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. (Technical Report Y-87-1.) U.S. Army Waterways Experiment Station. Vicksburg, MS.

———. 2016a. *Request for Preliminary Jurisdictional Determination of the Delineation of the Proposed I Street Bridge Project, Sacramento County and Yolo County, California*. Sacramento, CA. May 3. Letter to Mr. Mark Fugler, U.S. Army Corps of Engineers, Sacramento District, Regulatory Division.

ICF International. 2016a. *Wetland Delineation Report, Request for Preliminary Jurisdictional Determination of the Delineation of the Proposed I Street Bridge Project, Sacramento County and Yolo County, California*. May. Prepared for California Department of Transportation.

_____. 2016b. *Water Quality Assessment Report, I Street Bridge Replacement Project*. February 17. Prepared for California Department of Transportation. Sacramento, CA.

U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0)*. J. S. Wakeley, R. W. Lichvar, and C. V. Noble (eds.). (ERDC/EL TR-08-28.) U.S. Army Engineer Research and Development Center. Vicksburg, MS.

2.18 Plant Species

2.18.1 Regulatory Setting

USFWS and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. *Special status* is a general term for species that are provided 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 2.20, “Threatened and Endangered Species” for detailed information about these species.

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

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

2.18.1.1 Local Requirements

City of Sacramento General Plan

Goals and policies in the *Sacramento 2035 General Plan* (Part 2, Environmental Resources section) (City of Sacramento 2015) apply to plant species in the proposed project area that would be affected by implementation of the project. The relevant goals and policies are listed below.

Goal ER 2.1. Natural and Open Space Protection. Protect and enhance open space, natural areas, and significant wildlife and vegetation in the city as integral parts of a sustainable environment within a larger regional ecosystem.

ER 2.1.4 Retain Habitat Areas. The City shall retain plant and wildlife habitat areas where there are known sensitive resources (e.g., sensitive habitats, special-status, threatened, endangered, candidate species, and species of concern). Particular attention shall be focused on retaining habitat areas that are contiguous with other existing natural areas and/or wildlife movement corridors.

ER 2.1.10 Habitat Assessments. The City shall consider the potential impact on sensitive plants and wildlife for each project requiring discretionary approval. If site conditions are such that potential habitat for sensitive plant and/or wildlife species may be present, the City shall require habitat assessments, prepared by a qualified biologist, for sensitive plant and wildlife species. If

the habitat assessment determines that suitable habitat for sensitive plant and/or wildlife species is present, then either (1) protocol-level surveys shall be conducted (where survey protocol has been established by a resource agency), or, in the absence of established survey protocol, a focused survey shall be conducted consistent with industry-recognized best practices; or (2) suitable habitat and presence of the species shall be assumed to occur within all potential habitat locations identified on the project site. Survey Reports shall be prepared and submitted to the City and the California Department of Fish and Wildlife (CDFW) or the United States Fish and Wildlife Service (USFWS) (depending on the species) for further consultation and development of avoidance and/ or mitigation measures consistent with state and federal law.

ER 2.1.11 Agency Coordination. The City shall coordinate with State and Federal resource agencies (e.g., California Department of Fish and Wildlife (CDFW), U.S. Army Corps of Engineers, and United States Fish and Wildlife Service (USFWS) to protect areas containing rare or endangered species of plants and animals.

City of West Sacramento General Plan

Goals and policies in the Natural and Cultural Resources Element of the *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) apply to plant species in the BSA that would be affected by implementation of the project. The relevant goals and policies are listed below.

Goal NCR-2: To protect sensitive native vegetation and wildlife communities and habitat in West Sacramento.

Policy NCR-2.4. The City shall require site-specific surveys for discretionary development proposals that could potentially impact biological resources to determine if any significant wildlife habitat and vegetation resources will be adversely affected and, if so, to identify appropriate measures to avoid or mitigate such impacts.

Policy NCR-2.7. The City shall seek to preserve populations of rare, threatened, and endangered species by ensuring that development does not adversely affect such species or by fully mitigating adverse effects. For developments where adverse impacts cannot be mitigated, the City shall not approve the project

Policy NCR-4.2. The City shall conserve and, where feasible, create or restore open space areas that serve to protect water quality such as riparian corridors, buffer zones, wetlands, undeveloped open space areas, levees, and drainage canals.

2.18.2 Affected Environment

This section is based on the *Natural Environment Study* (ICF International 2016) prepared for the project. The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Botanical surveys in the BSA were conducted on April 14, 2014; and April 8, May 8, and June 17, 2015. The spring and summer surveys coincided with the identification periods of special-status plants identified as having potential to occur in the project region. During all but

the June 17, 2015 surveys, the botanist walked the entire BSA and compiled lists of plants species observed. For the June 17, 2015 survey, close-up photographs of the banks were taken from the river via a kayak and then examined for the presence of special-status plants, in particular woolly rose-mallow. One part of the bank in West Sacramento was then walked to confirm the absence of woolly rose-mallow.

Based on searches of the CNDDDB, the CNPS rare plant inventory, and USFWS lists of threatened endangered species for the project region (U.S. Fish and Wildlife Service 2019), 24 special-status plant species were identified as occurring in the vicinity of the BSA (Table 2.18-1). The natural communities (see Section 2.16) in the BSA contain potential habitat for 4 of these 24 species. The remaining 20 species have habitat or microhabitat requirements (i.e., playas, vernal pools, perennial marsh; alkaline, saline, clay, or serpentine soils) that are not present in the BSA. Additionally, the relatively high level of historical and ongoing disturbance that is present in most of the BSA detracts from the quality of potential habitat for special-status plant species. No special-status plants were observed during the 2015 botanical surveys, and none have been previously reported in the BSA (California Department of Fish and Wildlife 2015; California Native Plant Society 2015).

Although plant surveys were conducted during a drought period, all of the special-status species with potential habitat in the BSA would grow on the Sacramento River banks. The river banks did not experience substantially drier conditions than normal due to the presence of normal river water levels; therefore, the drought conditions would not be expected to affect the growth of special-status plants along the river. All four species with potential habitat in the BSA are perennial, although three are herbaceous (rose-mallow, Mason’s lilaeopsis, and Suisun Marsh aster). The habitat for all three of these species would be restricted to the banks of the Sacramento River, and their seed germination and growth would not likely be affected by the drought conditions. Based on the field survey results and the lack of recorded occurrences in the BSA, special-status plant species are not expected to occur in the BSA.

Table 2.18-1. Special-Status Plant Species Identified as Having the Potential to Occur in the Project Region or That May Be Affected by the Proposed Project

Common Name Scientific Name	Status ^a	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
	Federal/State/ CRPR				
Ferris' milk-vetch (<i>Astagalus tener</i> var. <i>ferrisiae</i>)	—/—/1B.1	Seasonally wet areas in meadows and seeps, subalkaline flats in valley and foothill grassland; 6–246 feet	April– May	Habitat absent	Grassland habitat only in open areas of ruderal woodland. Riparian wetland is the only seasonally wet habitat and is not suitable. No subalkaline flats present. Nearest recorded occurrence is ~4 miles west of the BSA. Not observed in April or May 2015 surveys.
Alkali milk-vetch (<i>Astragalus tener</i> var. <i>tener</i>)	—/—/1B.2	Playas, on adobe clay in valley and foothill grassland, vernal pools on alkali soils; below 197 feet	March– June	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No playas, vernal pools or alkali soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.

Common Name Scientific Name	Status ^a	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
	Federal/State/ CRPR				
Heartscale (<i>Atriplex cordulata</i> var. <i>cordulata</i>)	-/-/1B.2	Saline or alkaline soils in chenopod scrub, meadows and seeps, sandy areas in valley and foothill grassland; below 1,230 feet	April–October	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No saline or alkaline soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Brittlescale (<i>Atriplex depressa</i>)	-/-/1B.2	Alkaline or clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools; below 1,050 feet	April–October	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No alkaline or clay soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
San Joaquin saltscale (<i>Atriplex joaquiniana</i>)	-/-/1B.2	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland; below 2,739 feet	April–October	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No alkaline soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Bristly sedge (<i>Carex comosa</i>)	-/-/2.1	Coastal prairie, marshes and swamps at lake margins, valley and foothill grassland; below 2,050 feet	May–September	Habitat absent	Grassland habitat only in open areas of ruderal woodland. Riparian wetland is only seasonally wet and is not suitable habitat. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Palmate-bracted bird's-beak (<i>Chloropyron palmatum</i>) [<i>Cordylanthus palmatus</i>]	E/E/1B.1	Alkaline grassland, alkali meadow, chenopod scrub; 50–1,670 feet	May–October	Habitat absent	No alkaline grassland habitat or chenopod scrub present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Peruvian dodder (<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>)	-/-/2.2	Not seen since 1948; freshwater marshes and swamps; 50–920 feet	July–October	Habitat absent	No freshwater marsh habitat present. Riparian wetland is only seasonally wet and is not suitable habitat. Nearest recorded occurrence is more than 10 miles away.
Dwarf downingia (<i>Downingia pusilla</i>)	-/-/2.2	Vernal pools and mesic valley and foothill grasslands; below 1,459 feet	March–May	Habitat absent	No vernal pool habitat present. Nearest recorded occurrence is ~7.5 miles north of the BSA. Not observed in April or May 2015 surveys.

Common Name Scientific Name	Status ^a	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
	Federal/State/ CRPR				
Stinkbells (<i>Fritillaria agrestis</i>)	-/-/4.2	Chaparral, cismontane woodland, pinyon-juniper woodland, valley and foothill grassland, on clay, sometimes serpentinite substrate; 33–5,101 feet	March– June	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No chaparral or suitable woodland habitat present. No clay or serpentine soils. Nearest recorded occurrence is ~6 miles northeast of the BSA. Not observed in April or May 2015 surveys.
Boggs Lake hedge-hyssop (<i>Gratiola heterosepala</i>)	-/E/1B.2	Clay soils in areas of shallow water, lake margins of swamps and marshes, vernal pool margins; 33–7,791 feet	April– August	Habitat absent	No vernal pool habitat or clay soils present. Nearest recorded occurrence is ~8 miles northeast of the BSA. Not observed in April or May 2015 surveys.
Rose-mallow (<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>)	-/-/2.2	Freshwater marsh along rivers and sloughs; often in rip-rap on sides of levees; below 394 feet	June– September	Habitat present	Low potential for presence in rip-rap along the Sacramento River. Riparian wetland is only seasonally wet and is not suitable habitat. Nearest recorded occurrence is ~2 miles northwest of the BSA. Not observed in June 2015.
Northern California black walnut (<i>Juglans hindsii</i>)	-/-/1B.1	Last two native stands in Napa and Contra Costa Counties; riparian scrub and riparian woodland; below 1,443 feet	April– May	Habitat present	Riparian habitat present with several black walnut trees, but no native stands present. Nearest recorded occurrence along the Sacramento River ~8 miles south of the BSA is extirpated.
Legenere (<i>Legenere limosa</i>)	-/-/1B.1	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and river banks; below 2,887 feet	April– June	Habitat absent	No vernal pool habitat present. Nearest recorded occurrence is ~6 miles northeast of the BSA.
Heckard's pepper-grass (<i>Lepidium latipes</i> var. <i>heckardii</i>)	-/-/1B.2	Alkaline flats in valley and foothill grassland; 32–656 feet	March– May	Habitat absent	Grassland habitat only in open areas of ruderal woodland. No alkaline soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.

Common Name Scientific Name	Status ^a	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
	Federal/State/ CRPR				
Mason's lilaepsis (<i>Lilaeopsis masonii</i>)	-/R/1B.1	Freshwater or brackish marsh, riparian scrub; in tidal zone	April–November	Habitat present	Low potential for presence in degraded habitat present on the Sacramento River bank, but not known to occur in this area; flow and boat wakes are likely too great for establishment of this species, and most levee banks have rip-rap to below the water level or trampled sand flats. Nearest recorded occurrence is ~7.3 miles southwest of the BSA along the Deep Water Ship Channel. Not observed in April or May 2015 surveys.
Little mouse-tail (<i>Myosurus minimus</i> ssp. <i>apus</i>)	-/–/3.1	Alkaline soils in valley and foothill grassland and vernal pools; 66–2,100 feet	March–June	Habitat absent	BSA is lower than species' known elevation range. No alkaline soils or vernal pool habitat present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Baker's navarretia (<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>)	-/–/1B.1	Mesic areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools; 16–5,709 feet	April–July	Habitat absent	No suitable mesic grassland or vernal pool habitat present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Colusa grass (<i>Neostapfia colusana</i>)	T/E/1B.1	Adobe soils of vernal pools; 16–656 feet	May–August	Habitat absent	No vernal pool habitat or adobe soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Bearded popcorn flower (<i>Plagiobothrys hystriculus</i>)	-/–/1B.1	Mesic grassland, vernal pools; 33–900 feet	April–May	Habitat absent	No mesic grassland or vernal pool habitat present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	-/–/1B.2	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 2,132 feet	May–October	Habitat absent	No freshwater marsh or slow-moving water habitat present. Riparian wetland is only seasonally wet and is not suitable habitat. Nearest recorded occurrence is ~2 miles east of the BSA. Not observed in April or May 2015 surveys.
Suisun Marsh aster (<i>Symphotrichum lentum</i>)	-/–/1B.2	Brackish and freshwater marshes and swamps; below 10 feet	May–November	Habitat present	Low potential for presence in rip-rap along the Sacramento River. Riparian wetland is only seasonally wet and is not suitable habitat. Nearest recorded occurrence is ~5 miles southwest of the BSA. Not observed in April or May 2015 surveys.

Common Name Scientific Name	Status ^a	General Habitat Description	Blooming Period	Habitat Present/ Absent	Rationale
	Federal/State/ CRPR				
Saline clover (<i>Trifolium hydrophilum</i>)	–/–/1B.2	Salt marsh, mesic alkaline areas in valley and foothill grasslands, vernal pools, marshes and swamps; below 980 feet	April–June	Habitat absent	No salt marsh, mesic grassland, vernal pool, or marsh habitat present. Riparian wetland is only seasonally wet and is not suitable habitat. No alkaline soils present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.
Crampton's tuctoria (<i>Tuctoria mucronata</i>)	E/E/1B.1	Mesic areas in valley and foothill grassland, vernal pools; 16–33 feet	April–August	Habitat absent	No mesic grassland or vernal pool habitat present. Nearest recorded occurrence is more than 10 miles away. Not observed in April or May 2015 surveys.

BSA = biological study area

Sources: California Native Plant Society 2015; California Department of Fish and Wildlife 2015.

^a Status explanations:

Federal

E = Listed as endangered under FESA.

T = Listed as threatened under FESA.

– = No listing status.

State

E = Listed as endangered under CESA.

R = Listed as rare under the CESA. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.

– = No listing status.

CRPR

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: more information is needed about this plant.

4 = List 4 species: limited distribution; species on a watch list

.1 = Seriously endangered in California (over 80% of occurrences threatened—high degree and immediacy of threat).

.2 = Fairly endangered in California (20-80% occurrences threatened).

Note: In March, 2010, California Department of Fish and Game (now CDFW) changed the name of “CNPS List” or “CNPS Ranks” to “California Rare Plant Ranks (CRPR).” This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, non-governmental organizations, and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

2.18.3 Environmental Consequences

Special-status plants were not observed within the BSA during appropriately timed botanical surveys; therefore, special-status plants are not expected to occur in the BSA and would not be affected by the proposed project.

2.18.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.18.5 References Cited

- California Department of Fish and Wildlife. 2015. California Natural Diversity Database, RareFind 5, April 7, 2015. Search of the Sacramento West, Clarksburg, Saxon, Rio Linda, Sacramento East, Florin, Taylor Monument, Grays Bend, and Davis U.S. Geological Survey 7.5-minute quadrangles. Sacramento, CA.
- California Native Plant Society. 2015. *Inventory of Rare and Endangered Plants* (Online Edition, Version v7-15). Search of the Sacramento West, Clarksburg, Saxon, Rio Linda, Sacramento East, Florin, Taylor Monument, Grays Bend, and Davis U.S. Geological Survey 7.5-minute quadrangles. Available: <<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>>. Accessed: April 7, 2015.
- City of Sacramento. 2015. *Sacramento 2035 General Plan*. Adopted March 3, 2015. Sacramento, CA. Available: <<https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/General-Plan>>. Accessed: May 10, 2016.
- City of West Sacramento. 2016. City of West Sacramento General Plan 2035 Policy Document. Adopted November 2016. City of West Sacramento Community Development Department. Available: <https://www.cityofwestsacramento.org/city/depts/comdev/general_plan_2035.asp>. Accessed: February 21, 2017
- ICF International. 2016. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. February 23. Sacramento, CA.
- U.S. Fish and Wildlife Service. 2019. Official Species List. Consultation Code: 08ESMF00-2017-SLI-0452. Event Code: 08ESMF00-2019-E-04740. Project Name: I Street Bridge Replacement. March 25.

2.19 Animal Species

2.19.1 Regulatory Setting

Many state and federal laws regulate impacts on wildlife. USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), and CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.20. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations relevant to wildlife include the following.

- NEPA
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following.

- CEQA
- CFGC Sections 1600–1603
- CFGC Sections 4150 and 4152

2.19.1.1 California Fish and Game Code Sections 3503 and 3503.5 (Protection of Birds and Raptors)

Section 3503 of the CFGC prohibits killing of birds and destruction of bird nests. Section 3503.5 prohibits killing of raptor species and destruction of raptor nests. Typical violations include destruction of active bird and raptor nests as a result of tree removal, and failure of nesting attempts (loss of eggs or young) as a result of disturbance of nesting pairs caused by nearby human activity. The proposed project has the potential to adversely affect birds and raptors protected under Sections 3503 and 3503.5 of the CFGC.

2.19.1.2 California Fish and Game Code Sections 3511, 3513, 4700, 5050, and 5515 (Fully Protected Species)

CFGC Sections 3511, 3513, 4700, 5050, and 5515 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515) and strictly prohibit take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Community Conservation Plan has been adopted. Specifically, Section 3513 prohibits any take or possession of birds designated by the

MBTA as migratory nongame birds except as allowed by federal rules and regulations pursuant to the MBTA. One fully protected bird species, white-tailed kite (*Elanus leucurus*), has the potential to nest in the BSA and be affected by the proposed project.

2.19.2 Affected Environment

This section is based on the *Natural Environment Study* (ICF International 2016) prepared for the project. The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Surveys for terrestrial wildlife species in the BSA included a habitat-based assessment on April 14, 2014; an elderberry shrub survey and reconnaissance level wildlife survey on April 8, 2015; and bat surveys on May 5 and June 11, 2015. Fisheries resources were evaluated on May 8 and June 17, 2015, by assessing in-stream conditions as well as shaded riverine aquatic (SRA) cover. On November 17, 2015, a site visit was conducted with Lieutenant Junior Grade Sean Luis (NMFS) and Ms. Tanya Shaya (CDFW) to discuss potential fish concerns related to the project and in-water work windows. Non-listed wildlife and fish species that could be affected by the proposed project are discussed below.

2.19.2.1 Wildlife Species

The BSA supports common birds and mammals typical of both riverine, riparian, and urban areas. Wildlife species that were observed in the BSA are western fence lizard (*Sceloporus occidentalis*), great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), white-throated swift (*Aeronautes saxatalis*), western scrub jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), rock dove (*Columbia livia*), yellow-billed magpie (*Pica nuttalli*), feral house cat (*Felis catus*), black-tailed jackrabbit (*Lepus californicus*), fox squirrel (*Sciurus niger*), raccoon (tracks) (*Procyon lotor*), and skunk (odor) (likely *Mephitis mephitis*).

In addition, several occupied and potential bats roosts were observed under the I Street (both sides of the Sacramento River) and Jibboom Street approach structures. During the May 5, 2015 bat surveys, 30 expansion joints were mapped on the approach ramps for a total of 1,132 linear feet of potential bat roosting habitat. Of the 30 expansion joints, 16 were observed to be occupied by bats at the time of the May 15, 2015 survey; they were visually identified as Mexican free-tailed bats (*Tadarida brasiliensis*). Acoustic surveys conducted on the nights of May 5 and June 11, 2015, recorded Mexican free-tailed bats, big brown bats (*Eptesicus fuscus*), Yuma myotis (*Myotis yumanensis*), and Western red bat (*Lasiurus blossevillii*)—a species of special concern.

Based on a review of the CNDDDB search results; the USFWS list of endangered, threatened, and proposed species within the project region (U.S. Fish and Wildlife Service 2019); and species' distribution and habitat data, 36 special-status wildlife species were determined to have the potential to occur in the project region (Table 2.19-1). After completion of the field survey, the biologists determined that 19 of the 36 species would not occur in the BSA because the area lacks suitable habitat or is outside the species' known range. An explanation for the absence of

each of these species from the BSA is provided in Table 2.19-1. Suitable habitat is present in the BSA for the remaining nine species listed below. Eight of the 36 special-status wildlife species are listed under FESA or CESA and are discussed in Section 2.20.

Western Pond Turtle

Western pond turtle is a California species of special concern. Western pond turtle occurs throughout much of California, except east of the Sierra-Cascade crest and desert regions (with the exception of the Mojave River and its tributaries) (Zeiner et al. 1988:100). Aquatic habitats used by pond turtles include ponds, lakes, marshes, rivers, streams, and irrigation ditches with a muddy or rocky bottom in grassland, woodland, and open forest areas (Stebbins 2003:250). Pond turtles spend a considerable amount of time basking on rocks, logs, emergent vegetation, mud or sand banks, or human-generated debris (Jennings et al. 1992:11). Pond turtles move to upland areas adjacent to watercourses to deposit eggs and overwinter (Jennings and Hayes 1994:98). Turtles have been observed overwintering several hundred meters from aquatic habitat. In the southern portion of their range and along the central coast, pond turtles are active year-round. In the remainder of their range, these turtles typically become active in March and return to overwintering sites by October or November. (Jennings et al.1992:11.)

No pond turtles were observed in the BSA during the reconnaissance-level surveys. The Sacramento River provides suitable aquatic habitat for the species, and the banks on the Sacramento River and adjacent uplands may be used for basking and nesting. Although there is a high amount of disturbance within uplands in the BSA, including domestic dogs and cats that may prey on pond turtles or pond turtle eggs, pond turtles may still attempt to nest in these areas if they are present in the adjacent aquatic habitat. The species has been recorded within 10 miles of the BSA (California Department of Fish and Wildlife 2015).

White-Tailed Kite

White-tailed kite is fully protected by the CFGC. White-tailed kite occurs in coastal and valley lowlands in California (Zeiner et al. 1990:120). White-tailed kites generally inhabit low-elevation grassland, savannah, oak woodland, wetland, agricultural, and riparian habitats. Some large shrubs or trees are required for nesting and for communal roosting sites. Nest trees range from small, isolated shrubs and trees to trees in relatively large stands (Dunk 1995:6, 8). White-tailed kites make nests of loosely piled sticks and twigs lined with grass and straw, near the top of dense oaks, willows, and other tree stands. The breeding season lasts from February through October and peaks from May to August. They forage in undisturbed, open grassland, meadows, farmland, and emergent wetlands. (Zeiner et al. 1990:120.)

Table 2.19-1. Special-Status Wildlife and Fish Known or with Potential to Occur in the Project Region, or That May Be Affected by the Proposed Project

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Invertebrates				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE/-	Typically found in large, turbid vernal pools but known to occur in other types of pools; occurs in scattered locations from Butte and Tehama Counties to Ventura County.	Habitat absent	No suitable vernal pool habitat is present in the BSA.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT/-	Found in Central Valley, central and south Coast Ranges from Tehama to Santa Barbara County; isolated populations also in Riverside County; common in vernal pools; also found in sandstone rock outcrop pools.	Habitat absent	No suitable vernal pool habitat is present in the BSA.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE/-	Found from Shasta County south to Merced County; occurs in vernal pools and ephemeral stock ponds.	Habitat absent	No suitable vernal pool habitat is present in the BSA.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT/-	Streamside habitats below 3,000 feet throughout the Central Valley; occurs in riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Habitat present	Seven elderberry shrubs are present in the BSA. Only one shrub occurs within riparian habitat.
Amphibians				
California tiger salamander <i>Ambystoma californiense</i>	FT/ST	Breeds during the wet season in vernal pools and ponds, with a minimum 10-week inundation period; adults spend most of the year in grassland oak woodland habitat, primarily in small mammal burrows; occurs from Yolo to Kern County in the Central Valley and in the Sierra Nevada foothills from Amador to Tulare County, and from Sonoma to Santa Barbara County on the coast.	Habitat absent	No suitable habitat for the species is present in the BSA, and the BSA is outside the known distribution of the species.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Amphibians (continued)				
California red-legged frog <i>Rana draytonii</i>	FT/SSC	Found along the coast and coastal mountain ranges of California from Mendocino to San Diego County and in the Sierra Nevada from Butte to Tuolumne County; occurs in permanent and semipermanent aquatic habitats, such as creeks and ponds, with emergent and submergent vegetation; uses upland areas for cover (burrows, logs, rocks, and crevices) and dispersal.	Habitat absent	No suitable habitat for the species is present in the BSA, and the BSA is outside the known distribution of the species.
Reptiles				
Western pond turtle <i>Emys marmorata</i>	–/SSC	Occurs throughout California west of the Sierra-Cascade crest; found from sea level to 6,000 feet; does not occur in desert regions except along the Mojave River and its tributaries; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms.	Habitat present	In the BSA, suitable aquatic habitat is present in the Sacramento River, and potential upland habitat is present in riparian woodland habitat adjacent to the river.
Giant garter snake <i>Thamnophis gigas</i>	FT/ST	Sloughs, canals, low-gradient streams, and freshwater marsh habitats with a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Habitat absent	The Sacramento River is not considered suitable aquatic habitat for the species. No other suitable habitat is present in the BSA.
Birds				
Swainson's hawk <i>Buteo swainsoni</i>	–/ST	Lower Sacramento and San Joaquin Valleys, the 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.	Habitat present	Suitable nest trees occur within and adjacent to the BSA. Species has been documented nesting north and south of the BSA along the Sacramento River.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Birds (continued)				
White-tailed kite <i>Elanus leucurus</i>	-/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.	Habitat present	Suitable nest trees occur within and adjacent to the BSA.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT/SSC	Barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, and riverine sand bars; also along sewage, salt-evaporation, and agricultural wastewater ponds.	Habitat absent	The BSA lacks suitable habitat for the species.
Mountain plover <i>Charadrius montanus</i>	-/SSC	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields.	Habitat absent	The BSA lacks suitable habitat for the species.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	FT/SE	In the west, breeding populations are limited primarily to the Sacramento Valley; nests in large blocks of riparian habitat with dense understory foliage.	Habitat absent	The riparian habitat in the BSA is not typical nesting habitat used by the species because it consists of mostly thin rows of trees along the river with very little understory.
Burrowing owl <i>Athene cunicularia</i>	-/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.	Habitat absent	The BSA lacks ground squirrel burrows or other structures that could be used by burrowing owl for nesting.
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE	Historically nested in riparian habitat throughout the Central Valley, but the majority of the population now occurs in southern California; recently documented nesting on the San Joaquin River west of Modesto; requires dense riparian vegetation for nesting and a dense, stratified canopy for foraging	Habitat absent	The BSA lacks dense riparian vegetation with a stratified canopy.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Birds (continued)				
Purple martin <i>Progne subis</i>	-/SSC	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats. Also nests in vertical drainage holes under elevated freeways and highway bridges.	Habitat present	The species is known to nest in ventilation holes underneath the Sacramento side of the I Street Bridge ramp.
Bank swallow <i>Riparia riparia</i>	-/ST	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam.	Habitat absent	The Sacramento River within the BSA lacks suitable bank habitat with sandy open soil for nesting. The banks are all covered with rip-rap.
Grasshopper sparrow <i>Ammodramus svannarum</i>	-/SSC	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests in slight depressions in dense grasslands.	Habitat absent	The BSA lacks dense grasslands.
Song sparrow (“Modesto populations”) <i>Melospiza melodia</i>	-/SSC	Endemic to the north-central portion of the Central Valley and the Bay-Delta; breeds in emergent marsh and riparian scrub, and in valley oak riparian forests with dense blackberry understory, vegetated irrigation canals, and levees.	Habitat absent	The BSA lacks riparian habitat with a dense understory and lacks emergent marsh.
Tricolored blackbird <i>Agelaius tricolor</i>	-/SP	Permanent resident in the Central Valley from Butte 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.	Habitat absent	The BSA lacks suitable nesting and foraging habitat for the species.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Birds (continued)				
Yellow-headed blackbird <i>Xanthocephalus</i>	-/SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds; forages along moist shorelines and in grasslands and agricultural areas; breeding range includes primarily the Central Valley, northeastern California, and portions of southern California; most individuals migrate south of California in winter.	Habitat absent	The BSA lacks suitable nesting and foraging habitat for the species.
Mammals				
Pallid bat <i>Antrozous pallidus</i>	-/SSC	Occurs throughout California, primarily at lower and mid-level elevations in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Daytime roosts include rock outcrops, mines, caves, hollow trees, buildings, and bridges.	Habitat present	The I Street and Jibboom Street approach structures in the BSA are known to be used by bats. Trees on both sides of the river within the BSA also provide potential habitat for bats. Buildings within and adjacent to the BSA also provide potential roosting habitat for pallid bats.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	-/ST	Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after one onsite visit. Also reported to use bridges and hollow trees as roost sites. In bridges, typically uses cavernous spaces under bridges. In California, occurs in inland deserts, moist cool redwood forests, oak woodlands of the inner Coast Ranges and Sierra Nevada foothills, and lower to mid-elevation mixed coniferous forests.	Habitat absent	The species is not currently known to occur on the floor of the Sacramento Valley.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Mammals (continued)				
Western red bat <i>Lasiurus blossevillii</i>	-/SSC	Found 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.	Habitat present	Trees within the BSA represent potential roosting habitat for the species.
Western mastiff bat <i>Eumops perotis californicus</i>	-/SSC	Typically roosts in crevices in cliffs and rocky outcrops, in colonies of fewer than 100 individuals; may also roost in caves and buildings that allow sufficient height and clearance for dropping into flight; forages in a variety of grassland, shrub, and wooded habitats, including riparian and urban areas, although most commonly in open, arid lands; year-round range spans most of California, with records absent from the northwest and northeast portions of the state and is not known to occur on the floor of the Sacramento Valley.	Habitat absent	Although areas that could be used for roosting are present in the BSA (buildings), the species is not known to roost on the floor of the Sacramento Valley.
American badger <i>Taxidea taxus</i>	-/SSC	Drier open shrub, forest, and herbaceous habitats with friable soils; typically does not occupy cultivated lands; a single individual's home range can range between 300 and 1,500 acres; year-round range spans all of California except the Humboldt and Del Norte County coasts.	Habitat absent	No suitable habitat in the BSA for this species.
Fish				
Sacramento River winter-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FE/SE	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); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Habitat present	Sacramento River within the BSA provides migration and seasonal rearing habitat, is designated as critical habitat for the species, and is considered essential fish habitat (EFH) for Chinook salmon.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Fish (continued)				
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FT/ST	Upper Sacramento River, Feather River, and Yuba River and several perennial tributaries of the Sacramento River (Battle, Butte, Clear, Deer, and Mill Creeks); has the same general habitat requirements as winter-run Chinook salmon; coldwater pools are needed for holding adults (Moyle 2002); adults and juveniles migrate in the lower Sacramento River and through the Delta.	Habitat present	Sacramento River within the BSA provides migration and seasonal rearing habitat, is designated as critical habitat for the species, and is considered EFH for Chinook salmon.
Central Valley fall- and late fall–run Chinook salmon <i>Oncorhynchus tshawytscha</i>	SC/SSC	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5 °C; habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear for several months and emigrate to the ocean before summer (Moyle 2002).	Habitat present	Sacramento River within the BSA provides migration and seasonal rearing habitat, and is considered EFH for Chinook salmon.
Central Valley steelhead <i>Oncorhynchus mykiss</i>	FT/–	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 to 18 °C; habitat types are riffles, runs, and pools; adults spawn at head of riffles/tails of pools; young rear year-round for 1–4 years before emigrating to the ocean (Moyle 2002).	Habitat present	Sacramento River within the BSA provides migration and seasonal rearing habitat, and is designated as critical habitat for the species.
North American green sturgeon (southern DPS) <i>Acipenser medirostris</i>	FT/SSC	Sacramento, Klamath, and Trinity Rivers (Moyle 2002). Spawns in large river systems with well-oxygenated water, with temperatures from 8.0 to 14 °C.	Habitat present	Sacramento River within the BSA provides migration and rearing habitat, and is designated as critical habitat for the species.

Chapter 2. Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment—Animal Species

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Fish (continued)				
Delta smelt <i>Hypomesus transpacificus</i>	FT/SE	Found primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay; occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand (Moyle 2002).	Habitat present	Sacramento River within the BSA provides migration, spawning, and seasonal rearing habitat and is designated as critical habitat for the species.
Longfin smelt <i>Spirinchus thaleichthys</i>	FC/ST	San Francisco estuary, Humboldt Bay, Eel River estuary, and Klamath River estuary. Occurs in open waters of estuaries and seasonally migrates to spawn in freshwater habitats of upper estuary; spawns over sand, rocks, and aquatic plants.	Habitat present	Sacramento River within the BSA provides migration, spawning, and seasonal rearing habitat.
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	–/SSC	Occurs throughout the year in low-salinity waters and freshwater areas of the Sacramento–San Joaquin Delta, Yolo Bypass, Suisun Marsh, Napa River, and Petaluma River (Moyle 2002). Spawning takes place among submerged and flooded vegetation in sloughs and the lower reaches of rivers.	Habitat present	Sacramento River within the BSA provides migration, spawning, and seasonal rearing habitat.
Pacific lamprey <i>(Entosphenus tridentata)</i>	FSC/SSC	Sacramento and San Joaquin Rivers and tributary Central Valley streams and rivers below impassable barriers; tributaries of the San Francisco Estuary; and coastal streams throughout California. Adults live in the ocean and migrate into fresh water to spawn; ammocoetes (larvae) live in freshwater 5–7 years. (Moyle 2002; Moyle et al. 2015.)	Habitat present	Sacramento River within the BSA provides migration and rearing habitat.

Common Name Scientific Name	Legal Status ^a (Federal/State/Other)	General Habitat Description	Habitat Present/Absent ^b	Rationale
Fish (continued)				
River lamprey <i>Lampetra ayresi</i>	-/SSC	Sacramento, San Joaquin, and Napa Rivers; tributaries of San Francisco Bay (Moyle 2002; Moyle et al. 2015). Adults live in the ocean and migrate into fresh water to spawn.	Habitat present	Sacramento River within the BSA provides migration and rearing habitat.

^a Status explanations:

Federal

- FE = Listed as endangered under the federal Endangered Species Act (FESA).
- FT = Listed as threatened under FESA.
- FC = Candidate under FESA.
- FSC = Species of concern
- FD = Delisted from FESA.
- = No listing.

State

- SE = Listed as endangered under the California Endangered Species Act (CESA).
- ST = Listed as threatened under CESA.
- SP = Proposed for listing as threatened or endangered under CESA.
- FP = Fully protected under the California Fish and Game Code.
- SSC = Species of special concern in California.
- = No listing.

^b Definitions:

- Absent = No habitat is present and no further work is needed.
- Habitat Present = Habitat is, or may be, present. The species may be present.
- Present = The species is known to be present.

Focused surveys for white-tailed kite were not conducted, and no kites were observed during the April 2014 and May 2015 field surveys. There are numerous records of white-tailed kite nesting within 10 miles of the BSA; the nearest is approximately 1.75 miles east of the BSA (California Department of Fish and Wildlife 2015). There is an eBird (2015) record for a sighting of white-tailed kite on July 21, 2014, just south of the I Street Bridge on the West Sacramento side of the river.

Trees within the cottonwood riparian forest, riparian forest/shrub wetland, ruderal woodland, and landscaped area represent potential nesting habitat for white-tailed kite.

Purple Martin

Purple martin is designated as a California species of special concern. The species is broadly distributed across eastern North America and occurs locally in the western states (Shuford and Gardali 2008:294). In California, the species occurs as a summer resident and migrant, primarily from mid-March to late September, and breeds from May to mid-August (Shuford and Gardali 2008:294). Purple martins are widely but locally distributed in forest and woodland areas at low to intermediate elevations throughout much of the state (Shuford and Gardali 2008:294). Populations are densest in central and northern coastal coniferous forests and smaller and more localized in the Sierra Nevada, interior foothills, and southern California (Shuford and Gardali 2008:294). The species' range has contracted substantially on the central and southern coastal slope and in the Central Valley (Shuford and Gardali 2008:294). Historically widespread, only one extant population of purple martins persists within the Central Valley. This population nests solely in elevated freeways and overpasses ("bridges") in the Sacramento region (i.e., the City of Sacramento, Sacramento County, and one nest site in western Placer County) (Airola et al. 2009:8). The population of purple martins in the Sacramento region has been steadily declining since 2002, going from 135 breeding pairs down to 30 breeding pairs in 2014 (Airola et al. 2014:14).

The population of purple martin in the Sacramento area in 2014 was reported at 30 pairs, with 7 of those pairs occurring within the BSA. The 7 pairs were reported to be nesting in the vent holes that are on the underside of the approach structure heading east from the I Street Bridge to J Street (Airola et al. 2014:14). The number of nesting pairs on the I Street Bridge approach structure has significantly declined over the last 10 years, with a marked drop from 32 pairs in 2005 to 17 pairs in 2006 to a low of 4 pairs in 2010 (Airola et al. 2014:14).

Possible threats to these urban populations likely include changes in habitat conditions (i.e., increases in train and car traffic, loss of flight access to nesting areas, loss of perch sites, and loss of nest material collection areas), use of neonicotinoid insecticides, increased predation by kestrels and feral cats, and competition for nests sites with white-throated swifts (Airola et al. 2014:14).

Other Migratory Birds

Several non-special-status migratory birds, including red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*), Anna's hummingbird (*Calypte anna*), and northern

mockingbird could nest on the ground or in shrubs or trees in and adjacent to the limits of disturbance for proposed project construction. These generally common species are locally and regionally abundant. The breeding season for most birds is generally from February 1 to August 31. Cliff swallows and white-throated swifts are known to utilize the approach structures for nesting. Cliff swallows nest from April to August and migrate south in September and October (Zeiner et al. 1990:444). White-throated swifts breed from early May to mid-August (Zeiner et al. 1990:356). The occupied nests and eggs of migratory birds are protected by federal and state laws, including the MBTA and CFCG Sections 3503 and 3503.5. USFWS is responsible for overseeing compliance with the MBTA, and CDFW is responsible for overseeing compliance with the CFCG and making recommendations on nesting bird and raptor protection.

Suitable nesting habitat for migratory birds is present within the cottonwood riparian forest, riparian forest/shrub wetland, ruderal woodland, and landscaped areas, and on the approach structures and buildings within the BSA.

No active nests were observed during the April 2014 and May 2015 surveys. Migratory birds observed during these surveys included great blue heron, Canada goose, white-throated swift, western scrub jay, northern mockingbird, and yellow-billed magpie.

Pallid Bat

Pallid bat is designated as a California species of special concern. Pallid bat occurs at low elevations throughout California (Zeiner et al. 1990:70). They occur in a variety of habitat, including grasslands, shrublands, and woodlands, and are most common in open, dry habitats with rocky areas for roosting (Zeiner et al. 1990:70). Pallid bats roost alone, in small groups, or gregariously in crevices in rocky outcrops and cliffs, caves, mines, trees hollows, exfoliating tree bark, and various human structures such as bridges and buildings (Western Bat Working Group 2005).

The existing I Street and Jibboom Street approach structures, buildings, and several large trees with cavities within the cottonwood riparian forest, landscaped, and ruderal woodland on both sides of the river provide potential roosting habitat for pallid bats in the BSA. A total of 30 expansion joints, representing 1,132 linear feet of potential roosting habitat, were mapped on the approach structures.

No pallid bats were detected during visual inspections of expansion joints or during acoustic surveys; however, Mexican free-tail bats have been observed in several expansion joints on the Sacramento side of the river, and bats have been reported using the approach structure on the West Sacramento side (Wyatt pers. comm.). No sign of bat occupation (guano) was detected in the tree cavities inspected; however, not all portions of these trees were accessible (e.g., higher portions of trees). Pallid bats may roost in the expansion joints, in trees with cavities, and in buildings within the BSA. The nearest known record of this species is approximately 10 miles west of the BSA near the City of Davis (California Department of Fish and Wildlife 2015).

Western Red Bat

Western red bat is designated as a California species of special concern. Western red bat occurs along the California coast from Mendocino County south to San Diego and into the Sierra Nevada, but the most significant distribution in the state is within the Central Valley (Pierson et al. 2006:12). Western red bat roost is typically solitary, roosting primarily in the foliage of trees or shrubs (Western Bat Working Group 2005). Day roosts are commonly in edge habitats adjacent to streams or open fields (Western Bat Working Group 2005). In the Central Valley, they are more common in areas with wide strips of mature cottonwoods and sycamores (*Platanus racemosa*) (Pierson et al. 2006:12). They are also known to roost in orchard trees, in particular, walnut orchards (Pierson et al. 2006:13).

The cottonwood riparian forest, riparian forest/shrub wetland, landscaped, and ruderal woodland on both sides of the river provide potential roosting habitat in the BSA for western red bats.

Western red bats were detected within the BSA on the night of June 11, 2015, during acoustic surveys on the West Sacramento side of the river. The species has not been previously reported within 10 miles of the BSA (California Department of Fish and Wildlife 2015).

Other Bats

Bats are known to, and have the potential to, nest in built structures and trees within the BSA. CFGC Section 4150 states that nongame mammals or parts thereof may not be taken or possessed as provided in the code or in accordance with regulations adopted by the California Fish and Game Commission, which would include common bat species.

The approach structures, buildings, and trees within the BSA represent potential roosting habitat for bats. Mexican free-tailed bats were observed roosting in the Jibboom Street and western I Street approach structures. A total 1,132 linear feet of roosting habitat was mapped, which consisted of 30 potential roosts on the four approach structures, 16 of which were found to be occupied by Mexican-free tailed bats. During nighttime acoustic surveys conducted in May and June 2015, Mexican free-tailed bats, big brown bats, *Yuma myotis*, and western red bats were detected. Big brown bats were observed night roosting in an abandoned building that is immediately west of the Jibboom Street approach structure, as confirmed by acoustic recording.

Several trees on both sides of the river had suitable habitat for foliage-roosting bats and cavity-roosting bats. No bat sign was detected in or near any of these trees.

2.19.2.2 Fish Species

The Sacramento River in the BSA falls within the Sacramento-San Joaquin Province (Central Valley Subprovince), one of six aquatic zoogeographic provinces in California, as defined by Moyle (2002). The Sacramento-San Joaquin Province is drained by the Sacramento and San Joaquin Rivers. Generally, four native fish assemblages can be recognized in Central Valley streams: rainbow trout assemblage, California roach assemblage, pikeminnow-hardhead-sucker assemblage, and deep-bodied fish assemblage (Moyle 2002). Based on its geographic location,

the BSA lies at the interface between the zone characterized by the deep-bodied fish assemblage and the Sacramento-San Joaquin Estuary (i.e., the Delta).

Native fish species that occur where the Sacramento River meets the Delta include Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento blackfish (*Orthodon microlepidotus*), hitch (*Lavinia exilicauda*), Chinook salmon (*Oncorhynchus tshawytscha*) (winter-, spring-, fall-, and late fall–run), steelhead (*O. mykiss*), green (*Acipenser medirostris*) and white sturgeon (*A. transmontanus*), Pacific lamprey (*Entosphenus tridentata*), river lamprey (*Lampetra ayresi*), delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), tule perch (*Hysterocarpus traski*), and prickly sculpin (*Cottus asper*) (Moyle 2002). The dominant fishes, however, are all nonnative (alien) species: largemouth, smallmouth, and spotted bass (*Micropterus* spp.); white and black crappie (*Pomoxis* spp.); bluegill (*Lepomis macrochirus*); American (*Alosa sapidissima*) and threadfin shad (*Dorosoma petenense*); striped bass (*Morone saxatilis*); bigscale logperch (*Percina macrolepida*); red shiner (*Cyprinella lutrensis*); inland silverside (*Menidia beryllina*); white catfish (*Ameiurus catus*); black and brown bullhead (*Ameiurus* spp.); and common carp (*Cyprinus carpio*) (Moyle 2002).

Based on a review of existing information (CNDDDB search results; the USFWS and NMFS lists of endangered, threatened, and proposed species within the project region [U.S. Fish and Wildlife Service 2019; National Marine Fisheries Service 2019]; and species' distribution and habitat data [e.g., Moyle 2002; Moyle et al. 2015]), 10 special-status fish species were identified as occurring in the project region (Table 2.19-1). Six of the 10 species are listed under FESA or CESA and are discussed in Section 2.20. The remaining four non-listed special-status fish species are discussed below. In addition, the Sacramento River in the BSA is designated as critical habitat for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, North American green sturgeon, and delta smelt. The Sacramento River in the BSA is also considered essential fish habitat (EFH) for Pacific salmon (i.e., Chinook salmon).

Central Valley Fall- and Late Fall–Run Chinook Salmon

The Central Valley (CV) fall- and late fall–run Chinook salmon evolutionarily significant unit (ESU) is a federal species of concern (69 FR 19975; April 15, 2004). The CV fall-run and late fall–run Chinook salmon ESU includes all naturally spawning populations of fall-run and late fall–run Chinook salmon in the Sacramento and San Joaquin River basins and their tributaries east of the Carquinez Strait in California (64 FR 50394). Critical habitat for CV fall- and late fall–run Chinook salmon has not been designated. The CV fall- and late fall–run Chinook salmon ESU is not listed under CESA, but is considered a California species of special concern. CDFW classifies the current status of CV fall-run Chinook salmon as Moderate Concern (i.e., the species is under no immediate threat of extinction but populations are in long-term decline or are naturally small and isolated, and warrant frequent status re-assessment) and CV late fall–run Chinook salmon as High Concern (considered to be under severe threat of extinction, but extinction is less imminent than for other more imperiled species) (Moyle et al. 2015).

Adult fall-run Chinook salmon enter the Sacramento River and tributaries from June through December with a peak in September and October, and spawn from late September through

December, with a peak in October and November (Table 2.19-2) (Moyle 2002). Adults spawn within a few days or weeks of reaching their spawning grounds in the upper reaches of the Sacramento River and tributaries (Moyle 2002); the nearest spawning grounds are in the upper reaches of the lower American River. Shortly after emergence from the redds, most fry disperse downstream toward the Delta and into the San Francisco Bay estuary. Juveniles migrate to the ocean generally from December to June before water temperatures become too warm in summer.

Adult late fall–run Chinook salmon enter the Sacramento River from October through April and spawn from early January through April, with a peak in February and March (Table 2.19-2) (Moyle 2002). Adult late fall–run Chinook salmon typically hold in the river for 1–3 months before spawning (Moyle 2002). Most juvenile late fall–run Chinook salmon remain in freshwater for 7–13 months; consequently, adults are adapted for spawning and rearing in reaches of the upper Sacramento River that remain cold and deep enough in summer to support juvenile rearing (Moyle 2002). Natural spawning populations of late fall–run Chinook salmon occur in the Sacramento River, between Keswick Dam to just below Red Bluff. Spawning and egg incubation do not occur in the vicinity of the BSA (Moyle 2002).

CV fall- and late fall–run Chinook salmon have experienced substantial declines in distribution and abundance in the Central Valley relative to historical conditions. Factors that have contributed to the population decline of naturally-produced fall/late fall–run Chinook salmon in the Central Valley include loss and degradation of spawning and rearing habitat (including loss of SRA cover habitat) from dam construction; alteration of streamflows; alteration of estuary habitats; overharvest; entrainment into water diversions; blockage of migration routes; historical and ongoing gold and gravel mining; exposure to toxins; and, possibly, loss of genetic viability from interbreeding with hatchery stocks (Moyle et al. 2015).

Fall- and late fall–run Chinook salmon use the BSA as a migration corridor during upstream (adult) and downstream (juvenile) migration. In addition, Central Valley fall- and late fall–run Chinook salmon seasonally use the lower reaches of the Sacramento River for rearing while emigrating to the ocean. Spawning and egg incubation do not occur in the BSA.

Table 2.19-2. Life Stage Timing and Distribution of Special-Status Fish Species Potentially Affected by the Project

Species/Life Stage	Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Winter-Run Chinook Salmon													
Adult migration and holding	San Francisco Bay to upper Sacramento River												
Juvenile movement and rearing	Upper Sacramento River to San Francisco Bay												
Spring-Run Chinook Salmon													
Adult migration	San Francisco Bay to upper Sacramento River and tributaries												
Juvenile movement	Upper Sacramento River and tributaries to San Francisco Bay												
Late Fall-Run Chinook Salmon													
Adult migration	San Francisco Bay to upper Sacramento River and tributaries												
Juvenile movement and rearing	Upper Sacramento River and tributaries												
Fall-Run Chinook Salmon													
Adult migration and holding	San Francisco Bay to upper Sacramento River and tributaries												
Juvenile movement and rearing	Upper Sacramento River and tributaries to San Francisco Bay												
Steelhead													
Adult migration	San Francisco Bay to upper Sacramento River and tributaries												
Juvenile and smolt movement	Upper Sacramento River and tributaries to San Francisco Bay												
Green Sturgeon													
Adult migration and holding	San Francisco Bay to upper Sacramento River												
Adult post-spawning migration	Upper Sacramento River to San Francisco Bay												

Chapter 2. Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures—Biological Environment—Animal Species

Species/Life Stage	Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Juvenile rearing (natal stream to estuary)	Upper Sacramento River to San Francisco Bay												
Juvenile movement and rearing	Upper Sacramento River to San Francisco Bay												
Delta Smelt													
Adult migration	South Delta to north Delta and lower Sacramento River												
Spawning	Upper Delta to lower Sacramento River												
Longfin Smelt													
Adult migration and spawning	San Francisco Bay to upper Delta												
Sacramento Splittail													
Adult migration and spawning	Suisun Bay/Marsh to lower Sacramento and San Joaquin Rivers												
Pacific Lamprey													
Adult migration and spawning	Pacific Ocean to Sacramento River												
Ammocoete stage, metamorphosis and movement	Sacramento River to Delta												
River Lamprey													
Adult migration and spawning	Pacific Ocean to Sacramento River												
Ammocoete stage, metamorphosis and movement	Sacramento River to Delta												

Note: Gray shading indicates primary periods of species and life stage occurrence included in the assessment of project effects.

Sources: Hallock et al. 1957; Hallock 1989; Wang and Brown 1993; U.S. Fish and Wildlife Service 1996; Yoshiyama et al. 1998; Snider and Titus 1998; Snider and Titus 2000a-c; McEwan 2001; Moyle 2002; Beamesderfer et al. 2005; Roberts 2007; Heublein et al. 2009; Moyle et al. 2015.

The temporal occurrence and relative abundance of juvenile fall- and late fall–run Chinook salmon in the BSA can be inferred based on the weekly trawl surveys of the Sacramento River at Sherwood Harbor (river mile [RM] 55) approximately 4.5 miles downstream of the BSA, as part of the Delta Juvenile Fish Monitoring Program (DJFMP) (U.S. Fish and Wildlife Service 2015a). From January 2005 through March 2015, fall-run-size juvenile Chinook salmon were detected in the trawls from December through August, although most were detected in the trawls from January through May (Table 2.19-3).

Table 2.19-3. Number of Fall-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan	220	218	4	493	1	80	64	558	435		1	2,073
Feb	498	328	2,021	688	414	139	84	156	78	15,471	196	19,877
Mar	789	473	143	5	82	39	88	370	5	6,543	1	8,537
Apr	1,409	278	1,038	62	274	399	746	624	826	969		6,625
May	2,388	2,598	950	409	981	47	407	358	548	92		8,778
Jun	48	110	17	12	25	6	117	13	16	1		365
Jul	8	33	54	1	6	4	3	2	1			112
Aug	1	4	3	1	1			3	1			14
Sep												0
Oct												0
Nov												0
Dec	67	1				225		67		103		463
Annual Total	5,428	4,043	4,230	1,671	1,784	939	1,509	2,151	1,910	23,179	NA	46,844

NA = Not applicable.

Gray shading = data unavailable when website was accessed.

^a 2015 data excluded from totals.

By contrast, late fall–run-size juvenile Chinook salmon were detected in the trawls in every season; they were not detected in the trawls in February, March, and June during this period (Table 2.19-4).

Table 2.19-4. Number of Late Fall–Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan	1		1	1								3
Feb												0
Mar												0
Apr		1	1					1				3
May	8											8
Jun												0
Jul		1	11									12
Aug	1	2			1			1				5
Sep		1				1						2
Oct						1						1
Nov				1	1			5				7
Dec	1	1		1	1			5		5		14
Annual Total	11	6	13	3	3	2	0	12	0	5	NA	55

NA = Not applicable.

Gray shading = data unavailable when website was accessed.

^a 2015 data excluded from totals.

Sacramento Splittail

Sacramento splittail is not listed under FESA (68 FR 55139; September 22, 2003) (75 FR 62070; October 7, 2010) or CESA. However, Sacramento splittail is designated by CDFW as a California species of special concern. CDFW classifies the current status of Sacramento splittail as Moderate Concern (i.e., the species is under no immediate threat of extinction but populations are in long-term decline or are naturally small and isolated, and warrant frequent status re-assessment) (Moyle et al. 2015).

Sacramento splittail were endemic to the sloughs, lakes, and rivers of California’s Central Valley but are now confined to the downstream reaches of the Sacramento and San Joaquin Rivers, and the Delta. In the Sacramento River, splittail range from the Delta up to the Red Bluff Diversion Dam. Selected observations in the lower portions of the Sacramento River and tributaries include the American River to RM 12, the Feather River to RM 58 and to just below the Thermalito Afterbay outlet (Oppenheim pers. comm.; Seesholtz pers. comm.), and in Butte Creek/Sutter Bypass in the vicinity of Colusa State Park.

Adult splittail exhibit a gradual movement upstream during winter and spring, presumably to forage and spawn in flooded areas. They have been observed to leave Suisun Bay and the Delta during December through March, and it appears that the Yolo and Sutter Bypasses provide important spawning habitat in years when the bypasses are flooded (Sommer et al. 1997). Spawning occurs between early March and May in the lower reaches and flood bypasses of the Sacramento River (Table 2.19-2) (Moyle et al. 1989, 2004).

A variety of interacting factors are believed to be responsible for the long-term decline in splittail abundance. These factors include reduction in valley floor habitats; modification of spawning habitat; changes in estuarine hydraulics, especially reduced outflows; climatic variation; toxic substances; introduced aquatic species; and harvest (Moyle 2002).

Sacramento splittail use the BSA for migration, rearing, and possibly spawning, based on weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). Sacramento splittail have been detected in the trawls in every month of the year, although most have been detected in the trawls from January through May (Table 2.19-5).

Table 2.19-5. Number of Sacramento Splittail Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan	1											1
Feb	2		1	1								4
Mar	1				1	1		2		1	2	6
Apr	6						1					7
May	1	25										26
Jun									1			1
Jul		6					2					8
Aug	2	2										4
Sep						1		1				2
Oct		1										1
Nov		1										1
Dec			1									1
Annual Total	13	35	2	1	1	2	3	3	1	1	NA	62

NA = Not applicable.

Gray shading = data unavailable when website was accessed.

^a 2015 data excluded from totals.

Pacific Lamprey

Pacific lamprey is a federal species of concern (U.S. Fish and Wildlife Service 2016) and a California species of special concern (Moyle et al. 2015). CDFW classifies the current status of the species as Moderate Concern (the species is under no immediate threat of extinction but populations are in long-term decline or are naturally small and isolated, and warrant frequent status re-assessment) (Moyle et al. 2015). Critical habitat for Pacific lamprey has not been designated.

Historically, the distribution of Pacific lamprey was thought to be similar to salmon and steelhead; however, recent data indicate that their distribution has been reduced in many areas for many of the same reasons that have affected salmon and steelhead populations, most notably dam construction (U.S. Fish and Wildlife Service 2016). Both historical and current abundance and distribution data are lacking. Pacific lamprey is currently found along the Pacific coast from

Japan to Baja California, and anadromous forms occur in the rivers of the Central Valley below impassable dams (Moyle et al. 2015).

Adult Pacific lamprey spend the predatory phase of the life in the ocean, and migrate into freshwater streams from January through June to spawn (Table 2.19-2) (Moyle 2002). Most movement occurs at night. Adults spawn by constructing a nest in gravelly areas of streams containing relatively fast velocities and depths of 1–5 feet (Moyle 2002). After hatching, young (ammocoetes) spend a short period in the nest before being washed downstream to areas of soft sand or mud and burrow tail first into the substrate. It is thought that ammocoetes spend the next 5–7 years filter feeding in freshwater before metamorphosing into adult forms and migrating to the ocean (in winter and spring) where they prey on a wide variety of fishes, including salmon (Moyle 2002).

Threats to Pacific lamprey populations are diverse and multiple, and include reduction in prey abundance (e.g., salmon), dam construction, water diversion, land use practices, pollution, and invasive species (Moyle et al. 2015).

Focused surveys for Pacific lamprey were not conducted. Pacific lamprey use the BSA for migration (adults and juveniles) and possibly rearing; no spawning occurs in the BSA. Because of their extended freshwater residency as ammocoetes, Pacific lamprey may be present in the BSA year-round.

River Lamprey

River lamprey is a California species of special concern but have no other state or federal listing status (Moyle et al. 2015; 69 FR 77158). CDFW classifies the current status of the species as Moderate Concern (the species is under no immediate threat of extinction but populations are in long-term decline or are naturally small and isolated, and warrant frequent status re-assessment) (Moyle et al. 2015). Although river lamprey is widely believed to be in decline, the species' exact status is uncertain, partly because it is often overlooked and seldom studied. Both historical and current abundance and distribution data are lacking.

River lamprey is found from San Francisco Bay in California to near Juneau, Alaska; however, detailed information on its distribution is lacking. Generally, river lamprey is associated with specific, lower portions of large river systems, including the Fraser (Canada), Columbia, Klamath, Eel, and Sacramento Rivers (69 FR 77158). In California, river lamprey occur in the lower Sacramento River, lower San Joaquin River and its tributaries (Stanislaus and Tuolumne Rivers), Salmon Creek and tributaries to the lower Russian River in Sonoma County, and the Trinity and Klamath Rivers (69 FR 77158).

Limited information is available regarding the life history of this species in California, and current accounts are based largely on information from Canadian populations (Moyle 2002). River lamprey are semelparous (i.e., they die after spawning) anadromous fish with long freshwater rearing periods. Adults return to fresh water to spawn in fall and winter, but spawning usually occurs in February through May in gravelly riffles (Table 2.19-2) (Moyle 2002). Juvenile river lamprey (ammocoetes) remain in silty backwater habitats where they filter feed on various microorganisms for approximately 3–5 years before migrating to the ocean during late spring

periods after completing the transformation from ammocoete to adult (the process of metamorphosis takes 9–10 months) (Moyle et al. 1995; Moyle 2002).

It is likely that many of the same factors responsible for the long-term decline in abundance of other fish species in the Central Valley (modification of spawning and rearing habitat; changes in the timing and magnitude of river flow; climatic variation; toxic substances; and introduced aquatic species) have also negatively affected river lamprey.

Focused surveys for river lamprey were not conducted. River lamprey use the BSA for migration and possibly rearing; no spawning occurs in the BSA. Because of their extended freshwater residency as ammocoetes, river lamprey may be present in the BSA year-round.

Shaded Riverine Aquatic Cover

Quantification of SRA cover habitat in the BSA was based on a combination of field observations (June 17, 2015) and interpretation of recent aerial photographs, by ICF biologists. USFWS defines *SRA cover* as “the unique, near-shore aquatic cover that occurs at the interface between a stream or river and adjacent woody riparian habitat” and is an essential component of salmonid habitat. Key features of SRA cover include the following.

An adjacent bank composed of natural, often eroding substrate that supports overhanging riparian vegetation and vegetation that may protrude into the water.

A stream channel with variable amounts of woody material and detritus, and variable water velocity and depth.

SRA cover is composed of two components: overhead cover and in-stream cover. Overhead cover consists of overhanging riparian vegetation that provides important stream shading and contributes leaf litter and insects to the stream. Instream cover consists of submerged woody material (exposed roots, branches, and trunks), aquatic plants, substrate (gravel, cobble, and boulders), and undercut banks. These attributes provide high-value feeding areas, burrowing substrates, escape cover, and reproductive cover for numerous regionally important fish and wildlife species. (U.S. Fish and Wildlife Service 1992).

Table 2.19-6 shows the amount of SRA cover present along both banks of the Sacramento River in the BSA relative to the total bank length.

Table 2.19-6. Existing Shaded Riverine Aquatic Cover (Overhead Vegetation and Undercut Banks) in the Biological Study Area

River Bank	Existing Bank Length ^a (linear feet)	Existing Overhead Vegetation		Existing Undercut Bank ^a (linear feet)
		Bank Length ^a (linear feet)	Percent Bank Length ^a	
City of Sacramento	900	598	66%	0
City of West Sacramento	752	377	50%	0
Total	1,652	975	59%	0

^a Within the limits of the biological study area.

2.19.3 Environmental Consequences

2.19.3.1 Build Alternatives

There are two roadway design alternatives for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the City of Sacramento, but both alternatives would result in the same permanent and temporary impacts on animal species. Therefore, the impacts of these alternatives are not discussed separately in this chapter.

Wildlife Species

Western Pond Turtle

The proposed project would affect potential western pond turtle nesting habitat on both sides of the Sacramento River. Construction of the proposed project would result in a total of 3.3 acres of permanent impacts and 3.4 acres of temporary impacts on areas that could serve as nesting habitat (cottonwood riparian forest, riparian forest/shrub wetland, and ruderal woodland).

The proposed project would require two seasons of temporary in-channel work that could result in injury and mortality to pond turtles. Injury or mortality could result from placement of equipment and materials into the river channel and on the river banks. In addition, underwater vibrations from pile driving could result in injury to pond turtles if they are in the vicinity. Construction activities, including noise and visual disturbance, also could temporarily discourage pond turtles from foraging and basking near the project site.

White-Tailed Kite

The proposed project would affect potential white-tailed kite nesting habitat on both sides of the Sacramento River. Construction of the proposed project would result in a total of 3.8 acres of permanent impacts and 4.0 acres of temporary impacts on areas that could support suitable nest trees (cottonwood riparian forest, riparian forest/shrub wetland, landscaped, and ruderal woodland).

Noise and visual disturbances associated with project construction during the nesting season may disrupt white-tailed kite nesting behavior to the point of nest abandonment or forced fledging that results in mortality of young. Nests that are located within or adjacent to the BSA could be affected by typical construction noise and visual disturbances. Because the BSA has high levels of pedestrian, bike, vehicle, and boat traffic and associated noise, most construction activities may not substantially increase noise and visual disturbance above baseline conditions. However, pile driving and the use of cranes near an active nest is expected to exceed existing levels of noise disturbance. Bridge construction will require impact pile driving spread over two summers. These loud noises could startle white-tailed kites beyond the BSA and disrupt normal behaviors, including nesting. Because white-tailed kite is a fully protected species, removal of trees with active nests and activities that may result in loss of white-tailed kites are prohibited.

Purple Martin

The proposed project would result in the removal of the approach structures and thus the removal of the purple martin nesting habitat within the BSA. Based on the most recent population estimates, the loss of nesting habitat within the BSA would displace approximately 25 percent of the Sacramento population of purple martins, which is the only extant population in the Central Valley.

Removal of the approach structures, if not timed properly, could remove active nests or directly disrupt breeding behavior and potentially result in mortality and injury of adults, young, and eggs.

An existing perching wire located just north of the I Street Bridge approach structure, at the edge of the State Parks parking lot, was installed as mitigation for a nearby project. This perching wire will not be removed as part of the approach structure demolition and would continue to be used by purple martins if replacement habitat (see measure below in Section 2.19.4) is created near the perch. On both the east and west sides of the Sacramento River, several utility lines in proximity to the future bridge would be available to purple martins for perching.

As part of the proposed project, landscaping would be incorporated along the road improvements on the West Sacramento side of the BSA, which would provide purple martins a source for gathering nesting materials, if replacement habitat is situated nearby. In addition, the levee on the West Sacramento side will remain vegetated in herbs and grasses, which would provide another area for purple martins to gather nesting material if they nest on the West Sacramento side of the bridge and if additional replacement habitat is located in this area (see measure below in Section 2.19.4).

Other Migratory Birds

The project has the potential to affect nesting migratory birds either through direct injury or mortality during ground-disturbing activities or by disrupting normal behaviors, including nesting.

Pallid Bat

The proposed project would result in removal of the existing I Street and Jibboom Street approach structures. Potential roosting habitat, consisting of 30 expansion joints, for pallid bats would be removed during project demolition activities. Several large trees with cavities would be removed within the cottonwood riparian forest, landscaped, and ruderal woodland. The proposed project also would affect buildings on the West Sacramento side of the BSA that could be used by pallid bats for roosting.

Project construction could result in injury and/or mortality to the species if occupied roost sites are removed at times when bats are not awake and active (e.g., early in the day, periods of cold weather).

Western Red Bat

Western red bat is designated as a California species of special concern. Western red bat occurs along the California coast from Mendocino County south to San Diego and into the Sierra Nevada, but the most significant distribution in the state is within the Central Valley (Pierson et al. 2006:12). Western red bat roosts are typically solitary, roosting primarily in the foliage of trees or shrubs (Western Bat Working Group 2005). Day roosts are commonly in edge habitats adjacent to streams or open fields (Western Bat Working Group 2005). In the Central Valley, they are more common in areas with wide strips of mature cottonwoods and sycamores (Pierson et al. 2006:12). They are also known to roost in orchard trees, in particular, walnut orchards (Pierson et al. 2006:13).

The cottonwood riparian forest, riparian forest/shrub wetland, landscaped, and ruderal woodland on both sides of the river provide potential roosting habitat in the BSA for western red bats.

Western red bats were detected within the BSA on the night of June 11, 2015, during acoustic surveys on the West Sacramento side of the river. The species has not been previously reported within 10 miles of the BSA (California Department of Fish and Wildlife 2015).

Project construction could result in injury and/or mortality to the species if trees they are roosting in are removed at times when bats are not awake and active (e.g., early in the day, periods of cold weather).

Other Bats and Bat Habitat

The proposed project would result in removal of the I Street and Jibboom Street approach structures. Thirty expansion joints that represent potential roosting habitat for pallid bats and are known to be used by Mexican free-tailed bats would be removed. Several large trees with cavities would be removed within the cottonwood riparian forest, landscaped, and ruderal woodland that could be used by bats for roosting. In addition, removal of trees would remove suitable foliage roosting habitat for some bats. The proposed project also would affect buildings on the West Sacramento side of the BSA that could be used by bats for roosting.

Fish Species

Potential project effects on special-status fish species and their habitat include both short-term and long-term effects. Short-term effects include temporary construction-related impacts on fish and aquatic habitat that may last from a few hours to days (e.g., suspended sediment and turbidity, construction noise, artificial lighting). Long-term effects (addition of overwater structure, loss of aquatic habitat [substrate and water column], loss of SRA cover habitat) typically would last months or years, or would be permanent. These effects are generally due to physical alteration of important habitat attributes of the channel, shoreline, and adjacent bank. Short-term effects on special-status fish species were evaluated qualitatively based on general knowledge of the impact mechanisms and species' responses to construction actions. Long-term effects were measured in terms of the area and/or linear feet of artificial shade, aquatic habitat, and SRA cover habitat affected by the proposed project.

Because salmonids have relatively narrow habitat requirements relative to other native and non-native fish species, it was assumed that the following impact assessment for CV fall- and late fall–run Chinook salmon also applies to non-salmonid species. It was further assumed that the proposed avoidance, minimization, and mitigation measures also would be protective of, and mitigate potential impacts on, non-salmonid fish species.

Central Valley Fall- and Late Fall–Run Chinook Salmon

Pile Driving Noise

Noise and vibration associated with impact pile driving has resulted in disturbance and mortality of fish (Popper and Hastings 2009). The effects of pile driving noise on fish may include behavioral responses, physiological stress, temporary and permanent hearing loss, tissue damage (auditory and non-auditory), and direct mortality (Popper and Hastings 2009). In general, factors that may influence the magnitude of effects include species, life stage, and size of fish; type and size of pile and hammer; frequency and duration of pile driving; site characteristics (e.g., water depth); and distance of fish from the source of the underwater sound.

The ability to predict impacts of pile driving noise on listed fish species is currently limited by a lack of information on the key variables and mechanisms linking pile driving sounds with the biological responses of the species of concern (Popper and Hastings 2009). Beginning in 2004, Caltrans—in coordination with the FHWA, Oregon Department of Transportation, and Washington Department of Transportation—established a Fisheries Hydroacoustic Working Group (FHWG) to coordinate and improve information related to the assessment of underwater noise impacts on fish from pile driving. Other member agencies include NMFS (West Coast Region [formerly Northwest and Southwest Regions]), USFWS, and CDFW.

In 2008, FHWG established interim noise criteria for injury to fish from pile driving activities (Table 2.19-7). These criteria, based on recommendations developed by Popper et al. (2006) and revised by Carlson et al. (2007), are considered preliminary thresholds for assessing the potential for injury to listed fish species. The peak sound pressure level (SPL) is considered the maximum SPL a fish can receive from a single strike without injury. The cumulative sound exposure level (SEL) is considered the total amount of acoustic energy that a fish can receive from a single or multiple strikes without injury. Insufficient data are currently available to support the establishment of a noise threshold for behavioral effects (Popper et al. 2006); however, NMFS generally assumes that a noise level of 150 decibels root mean square (dB RMS) is an appropriate threshold for behavioral effects. Technical guidance on the application of these criteria to pile driving projects is presented by ICF Jones & Stokes and Illingworth and Rodkin (2009).

The primary source of underwater noise associated with the project would be driving the 200 16-inch piles with an impact hammer for the two in-water piers (i.e., piers 2 and 5) and two in-levee abutments (i.e., abutments 1 and 6) for the new bridge, the 160 16-inch piles for the temporary trestle and work platforms, the 60 16-inch piles for the bridge fender system, and the eight 16-inch spud piles for the barges (see Figure 1-3 in Chapter 1). Additional sources of underwater noise associated with the project would occur during installation of the eight 108-inch steel casings for the two in-water piers (i.e., piers 3 and 4) for the lift span with a

vibratory hammer and/or hydraulic-driven oscillator/rotator system, and installation and removal of temporary sheet piles with a vibratory hammer for the temporary cofferdams used to isolate the in-water construction areas for bridge piers 2 and 5. Only driving of piles with an impact hammer is expected to produce sound levels that could result in injury to fish.

Table 2.19-7. Interim Criteria for Injury to Fish from Pile Driving Activities

Interim Criteria	Agreement in Principle
Peak sound pressure level (SPL)	206 dB re 1µPa (for all sizes of fish)
Cumulative sound exposure level (SEL)	187 dB re 1µPa ² -sec—for fish size ≥ 2 grams 183 dB re 1µPa ² -sec—for fish size < 2 grams
Behavioral (RMS)	150 dB re 1µPa (for all sizes of fish)

dB = decibel(s)

dB re 1µPa = dB referenced to a pressure of 1 microPascal

dB re 1µPa²-sec = dB referenced to a pressure of 1 microPascal squared per second

RMS = root mean square

Table 2.19-8 presents a summary of the pile driving assumptions used in the analysis, including assumptions related to pile location (e.g., structure location, land, in-water, in de-watered cofferdam), pile size and type (e.g., steel pipe, steel H pile, concrete), the number of piles to be installed (e.g., total and number per day), type of driver to be used (e.g., impact, vibratory, hydraulic driven oscillator/rotator system), estimated total pile strikes (e.g., per pile and day), sound attenuation (e.g., bubble curtain, dewatered cofferdam, none), and underwater sound level assumptions. Because a specific pile type has not been determined, Table 2.19-8 presents pile driving assumptions for all possible pile driving scenarios, including with and without sound attenuation (i.e., bubble curtain).

The potential for physical injury to fish from exposure to pile driving sounds was evaluated using the “NMFS Pile Driving Calculator”, a spreadsheet model developed by NMFS to calculate the distance from the pile that sound attenuates to the peak or cumulative interim noise criteria that were established by the FHWG in 2008 (Table 2.19-7). These distances define the area in which the criteria are expected to be exceeded as a result of impact pile driving (potential impact area). The calculated distances from the pile that sound would attenuate to the peak or cumulative interim noise criteria for each pile type that would be used during construction are presented in Table 2.19-8.

The assessment of underwater noise impacts on fish is based on the overlap of construction activities (timing, location, duration) (see Figure 1-4 in Chapter 1) with the spatial and temporal distribution of sensitive species and life stages (discussed in Section 2.19.2.2), as well as the expected fish behavior if encountering underwater noise. An important measure for reducing the potential exposure of fish populations to pile driving noise is the restriction of in-water impact pile driving activities to May 1 through November 30, a period when the abundance of special-status fish in the construction area is reduced (see Section 2.19.4).

To further minimize direct effects on fish, the project proponent proposes to use sound attenuation measures—including cofferdam dewatering and, if feasible, bubble curtains—and hydroacoustic monitoring to minimize the exposure of special-status fish species to potentially harmful pile driving sounds (see Section 2.19.4). During in-water pile driving activities, the use of an impact driver would be limited to driving only the 16-inch piles that are needed for the piers and abutments of the new bridge, the temporary trestles, and the barges. All of the 108-inch steel casings would be installed with a vibratory hammer and/or hydraulic-driven oscillator/rotator system, and all of the temporary sheet piles for the cofferdams would be installed and extracted using a vibratory driver. Use of a vibratory driver and/or hydraulic-driven oscillator/rotator system to install the 108-inch steel casings and the vibratory driver to install and remove the temporary sheet piles for coffer dams is not expected to produce sound levels that result in injury to fish. Vibratory pile driving is a preferred method for minimizing the exposure of fish to potentially harmful pile driving sounds (National Marine Fisheries Service 2009). Therefore, the following assessment focuses on the potential for injury to fish based on predicted noise levels associated with impact pile driving. For ease of discussion, the following assessment discusses the effects of pile driving noise on all special-status fish, including fall- and late fall–run Chinook salmon.

Table 2-19-8. Assumptions in the Hydroacoustic Analysis for I Street Bridge

Pile Location	Pile Diameter/ Type	Driver	Total Number of Piles to be Installed	Land or Water Installation	Piles per Day	Engineer's Estimate of Strikes per Pile	Total Strikes per Day	Attenuation (dB)	Underwater Sound Level Assumptions					Cumulative SEL at Reference Distance	Transmission Loss Constant	Distance (m) to Threshold			
									Onset of Physical Injury				Behavior						
									Peak	Cumulative SEL dB		RMS							
									dB	Fish ≥ 2 g	Fish < 2 g	dB							
														206 dB	187 dB	183 dB	150 dB		
Abutments 1 and 6	16-in diameter steel	Impact	100	Land	20	800	16,000	0	198	171	183	10	Caltrans 2014. 20-inch steel pipe driven on land near the San Joaquin River.	213	15	<10	251	251	1,585
	16-in square precast concrete (alternative to 16-in diameter steel above)	impact	100	Land	20	800	16,000	0	192	174	181	10	Caltrans 2014. 24-inch octagonal concrete pile driven at the Port of Oakland.	216	15	<10	398	398	1,166
Temporary trestle	16-in diameter steel	Impact	160	Water	20	800	16,000	0	208	176	187	10	Caltrans 2014. 20-inch steel pipe driven in the San Joaquin River.	218	15	14	541	541	2,929
	16-in diameter steel	Impact	160	Water with attenuation system	20	800	16,000	-5	203	171	182	10	Caltrans 2014. 20-inch steel pipe driven in the San Joaquin River. 5-dB attenuation assumed from bubble curtain or dewatered cofferdam.	213	15	<10	251	251	1,359
Temporary trestle	16-in H pile (alternative to 16-in diameter steel pile above)	Impact	160	Water	20	800	16,000	0	195	170	180	10	Caltrans 2014. 15-inch steel H thick driven at Ballena Isle Marina.	212	15	<10	215	215	1,000
	16-in H pile (alternative to 16-in diameter steel pile above)	Impact	160	Water with attenuation system	20	800	16,000	-5	190	165	175	10	Caltrans 2014. 15-inch steel H thick driven at Ballena Isle Marina. 5-dB attenuation assumed from bubble curtain.	207	15	<10	100	100	464
Piers 2 and 5	16-in diameter steel	Impact	100	Inside dewatered cofferdam	20	800	16,000	-5	203	171	182	10	Caltrans 2014. 20-inch steel pipe driven in the San Joaquin River. 5-dB attenuation assumed from dewatered cofferdam.	213	15	<10	251	251	1,359
	16-in square precast concrete (alternative to 16-in diameter steel above)	Impact	100	Inside dewatered cofferdam	20	800	16,000	-5	183	161	171	10	Caltrans 2014. 24-inch octagonal concrete pile driven at the Port of Oakland. 5-dB attenuation assumed from dewatered cofferdam.	203	15	<10	54	54	251

Pile Location	Pile Diameter/Type	Driver	Total Number of Piles to be Installed	Land or Water Installation	Piles per Day	Engineer's Estimate of Strikes per Pile	Total Strikes per Day	Attenuation (dB)	Underwater Sound Level Assumptions					Cumulative SEL at Reference Distance	Transmission Loss Constant	Distance (m) to Threshold			
									Peak	SEL	RMS	Reference Distance (m)	Source for Sound Level Assumptions			Onset of Physical Injury		Behavior	
																dB	Cumulative SEL dB	RMS	
																206 dB	Fish ≥ 2 g	Fish < 2 g	150 dB
Bridge Fender System	16-in diameter concrete	Impact	60	Water	20	1000	20,000	0	188	166	176	10	Caltrans 2014. 24-inch octagonal concrete pile driven at the Port of Oakland.	209	15	<10	117	117	541
	16-in diameter concrete	Impact	60	Water with attenuation system	20	1000	20,000	-5	183	161	171	10	Caltrans 2014. 24-inch octagonal concrete pile driven at the Port of Oakland. 5-dB attenuation assumed from bubble curtain.	204	15	<10	54	54	251
Spud piles	16-in diameter steel	Impact	8	Water	8	800	6,400	0	208	176	187	10	Caltrans 2014. 20-inch steel pipe driven in the San Joaquin River.	214	15	14	541	541	2,929
	16-in diameter steel	Impact	8	Water with attenuation system	8	800	6,400	-5	203	171	182	10	Caltrans 2014. 20-inch steel pipe driven in the San Joaquin River. 5-dB attenuation assumed from bubble curtain.	209	15	<10	251	251	1,359
Piers 3 and 4	108-in steel casings	Vibratory hammer and/or hydraulic driven oscillator/rotator system	8	Water	2 weeks/pile	NA	NA	NA	Vibratory pile driving is not known to cause injury to fish and therefore is not evaluated here.										
									Hydraulic oscillator/rotator systems slowly rotate piles into place and do not generate high underwater noise levels.										

dB = decibels
g = grams
m = meter(s)
NA = not applicable
RMS = root mean square
SEL = sound exposure level

Notes:

Cofferdam sheet piles will be driven with a vibratory driver. Vibratory pile driving is not known to cause injury to fish and therefore is not evaluated.

Limited hydroacoustic data are available for concrete piles driven on land. Data taken from measurements at the Port of Oakland are used. In this case, piles driven on land resulted in higher underwater sound levels than piles driven in water.

Pile driving energy does not accumulate once the single-strike SEL drops to 150 dB (i.e., "effective quiet"). The distance to the onset of physical injury therefore cannot extend beyond the distance to effective quiet. Once the daily number of strikes exceeds 5,000 strikes per day the distance to the onset of injury does not increase. For this reason, the distances to the 183-dB and 187-dB thresholds are the same.

Effects of Pile Driving Noise on Fish

The proposed timing of pile driving activities and, where feasible, use of sound attenuation measures are expected to minimize the exposure of listed fish species to potentially harmful pile driving sounds. Generally, the potential for injury or mortality of special-status fish species would be greatest for the 16-inch-diameter steel piles for the temporary trestles and the 16-inch-diameter steel piles for anchoring the barges driven in water (no attenuation), and would be the lowest for the 16-inch-square precast concrete piles for piers 2 and 5 driven in dewatered cofferdams. For the 16-inch-diameter steel piles for the temporary trestles and the 16-inch-diameter steel piles for anchoring the barges driven in water (unattenuated), the potential for injury and mortality would exist within areas of up to 14 meters (46 feet) for single-strike exposures and within areas of up to 541 meters (1,775 feet) of the source piles for multiple-strike exposures to impact pile driving sounds. By comparison, for 16-inch-square precast concrete piles for piers 2 and 5 driven in dewatered cofferdams, the potential for injury and mortality would still exist within areas of less than 10 meters (32.8 feet) of the source piles for single-strike exposures and within areas of up to 54 meters (177 feet) of the source piles for multiple-strike exposures to impact pile driving sounds.

Several factors that could influence the potential exposure and susceptibility of fish to injury from pile driving sounds include the size, mobility, and likely responses of the species and the life stages of concern. Large, actively migrating adults and juveniles are capable of readily avoiding or migrating through the areas where potential injury may occur. In addition, because of their larger size (≥ 2 grams), adult fish and larger species such as salmonids and green sturgeon would be expected to tolerate higher sound pressures than the levels associated with the onset of injury in smaller fish (< 2 grams) (Table 2.19-7), such as juvenile salmonids and species whose individuals are relatively small (e.g., delta and longfin smelt). At a minimum, any adults or juveniles encountering pile driving noise may exhibit some form of behavioral response, including an avoidance response that could disrupt or delay their movement or feeding. Evidence suggests that some fish species avoid or disperse from areas subject to pile driving or other human-generated noises (Popper and Hastings 2009).

Installation of the temporary trestle piles and piles for piers 2 and 5 in May of the first year of construction presents the greatest concern for the potential of injury and mortality of fish from pile driving noise because of the relatively large number of piles (i.e., approximately 160 total piles) that would be installed and the relatively large channel area that would be subject to cumulative sound levels exceeding the injury thresholds (Table 2.19-8). In addition, relocation of the construction barges is of concern if impact driving is required to install the spud piles to anchor the barges during primary periods of species and life stage occurrence. However, unlike pile driving associated with the temporary trestles and bridge piers, pile driving associated with relocation of the barges would be infrequent (4–6 times over the course of construction) and would require that only eight piles be driven over the course of 1 day, per event.

Chinook salmon (winter-, spring-, fall-, and late fall–run), steelhead, green sturgeon, and river lamprey eggs and fry would not be exposed to underwater noise from pile driving activities because these activities would be located well downstream of spawning areas or because these life stages would not be present during the proposed in-water construction period. Some overlap

with green sturgeon and winter-run and spring-run Chinook salmon adults may occur at the end of the migration season in May and June, with late fall-run Chinook salmon and steelhead adults at the beginning of the migration season in November, and with steelhead and river lamprey adults in November. Adult fall-run Chinook salmon may be exposed to underwater noise from pile driving activities in early July and November, and some fall-run and spring-run Chinook salmon and steelhead smolts may be exposed to underwater noise from pile driving in May and June.

Delta smelt, longfin smelt, and splittail may spawn within or in the vicinity of the BSA; therefore, their eggs and larvae may be exposed to underwater noise from pile driving activities. In addition, pile driving activities would overlap with delta smelt, longfin smelt, and Sacramento splittail adults at the end of the migration and spawning season in May and June, and with larvae and juveniles of these species in May through early July. Pile driving associated with relocating the construction barges outside of May 1 to November 30 could potentially overlap peak migration and spawning periods for special-status fish species. Because it is not known when barges would need to be moved, it is not possible to identify which species and life stages potentially would be affected. However, these pile driving activities would be infrequent and last for less than 1 day per event.

Based on the predicted levels of underwater noise, pile driving activities could lead to injury and/or direct and indirect mortality if individuals are within the range of noise levels that could cause physical harm or behavioral effects that lead to mortality (e.g., from predation). However, it is likely that only a small proportion of each fish population is at risk, based on the relatively limited overlap of pile driving activities with migration timing.

Although pile driving would occur over many days per season, pile driving would not be continuous and would be limited to daylight hours only, resulting in extended overnight periods each day for migrating fish to pass the construction site undisturbed. In addition, the project proponent proposes to drive piles for in-water piers 2 and 5 in dewatered cofferdams and to install the 108-inch-diameter steel casings for in-water piers 3 and 4 using a vibratory hammer and/or hydraulic driven oscillator/rotator system, which would not generate the same underwater noise levels had these piles been driven in water with an impact hammer. Finally, the project proponent will require the contractor to employ sound attenuation devices (e.g., bubble curtains) during in-water pile driving, where feasible.

Insufficient data are currently available to support the establishment of a noise threshold for behavioral effects (Popper et al. 2006). NMFS generally assumes that a noise level of 150 dB RMS is an appropriate threshold for behavioral effects. During in-water (no attenuation) impact driving of the 16-inch piles for the trestles and barges, the spreadsheet calculations indicate that underwater sounds exceeding 150 dB RMS would extend 2,929 meters (1.8 miles) from the source piles (Table 2.19-8). These calculations assume an unimpeded open water propagation path over this distance, however, which is not the case for the Sacramento River. The Sacramento River has major river channel bends within about 1,280 meters (4,200 feet) upstream and 1,830 meters (6,000 feet) downstream from the proposed bridge crossing that will result in diffraction and attenuation of sound waves. Thus, the distance within which 150 dB RMS is exceeded likely would be less than indicated in Table 2.19-8.

Based on the area of disturbance and timing of pile driving operations, some disturbance to the movement and feeding of special-status fish is anticipated. In addition, pile driving activities would not be continuous but would start and stop during the course of each day of pile driving (including cessation of pile driving activities at night), providing opportunities for fish to continue with their movements and feeding without substantial delays. In addition, general construction noise may act to disperse fish away from the construction area before impact driving is initiated.

Increased Exposure to Contaminants

Construction activities may result in increased exposure of fish to contaminants through disturbance and resuspension of river bottom sediments during in-water construction and from the discharge of contaminants during construction (e.g., accidental spills or leakage of fluids from heavy equipment) that are potentially lethal to fish. These potential impacts are discussed below.

Disturbance and Resuspension of Contaminated Sediments

Disturbance and resuspension of river bottom sediments during in-water construction pose a risk to juvenile and adult fall- and late fall–run Chinook salmon because of potential increases in the exposure to contaminated sediments.

Sand, silt, and gravel characterize bottom substrate in the BSA. Non-soluble contaminants with a tendency to adsorb to sediments (as opposed to soluble contaminants which have the tendency to be readily diluted in water) can accumulate in the substrate over time. Non-soluble contaminants that are known to be present in the Sacramento River include PCBs, mercury, pesticides and insecticides (i.e., dieldrin, chlorodane, DDT), and other unknown toxicities (State Water Resources Control Board 2011). Resuspension of sediments with adsorbed metals during in-water construction potentially could lead to degradation of water quality and food resources in the BSA. In addition, resuspended particulate material could be transported to other locations in the Sacramento River as a result of transport by river currents, thus leading to potential degradation of water quality and food resources beyond the BSA. Although special-status fish species may be present in the BSA during any month, restricting in-water construction to the May 1–November 30 window will minimize or avoid exposure of most juvenile and adult fall- and late fall–run Chinook salmon to contaminants because they occur less frequently in the Sacramento River during this time of year (Tables 2.19-2, 2.19-3, and 2.19-4). Green sturgeon may be more susceptible than other fish species to contaminated sediments because they are more benthic oriented than other species and therefore may come into direct contact with contaminated sediments through ingestion of sediments along with benthic food organisms. In addition, their long life span allows them to accumulate high body burdens of contaminants, which potentially can reach concentrations with deleterious physiological effects.

In-water construction would be limited to pile driving and installation and removal of sheet piles for cofferdams. In addition, in-water construction would be limited to daylight hours each day. Thus, disturbance of channel substrate and the potential for increased contaminants would be temporary and localized, and limited to only a portion of the time each day. Assuming that

mobilization of sediment is also an indication of contaminant mobilization, the proposed in-water construction methods should minimize the increase in contaminants.

Given the relatively short exposure time and the restricted area of in-water construction relative to the distribution and temporal occurrence of adult and juvenile fall- and late fall–run Chinook salmon between May 1 and November 30, the effect of contaminants mobilized by in-water construction is not expected to result in significant effects on the survival and growth of fall- and late fall–run Chinook salmon.

Contaminant Spills

Construction activities that occur in or near the Sacramento River channel can result in the discharge of contaminants that are potentially lethal to fish. Operation of heavy equipment, cranes, pile drivers, drilling rigs, tug boats, and other construction equipment during bridge construction can result in spills and leakage of fuel, lubricants, hydraulic fluids, and coolants. Other sources of potential contamination include asphalt, wet concrete, and other materials that may come into direct contact with surface water during construction activities. For example, concrete that is being poured for the bridge decking could be discharged accidentally to the river, thereby contaminating the river with uncured concrete (which can raise pH) and related compounds.

The potential magnitude of biological effects resulting from contaminants depends on a number of factors, including the proximity of spills to the river; the type, volume, concentration, and solubility of the contaminant; and the timing and duration of the spill or release of the contaminant into the water column. Contaminants can affect survival, growth, and reproductive success of fish and other aquatic organisms. The level of effect depends on the species, life stage sensitivity, duration of exposure, condition or health of exposed individuals, and the physical and chemical properties of the water (e.g., temperature, pH, dissolved oxygen, and other factors).

Increases in Turbidity and Suspended Sediments

Site clearing, earthwork, driving of permanent piles, driving and removal of piles for the temporary trestles, vibrating and removal of sheet piles for cofferdams, and installation of RSP would result in disturbance of soil and riverbed sediments, resulting in temporary increases in turbidity and suspended sediments in the Sacramento River. In addition, dewatering and soil removal from the inside of the cofferdams could result in temporary increases in turbidity and suspended sediments in the river, if water (and associated spoils) from within the cofferdams is not properly disposed of or contained and treated before being discharged back to the river.

The potential for disturbance of riverbed sediments and associated increases in sedimentation and turbidity in the Sacramento River are anticipated to be greatest during activities to extract the piles used for the temporary trestles and cofferdams. These activities would result in greater disturbance to riverbed sediments than would occur during pile driving for piers and the bridge fender system; these piles would be driven only and not extracted.

In addition to increasing exposure to contaminants as discussed previously, elevated levels of suspended sediments have the potential to result in physiological, behavioral, and habitat effects

related to increased sediment concentrations in the water column. The severity of these effects depends on the sediment concentration, duration of exposure, and sensitivity of the affected life stage. Short-term increases in turbidity and suspended sediment may disrupt normal behavior patterns of fish, potentially affecting foraging, rearing, and migration. The level of disturbance may also cause juveniles to abandon protective habitat or reduce their ability to detect predators, potentially increasing their vulnerability to predators (e.g., striped bass and largemouth bass). Previous studies have documented these effects. For example, juvenile salmonids have been observed to avoid streams that are chronically turbid (Lloyd et al. 1987) or move laterally or downstream to avoid turbidity plumes (Sigler et al. 1984). Bisson and Bilby (1982) reported that juvenile coho salmon avoid turbidities exceeding 70 nephelometric turbidity units (NTUs). Chronic exposure to high turbidity and suspended sediment may affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress (Waters 1995). Sigler et al. (1984) found that prolonged exposure to turbidities between 25 and 50 NTUs resulted in reduced growth and increased emigration rates of juvenile coho salmon and steelhead compared to controls. Increased sediment delivery can also smother aquatic invertebrates (a fish food item), degrade forage and spawning habitat, and reduce cover for juvenile fish.

Increases in Impervious Surface Area and Storm Water Runoff

The proposed project would result in added impervious surface, with the potential to increase runoff volume in the Sacramento River. Increased traffic loads on the new bridge resulting from improved access could result in increased deposition of particulates onto the bridge deck that could then be transported to the Sacramento River with road runoff.

Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons (PAHs) are common pollutants in road runoff. Some of these pollutants can accumulate in stream sediments with lethal and sublethal consequences for fish and other aquatic species, particularly during first-flush rain events. PAHs are organic compounds—containing only carbon and hydrogen—that occur in motor vehicle exhaust, petroleum products, materials associated with asphalt, and various other municipal and industrial sources. PAHs are widely distributed in the environment and are important environmental pollutants because of their carcinogenicity and tendency to bioaccumulate. PAHs are readily absorbed by fish and other aquatic organisms and, depending on concentration, can lead to lethal and deleterious sublethal effects in these organisms (Tuvikene 1995). PAHs tend to adsorb to any particulate matter, including fine sediment; therefore, relative concentrations of PAHs in aquatic ecosystems are generally highest in sediments, followed by aquatic biota and the water column (Tuvikene 1995). There is evidence that urban runoff containing roadway sediment may be an important PAH input to aquatic habitats and that a significant contribution to the PAH content of roadway sediment comes from materials associated with asphalt (Wakeham et al. 1980).

Although the new bridge would represent added impervious surface area, the proposed project would not represent a substantial increase in impervious surface area in the BSA relative to existing conditions. The new bridge would replace the vehicle portion of the existing I Street Bridge, and existing traffic would be re-routed to the new bridge. In addition, storm water runoff from the new bridge would be directed to the existing storm water collection systems. Therefore,

it is not anticipated that the proposed project would contribute to a cumulative water quality impact during operations.

Temporary and Permanent Loss of Aquatic Habitat

The proposed project would result in the temporary and permanent loss of aquatic habitat area and volume, including foraging and rearing habitat for juvenile fall- and late fall–run Chinook salmon. Table 2.19-9 shows the temporary and permanent loss of aquatic habitat that would occur as a result of constructing the proposed project.

Installation of sheet pile cofferdams to isolate the in-water construction areas for piers 2 and 5 from the water column during pier construction would result in the temporary loss of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the in-water cofferdams. The proposed dimensions of each cofferdam are 25 feet by 80 feet, or 2,000 square feet. Together, the two cofferdams would result in a temporary loss of 4,000 square feet (0.09 acre) of substrate habitat and up to 73,640 cubic feet of water column habitat below the OHWM (based on a water surface elevation of +20 feet). Similarly, installation of piles for the temporary trestles would also result in the temporary loss of substrate and water column habitat equal to the total area and volume of the in-water piles used to support the temporary trestles. The temporary trestle piles would remain in place throughout the duration of construction. A total of approximately 141 16-inch-diameter pipe or H piles would be installed below the OHWM to support the temporary trestles, and would result in a temporary loss of 197 square feet (0.005 acre) of substrate habitat and up to 3,573 cubic feet of water column habitat below the OHWM. (Approximately 19 of the 160 piles for the temporary trestles would be installed above the OHWM.)

Installation of the new bridge piers (piers 2–5) and piles for the new bridge fender system would result in the permanent loss of aquatic habitat (substrate and water column) equal to the cumulative area (substrate) and volume (water column) of the in-water piers and bridge fender piles. Similarly, placement of rock revetment (rip-rap) around the new bridge abutments on the waterside slope of the existing levees also would result in the permanent loss of natural substrate habitat equal to the net increase in area of rock revetment. Up to approximately 120 linear feet of shoreline (approximately 60 linear feet on City of Sacramento shoreline and approximately 60 linear feet on City of West Sacramento shoreline) would be lined with RSP (1/4 ton, Method B), covering up to approximately 300 square feet (0.007 acre) of the bank below the OHWM on the City of Sacramento shoreline. The remaining RSP, approximately 4,700 square feet [0.11 acre], would be placed above the OHWM on both shorelines. A total of approximately 37 cubic yards of RSP would be placed below the OHWM, and a total of approximately 574 cubic yards would be placed above the OHWM.

Table 2.19-9. Amount of Temporarily and Permanently Affected Aquatic Habitat in the Sacramento River Resulting from the Proposed Project

Feature/Habitat	Square Feet (acres) of Affected Aquatic Habitat	
	Temporary Impact	Permanent Impact
Temporary Cofferdams		
Substrate area (square feet [acre])	4,000 (0.09)	NA
Water column volume (cubic feet)	73,640	NA
Temporary Trestle Piles		
Substrate area (square feet [acre])	197 (0.005)	NA
Water column volume (cubic feet)	3,573	NA
Piers 2 and 5		
Substrate area (square feet [acre])	NA	2,500 (0.06) ^a
Water column volume (cubic feet)	NA	12,250
Piers 3 and 4		
Substrate area (square feet [acre])	NA	64 (0.001) ^b
Water column volume (cubic feet)	NA	17,800
Piles for Bridge Fender System		
Substrate area (square feet [acre])	NA	85 (0.002)
Water column volume (cubic feet)	NA	2,600
Shoreline Rock Revetment (RSP)		
Substrate area (square feet [acre])	NA	300 (0.007)
Water column volume (cubic feet)	NA	NA
TOTALS		
Substrate area (square feet [acre])	4,197 (0.095)	2,949 (0.07)
Water column volume (cubic feet)	77,213	32,650

NA = Not applicable

^a total for pile caps

^b total for piles

Installation of these features may result in direct and indirect effects by inhibiting establishment of riparian vegetation; inhibiting recruitment and retention of sediment and woody debris; and eliminating shallow, low-velocity river margins preferred by juvenile fish.

Compensation for impacts on critical habitat, as described in Section 2.20.4, would offset the effects of permanent impacts on the substrate and water column resulting from construction of the new bridge piers.

Loss of Shaded Riverine Aquatic Cover

Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in the permanent loss of up to 1.44 acres and temporary loss of up to 1.52 acres of cottonwood riparian forest within the BSA, of which approximately 0.44 acres is below the OHWM and contributes to overhead (shade) and in-stream SRA cover (see additional discussion below regarding SRA cover). The permanent loss of existing cottonwood forest would result from activities related to construction of the two fixed-span bridge approach

structures, the bikeway along Jibboom Street in the City of Sacramento, and the new residential access road connecting B Street and 3rd Street in the City of West Sacramento (Figure 2.16-1). The temporary loss of cottonwood riparian forest would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access. Portions of this affected riparian forest also provide SRA cover habitat that is an important component of anadromous fish habitat (see additional discussion below). Clearing of the existing cottonwood riparian forest that contributes to SRA cover would result in the temporary and permanent loss of up to 890 linear feet (i.e., up to 513 linear feet on the City of Sacramento side of the Sacramento River and up to 377 linear feet on the City of West Sacramento side of the Sacramento River) of overhead SRA cover (shade) along the summer (low-flow) shoreline of the Sacramento River.

Riparian vegetation is important in controlling stream bank erosion, contributing to in-stream structural diversity, and maintaining undercut banks. In addition, canopy cover (overhanging vegetation [a form of SRA cover]) maintains shade that is necessary to reduce thermal input and provides an energy input to the aquatic habitats in the form of fallen leaves and insects (a food source for fish). SRA cover also provides fish with protection from predators in the form of undercut banks, branches, roots, and in-stream woody material (e.g., logs).

Without appropriate mitigation, removal of streamside vegetation is likely to adversely affect fall- and late fall-run Chinook salmon because riparian and SRA cover habitat are essential components of salmonid rearing habitat. The absence or decreased presence of this habitat may limit production and abundance of salmonids (and other fish species) in the Sacramento River. Salmonid populations are highly influenced by the amount of available cover (Raleigh et al. 1984). The amount of existing riparian and SRA cover habitat in the BSA and in the region is of variable quality because of past and ongoing impacts, including levee construction and bank protection activities (i.e., placement of rock revetment).

USFWS mitigation policy identifies California's riparian habitats, including SRA cover habitat, in Resource Category 2. The designation criteria for habitat in Resource Category 2 is "habitat to be impacted is of high quality for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section" (U.S. Fish and Wildlife Service 2015b), for which "no net loss of in-kind habitat value" is recommended (46 FR 7644; January 23, 1981). In addition, NMFS recommends revegetating onsite at a 3:1 ratio (3 units replaced for every 1 unit of affected habitat) with native riparian species to facilitate the development of SRA cover habitat (Rea pers. comm.).

Increase in Overwater Structure (Artificial Shade)

Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that prey on juvenile fishes. Temporary shading attributable to the presence of the temporary trestles, work platforms, and barges during bridge construction and permanent shading from the new bridge potentially could reduce primary productivity of affected habitats. Temporary shading also could increase the number of predatory fishes (e.g., striped bass, largemouth bass) holding in the study area and/or their ability to prey on juvenile fishes. Because the temporary trestles, work platforms, and barges would be present only during construction, the effects of trestle, work platform, and barge shading would be temporary and localized.

Barge shading would occur year-round during construction of the new bridge. One to two barges, each approximately 60 feet wide and 190 feet long (11,400 square feet [0.26 acre]), would be present during construction and would provide a total of 11,400–22,800 square feet (0.26–0.52 acre) of temporary overwater structure (Table 2.19-10). Because the barges would be present only during construction and moved periodically as construction of the bridge progresses, the effects of barge shading would be temporary and localized.

Shading by the temporary trestles and work platforms would occur year-round during construction of the new bridge. Two trestles, approximately 30 feet wide and varying in length and configuration (see Figure 1-3 in Chapter 1), would be present during construction and would provide a total of approximately 30,000 square feet (0.69 acre) of temporary overwater structure (Table 2.19-10). Because the trestles and work platforms would be present only during construction, effects of trestle shading would be temporary and localized. Together, the barges and temporary trestles would create up to 52,800 square feet (1.21 acres) of temporary overwater structure (i.e., shade) (Table 2.19-10).

The new bridge would create approximately 55,000 square feet (1.26 acre) of permanent overwater structure where no overwater structure currently exists. The increased shading created by the new bridge could potentially affect the migration of adult and juvenile winter-run Chinook salmon, and other species. Within the Sammamish River, in Washington State, migrating adult salmon hold in shaded areas beneath bridges (Carrasquero 2001). Juvenile salmonids also prefer shaded areas created by bridges. Because of the height of the new bridge over the water, ambient light levels generally would be expected to penetrate into the water, thereby minimizing the effect of bridge shading on aquatic habitats in the Sacramento River. Compensation for impacts on critical habitat, as described below, would offset the effects of bridge shading on aquatic habitats in the Sacramento River.

Table 2.19-10. Amount of Artificial Overwater Structure (Shade) on the Sacramento River under Existing and With-Project Conditions

Overwater Structure	Square Feet of Shaded Area		
	Existing Conditions	With-Project Conditions (Barge/Trestle/Bridge)	Change
Barge (temporary)	0	11,400–22,800 ^a	+11,400–22,800 ^a
Trestle (temporary)	0	30,000	+30,000
Bridge (permanent)	0	55,000	+55,000
Net change (temporary)			+41,400–52,800 ^a
Net change (permanent)			+55,000

NA = Not applicable

^a 1 barge–2 barges

Fish Entrapment in Cofferdams

Cofferdams will be required in order to construct piers 2 and 5 for the new bridge. Cofferdams would be constructed of sheet piles; when installed, each cofferdam will be approximately 25 feet wide and 80 feet long. The potential exists for entrapment and mortality of fish following

closure and dewatering of the cofferdam. The proposed timing of cofferdam installation (May) would avoid the primary period of occurrence of juvenile winter-run Chinook salmon; however, the potential would remain for some special-status fish species to become entrapped in the cofferdams.

Introduction of Aquatic Invasive Species

During construction, operation of barges and other in-water equipment originating from regions or areas outside the project area could result in the introduction and spread of aquatic invasive species (AIS), including the Asian overbite clam (*Corbula amurensis*), quagga mussel (*Dreissena bugensis*), zebra mussel (*Dreissena polymorpha*), hydrilla (*Hydrilla verticillata*), and Brazilian elodea (*Egeria densa*) (California Department of Fish and Game 2008). These species can adversely affect native fishes and other ecologically and economically important species through a number of mechanisms, including competition for resources, predation, parasitism, interbreeding, disease transmission, and changes in the physical or chemical attributes of aquatic habitat.

Increase in Direct Lighting on Sacramento River

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over the Sacramento River, and permanent lighting associated with the new bridge may result in increased nighttime light intensity on the water surface of the Sacramento River. Increases in direct lighting of the Sacramento River at night may affect the migratory behavior of juvenile fish; alter behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats; or make juvenile fish more visible to predators, thereby leading to increased mortality of fish through increased predation (Tabor et al. 2001).

Sacramento Splittail

Project impacts on Sacramento splittail would be similar to those described for fall- and late fall-run Chinook salmon. Of greatest concern would be the potential exposure of eggs, larvae, juveniles, and adult splittail to potentially harmful underwater sounds during impact pile driving, increased exposure to contaminants, potential contaminant spills, erosion and mobilization of sediment, and entrapment in cofferdams.

Pacific Lamprey

Project impacts on Pacific lamprey would be similar to those described for fall- and late fall-run Chinook salmon. Of greatest concern would be the potential exposure of ammocoete and adult Pacific lamprey to potentially harmful underwater sounds during impact pile driving, increased exposure to contaminants, potential contaminant spills, erosion and mobilization of sediment, and entrapment in cofferdams.

River Lamprey

Project impacts on river lamprey would be similar to those described for fall- and late fall–run Chinook salmon. Of greatest concern would be the potential exposure of ammocoete and adult river lamprey to potentially harmful underwater sounds during impact pile driving, increased exposure to contaminants, potential contaminant spills, erosion and mobilization of sediment, and entrapment in cofferdams.

2.19.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect non-listed special-status animals.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential permanent and temporary impacts on western pond turtle, white-tailed kite, purple martin, other migratory birds, pallid bat, western red bat, other bats, Central Valley fall-/late fall–run Chinook salmon, Sacramento splittail, Pacific lamprey, river lamprey, and their habitat that would be caused by the two build alternatives.

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Environmental Awareness Training for Construction Employees

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Periodic Biological Monitoring

Please refer to the discussion of this measure in Section 2.16.4.

Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.4.

Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands

Please refer to the discussion of this measure in Section 2.17.4.

Compensate for Loss of Perennial Stream

Please refer to the discussion of this measure in Section 2.17.4.

Implementation of the following measures will ensure that construction activities avoid or minimize impacts on western pond turtle within and adjacent to the limits of disturbance associated with construction.

Conduct Preconstruction Surveys for Western Pond Turtle and Allow Turtles to Leave Work Area Unharmmed

To avoid potential injury to or mortality of western pond turtles, the project proponent will retain a qualified biologist to conduct a preconstruction survey for western pond turtles immediately prior to construction activities (including vegetation removal) along the banks of the Sacramento River. The biologist will survey the aquatic habitat, river banks, and adjacent riparian and ruderal habitat within the construction area immediately prior to disturbance.

If a western pond turtle is found within the immediate work area during the preconstruction survey or during project activities, work shall cease in the area until the turtle is able to move out of the work area on its own. Information about the location of turtles seen during the preconstruction survey will be included in the environmental awareness training (see *Conduct Environmental Awareness Training for Construction Employees* in Section 2.16.4) and provided directly to the construction crew working in that area to ensure that areas where turtles were observed are inspected each day prior to the start of work to ensure that no turtles are present.

If a western pond turtle nest is discovered during the preconstruction survey or during project construction, the project proponent will coordinate with CDFW to determine whether additional avoidance measures (e.g., no-disturbance buffer or monitoring) is prudent.

Implementation of the following measure will ensure that construction activities avoid or minimize potential impacts on white-tailed kite within and adjacent to the limits of disturbance associated with project construction.

Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers for Active Nests

The project proponent will retain a qualified wildlife biologist to conduct nesting surveys before the start of construction. These nesting surveys will be conducted in conjunction with the Swainson's hawk nesting surveys (see *Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction* in Section 2.20.4) and will include a minimum of three separate surveys to look for active nests of migratory birds, including raptors. Surveys will include a search of all trees and shrubs, ruderal areas, and grassland vegetation that provide suitable nesting habitat within 50 feet of disturbance. In addition, a 0.25-mile area from the river will be surveyed for nesting raptors in order to identify raptors that might be affected by pile driving. Surveys should occur during the height of the breeding season (March 1 to June 1), with one survey occurring in each of the 2 consecutive months within this peak period and the final survey occurring within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (September 15) or

until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with CDFW and will depend on the level of noise or construction disturbance taking place, line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Active white-tailed kite nests within 600 feet of the BSA will be monitored during pile driving and other construction activities. Monitoring will be conducted by a wildlife biologist with experience in monitoring white-tailed kite nests. The monitor will document the location of active nests, consult with the project proponent and CDFW, and record all observations in a daily monitoring log. The monitor will have the authority to temporarily stop work if activities are disrupting nesting behavior to the point of resulting in potential take (i.e., eggs and young chicks are still in the nest, and adults appear agitated and could potentially abandon the nest). The monitor will work closely with the contractor, the project proponent, and CDFW to develop plans for minimizing disturbance, such as modifying or delaying certain construction activities.

A minimum non-disturbance buffer of 600 feet (radius) will be established around all active white-tailed kite nests. No entry of any kind related to construction will be allowed within this buffer while the nest is active, unless approved by CDFW. The buffer size may be modified based on site-specific conditions, including line-of-sight, topography, type of disturbance, existing ambient noise and disturbance levels, and other relevant factors. Entry into the buffer for construction activities will be granted when the biological monitor determines that the young have fledged and are capable of independent survival, or that the nest has failed and the nest site is no longer active.

Conduct Tree Removal during Non-Sensitive Periods for Wildlife

The project proponent will remove or trim trees during the non-breeding season for tree-nesting migratory birds and raptors, and prior to periods when bats would be hibernating (generally between September 15 and October 31). If tree removal cannot be confined to this period, the project proponent will retain a qualified wildlife biologist with knowledge of the wildlife species that could occur in the project area to conduct the appropriate preconstruction surveys and establish no-disturbance buffers for sensitive wildlife species as described under measures for white-tailed kite, Swainson's hawk, and nesting birds (see *Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers for Active Nests* above; and *Monitor Active Swainson's Hawk Nests during Pile Driving and Other Construction Activities* in Section 2.20.4) and for roosting bats (see *Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures* below).

Implementation of the following measures will avoid and minimize impacts on purple martins, as well as other nesting birds and bats that use the approach structures.

Avoid and Minimize Impacts on Purple Martins during Construction Activities

No construction activity that results in ground disturbance, modification of the I Street Bridge approach structure, loud noises, and/or vibrations will be conducted within 100 feet of the edge

of the purple martin colony during the purple martin nesting season (March 15 to August 15). In addition, no construction-related vehicles or machinery shall be operated or stored beneath the colony during this period or until a qualified biologist determines that the purple martins have completed nesting and are no longer occupying the structure.

Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures

Because all four of the approach structures that are associated with the I Street Bridge are used by nesting birds (including purple martin) and roosting bats, the removal of these structures will take place outside of the breeding season for migratory birds and bats, and will be conducted in the following manner to avoid and minimize direct harm and temporary disturbance to nesting birds and roosting bats.

Timing of Approach Structure Demolition

To avoid and minimize potential impacts on purple martins and bats, the approach structures will not be removed or be altered until after the new I Street Bridge and associated replacement habitat on the bridge and/or elsewhere is in place and available for use by birds and bats for at least one overlapping nesting/maternal season, which generally would be from March 15 to September 15. Exclusion activities will be initiated between September 15 and October 31 to avoid affecting nesting purple martins and other birds, and to avoid affecting maternal and hibernating bat roosts. The exact date of beginning exclusion will be determined based on the results of preconstruction surveys that will be conducted in mid- to late August to document the status of bird nests and bat roosts. Active nests will be periodically monitored until it is verified that they are no longer being used. The non-volant (non-flying) period for most young bats is between April and the beginning of September (Johnston et al. 2004:26).

To avoid and minimize potential noise impacts on migratory birds nesting adjacent to project demolition activities, all demolition activities resulting in loud noise will be conducted outside of the nesting season, which is generally September 15 to February 1, to the extent feasible.

Approach Structure Exclusion Measures

The following exclusion measures will be implemented before demolition of the approach structures and will be approved by the project proponent and CDFW prior to implementation.

The vent holes and expansion joints on the approach structures will be altered to exclude birds and bats from using them prior to initiating demolition activities. After it has been confirmed that purple martins or other birds are no longer nesting in the vent holes, one-way doors will be installed on the vent holes to allow any wildlife (e.g., birds and bats) that may be occupying the hollow box-girders on the existing approach structure to exit and not re-enter. After the one-way doors have been in place for 48 hours, they will be removed and the vent holes will be sealed off to prevent any wildlife from re-entering prior to demolition.

One-way door devices also will be installed along the expansion joints to allow bats to exit but not re-enter. These one-way door devices will be designed such that they do not contain netting

or wire mesh that bats could become entangled in. Once installed, a qualified biologist will observe the one-way door devices at locations confirmed to have contained bats to verify that bats are exiting the structures and being excluded. The one-way doors will remain in place for 48 hours, after which they will be inspected for remaining bats. Once each expansion joint is confirmed to be unoccupied, they will be sealed close with an expanding foam sealant to prevent bats from reoccupying the approach structures.

Implementation of the following measures will partially compensate for the loss of purple martin habitat and the long-term effects on the Sacramento area population.

Conduct Staff Training

The City of Sacramento will work with a wildlife biologist with knowledge of the life history, behavior, and habitat requirements of purple martin to conduct a training session for City project managers (i.e., project managers from the Public Works department) to inform staff of the biology, habitat requirements, regulatory status, and legal protection of purple martin as well as the mitigation requirements under CEQA and NEPA for the colonies in the City of Sacramento. The training will allow City staff to be informed for other City projects that could affect purple martins. The training session will occur prior to the demolition of the I Street Bridge approach structure.

Enhance Existing Colony Entrance Holes

To improve nesting success at other existing colonies within the City of Sacramento, nest guards will be installed in at least 50 nest entrance holes (unless there are fewer than 50 holes without guards already installed) across colony locations in the City used by martins in the previous 3 years. The nest guards will consist of 1/2-inch wire mesh installed along the interior edge of the previously used vent holes and will extend at least 1 inch above the floor of the structure chamber. Nest guards will be installed prior to the demolition of the I Street Bridge approach structure and outside of the nesting season (i.e., installation could generally occur between September 15 and February 1).

Create Purple Martin Replacement Habitat

Purple martin nesting habitat that will be lost due to demolition of the I Street Bridge approach structure will be mitigated in part with replacement habitat. Replacement habitat will consist of at least 10 large (e.g., 4-foot tall) nest boxes placed at least 20 feet above the ground at the same location as the existing approach structure. An initial set of nest boxes will be installed prior to the 2019 nesting season to determine if they are used by purple martins. The initial nest boxes will be strapped to the approach structure support columns. Nest box design, construction, and installation will be coordinated with a biologist with extensive experience with the nesting needs of the Sacramento region population of purple martins.

Nest boxes will be monitored in all years leading up to the demolition of the approach structure to determine their use by purple martins in order to make modifications to the design, location, and/or number of boxes to encourage and continue to support purple martins at the I Street colony location.

The final design and at least the minimum number of replacement boxes will be in place and overlap temporally with the approach structure for at least one season prior to demolition and removal of the approach structure. Prior to the demolition of the approach structure, the nest boxes may be removed (outside of the nesting season) to accommodate demolition activities but will be re-installed in advance of the subsequent nesting season on permanent poles within the same location as the approach structure. Landscaping near the nesting habitat will be designed to not disrupt the flight access within 120 feet of replacement nesting habitat (i.e., will not physically or visually obstruct the space around the nesting habitat).

Small to medium non-fruit-bearing trees will be incorporated into the landscaping plans for the project. Where possible, pine trees (*Pinus* spp.) also will be incorporated into landscaping plans to provide a permanent source of nesting material for purple martins. If feasible, some mowed or cut vegetation along the West Sacramento levee in the BSA (see BSA limits shown on EIR/EA Figure 2.16-1) will be left in place between March 15 and May 15 to allow purple martins to use this material for nesting.

Prepare and Implement a Monitoring and Management Plan for the I Street Bridge Purple Martin Colony Replacement Habitat

The project proponent will develop and implement a monitoring and management plan for the I Street Bridge purple martin colony replacement habitat prior to the construction of the proposed project. The monitoring portion of the plan will be implemented at least one nesting season prior to the demolition of the existing approach structure near the I Street Bridge. At a minimum, the plan will include the following actions and requirements.

- Monitor annually the use of replacement habitat by purple martins at the I Street Bridge colony location over a minimum 10-year period with at least 7 of the years occurring after the completion of the new bridge and the demolition of the existing approach structure that provides nesting habitat for purple martins. The monitoring period may be extended if it is found that (1) purple martins are not using the replacement habitat; or (2) the replacement habitat is not functioning as intended and repairs are made, or additional replacement habitat is created.
- Monitor annually the other colonies in the Sacramento region to provide context for how the I Street Bridge colony is doing relative to the remaining population. Colonies will be monitored over the same period as the I Street Bridge colony.
- Annual monitoring will include up to 6 visits to each colony starting in March and ending in approximately June. Reproductive monitoring at colonies will be conducted using a pole mounted camera. Reproductive monitoring will occur during the latter part of the annual colony monitoring (approximately 3 of the total visits to a colony). At a minimum, the following information will be recorded.
 - Number of nesting pairs
 - Documentation of which vent holes and/or nest boxes are used
 - Documentation of use of perching structures

- Effectiveness of landscaped areas and semi-natural areas (vegetated levee) in providing nesting materials
- Observations of predation or presence of known predators
- Changes in habitat in and around the colony
- Monitoring and management will be conducted by a wildlife biologist with knowledge of the life history, behavior, and habitat requirements of purple martin and with demonstrated prior experience in monitoring purple martin colonies.
- The monitoring and management plan will include adaptive management measures to correct problems with I Street Bridge Project replacement habitat, make other habitat improvements, and/or implement management recommendations within or adjacent to the BSA, or at other City of Sacramento colony locations where the City has existing rights to make modifications, in an attempt to boost nesting success. These measures may include but would not be limited to the following.
 - A commitment to replacing poor-functioning or damaged free-standing purple martin nesting and/or perching habitat such that there is no net loss in the amount of created habitat.
 - A process for making and implementing recommendations on the management of vegetation around colonies within the city of Sacramento.

The Director of the City of Sacramento Department of Public Works, or his or her designee, will be responsible on a continuing basis for the implementation of the mitigation measures relating to purple martin impacts, replacement habitat and the replacement habitat management plan. The Director will determine the manner in which mitigation shall proceed, and the resources, including staff commitment and consultants, that will be utilized in the effort.

Implementation of the following measure would ensure that construction activities avoid and minimize potential impacts on pallid bat and western red bat within and adjacent to the limits of disturbance associated with construction.

Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

To avoid and minimize potential impacts on pallid bat, western red bat, and non-special-status bat species from the removal of trees and buildings, the project proponent will implement the following actions.

Preconstruction Surveys

Within 2 weeks prior to tree trimming or removal and any building demolition (e.g., homes, sheds, other outbuildings), a qualified biologist will examine trees to be removed or trimmed and buildings planned for demolition for suitable bat roosting habitat. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, abandoned buildings, attics) will be identified, and the area around these features searched for bats and bat sign (e.g., guano, culled insect parts, staining). Riparian woodland and stands of mature broadleaf trees will be considered potential habitat for solitary foliage-roosting bat species.

If suitable roosting habitat and/or bat sign is detected, biologists will conduct an evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights. Full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. If site security allows, detectors should be set to record bat calls for the duration of each night. All emergence and monitoring surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologist will analyze the bat call data using appropriate software and prepare a report that will be submitted to the project proponent and CDFW.

Timing of Tree Removal and Building Demolition

Trees and buildings planned for removal and demolition will have exclusion devices installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts. The exact timing of removal and demolition will be determined based on preconstruction surveys of trees and buildings.

Protective Measures

Protective measures may be necessary if it is determined that bats are using buildings or trees in the BSA as roost sites, or if sensitive bats species are detected during acoustic monitoring. The following measures will be implemented when roosts are found within trees or buildings planned for removal according to the timing discussed above. Specific measures will be approved by the project proponent and CDFW prior to excluding bats from occupied roosts.

- Exclusion from buildings or bridge structures will not take place until temporary or permanent replacement roosting habitat is available.
- Exclusion from roosts will take place late in the day or in the evening to reduce the likelihood of evicted bats falling prey to diurnal predators, and will take place during weather and temperature conditions conducive to bat activity.
- Biologists experienced with bats and bat evictions will carry out or oversee the exclusion tasks and will monitor tree trimming and removal, and buildings if they are determined to be occupied.
- Trees that provide suitable roost habitat will be removed in pieces, rather than felling the entire tree and should be done late in the day or in the evening to reduce the likelihood of evicted bats falling prey to diurnal predators, and will take place during warm weather conditions conducive to bat activity.
- Structural changes may be made to a known roost proposed for removal, to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that temperature, wind, light and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats.
- Non-injurious harassment at the roost site, such as ultrasound deterrents or other sensory irritants, may be used to encourage bats to leave on their own.

- One-way door devices will be used where appropriate to allow bats to leave the roost but not to return.
- Prior to building demolition and/or tree removal/trimming and after other eviction efforts have been attempted, any confirmed roost site will be gently shaken or repeatedly struck with a heavy implement such as a sledge hammer or an axe. Several minutes should pass before beginning demolition work, felling trees, or trimming limbs to allow bats time to arouse and leave the roost. A biological monitor will search downed vegetation for dead and injured bats. The presence of dead or injured bats will be reported to CDFW. Injured bats will be transported to the nearest CDFW-permitted wildlife rehabilitation facility.

Implementation of the following measures will compensate for the loss of bat roosting habitat on the approach structure and ensure that the habitat is functioning. The loss of any tree roosting habitat will be in part mitigated by the replacement of riparian forest and protected trees, which would restore and protect riparian habitat and compensate for the loss of protected trees.

Replace Bat Roosting Habitat Lost from Demolition of Approach Structures

Bat roosting habitat will be incorporated into the new bridge and, if necessary, additional free-standing roosting habitat (e.g., bat houses) will be created and installed within or adjacent to the BSA. At a minimum ratio of 1:1, 1,132 linear feet of roosting habitat will be created to compensate for the loss of bat roosting habitat associated with the approach structures. Bat replacement habitat will consist of crevice habitat built into the new bridge. Bat replacement habitat will be designed generally following the guidelines in *California Bat Mitigation Techniques, Solutions, and Effectiveness* (Johnston et al. 2004), which provides a review of mitigation options for bats in relation to Caltrans projects. Final plans for bat habitat replacement will be approved by the project proponent and CDFW.

Monitor Bat Replacement Habitat

The project proponent will be responsible for monitoring replacement bat habitat over a 5-year period for a minimum of 3 years (e.g., years 2, 3, and 5) to determine whether bats are using the habitat, determine whether the habitat is functioning as intended, and identify any corrective actions that need to be made to the habitat to improve its use by bats. Bat use will be documented through a combination of visual observation (bats and bat sign), which could be conducted during the day where roosting bats are visible or at night during an emergence survey. Acoustic recordings will be used in combination with emergence surveys to attempt to identify the species of bat(s) using the replacement habitat. The locations and amount of occupied habitat will be recorded. Recommendations for corrective actions will be presented to the project proponent and CDFW for approval. Annual monitoring reports will be sent to the project proponent and CDFW.

Implementation of the following measures will avoid and/or minimize direct and indirect impacts on Central Valley fall- and late fall–run Chinook salmon and their habitat.

Conduct All In-Water Construction Activities between May 1 and November 30, and Only during Daylight Hours

The project proponent will conduct all in-water construction work and pile driving (in-water and shore-based within 250 feet of the Sacramento River), installation of cofferdams, removal of temporary sheet piles, and placement of rock revetment between May 1 and November 30 to avoid or minimize causing disturbance and injury to, or mortality of, special-status fish species in the affected reaches of the Sacramento River. In addition, in-water work will be conducted during daylight hours only to provide fish in the affected reaches of the Sacramento River with an extended quiet period during nighttime hours for feeding and unobstructed passage.

Limiting in-water construction to the May 1–November 30 period would achieve several goals.

- In-water construction activities with the potential to generate harmful levels of underwater noise (e.g., driving piles with an impact hammer) would avoid the primary migration periods of adults and juveniles of special-status fish species.
- The length of the in-water construction period would be maximized, thereby limiting the number of construction seasons that in-water construction would be needed and the number of year classes of fish species that potentially would be exposed to in-water construction effects.

Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving

The project proponent will require the contractor to implement the following measures, developed in coordination with project design engineers, to minimize the exposure of listed fish species to potentially harmful underwater sounds.

- The contractor will vibrate all piles to the maximum depth possible before using an impact hammer.
- No more than 20 piles will be driven per day, and pile driving with an impact hammer will occur on no more than 75 individual days total during construction.
- During impact driving, the contractor will limit the number of strikes per day to the minimum necessary to complete the work and will limit the total number of hammer strikes to 16,000 strikes per day (i.e., 800 hammer strikes per pile, per day) for piles for the bridge piers and temporary trestles, and 20,000 strikes per day (i.e., 1,000 hammer strikes per pile, per day) for the piles for the bridge fender system.
- The smallest pile driver and minimum force necessary will be used to complete the work.
- During impact driving, the project proponent will require the contractor to use a bubble curtain or similar device, if feasible, to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded.
- No pile driving activity will occur at night, thereby providing fish with an extended quiet period during nighttime hours on days pile driving is being conducted for feeding and unobstructed passage.

Develop and Implement a Hydroacoustic Monitoring Plan

The project proponent and/or its construction contractor will develop and implement a hydroacoustic monitoring plan. The monitoring plan will be submitted to the resource agencies (CDFW, NMFS, and USFWS) for approval at least 60 days before the start of project activities. The plan will include the following requirements.

- The project proponent and/or its construction contractor will monitor underwater noise levels during all impact pile driving activities on land and in water to ensure that that peak and cumulative SELs) do not exceed estimated values (Table 2.19-8).
- The monitoring plan will describe the methods and equipment that will be used to document the extent of underwater sounds produced by pile driving, including the number, location, distances, and depths of the hydrophones and associated monitoring equipment.
- The monitoring plan will include a reporting schedule for daily summaries of the hydroacoustic monitoring results and for more comprehensive reports to be provided to the resource agencies on a monthly basis during the pile driving season.
- The daily reports will include the number of piles installed per day; the number of strikes per pile; the interval between strikes; the peak SPL, SEL, and RMS per strike; and the accumulated SEL per day at each monitoring station.
- The project proponent or its contractors will ensure that a qualified fish biologist is on site during impact pile driving to document any occurrences of stressed, injured, or dead fish. If stressed, injured, or dead fish are observed during pile driving, the project proponent and/or its construction contractor will reduce the number of strikes per day to ensure that fish are no longer showing signs of stress, injury, or mortality.

Monitor Turbidity in the Sacramento River

The project proponent will require the construction contractor to monitor turbidity levels in the Sacramento River during in-water construction activities (e.g., pile driving, extraction of temporary sheet piles used for cofferdams, placement of RSP). Turbidity will be measured using standard techniques upstream and downstream of the construction area to determine whether changes in ambient turbidity levels exceed 20 percent, the threshold derived from the Basin Plan for the Sacramento and San Joaquin Rivers (Central Valley Regional Water Quality Control Board 2011). If it is determined that turbidity levels exceed the 20-percent threshold, then the project proponent and/or its contractors will adjust work to ensure that turbidity levels do not exceed the 20-percent threshold.

Implement Cofferdam Restrictions

The following restrictions will be implemented during installation of the cofferdams and cofferdam dewatering.

- The extent of cofferdam footprints will be limited to the minimum necessary to support construction activities.
- Sheet piles used for cofferdams will be installed and removed using a vibratory pile driver.

- Cofferdams will be installed and removed only during the proposed in-water work window (between May 1 and November 30).
- Cofferdams will not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area.
- All pumps used during dewatering of cofferdams will be screened according to CDFW and NMFS guidelines for screens.
- Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure.

Prepare and Implement a Fish Rescue and Relocation Plan

The project proponent and/or its construction contractor will develop and implement a fish rescue and relocation plan to recover any fish trapped in cofferdams. The fish rescue and relocation plan will be submitted to the resource agencies (CDFW, NMFS, and USFWS) for approval at least 60 days before initiating activities to install cofferdams. At a minimum, the plan will include the following.

- A requirement that fish rescue and relocation activities will commence immediately after cofferdam closure and that dewatering has sufficiently lowered water levels inside cofferdams to make it feasible to rescue fish.
- A description of the methods and equipment proposed to collect, transfer, and release all fish trapped within cofferdams. Capture methods may include seining, dip netting, and/or electrofishing as approved by CDFW, NMFS, and USFWS. The precise methods and equipment to be used will be developed cooperatively by CDFW, NMFS, USFWS, and the project proponent and/or contractor.
- A requirement that only CDFW-, NMFS-, and USFWS-approved fish biologists will conduct the fish rescue and relocation.
- A requirement that fish biologists will contact CDFW, NMFS, and USFWS immediately if any listed species are found dead or injured.
- A requirement that a fish rescue and relocation report be prepared and submitted to CDFW, NMFS, and USFWS within 5 business days following completion of the fish relocation. Data will be provided in tabular form and at a minimum will include the species and number rescued and relocated, approximate size of each fish (or alternatively, approximate size range if large number of individuals are encountered), date and time of their capture, and general condition of all live fish (e.g., good—active with no injuries; fair—reduced activity with some superficial injuries; poor—difficulty swimming/orienting with major injuries). For dead fish, additional data will include fork length and description of injuries and/or possible cause of mortality if it can be determined.

Prevent the Spread or Introduction of Aquatic Invasive Species

The project proponent or its contractors will implement the following actions to prevent the potential spread or introduction of aquatic invasive species (AIS) associated with the operation of barges and other in-water construction activities. Species of concern related to the operation of barges and other equipment in the lower Sacramento River include invasive mussels (e.g., quagga mussels [*Dreissena bugensis*] and zebra mussels [*Dreissena polymorpha*]) and aquatic plants (e.g., Brazilian waterweed [*Egeria densa*] and hydrilla [*Hydrilla verticillata*]) (California Department of Fish and Game 2008).

- The project proponent or its contractors will coordinate with the CDFW's Invasive Species Program to ensure that the appropriate BMPs are implemented to prevent the spread or introduction of AIS.
- Educate construction supervisors and managers about the importance of controlling and preventing the spread of AIS.
- Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of AIS.
- If feasible, prior to departure of vessels from their place of origin and before in-water construction equipment is allowed to operate within the waters of the Sacramento River, thoroughly inspect and remove and dispose of all dirt, mud, plant matter, and animals from all surfaces that are submerged or may become submerged, or places where water can be held and transferred to the surrounding water.

Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The project proponent will minimize or avoid the effects of nighttime lighting on special-status fish species by implementing the following actions.

Temporary Construction Lighting

- Avoiding construction activities at night, to the maximum extent practicable.
- Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas.
- Shielding and focusing lights on work areas and away from the water surface of the Sacramento River, to the maximum extent practicable.

Permanent Bridge Lighting

- Minimizing nighttime lighting of the bridge structure for aesthetic purposes.
- Using the minimal amount of lighting necessary to safely and effectively illuminate vehicular, bicycle, and pedestrian areas on the bridge.
- Shielding and focusing lights on vehicular, bicycle, and pedestrian areas and away from the water surface of the Sacramento River, to the maximum extent practicable.

2.19.5 References Cited

- Airola, D. A. and D. Kopp. 2009. Recent Purple Martin Declines in the Sacramento Region of California: Recovery Implications. *Western Birds* 40:254–259.
- Airola, D., B. Cousens, and D. Kopp. 2014. Accelerating Decline of the Sacramento Purple Martin Breeding Population in 2014: What Are the Possible Causes? *Central Valley Bird Club Bulletin* 17:12–22.
- Bisson, P. B. and R. E. Bilby. 1982. Avoidance of Suspended Sediment by Juvenile Coho Salmon. *North American Journal of Fisheries Management* 2:371–374.
- California Department of Fish and Game. 2008. *California Aquatic Invasive Species Management Plan*. January. Available: <<http://www.dfg.ca.gov/invasives/plan/>>. Accessed: February 11, 2014.
- California Department of Fish and Wildlife. 2015. California Natural Diversity Database, RareFind 5 (April 7, 2015). Search of the Sacramento West, Clarksburg, Saxon, Rio Linda, Sacramento East, Florin, Taylor Monument, Grays Bend, and Davis U.S. Geological Survey 7.5-minute quadrangles. Sacramento, CA.
- Carlson, T. J., M. Hastings, and A. N. Popper. 2007. *Update on Recommendations for Revised Interim Sound Exposure Criteria for Fish during Pile Driving Activities*. Memorandum to Suzanne Theiss (California Department of Transportation) and Paul Wagner (Washington Department of Transportation).
- Carrasquero, J. 2001. *Overwater Structures: Freshwater Issues*. Herrera Environmental Consultants, prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation. Seattle, WA.
- Central Valley Regional Water Quality Control Board. 2011. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region*. Fourth Edition, Revised October 2011 (with approved amendments). Available: <www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf>.
- Dunk, Jeffrey R. 1995. *White-Tailed Kite (Elanus leucurus)*. In A. Poole (ed.), *The Birds of North America*. Cornell Laboratory of Ornithology. Ithaca, NY. Available: <<http://bna.birds.cornell.edu/bna/species/178>>.
- eBird. 2015. eBird: An online database of bird distribution and abundance [web application]. Ithaca, NY. Available: <<http://www.ebird.org>>. Accessed: May 12, 2015.
- ICF International. 2016. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. February 23. Sacramento, CA.

- ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2009. *Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish—Final*. Prepared for California Department of Transportation. Sacramento, CA.
- Hallock, R. J., D. H. Fry, Jr., and D. A. LaFaunce. 1957. The Use of Wire Fyke Traps to Estimate the Runs of Adult Salmon and Steelhead in the Sacramento River. *California Fish and Game* 43(4):271–298.
- Heublein, J. C., J. T. Kelly, C. E. Crocker, A. P. Klimley, and S. T. Lindley. 2009. Migration of Green Sturgeon, *Acipenser medirostris*, in the Sacramento River. *Environmental Biology of Fishes* 84(3):245–258.
- Jennings, M. R. and M. P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. California Department of Fish and Game, Inland Fisheries Division. Rancho Cordova, CA.
- Jennings, M. R., M. P. Hayes, and D. C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants.
- Johnston, D., G. Tatarian, and E. Pierson. 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. December 29. Prepared for California Department of Transportation and California State University Sacramento Foundation. (Project Number 2394-01.)
- Lloyd, D. S., J. P. Koenings, and J. D. La Perriere. 1987. Effects of Turbidity in Fresh Waters of Alaska. *North American Journal of Fisheries Management*.
- Moyle, P. 2002. *Inland Fishes of California*. University of California Press. Berkeley, CA.
- Moyle, P. B., R. D. Baxter, T. Sommer, T. C. Foin, and S. A. Matern. 2004. Biology and Population Dynamics of Sacramento Splittail (*Pogonichthys macrolepidotus*) in the San Francisco Estuary: A Review. *San Francisco Estuary and Watershed Science* [online serial] 2(2), Article 3.
- Moyle, P. B., R. M. Quiñones, J. V. Katz, and J. Weaver. 2015. *Fish Species of Special Concern in California*. California Department of Fish and Wildlife. Sacramento, CA. Available: www.wildlife.ca.gov.
- Moyle, P. B., J. E. Williams, and E. D. Wikramanayake. 1989. *Fish Species of Special Concern of California*. California Department of Fish and Game. Rancho Cordova, CA.
- National Marine Fisheries Service. 2019. Species List. Quad Name: Sacramento West, Sacramento East. Quad Number: 38121-E5, 38121-E4. March.

- _____. 2009. *Public Draft Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead*. October. Sacramento Protected Resources Division. Sacramento, CA.
- Pierson, E. D., W. E. Rainey, and C. Corben. 2006. *Distribution and Status of Western Red Bats (Lasiurus blossevillii) in California*. California Department of Fish and Game, Habitat Conservation Planning Branch. (Species Conservation and Recovery Program Report 2006-04.) Sacramento, CA.
- Popper, A. N. and M. C. Hastings. 2009. The Effects of Human-Generated Sound on Fish. *Integrative Zoology* 4:43–52.
- Popper, A. N., T. J. Carlson, A. D. Hawkins, B. L. Southall, and R. L. Gentry. 2006. *Interim Criteria for Injury of Fish Exposed to Pile Driving Operations: A White Paper*.
- Raleigh, R. F., T. Hickman, R. C. Soloman, and P. C. Nelson. 1984. *Habitat Suitability Information: Rainbow Trout*. (Biological Report 82[10.60].) U.S. Fish and Wildlife Service. Washington, D.C.
- Roberts, J. 2007. *Timing, Composition and Abundance of Juvenile Anadromous Salmonid Emigration in the Sacramento River near Knights Landing, October 2001—July 2002*. California Department of Fish and Game, North Central Region. Fisheries Program. Rancho Cordova, CA.
- Shuford, W. D. and T. Gardali (eds.) *California Bird Species of Special Concern – a Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*. February 4. Studies of Western Birds No. 1. Western Field Ornithologists, Camarillo, CA and California Department of Fish and Game, Sacramento, CA.
- Sigler, J. W., T. C. Bjornn, and F. H. Everest. 1984. Effects of Chronic Turbidity on Densities and Growth of Steelheads and Coho Salmon. *Transactions of the American Fisheries Society* 113:142–150.
- Snider, B. and R. Titus. 2000a. *Timing, Composition and Abundance of Juvenile Anadromous Salmonid Emigration in the Sacramento River near Knights Landing, October 1996–September 1997*. California Department of Fish and Game, Native Anadromous Fish and Watershed Branch. Stream Evaluation Project. (Technical Report No. 00-04.) 30 pp. (plus appendices).
- _____. 2000b. *Timing, Composition and Abundance of Juvenile Anadromous Salmonid Emigration in the Sacramento River near Knights Landing, October 1997–September 1998*. California Department of Fish and Game, Native Anadromous Fish and Watershed Branch. Stream Evaluation Project. (Technical Report No. 00-15.) 27 pp. (plus appendices).

- _____. 2000c. *Timing, Composition and Abundance of Juvenile Anadromous Salmonid Emigration in the Sacramento River near Knights Landing October 1998–September 1999*. California Department of Fish and Game, Native Anadromous Fish and Watershed Branch. Stream Evaluation Project. (Technical Report No. 00-6.) 28 pp. (plus appendix).
- _____. 1998. *Evaluation of Juvenile Anadromous Salmonid Emigration in the Sacramento River near Knights Landing, November 1995 through July 1996*. California Department of Fish and Game, Environmental Services Division. Stream Evaluation Project. 26 pp. (plus appendices).
- Sommer, T., R. Baxter, and B. Herbold. 1997. Resilience of Splittail in the Sacramento–San Joaquin Estuary. *Transactions of the American Fisheries Society* 126:961–976.
- State Water Resources Control Board. 2011. *2010 Integrated Report (Clean Water Act Section 303[d] List / 305[b] Report) — Statewide*. Available: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml. Accessed: April 10, 2015.
- Stebbins, R. C. 2003. *Western Reptiles and Amphibians*. Third Edition. Houghton Mifflin Company. New York, NY.
- Swainson’s Hawk Technical Advisory Committee. 2000. *Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley*. May 31. Available: <https://www.dfg.ca.gov/wildlife/nongame/raptors/swha/>. Accessed: July 1, 2015.
- Tabor, R. A., G. S. Brown, and V. T. Luiting. 2001. The Effect of Light Intensity on Sockeye Salmon Fry Migratory Behavior and Predation by Cottids in the Cedar River, Washington. *North American Journal of Fisheries Management* 24:128–145.
- Tuvikene, A. 1995. Responses of Fish to Polycyclic Aromatic Hydrocarbons (PAHs). *Annales Zoologici Fennici* 32:295–309.
- U.S. Fish and Wildlife Service. 2019. Official Species List. Consultation Code: 08ESMF00-2017-SLI-0452. Event Code: 08ESMF00-2019-E-04740. Project Name: I Street Bridge Replacement. March 25.
- _____. 2016. *Pacific Lamprey*. Oregon Fish and Wildlife Office website. Available: <http://www.fws.gov/oregonfwo/articles.cfm?id=149489457>. Accessed: March 18, 2016.
- _____. 2015a. *Delta Juvenile Fish Monitoring Program Data*. Available: <http://www.fws.gov/lodi/jfmp/>. Accessed: June 1, 2015.
- _____. 2015b. *Guidance to Ensure Consistent and Effective Application of the U.S. Fish and Wildlife Service Mitigation Policy*. Available: <http://www.fws.gov/policy/501fw2.html>. Accessed: June 26, 2015.

- _____. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. July 9.
- _____. 1992. *Shaded Riverine Aquatic Cover of the Sacramento River System: Classification as a Resource Category 1 Under the FWS Mitigation Policy*. October. Fish and Wildlife Enhancement, Sacramento Field Office, Sacramento, CA.
- Wakeham, S. G., C. Schaffner, and W. Giger. 1980. Polycyclic Aromatic Hydrocarbons in Recent Lake Sediments—I. Compounds Having Anthropogenic Origins. *Geochimica et Cosmochimica Acta*, 44 (3):403–413.
- Waters, T. F. 1995. *Sediment in Streams—Sources, Biological Effects and Control*. (American Fisheries Society Monograph 7.) Bethesda, MD. 251 pp.
- Western Bat Working Group. 2005. *Species Accounts*. Updated at the 2005 Portland Biennial Meeting. *Corynorhinus townsendii*, Townsend’s Big-Eared Bat.
- Zeiner, D. C., W. F. Laudenslayer, Jr., and K. E. Mayer (eds.). 1988. *California’s Wildlife. Volume 1: Amphibians and Reptiles*. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Game. Sacramento, CA.
- _____. 1990. *California’s Wildlife. Volume 2: Birds*. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Game. Sacramento, CA.

2.19.5.1 Personal Communications

- Grimaldo, L. California Department of Water Resources. 8–10 years of data using fin rays, unpublished data.
- Oppenheim, Bruce. Biologist, National Marine Fisheries Service. September 15, 2003—E-mail report to Randall Baxter, California Department of Fish and Game, of a fresh angler-killed adult splittail thrown up on a river bank just below the Thermalito outlet.
- Rea, Maria. Assistant Regional Administrator, National Marine Fisheries Service. August 20, 2015—Letter to Sue Bauer, California Department of Transportation, regarding request for technical assistance for Caltrans’ proposed project to replace the I-Street Bridge over the Sacramento River.
- Seesholtz, Alicia. Environmental Scientist, California Department of Water Resources. September 20, 2007—Phone conversation with Rick Wilder about fish use of the Feather River.
- Wyatt, David. Professor. Biology Department, Sacramento City College, Sacramento, California. May 7, 2015 – email to John Howe regarding bats roosting in the I Street Bridge approach structures.

2.20 Threatened and Endangered Species

2.20.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is FESA (16 USC 1531 et seq.). See also 50 CFR 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of FESA, federal agencies, such as the FHWA, are required to consult with USFWS and 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 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a No Effect finding. Section 3 of the ESA 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, CESA (CFGF 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. CDFW is the agency responsible for implementing CESA. CFGF Section 2081 prohibits take of any species determined to be an endangered species or a threatened species. *Take* is defined in CFGF Section 86 as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by CDFW. For species listed under both ESA and CESA requiring a Biological Opinion under Section 7 of the ESA, CDFW also may authorize impacts on CESA species by issuing a Consistency Determination under CFGF Section 2080.1.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (1) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983; and (2) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.20.2 Affected Environment

This section is based on the *Natural Environment Study* (ICF International 2016) prepared for the project and the USFWS and NMFS lists of threatened endangered species for the project region (U.S. Fish and Wildlife Service 2019, National Marine Fisheries Service 2019) (included in Appendix G). Threatened and endangered species reviewed as potentially occurring in the BSA

are listed and described in Sections 2.18 (Table 2.18-1) and 2.19 (Table 2.19-1), and only those species with suitable habitat in the BSA are further discussed in this chapter. The *Natural Environment Study* is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Six federally listed species (valley elderberry longhorn beetle [VELB], Sacramento River winter-run Chinook salmon, Central Valley (CV) spring-run Chinook salmon, CV steelhead, green sturgeon, and delta smelt) and six state-listed species (Mason's lilaepsis, Swainson's hawk, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, delta smelt, and longfin smelt) could occupy the BSA based on the presence of suitable habitat. Each of these species is discussed below.

Inter-agency consultation with NMFS and USFWS under Section 7 of FESA is required for potential effects of the proposed project on Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and green sturgeon (including designated critical habitat) (NMFS); and VELB and delta smelt (including designated critical habitat for delta smelt) (USFWS).

A Biological Assessment and essential fish habitat (EFH) assessment (California Department of Transportation 2016a) was prepared and submitted by Caltrans to NMFS on August 4, 2016, in order to initiate FESA consultation and request a determination on the effects of the project on Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and green sturgeon (including designated critical habitat). NMFS issued a Biological Opinion on June 25, 2018 concluding that the proposed project may affect, likely to adversely affect, winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and green sturgeon (including designated critical habitat). A Biological Assessment (California Department of Transportation 2016b) was prepared and submitted by Caltrans to USFWS on August 4, 2016, in order to initiate FESA consultation and request a determination on the effects of the project on delta smelt (including designated critical habitat) and VELB. USFWS issued a Biological Opinion on June 15, 2017 concluding that the proposed project is not likely to adversely affect critical habitat for delta smelt, and that the proposed project may affect, likely to adversely affect, delta smelt and VELB. Both biological opinions are included in Appendix G.

Plant Species

Mason's Lilaepsis

Mason's lilaepsis is a state-listed rare plant species and California Rare Plant Rank 1B.1 species that occurs in the tidal zone of freshwater or brackish marsh and riparian scrub habitats. This herbaceous perennial blooms between April and November. There is only low potential for Mason's lilaepsis to occur in the BSA within the degraded habitat present on the Sacramento River bank. The nearest recorded occurrence is approximately 7.3 miles southwest of the BSA along the Sacramento Deep Water Ship Channel, and the nearest recorded occurrence on the Sacramento River is approximately 30 miles south near Rio Vista (California Department of Fish and Wildlife 2015). The strong currents and boat wakes in the Sacramento River are likely too great for establishment of this species, and there is foot traffic over much of the levee bank area.

In addition, most of the levee bank is either covered by rip-rap to below the water level or is trampled sand flats. This species was not observed during the April or May 2015 surveys, which coincided with the blooming period. Due to the degraded state of the potential habitat in the BSA, the distance to the nearest known occurrence, and the absence of the species during the 2015 surveys, Mason's lilaeopsis is presumed absent from the BSA and is not discussed further in this document.

Wildlife Species

Valley Elderberry Longhorn Beetle

The VELB is federally listed as threatened. The current known range of the VELB extends throughout California's Central Valley and associated foothills from about the 3,000-foot contour on the east and the watershed of the Central Valley on the west (U.S. Fish and Wildlife Service 1999:1). The VELB is dependent on its host plant, elderberry, which is a common component of riparian corridors and adjacent upland areas in the Central Valley (Barr 1991:5).

The VELB has four stages of life: egg, larva, pupa, and adult. Females deposit eggs on or adjacent to the host elderberry. Egg production varies, and females have been observed to lay between 16 and 180 eggs. Eggs hatch within a few days of being deposited and larvae emerge. The larvae bore into the wood of the host plant and create a long feeding gallery in the pith of the elderberry stem. The larvae feed on the pith of the plant for 1–2 years. When a larva is ready to pupate, it chews an exit hole to the outside of the stem and then plugs it with wood shavings. The larva then retreats into the feeding gallery to an enlarged pupal chamber. The larvae metamorphose into pupae between December and April; the pupal stage is thought to last about a month. The adult remains in the chamber for several weeks after the pupal phase and then emerges from the chamber through the exit hole, which is typically 4–10 millimeters (mm) in diameter and circular to oval in shape. Adults emerge between mid-March and mid-June, the flowering season of the plant. Adults feed on elderberry leaves and mate within the elderberry canopy (Talley et al. 2006a:7–9).

ICF wildlife biologist John Howe surveyed for and mapped elderberry shrubs in the BSA during the April 8, 2015 field survey. Seven elderberry shrubs were identified within the BSA. Five shrubs are located on the West Sacramento side, and two are on the Sacramento side of the BSA (Figure 2.16-1). The results of the survey are summarized in Table 2-20-1. Shrub 1 was observed to be a re-sprout from an elderberry stump, which appeared to have been cut down. The stump was measured to be approximately 12 inches in diameter at ground level; multiple new stems were growing out of it and from the surrounding soil. Shrub 5 also was cut down at some point; it had two stumps greater than 5 inches in diameter with new stems growing out of them. Table 2.20-1 reports only those stems that currently provide habitat for VELB (i.e., the cut stumps themselves are not included). VELB has been documented approximately 0.5 mile north of the BSA along the west bank of the Sacramento (California Department of Fish and Wildlife 2015).

Table 2.20-1. Elderberry Shrub Survey Results

Shrub Number	Stem Diameter Class at Ground Level in Inches			Shrub Height in Feet	Exit Holes Present?	Shrub in Riparian Habitat?
	≥1–≤3	>3–<5	≥ 5			
1	4	0	0	6	No	No
2	0	1	1	22	No	No
3	0	0	1	12	No	No
4	4	3	0	15	No	No
5	18	0	0	10	No	No
6	6	0	3	26	No	No
7	0	0	1	20	No	Yes
Total	32	4	6			

Swainson's Hawk

Swainson's hawk is state listed as threatened. Swainson's hawks forage in grasslands, grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Vineyards, orchards, rice, and cotton crops are generally unsuitable for foraging because of the density of the vegetation (California Department of Fish and Game 1992:41). The majority of Swainson's hawks winter in South America, although some winter in the United States. Swainson's hawk arrives in California in early March to establish nesting territories and breed (California Department of Fish and Game 1994:5). They usually nest in large, mature trees. Most nest sites (87 percent) in the Central Valley are found in riparian habitats (Estep 1989:35), primarily because trees are more available there. Swainson's hawks also nest in mature roadside trees and in isolated trees in agricultural fields or pastures. The breeding season is from March through August (Estep 1989:12, 35).

No Swainson's hawks were observed during the April 2014 and May 2015 surveys. The CNDDDB contains several records for Swainson's hawk both upstream and downstream of the BSA, with the nearest record approximately 0.2 mile north of the BSA on the west side of the river in 2007 (California Department of Fish and Wildlife 2015).

Trees within the cottonwood riparian forest, riparian forest/shrub wetland, ruderal woodland, and landscaped area represent potential nesting habitat for Swainson's hawk.

Fish Species

Sacramento River Winter-Run Chinook Salmon

The Sacramento River winter-run Chinook salmon evolutionarily significant unit (ESU) (*O. tshawytscha*) is listed as endangered under FESA (59 FR 440; January 4, 1994). The ESU includes all naturally spawned populations of winter-run Chinook salmon in the Sacramento River and its tributaries, as well as artificially propagated fish from the Livingston Stone National Fish Hatchery (LSNFH) (National Marine Fisheries Service 2005). NMFS designated critical habitat for Sacramento River winter-run Chinook salmon on June 16, 1993 (58 FR 33212–33219); the Sacramento River within and in the vicinity of the BSA is included in the

designation of critical habitat for Sacramento River winter-run Chinook salmon. The Sacramento River winter-run Chinook salmon ESU was listed as endangered under CESA in September 1989.

Prior to construction of Shasta Dam, winter-run Chinook salmon spawned in the upper reaches of the Sacramento River, the McCloud River, and the lower Pit River. Spawning is now restricted to approximately 44 miles of the mainstem Sacramento River, immediately downstream of Keswick Dam (Yoshiyama et al. 1998).

Winter-run Chinook salmon spend 1–3 years in the ocean. Adult winter-run Chinook salmon leave the ocean and migrate through the Delta into the Sacramento River from December through July, with peak migration in March (Table 2.19-2) (Moyle 2002). Downstream movement of juvenile winter-run Chinook salmon begins in August, soon after fry emerge. The peak abundance of juveniles moving downstream at Red Bluff occurs in September and October (Vogel and Marine 1991). Winter-run Chinook salmon smolts may migrate through the Delta and San Francisco Bay to the ocean from November through May (Yoshiyama et al. 1998). The Sacramento River channel is the main migration route; however, the Yolo Bypass also provides significant outmigration passage during higher flow events.

One of the main factors in the decline of winter-run Chinook salmon is habitat loss and degradation. On the Sacramento River, Shasta Dam blocks access to historical spawning and rearing habitat. Other factors affecting abundance include the effects of reservoir operations on water temperature, drought effects, passage impediments, harvesting and fishing pressure, entrainment in diversions, contaminants, predation by non-native species, and interaction with hatchery stock (U.S. Army Corps of Engineers 2000). Factors such as levee construction and bank armoring have altered the critical habitat of winter-run Chinook salmon. These factors reduce floodplain habitat, change river bank substrate size, and decrease the amount of SRA cover and riparian habitat, which in turn, reduce habitat availability and quality (National Marine Fisheries Service 2006).

Winter-run Chinook salmon use the BSA as a migration corridor during upstream (adult) and downstream (juvenile) migration, and juveniles use the BSA for seasonal rearing while emigrating to the ocean. Spawning and egg incubation do not occur in the BSA (Moyle 2002).

Winter-run size juvenile Chinook salmon have been detected in weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, winter-run size juvenile Chinook salmon were detected in the trawls from October through April, although most were detected in the trawls from November through March (Table 2.20-2) (U.S. Fish and Wildlife Service 2015).

Table 2.20-2. Number of Winter-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013 ^a	2014	2015	Monthly Total ^b
Jan	25	4	2	22	1	1		2			3	57
Feb	17	19	53	9	14	7	3	2		45	2	169
Mar	7	37		1			3	24		23	1	95
Apr	1	5					5	1		3		15
May												0
Jun												0
Jul												0
Aug												0
Sep												0
Oct					3	2						5
Nov	30	2			2			48		2		84
Dec	38	38		1		7		26		13		123
Annual Total	118	105	55	33	20	17	11	103	0	86	NA	548

NA = Not applicable

Gray shading = data unavailable when website was accessed.

^a No winter-run-size juvenile Chinook salmon were captured by trawl surveys.

^b 2015 data are excluded from total because data are incomplete.

Source: U.S. Fish and Wildlife Service 2015.

Central Valley Spring-Run Chinook Salmon

The CV spring-run Chinook salmon (*O. tshawytscha*) ESU is federally listed as threatened (70 FR 37160; June 28, 2005). The ESU includes naturally spawned populations in the Sacramento River and its tributaries, including the Feather and Yuba Rivers, and the artificial propagation program at the Feather River Fish Hatchery. NMFS designated critical habitat for this ESU on September 2, 2005 (70 FR 52488). The Sacramento River within and in the vicinity of the BSA is included in the designation of critical habitat for CV spring-run Chinook salmon. The CV spring-run Chinook salmon ESU was listed as threatened under CESA in February 1999.

Adult spring-run Chinook salmon enter the mainstem Sacramento River from February through September, with the peak upstream migration occurring from May through June (Table 2.19-2) (Yoshiyama et al. 1998). Adults generally enter tributaries from the Sacramento River between mid-April and mid-June (National Marine Fisheries Service 2006). Spring-run Chinook salmon are sexually immature during upstream migration, and adults hold in deep, cold pools near spawning habitat until spawning commences in late summer and fall. Spawning habitat occurs in the upper reaches of the Sacramento River and tributaries.

Juvenile spring-run Chinook salmon typically spend up to 1 year rearing in fresh water before migrating to sea as yearlings, but some may migrate downstream as young-of-year juveniles. Rearing takes place in their natal streams, the mainstem of the Sacramento River, inundated floodplains (including the Sutter and Yolo Bypasses), and the Delta. Based on observations in Butte Creek and the Sacramento River, young-of-year juveniles typically migrate from

November through May. Yearling spring-run Chinook salmon migrate from October to March, with peak migration in November (Cramer and Demko 1997; Hill and Webber 1999). Downstream migration of yearlings typically coincides with the onset of the winter storm season (California Department of Fish and Game 1998).

Reasons for the decline and current status of Central Valley spring-run Chinook salmon fall into three general categories: (1) loss of historical spawning habitat; (2) degradation of remaining habitat; and (3) threats to the genetic integrity of the wild spawning populations. The construction of debris, hydropower, flood control, and water supply dams eliminated virtually all historical spawning habitat of spring-run Chinook salmon. Current spawning is restricted to limited areas in mainstem reaches below the lowermost impassable dams and in a few tributaries where the habitat has been degraded by a number of historical and ongoing activities. Major factors that contributed to declines—and that currently limit salmon and steelhead populations—include altered flows and water temperatures from dam operations and water diversions; losses of suitable spawning substrate; channel alterations (e.g., channelization, levees) associated with navigation and flood risk reduction; and associated losses of riparian, floodplain, and wetland habitat.

Spring-run Chinook salmon use the BSA as a migration corridor during upstream (adult) and downstream (juvenile) migration, and juveniles use the BSA for seasonal rearing while emigrating to the ocean. Spawning and egg incubation do not occur in the BSA (Moyle 2002). Spring-run size juvenile Chinook salmon have been detected during weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, spring-run size juvenile Chinook salmon were detected in the trawls from December through May (Table 2.20-3) (U.S. Fish and Wildlife Service 2015).

Spring-run size juvenile Chinook salmon have been detected during weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, spring-run size juvenile Chinook salmon were detected in the trawls from December through May (Table 2.20-3) (U.S. Fish and Wildlife Service 2015).

Table 2.20-3. Number of Spring-Run-Size Juvenile Chinook Salmon Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan	4	64		9			10	1	1		2	89
Feb	27	74	23	11	2	3	20	1		102	9	263
Mar	67	98	7	2	2	13	9	142		157	1	497
Apr	412	186	123	37	179	148	272	110	390	487		2344
May	21	110	15	8	41	5	5	4	5	6		220
Jun												0
Jul												0
Aug												0
Sep												0
Oct												0
Nov												0
Dec	27					34		11		21		93
Annual Total	558	532	168	67	224	203	316	269	396	773	NA	3,506

NA = Not applicable

Gray shading = data unavailable when website was accessed.

^a 2015 data excluded from totals.

Source: U.S. Fish and Wildlife Service 2015.

Central Valley Steelhead Distinct Population Segment

The CV steelhead DPS is federally listed as threatened (63 FR 13347; March 19, 1998). NMFS published its final determination to list the species on January 5, 2006 (71 FR 834), and reaffirmed its threatened status for the species on August 15, 2011 (National Marine Fisheries Service 2011). The CV steelhead DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries. Artificially propagated fish from Coleman National Fish Hatchery and Feather River Fish Hatchery are included in the DPS (National Marine Fisheries Service 2006). Critical habitat for CV steelhead has been designated, and includes the Sacramento River within and in the vicinity of the BSA (70 FR 52488; September 2, 2005). CV steelhead is not listed under CESA.

Steelhead exhibit highly variable life history patterns throughout their range but are broadly categorized into winter and summer reproductive ecotypes. Winter steelhead, the most widespread reproductive ecotype, is the only type currently present in Central Valley streams (McEwan and Jackson 1996). Winter steelhead become sexually mature in the ocean; enter spawning streams in summer, fall, or winter; and spawn a few months later in winter or spring (Meehan and Bjornn 1991; Behnke 1992).

In the Central Valley, adult winter steelhead migrate to upstream spawning areas during most months of the year, with peak migration occurring in fall or early winter, and spawn in winter and spring (Table 2.19-2). Juvenile steelhead rear for a minimum of 1 year, and typically for 2 or more years, in fresh water before migrating to the ocean as smolts (i.e., juveniles that are

physiologically ready to enter seawater). Juvenile migration to the ocean generally occurs from December through August. The peak months of juvenile migration are January to May (McEwan 2001). Generally, steelhead require cool, clean, well-oxygenated riverine habitat with an abundance of relatively clean gravel for spawning and food production, streamside vegetation, and cover.

Steelhead were once abundant in Central Valley drainages. However, population numbers have declined significantly in recent decades. Factors that have contributed to their present status include habitat loss as a result of barriers, water development, water conveyance and flood control, hatchery operations and practices, land use activities, water quality, sport harvest, disease and predation, environmental variation (e.g., climatic and ocean conditions), and invasive species (National Marine Fisheries Service 2014).

CV steelhead use the BSA as a migration corridor during upstream (adult) and downstream (juvenile) migration, and juveniles use the BSA for seasonal rearing while emigrating to the ocean. Spawning and egg incubation do not occur in the BSA (Moyle 2002).

Steelhead have been detected during weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, adipose fin-clipped juvenile steelhead (indicating hatchery origin) and unclipped (wild) steelhead were detected in the trawls from January through June (Table 2.20-4) (U.S. Fish and Wildlife Service 2015).

Table 2.20-4. Total Number of Wild and Hatchery-Origin Juvenile Steelhead Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan	23(1)	4	1	13(1)	11	1	3	34(1)	3	1	1	94(3)
Feb	44	36(2)	33(1)	42	45	31(4)	23	81(5)	3	256(5)	8	594(17)
Mar	19	12	1	1	3	1	11	13	1	12(3)		74(3)
Apr	6(1)		3(1)		1	6(2)	1	4(1)	3(2)	4(1)		28(8)
May	5(2)	1	3		2(2)	1(1)	1(1)	2(1)	1(1)			16(8)
Jun		1(1)	1(1)				1(1)					3(3)
Jul												
Aug												
Sep												
Oct												
Nov												
Dec												
Annual Total	97(4)	54(3)	42(3)	56(1)	62(2)	40(7)	40(2)	134(8)	11(3)	273(9)	NA	809(42)

NA = Not applicable

Notes:

Gray shading = data unavailable when website was accessed.

The number of unclipped (wild) steelhead shown in parentheses.

^a 2015 data excluded from totals.

Source: U.S. Fish and Wildlife Service 2015.

Southern Distinct Population Segment of North American Green Sturgeon

On January 23, 2003, NMFS determined that North American green sturgeon is composed of two populations, a northern and a southern DPS (68 FR 4433). The northern DPS consists of populations extending from the Eel River northward, and the southern DPS consists of populations south of the Eel River to the Sacramento River. The Sacramento River supports the southernmost spawning population of green sturgeon (Moyle 2002). On April 7, 2006, NMFS listed the southern DPS of green sturgeon as threatened under FESA (71 FR 17757–17766). Critical habitat for green sturgeon was designated on October 9, 2009, (74 FR 52300) and includes the Sacramento River within and in the vicinity of the BSA.

Green sturgeon is not listed under CESA but is considered a California species of special concern. CDFW classifies the current status of green sturgeon as High Concern (high risk of becoming a critical concern species) (Moyle et al. 2015). On March 20, 2006, emergency green sturgeon regulations were put into effect by CDFG (now CDFW) requiring a year-round zero bag limit of green sturgeon in all areas of the state (NorCal Fish Reports 2016). Current freshwater sportfishing regulations prohibit the taking or possessing of green sturgeon in California (California Department of Fish and Wildlife 2016).

Green sturgeon is the most marine species of sturgeon, making extensive oceanic migrations and coming into freshwater rivers only to spawn. Adults migrate into rivers to spawn between late February and late July, and spawn between March and July, with a peak from mid-April to mid-June (Table 2.19-2) (Moyle 2002). In the Central Valley, spawning occurs in the Sacramento River upstream of Hamilton City, perhaps as far upstream as Keswick Dam (Adams et al. 2002), and possibly in the lower Feather River (Moyle 2002). Spawning and egg incubation do not occur in the vicinity of the BSA (Moyle 2002). Juveniles spend several months in the Sacramento River before migrating to brackish or estuarine waters (Kynard et al. 2005). Juveniles migrate to the ocean at 1–3 years of age (Adams et al. 2002).

Musick et al. (2000) noted that the abundance of North American green sturgeon populations has declined by 88 percent throughout much of its range. A number of threats and stressors exist for green sturgeon, specifically reduced spawning habitat (migration barriers), exposure to toxins, harvest, reduced rearing habitat, increased water temperatures, dredging, non-native aquatic species, and entrainment in unscreened diversions.

It is well documented that green sturgeon use the BSA as a migration corridor during upstream (adult) and downstream (adult and juvenile) migration. In addition, juvenile green sturgeon use the lower reaches of the Sacramento River for seasonal rearing. Spawning and egg incubation do not occur in the BSA (Moyle 2002).

Focused surveys for green sturgeon were not conducted. Because green sturgeon are benthic-oriented, they are not typically susceptible to the USFWS trawls that sample the water column. Therefore, little is known about their seasonal use of habitats and relative abundance in the BSA. General information on their distribution and habitat use indicates that green sturgeon have the potential to occur in the BSA year-round.

Delta Smelt

Delta smelt was federally listed as threatened on March 5, 1993 (58 FR 12854–12863), and critical habitat was designated on December 19, 1994 (59 FR 65256–65278). On April 7, 2010, USFWS ruled that a change in the status of delta smelt from threatened to endangered was warranted but was precluded by other higher priority listing actions (75 FR 17667). Although the Sacramento River within the BSA is not designated as critical habitat, the Sacramento River within the vicinity of the BSA (i.e., downstream of the existing I-Street Bridge) is designated as critical habitat for delta smelt.

Delta smelt was listed as a threatened species under CESA on December 9, 1993. In February 2007, an emergency petition was filed with the California Fish and Game Commission to elevate the status of delta smelt from threatened to endangered under CESA (The Bay Institute et al. 2007). On March 4, 2009, the California Fish and Game Commission elevated the status of delta smelt to endangered under CESA.

Delta smelt are endemic to the Sacramento-San Joaquin estuary and are found seasonally in Suisun Bay and Suisun Marsh (Moyle 2002). They typically are found in shallow water (<10 feet) where salinity ranges from 2 to 7 parts per thousand (ppt), although they have been observed at salinities between 0 and 18.4 ppt (Moyle 2002). Delta smelt have relatively low fecundity, and most live for 1 year (Moyle 2002). They feed on planktonic copepods, cladocerans, amphipods, and insect larva (Moyle 2002).

Delta smelt are semi-anadromous. During their spawning migration, adults move into the freshwater channels and sloughs of the Delta between December and January (Moyle 2002). Spawning occurs between January and July, with peak spawning from April through mid-May (Table 2.19-2) (Moyle 2002). Spawning locations in the Delta have not been identified and are inferred from larval catches (Bennett 2005). Larval fish have been observed in Montezuma Slough (Wang 1986); Suisun Slough in Suisun Marsh (Moyle 2002); the Napa River estuary (Stillwater Sciences 2006); the Sacramento River above Rio Vista; and Cache, Lindsey, Georgiana, Prospect, Beaver, Hog, Sycamore, and Barker Sloughs (U.S. Fish and Wildlife Service 1996). Spawning also was detected in the Sacramento River up to Garcia Bend (RM 51) during drought conditions as a result of increased saltwater intrusion that moved delta smelt spawning and rearing farther inland (Wang and Brown 1993).

Factors affecting delta smelt abundance include diversions, Delta inflow and outflow, extremely high river outflow that increases entrainment at export facilities, changes in prey abundance and composition, predation by non-native species, toxic substances, disease, and loss of genetic integrity through interbreeding with the introduced Wagasaki smelt (Moyle 2002; Bennett 2005).

Delta smelt occur in the Sacramento River in the vicinity of the BSA, based on weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, adult delta smelt (some in spawning condition) were detected in the trawls from February through May, although most were detected in the trawls in March (Table 2.20-5). (U.S. Fish and Wildlife Service 2015). The occurrence of mature adults in the trawl samples suggests that delta smelt may spawn in this part of the Sacramento River, including the BSA.

Table 2.20-5. Number of Delta Smelt Captured by Trawl at Sherwood Harbor (RM 55) by Month (January 2005 through March 2015)

Month/ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Monthly Total ^a
Jan												0
Feb	1											1
Mar	3			1		1		28		18		51
Apr	2			1				1	1	3		8
May		1										1
Jun												0
Jul												0
Aug												0
Sep												0
Oct												0
Nov												0
Dec												0
Annual Total	6	1	0	2	0	1	0	29	1	21	NA	61

NA = Not applicable

Gray shading = data unavailable when website was accessed.

^a 2015 data excluded from totals.

Source: U.S. Fish and Wildlife Service 2015.

Longfin Smelt

The San Francisco Bay-Delta DPS of longfin smelt is a candidate species under FESA. On April 2, 2012, USFWS announced a 12-month finding on a petition to list the Bay-Delta DPS of longfin smelt as threatened or endangered and to designate critical habitat under FESA. In its finding, USFWS announced that listing of the Bay-Delta DPS of longfin smelt is warranted but was precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants (77 FR 19756). Critical habitat for longfin smelt has not been designated.

Longfin smelt was listed as a threatened species under CESA on June 26, 2009. Longfin smelt is included in the *Sacramento-San Joaquin Delta Native Fishes Recovery Plan*, which was completed in 1996 (U.S. Fish and Wildlife Service 1996).

Longfin smelt are a small, euryhaline (tolerant of a range of salinities) fish found in open waters of bays and estuaries (Moyle 2002). In the San Francisco estuary, longfin smelt are rarely found upstream of Rio Vista on the Sacramento River and Medford Island on the San Joaquin River (Moyle 2002), although adults have been observed in the Sacramento River as far upstream as Colusa and in the San Joaquin River as far upstream as Lathrop (Merz et al. 2013). Although adults occur seasonally as far downstream as South San Francisco Bay, they are concentrated primarily in North San Francisco, San Pablo, and Suisun Bays (Moyle 2002). Longfin smelt are also common in nearshore coastal marine waters west of the Golden Gate Bridge in late summer and fall (Baxter 1999).

Bay-Delta longfin smelt are anadromous, leaving coastal marine areas and the brackish bays in fall and moving upstream to spawn in the freshwater reaches of the lower Sacramento and San

Joaquin Rivers in winter and spring. Although spawning of Bay-Delta longfin smelt has not been observed, the location of spawning sites can be inferred from CDFW surveys that collect adult female and larval smelt. Based on these surveys, spawning habitat is presumed to exist in the Cache Slough subregion (Sacramento River Deep Water Ship Channel, Cache-Liberty Island Complex), the West Delta subregion (lower Sacramento River), the eastern Suisun Bay subregion including upper Grizzly Bay, and Montezuma Slough in the Suisun Marsh subregion.

Adult longfin smelt may spawn as early as November and as late as June, although spawning is believed to typically occur from January through April based on the occurrence of larvae during this period and the decline in abundance of adult smelt after this period (Table 2.19-2) (77 FR 19757; Moyle 2002). Spawning occurs primarily over sandy or gravel substrates, rocks, and aquatic plants and when water temperatures are between 7.2 and 14.4°C (45 and 58°F) (Moyle 2002). Most Bay-Delta longfin smelt live for 2 years, spawn, and then die, although some individuals may spawn as 1- or 3-year-olds. Some longfin smelt, mostly females, survive after spawning and live another year; it is not known whether these fish spawn more than once (Moyle 2002).

Longfin smelt abundance in the Bay-Delta has declined significantly since the 1980s; over the last decade, abundance has been the lowest in the 40-year history of CDFW's monitoring surveys (77 FR 19763). Longfin smelt abundance is positively correlated with Delta outflow (Moyle 2002). Factors affecting the abundance of longfin smelt in the Bay-Delta are multiple and synergistic (Moyle 2002), and are likely to be similar to the factors affecting delta smelt.

Focused surveys for longfin smelt were not conducted. Longfin smelt are rarely captured in the weekly trawl surveys of the Sacramento River at Sherwood Harbor (RM 55). From January 2005 through March 2015, one adult longfin smelt was captured in the trawl in December 2012 (U.S. Fish and Wildlife Service 2015), suggesting that their abundance and frequency of use of habitat in the BSA is probably very low. Longfin smelt may spawn in the BSA along shallow river margins.

2.20.3 Environmental Consequences

2.20.3.1 Build Alternatives

There are two roadway design alternatives for the Railyards Boulevard/Jibboom Street/Bercut Drive intersection in the City of Sacramento, but both alternatives would result in the same permanent and temporary impacts on animal species. Therefore, the impacts of these alternatives are not discussed separately in this chapter.

As discussed above under “Affected Environment,” suitable habitat within the BSA is present for VELB, Swainson's hawk, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, the southern DPS of North American green sturgeon, delta smelt, and longfin smelt. Project effects on these species are discussed below. With the exception of these species, the project would have no effect on the listed wildlife and fish species identified in Table 2.19-1 and the species lists included in Appendix G.

Wildlife Species

Valley Elderberry Longhorn Beetle

Five of the seven shrubs (shrubs 1, 2, 3, 5, and 7) would be directly affected (removed or trimmed) by project construction, regardless of roadway design, and the other two (shrubs 4 and 6) could be indirectly affected by project construction (i.e., impacts between 20 and 100 feet from the shrub dripline). Shrubs 1, 2, 3, and 7 all fall within areas identified as temporarily affected by project construction. Although these shrubs ultimately may be able to be avoided, construction activities would likely be within 20 feet of the shrub driplines. Shrub 5 would be permanently affected with the connection of B and C Streets within the City of West Sacramento.

Shrub 4 is approximately 80 feet west of areas identified for temporary disturbance associated with the removal of the West Sacramento approach structure; Shrub 6 occurs immediately adjacent to the area identified as temporarily affected and less than 20 feet from areas of permanent impact. The USFWS typically considers project activities that result in a change in hydrology, fragmentation of habitat, drift of fertilizers or pesticides, increased pedestrian traffic, artificial lighting, and dust as potential indirect effects on the species. The project would not result in any of these effects on shrubs 4 and 6. Both shrubs occur in and adjacent to developed areas that are already subject to pedestrian traffic, artificial lighting, and the potential use of herbicides and pesticides from adjacent developed areas. The project construction that would occur within 100 feet of Shrub 4 is limited to the removal of the approach structure on the West Sacramento side of the river, which would not result in alteration of the hydrology in this area. Although work would occur within 20 feet of shrub 6, it is located on the embankment of I-5, which is above the current grade. Thus, construction activities at Bercut Drive and Railyards Boulevard are not likely to substantially alter the hydrology in the area around the shrub such that it would be adversely affected. Talley et al. (2006b:647) found that, in fact, elderberry shrubs adjacent to paved surfaces were less stressed than those near dirt surfaces, possibly because increased runoff from paved surfaces benefitted the shrubs. Talley et al. (2006b:647) also found that dust from low-traffic dirt roads trails and paved roads did not affect VELB presence in shrubs either directly or indirectly through changed elderberry condition (Talley et al. 2006b:647). Therefore, project dust is not expected to affect the VELB or its habitat associated with shrubs 4 and 6. Although shrubs 4 and 6 occur within 100 feet of project construction, construction activities and the operation of the project are not expected to result in a change in condition that could result in take of VELB.

Project construction, regardless of roadway design, may affect, likely to adversely affect the federally threatened VELB through the loss of suitable habitat in accordance with the definition of take under FESA.

Swainson's Hawk

Construction activities associated with roadway improvements within or near oak woodland and riparian forest habitats could disturb an active Swainson's hawk nest, if present in or near the construction area. These activities could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance or loss of an active Swainson's hawk nest

would violate CESA, the MBTA, and CFGC Section 3503.5, and would be considered an adverse impact.

The proposed project would affect potential Swainson's hawk nesting habitat on both sides of the Sacramento River. Construction of the proposed project would result in a total of 3.8 acres of permanent impacts and 4.0 acres of temporary disturbance in areas that could support suitable nest trees.

Noise and visual disturbances associated with project construction during the nesting season may disrupt Swainson's hawk nesting behavior to the point of nest abandonment or forced fledging that results in young mortality. Nest that are located within or adjacent to the BSA could be affected by typical construction noise and visual disturbances. Because the BSA has high levels of pedestrian, bicycle, vehicle, and boat traffic and associated noise, most construction activities may not substantially increase noise and visual disturbance above baseline conditions. However, pile driving and the use of cranes in proximity to an active nest are expected to exceed existing levels of noise disturbance. Bridge construction will require impact pile driving to be spread out over two summer construction seasons. These loud noises could startle Swainson's hawk beyond the BSA and disrupt normal behaviors, including nesting. CDFW typically considers intensive new disturbances in developed areas to result in potential impacts on active Swainson's hawk nests located in urban areas that are within 0.25 mile of the activity (California Department of Fish and Game 1994:10).

Fish Species

Sacramento River Winter-Run Chinook Salmon

Project impacts on Sacramento River winter-run Chinook salmon and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction; accidental spills of contaminants; increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; increases in aquatic invasive species; and increased predation from added lighting on the Sacramento River as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of adult and juvenile winter-run Chinook salmon to harmful levels of underwater noise from pile driving activities at the end of the adult migration season in May and June, and at the beginning of the juvenile emigration season in November.

The proposed project may affect, likely to adversely affect winter-run Chinook salmon based on temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on winter-run Chinook salmon would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Sacramento River Winter-Run Chinook Salmon Designated Critical Habitat

The Sacramento River within and in the vicinity of the BSA is included in the designated critical habitat for Sacramento River winter-run Chinook salmon (58 FR 33212–33219; June 16, 1993). The primary constituent elements of critical habitat in the BSA include freshwater rearing habitat with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of winter-run Chinook salmon. Critical habitat for winter-run Chinook salmon within and in the vicinity of the BSA includes the river water column, river bottom, and adjacent riparian zone—up to the ordinary or mean high water elevation—which is used by adults for migration and juveniles for emigration and rearing.

The project may affect, likely to adversely affect Sacramento River winter-run Chinook salmon designated critical habitat. Impacts on winter-run Chinook salmon critical habitat include temporary effects on the water column (underwater noise and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River. These impacts would be the same as those discussed for fall- and late fall–run Chinook salmon (Section 2.19.3.1). Impacts on designated critical habitat for winter-run Chinook salmon would be minimized or compensated for by implementing the measures discussed in Section 2.20.4.

Central Valley Spring-Run Chinook Salmon

Project impacts on CV spring-run Chinook salmon and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, and increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; increases in aquatic invasive species; and increased predation from added lighting on the Sacramento River as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of adult and juvenile spring-run Chinook salmon to harmful levels of underwater noise from pile driving activities at the end of the adult migration season in May–July and at the beginning of the juvenile emigration season in November.

The proposed project may affect, likely to adversely affect spring-run Chinook salmon based on temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on spring-run Chinook salmon would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Central Valley Spring-Run Chinook Salmon Designated Critical Habitat

The Sacramento River within and in the vicinity of the BSA is included in the designated critical habitat for Central Valley spring-run Chinook salmon (70 FR 52488, September 2, 2005). The primary constituent elements of critical habitat in the BSA include freshwater rearing habitat

with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of spring-run Chinook salmon. Critical habitat for spring-run Chinook salmon within and in the vicinity of the BSA includes the river water column, river bottom, and adjacent riparian zone—up to the ordinary or mean high water elevation—which is used by adults for migration and juveniles for rearing.

The project may affect, likely to adversely affect Central Valley spring-run Chinook salmon designated critical habitat. Impacts on spring-run Chinook salmon critical habitat include temporary effects on the water column (underwater noise and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River. These impacts would be the same as those discussed for fall- and late fall-run Chinook salmon (Section 2.19.3.1). Impacts on designated critical habitat for spring-run Chinook salmon would be minimized or compensated for by implementing the measures discussed in Section 2.20.4.

Central Valley Steelhead

Project impacts on CV steelhead and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, and increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; increases in aquatic invasive species; and increased predation from added lighting on the Sacramento River as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of adult steelhead to harmful levels of underwater noise from pile driving activities during the adult migration season in June, July, and November, and the potential exposure of juveniles during the juvenile emigration season in May, June, and November.

The proposed project may affect, likely to adversely affect steelhead based on temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on steelhead would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Central Valley Steelhead Critical Habitat

The Sacramento River within the BSA is included in the designated critical habitat for CV steelhead (70 FR 52488, September 2, 2005). The primary constituent elements of critical habitat in the BSA include freshwater rearing habitat with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of steelhead. Critical habitat for Central Valley steelhead in the BSA includes the river water column, river bottom, and adjacent riparian zone—up to the ordinary or mean high water elevation—which is used by adults for migration and juveniles for rearing.

The project may affect, likely to adversely affect CV steelhead designated critical habitat. Impacts on steelhead critical habitat include temporary effects on the water column (underwater noise and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River. These impacts would be the same as those discussed for fall- and late fall-run Chinook salmon (Section 2.19.3.1). Impacts on designated critical habitat for steelhead would be minimized or compensated for by implementing the measures discussed in Section 2.20.4.

Southern DPS of North American Green Sturgeon

Project impacts on North American green sturgeon and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, and increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; and increases in aquatic invasive species as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of adult and juvenile green sturgeon to harmful levels of underwater noise from pile driving activities in May–July and November. In addition, green sturgeon may be at higher risk of exposure to construction-related impacts than other listed species because their benthic nature may make them more likely to encounter sediment plumes that may be more concentrated near the river bottom.

The proposed project may affect, likely to adversely affect North American green sturgeon based on the potential for exposure to underwater noise during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on green sturgeon would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Southern DPS of North American Green Sturgeon Designated Critical Habitat

The Sacramento River within the BSA is included in the designated critical habitat for the southern DPS of North American green sturgeon (74 FR 52300, October 9, 2009). The primary constituent elements of critical habitat in the BSA include freshwater areas with water flow, water quality, depth, forage, sediment quality, and passage conditions supporting migration and rearing of green sturgeon. Critical habitat for North American green sturgeon in the BSA includes the river water column, river bottom, and adjacent riparian zone—up to the ordinary or mean high water elevation—which is used by adults for migration and juveniles for rearing.

The project may affect, likely to adversely affect North American green sturgeon designated critical habitat. Impacts on North American green sturgeon critical habitat include temporary effects on the water column (underwater noise and sound pressure, and water quality impacts)

and channel substrate (cofferdams and trestles), and permanent loss of aquatic habitat (water column and substrate) and riparian and SRA cover habitat in the Sacramento River. These impacts would be similar to those discussed for fall- and late fall-run Chinook salmon (Section 2.19.3.1). Impacts on designated critical habitat for green sturgeon would be minimized or compensated for by implementing the measures discussed in Section 2.20.4.

Delta Smelt

Project impacts on delta smelt and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, and increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; increases in aquatic invasive species; and increased predation from added lighting on the Sacramento River as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of spawning adults, eggs, and larvae to harmful levels of underwater noise from pile driving activities during May–July.

The proposed project may affect, likely to adversely affect delta smelt based on the potential for exposure to underwater noise during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on delta smelt would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Delta Smelt Designated Critical Habitat

The Sacramento River within the BSA is not included in the designated critical habitat for delta smelt, as it includes the contiguous waters of the legal Delta up to the existing I Street Bridge on the Sacramento River (59 FR 65256; December 19, 1994). Primary constituent elements of critical habitat determined to be essential to the conservation of the species are physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration (U.S. Fish and Wildlife Service 2006). Where it is designated, critical habitat for delta smelt consists of all water and submerged lands below OHWM and the entire water column, which is used by adults for migration and spawning and juveniles for rearing.

The proposed project may affect, likely to adversely affect delta smelt designated critical habitat. Although the BSA is not designated as critical habitat for delta smelt (designated critical habitat includes the Sacramento River as far upstream as the current I Street Bridge), project effects may extend far enough downstream to affect delta smelt critical habitat. Project effects with potential to affect designated critical habitat for delta smelt include temporary effects on the water column (underwater noise and sound pressure, and water quality impacts). These impacts would be

similar to those discussed for fall- and late fall–run Chinook salmon (Section 2.19.3.1). Impacts on designated critical habitat for delta smelt would be minimized or compensated for by implementing the measures discussed in Section 2.20.4.

Longfin Smelt

Project impacts on longfin smelt and their habitat include potential adverse effects related to noise and vibration associated with impact pile driving; increased exposure to contaminants from disturbance and resuspension of river bottom sediments during in-water construction, accidental spills of contaminants, and increased runoff from added impervious surfaces; increased turbidity and sedimentation; temporary and permanent loss of aquatic habitat; loss of SRA cover; increase in overwater structure (shade); fish entrapment in cofferdams; increases in aquatic invasive species; and increased predation from added lighting on the Sacramento River as discussed for Chinook salmon (Section 2.19.3.1). Of greatest concern would be the potential exposure of spawning adults, eggs, and larvae to harmful levels of underwater noise from pile driving activities during May and June.

The proposed project may affect, likely to adversely affect longfin smelt based on the potential for exposure to underwater noise during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles); temporary and permanent effects on riparian and SRA cover habitat (vegetation removal, bridge and bike path construction); and permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP) in the Sacramento River. However, potential effects on longfin smelt would be avoided, minimized, or compensated for by implementing the measures discussed in Section 2.20.4.

Essential Fish Habitat

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267) and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Public Law 109-479), requires federal agencies to consult NMFS on activities that may adversely affect EFH. Important components of EFH are substrate; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity.

EFH for Chinook salmon could be affected by the project. The MSA-managed species occurring in the Sacramento River and in the BSA, and potentially affected by the project, include Sacramento winter-run Chinook salmon, CV spring-run Chinook salmon, and fall-run and late fall–run Chinook salmon.

Effects on EFH for Pacific salmon would be similar to those discussed for fall- and late fall–run Chinook salmon (Section 2.19.3.1).

The following environmental conditions potentially affect Pacific salmon EFH.

- Sedimentation and turbidity

- Hazardous materials and contaminants
- Temporary and permanent loss of aquatic habitat
- Temporary and permanent loss of SRA cover habitat

Effects on Pacific salmon EFH associated with sedimentation and turbidity, exposure to hazardous materials and contaminants, and habitat loss would be temporary. Potential adverse effects on EFH of increased fine sediment and turbidity will be avoided or minimized through implementation of all applicable BMPs. The potential environmental effects of the project would be limited to short-term, localized, and minor increases in turbidity and suspended sediment. Implementation of the SWPPP along with applicable BMPs would substantially reduce or eliminate the potential for an accidental spill and unintentional discharge of contaminants, with potential associated effects on EFH.

Long-term and permanent effects on EFH would be limited to the net loss of aquatic habitat (substrate, water column) associated with the new bridge piers and SRA cover habitat associated with the footprints for the bridge and bike trail footprints; however, the temporary and permanent effects would be small relative to the total EFH available in the Sacramento River. Compensation for the permanent loss of critical habitat, as described in Section 2.20.4, also would benefit EFH for Chinook salmon.

2.20.3.2 No Build Alternative

The No Build Alternative would not result in habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect threatened or endangered species.

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures will avoid or minimize potential direct and indirect impacts on VELB, Swainson's hawk, Sacramento River winter-run Chinook salmon and designated critical habitat, CV spring-run Chinook salmon and designated critical habitat, CV steelhead and designated critical habitat, the southern DPS of North American green sturgeon and designated critical habitat, delta smelt and designated critical habitat, and longfin smelt that would be caused by the proposed project. The applicable measures below are consistent with the measures contained in both the NMFS and USFWS Biological Opinions (Appendix G). Measures added as a result of FESA consultation are noted.

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Environmental Awareness Training for Construction Employees

Please refer to the discussion of this measure in Section 2.16.4.

Conduct Periodic Biological Monitoring

Please refer to the discussion of this measure in Section 2.16.4.

Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (including SRA Cover)

Please refer to the discussion of this measure in Section 2.16.4.

Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands

Please refer to the discussion of this measure in Section 2.17.4.

Compensate for Loss of Perennial Stream

Please refer to the discussion of this measure in Section 2.17.4.

Implementation of the following measures will ensure that construction activities avoid and minimize impacts on VELB within and adjacent to the BSA.

Avoid and Minimize Impacts on Valley Elderberry Longhorn Beetle

The following measures will be implemented prior to and during construction to ensure that the proposed project does not adversely affect elderberry shrubs adjacent to the project footprint.

- Contractors will be briefed on the need to avoid damaging the elderberry shrubs and the possible penalties for not complying with these requirements. Crews also will be educated on the status of the VELB and the need to protect its habitat.
- All elderberry shrubs that are outside of the permanent project footprint or that can be avoided will be identified on construction drawings, with notes indicating that they are sensitive resources to be avoided.
- Orange construction barrier fencing will be placed at a minimum of 20 feet from each shrub's dripline [fencing around shrub 6 (construction will be within 20 feet) will be placed as far out from the dripline as possible]. No construction activities will be permitted within the buffer zone other than those activities necessary to erect the fencing. As specified in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Guidelines) (U.S. Fish and Wildlife Service 1999), signs will be posted every 50 feet (at a minimum) along the perimeter of the buffer area fencing. The signs will contain the following information: *This area 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.* The signs should be clearly readable from a distance of 20 feet and must be maintained for the duration of construction.
- Buffer area fences around the shrubs will be inspected weekly by a biological monitor during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor. The biological monitor will be responsible for ensuring that the contractor maintains

the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to USFWS and the project proponent.

Transplant Elderberry Shrubs That Cannot Be Avoided

Elderberry shrubs that cannot be avoided will be transplanted to a USFWS-approved conservation area in accordance with the Guidelines (U.S. Fish and Wildlife Service 1999). Transplanting will occur during the plant's dormant phase (approximately November through the first 2 weeks of February, after they have lost their leaves). A qualified specialist familiar with elderberry shrub transplantation procedures will supervise the transplanting. The location of the conservation area transplantation site will be approved by USFWS before removal of the shrubs.

Implementation of the following measures will compensate for direct impacts on VELB habitat.

Compensate for Impacts on Valley Elderberry Longhorn Beetle Habitat

Before construction begins, the project proponent will compensate for direct impacts (including transplanting) on all elderberry stems measuring 1 inch or more at ground level (i.e., habitat for VELB) that are located within 20 feet of proposed construction activities. Compensation will include planting replacement elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio = 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 (U.S. Fish and Wildlife Service 1999).

Mitigation credits for VELB will be purchased at a USFWS-approved mitigation bank. The exact amount and location of compensatory mitigation will be based on consultation with USFWS. Table 2.20-6 summarizes the compensation required for direct effects on up to five elderberry shrubs (shrubs 1, 2, 3, 5, and 7) that provide VELB habitat. Based on stem counts listed in Table 2.20-1 for these five shrubs and in accordance with the Guidelines, 34 elderberry seedlings and 34 associated native plants will be planted in a USFWS-approved conservation area. This compensation may be reduced if some of the shrubs occurring within temporary impact areas (shrubs 1, 2, 3, and 7) can be avoided once more detailed plans are available.

Table 2.20-6. Required Compensation for Directly Affected Elderberry Shrubs

Habitat	Stem Diameter	Number of Stems	Exit Holes?	Seedling Ratio	Native Plant Ratio	Total Seedling	Total Native Plants
Riparian	Stems >1" to <3"	0	No	2:1	1:1	0	0
	Stems >1" to <3"	0	Yes	4:1	2:1	0	0
	Stems >3" to <5"	0	No	3:1	1:1	0	0
	Stems >3" to <5"	0	Yes	6:1	2:1	0	0
	Stems >5"	1	No	4:1	1:1	4	4
	Stems >5"	0	Yes	8:1	2:1	0	0
Nonriparian	Stems >1" to <3"	22	No	1:1	1:1	22	22
	Stems >1" to <3"	0	Yes	2:1	2:1	0	0
	Stems >3" to <5"	1	No	2:1	1:1	2	2
	Stems >3" to <5"	0	Yes	4:1	2:1	0	0
	Stems >5"	2	No	3:1	1:1	6	6
	Stems >5"	0	Yes	6:1	2:1	0	0
Total		26				34	34

Implementation of the following measures will ensure that construction activities avoid or minimize potential impacts on Swainson’s hawk within and adjacent to the limits of disturbance associated with project construction.

Conduct Tree Removal during Non-Sensitive Periods for Wildlife

Please refer to the discussion of this measure in Section 2.19.4.

Conduct Focused Surveys for Nesting Swainson’s Hawk prior to Construction

The project proponent will retain a wildlife biologist experienced in surveying for Swainson’s hawk to conduct surveys for the species in the spring/summer prior to construction. The surveys will be conducted within the limits of disturbance and in a buffer area up to 0.25 mile from the limits of disturbance. The size of the buffer area surveyed will be based on the type of habitat present and the line-of-sight from the construction area to surrounding suitable breeding habitat. Surveys will follow the methods in *Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley* (Swainson’s Hawk Technical Advisory Committee 2000). A minimum of six surveys will be conducted according to these methods. If a variance of the survey distance or number of surveys is necessary, the project proponent will coordinate with CDFW regarding appropriate survey methods based on proposed construction activities. Surveys generally will be conducted from February to July. Survey methods and results will be reported to the project proponent and CDFW.

Monitor Active Swainson’s Hawk Nests during Pile Driving and Other Construction Activities

Active Swainson’s hawk nests within 600 feet of the BSA will be monitored during pile driving and other construction activities. Monitoring will be conducted by a wildlife biologist with experience in monitoring Swainson’s hawk nests. The monitor will document the location of

active nests, coordinate with the project proponent and CDFW, and record all observations in a daily monitoring log. The monitor will have the authority to temporarily stop work if activities are disrupting nesting behavior to the point of resulting in potential take (i.e., eggs and young chicks are still in the nest, and adults appear agitated and could potentially abandon the nest). The monitor will work closely with the contractor, the project proponent, and CDFW to develop plans for minimizing disturbance, such as modifying or delaying certain construction activities.

A minimum non-disturbance buffer of 600 feet (radius) will be established around all active Swainson's hawk nests. No entry of any kind related to construction will be allowed within this buffer while the nest is active, unless approved by CDFW through issuance of an Incidental Take Permit or through consultation during project construction. The buffer size may be modified based on site-specific conditions, including line-of-sight, topography, type of disturbance, existing ambient noise and disturbance levels, and other relevant factors. Entry into the buffer for construction activities will be granted when the biological monitor determines that the young have fledged and are capable of independent survival, or that the nest has failed and the nest site is no longer active. All buffer adjustments will be approved by CDFW.

Conduct All In-Water Construction Activities between May 1 and November 30 and during Daylight Hours Only

Please refer to the discussion of this measure in Section 2.19.4.

Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving

Please refer to the discussion of this measure in Section 2.19.4.

Develop and Implement a Hydroacoustic Monitoring Plan

Please refer to the discussion of this measure in Section 2.19.4.

Monitor Turbidity in the Sacramento River

Please refer to the discussion of this measure in Section 2.19.4.

Implement Cofferdam Restrictions

Please refer to the discussion of this measure in Section 2.19.4.

Prepare and Implement a Fish Rescue and Relocation Plan

Please refer to the discussion of this measure in Section 2.19.4.

Prevent the Spread or Introduction of Aquatic Invasive Species

Please refer to the discussion of this measure in Section 2.19.4.

Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

Please refer to the discussion of this measure in Section 2.19.4.

Implementation of the following measure would compensate for permanent impacts on critical habitat.

Purchase Channel Enhancement Credits for Impacts on Critical Habitat

Permanent impacts on critical habitat (bank and substrate below the OHWM and water column habitat), totaling 1.33 acres (up to 2,949 square feet [0.07 acre] from the new bridge piers and RSP and up to 55,000 square feet [1.26 acre] from bridge shading of aquatic habitat) will be mitigated at a 3:1 ratio. The project proponent proposes to mitigate the permanent loss of critical habitat through purchase of 3.99 acres of mitigation credits at a NMFS-approved anadromous fish conservation bank.

Compensate for Permanent Loss of Shallow Water Habitat for Delta Smelt

As a result of FESA consultation for effects on listed species, the USFWS identified mitigation for permanent impacts on 0.036 acre of shallow water habitat for delta smelt through the purchase of mitigation bank credits at a 3:1 ratio. The project proponent will compensate for the permanent loss of shallow water habitat through the purchase of 0.108 acre of mitigation credit at a USFWS-approved mitigation bank, such as Liberty Island Conservation Bank.

Implement Reasonable and Prudent Measures and Terms and Conditions of USFWS Biological Opinion for Delta Smelt and VELB

As a result of FESA consultation for effects on listed species, the USFWS determined the following reasonable and prudent measures necessary and appropriate to minimize the effect of the action area on delta smelt and VELB. The project proponent will be responsible for the implementation and compliance with these measures in accordance with the terms and conditions listed in the Biological Opinion issued for the project.

1. Minimize adverse effects to the delta smelt and VELB and their habitats in the action area by implementing the proposed project, including the conservation measures as described with the following terms and conditions.
2. Minimize adverse effects to the delta smelt and its critical habitat to the fullest extent practicable.

The terms and conditions described in the Biological Opinion are non-discretionary, and the project proponent must comply with them in order to implement the above reasonable and prudent measures (50 CFR 402.14).

Implement Reasonable and Prudent Measures and Terms and Conditions of NMFS Biological Opinion for Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and the southern DPS of North American green sturgeon

As a result of FESA consultation for effects on listed species, NMFS identified the measures listed below as non-discretionary, stating they must be undertaken by the project proponent, following the terms and conditions listed in the Biological Opinion, so that they become binding conditions of any contracts or permits.

1. Measures shall be taken to minimize sedimentation events and turbidity plumes.
2. Measures shall be taken to reduce the potential sound impacts.
3. Measures shall be taken to revegetate temporarily impacted areas below and above the OHWM with native plants and shrubs.
4. The project proponent shall monitor and report on the amount or extent of incidental take.

The terms and conditions described in the Biological Opinion are non-discretionary, and the project proponent must comply with them in order to implement the above reasonable and prudent measures (50 CFR 402.14).

2.20.5 References Cited

- Adams, P. B., C. B. Grimes, J. E. Hightower, S. T. Lindley, and M. L. Moser. 2002. *Status Review for North American Green Sturgeon, Acipenser medirostris*. National Marine Fisheries Service. Santa Cruz, CA.
- Barr, C. B. 1991. *The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle* *Desmocerus californicus dimorphus*. U.S. Fish and Wildlife Service. Sacramento, CA.
- Baxter, R. D. 1999. Osmeridae. In J. Orsi (ed.), *Report on the 1980 to 1995 Fish, Shrimp and Crab Sampling in the San Francisco Estuary*. Interagency Ecological Program for the Sacramento-San Joaquin Estuary. Pp 179–216.
- Behnke, R. J. 1992. *Native Trout of Western North America*. American Fisheries Society. Bethesda, MD.
- Bennett, W. A. 2005. Critical Assessment of the Delta Smelt Population in the San Francisco Estuary, California. *San Francisco Estuary and Watershed Science* [online serial] 3(2), Article 1.
- California Department of Fish and Game. 1998. Report to the Fish and Game Commission: *A Status Review of the Spring-Run Chinook salmon (Oncorhynchus tshawytscha) in the Sacramento River Drainage*. (Candidate Species Status Report 98-01.)
- . 1994. *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (Buteo swainsoni) in the Central Valley of California*. Sacramento, CA. November 1.

- _____. 1992. *1992 Annual Report on the Status of California State-Listed Threatened and Endangered Animals and Plants*. Sacramento, CA.
- California Department of Fish and Wildlife. 2016. *California Freshwater Sport Fishing Regulations, 2016–2017*. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=117095&inline>. Accessed: May 16, 2016.
- _____. 2015. California Natural Diversity Database, RareFind 5, April 7, 2015. Search of the Sacramento West, Clarksburg, Saxon, Rio Linda, Sacramento East, Florin, Taylor Monument, Grays Bend, and Davis U.S. Geological Survey 7.5-minute quadrangles. Sacramento, CA.
- California Department of Transportation. 2016a. *Biological Assessment/Essential Fish Habitat Assessment: I Street Bridge Replacement Project, Sacramento and Yolo Counties*. (Federal Project No.: BRLS 5002[164]). June. Cities of Sacramento and West Sacramento, CA.
- _____. 2016b. *Biological Assessment: I Street Bridge Replacement Project, Sacramento and Yolo Counties*. (Federal Project No.: BRLS 5002[164]). June. Cities of Sacramento and West Sacramento, CA.
- Cramer, S. P. and D. B. Demko. 1997. *The Status of Late-Fall and Spring Chinook Salmon in the Sacramento River Basin Regarding the Endangered Species Act*. Special Report. Submitted to National Marine Fisheries Service on behalf of Association of California Water Agencies and California Urban Water Agencies. Prepared by S. P. Cramer and Associates, Inc. Gresham, OR.
- Estep, J. A. 1989. *Biology, Movements and Habitat Relationships of the Swainson's Hawk in the Central Valley of California, 1986–1987*. California Department of Fish and Game, Nongame Bird and Mammal Section. Sacramento, CA.
- Hill, K. A. and J. D. Webber. 1999. *Butte Creek Spring-Run Chinook Salmon, *Oncorhynchus tshawytscha*, Juvenile Outmigration and Life History 1995–1998*. (Inland Fisheries Administrative Report No. 99-5.) California Department of Fish and Game, Sacramento Valley and Central Sierra Region. Rancho Cordova, CA.
- ICF International. 2016. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. February 23. Sacramento, CA.
- Kynard, B., E. Parker, and T. Parker. 2005. Behavior of Early Life Intervals of Klamath River Green Sturgeon, *Acipenser medirostris*, with Note on Body Color. *Environmental Biology of Fishes* 72:85–97.
- McEwan, D. R. 2001. Central Valley Steelhead. In R. Brown (ed.), *Contributions to the Biology of Central Valley Salmonids*. (California Department of Fish and Game Fish Bulletin No. 179.)

- McEwan, D. and T. A. Jackson. 1996. *Steelhead Restoration and Management Plan for California*. Management Report. California Department of Fish and Game, Inland Fisheries Division. Sacramento, CA.
- Meehan, W. R. and T. C. Bjornn. 1991. Salmonid distributions and life histories. Pages 47–82 in W. R. Meehan (ed.), *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*. (American Fisheries Society Special Publication No. 19.) Bethesda, MD.
- Merz, J. E., P. S. Bergman, J. F. Melgo, and S. Hamilton. 2013. Longfin Smelt: Spatial Dynamics and Ontogeny in the San Francisco Estuary, California. *California Fish and Game* 99(3):122–148.
- Moyle, P. 2002. *Inland Fishes of California*. University of California Press. Berkeley, CA.
- Moyle, P. B., R. M. Quiñones, J. V. Katz and J. Weaver. 2015. *Fish Species of Special Concern in California*. Third Edition. California Department of Fish and Wildlife. Sacramento, CA. Available: <<https://www.wildlife.ca.gov/>>. Accessed: May 13, 2016.
- Musick, J. A., M. M. Harbin, S. A. Berkeley, G. H. Burgess, A. M. Eklund, L. Findley, R. G. Gilmore, J. T. Golden, D. S. Ha, G. R. Huntsman, J. C. McGovern, S. J. Parker, S. G. Poss, E. Sala, T. W. Schmidt, G. R. Sedberry, H. Weeks, and S. G. Wright. 2000. Marine, Estuarine, and Diadromous fish stocks at Risk of Extinction in North America (exclusive of Pacific Salmonids). *Fisheries* 25(11):6–30.
- National Marine Fisheries Service. 2019. Species List. Quad Name: Sacramento West, Sacramento East. Quad Number: 38121-E5, 38121-E4. March.
- _____. 2014. *Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead*. July. California Central Valley Area Office. Sacramento, CA.
- _____. 2011. *5-Year Review: Summary and Evaluation of Central Valley Steelhead DPS – Central Valley Recovery Domain*. National Marine Fisheries Service, Southwest Region.
- _____. 2006. *Biological Opinion for the Sacramento River Bank Protection Project, 14 Critical Levee Erosion Repairs*. Prepared for the U.S. Army Corps of Engineers, Sacramento District. Sacramento, CA.
- _____. 2005. Endangered and Threatened Species; Designation of Critical Habitat for 12 Evolutionarily Significant Units of West Coast Salmon and Steelhead in Washington, Oregon, and Idaho. *Federal Register* 70: 52630–52858.
- NorCal Fish Reports. 2016. *Saltwater Fish Report for 3-17-2006*. Available: <http://norcal.fishreports.com/fish_reports/982/emergency-sturgeon-regulations-will-take-effect-on-monday,-march-20.php>. Accessed: May 16, 2016.

Stillwater Sciences. 2006. *Napa River Fisheries Monitoring Program*. Final report. (Contract # DACW05-01-C-0015.) Prepared by Stillwater Sciences, Davis, California for U.S. Army Corps of Engineers, Sacramento District.

Swainson's Hawk Technical Advisory Committee. 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. May 31. Available: <<https://www.dfg.ca.gov/wildlife/nongame/raptors/swha/>>. Accessed: July 1, 2015.

Talley, T. S., D. Wright, and M. Holyoak. 2006a. *Assistance with the 5-Year Review of the Valley Elderberry Longhorn Beetle* (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service. Sacramento, CA.

Talley, S. T., M. Holyoak, and D. A. Piechink. 2006b. The Effects of Dust on the Federally Threatened Valley Elderberry Longhorn Beetle. *Environmental Management* 37:647–658.

The Bay Institute, Natural Resources Defense Council, and Center for Biological Diversity. 2007. Petition to the State of California Fish and Game Commission and Supporting Information for Listing the Delta Smelt (*Hypomesus transpacificus*) as an Endangered Species under the California Endangered Species Act. Available: <<http://www.biologicaldiversity.org/swcbd/SPECIES/deltasmelt/ds-state-endangered-petition-02-07-2007.pdf>>. Accessed: May 13, 2016.

U.S. Army Corps of Engineers. 2000. *Biological Assessment for the Sacramento River Bank Protection Project; 42E, Proposed Levee Reconstruction at River Mile 149.0, Colusa County, California and at Five Other Sites along the Mainstem Sacramento River*. Sacramento, CA.

U.S. Fish and Wildlife Service. 2019. Official Species List. Consultation Code: 08ESMF00-2017-SLI-0452. Event Code: 08ESMF00-2019-E-04740. Project Name: I Street Bridge Replacement. March 25.

_____. 2015. Delta juvenile fish monitoring program data. Available: <<http://www.fws.gov/lodi/jfmp/>>. Accessed: June 1, 2015.

_____. 2006. *Endangered Species Section 7 Consultation for the U.S. Army Corps of Engineers' Proposed Sacramento River Bank Protection Project, 14 Critical Erosion Sites along the Sacramento and Steamboat Slough, California*. (1-1-07-F-0060.) December.

_____. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. July 9.

_____. 1996. *Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes*. Technical/Agency Draft. Prepared by Delta Native Fishes Recovery Team, U.S. Fish and Wildlife Service, Region 1. Portland, OR.

- Vogel, D. A. and K. R. Marine. 1991. *Guide to Upper Sacramento River Chinook Salmon Life History*. Prepared by CH2M Hill, Redding, California for U.S. Bureau of Reclamation, Central Valley Project.
- Wang, J. C. S. 1986. *Fishes of the Sacramento-San Joaquin Estuary and Adjacent Waters, California: a Guide to the Early Life Histories*. (Technical Report 9.) Prepared for the Interagency Ecological Study Program for the Sacramento-San Joaquin Estuary by California Department of Water Resources, California Department of Fish and Game, U.S. Bureau of Reclamation, and U.S. Fish and Wildlife Service.
- Wang, J. C. S. and R. L. Brown. 1993. *Observations of Early Life Stages of Delta Smelt, Hypomesus transpacificus, in the Sacramento–San Joaquin Estuary in 1991, with a Review of Its Ecological Status in 1988 to 1990*. November. (Technical Report 35.)
- Yoshiyama, R. M., F. W. Fisher, and P. B. Moyle. 1998. Historical abundance and decline of Chinook salmon in the Central Valley region of California. *North American Journal of Fisheries Management* 18:487–521.

2.21 Invasive Species

2.21.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed EO 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” FHWA guidance issued on August 10, 1999, directs the use of the State’s invasive species list, maintained by the California Invasive Species Council (Cal-IPC) (<http://www.iscc.ca.gov/>), to define the invasive species that must be considered as part of NEPA analysis for a proposed project.

2.21.2 Affected Environment

This section is based on the *Natural Environment Study* prepared for the project (ICF International 2016). The report is available on the project website at <http://www.cityofsacramento.org/Public-Works/Engineering-Services/Projects/Current-Projects/I-Street-Bridge-Replacement>.

Invasive plant species include species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture (CDFA), and invasive plants identified by Cal-IPC. Invasive plants displace native species, change ecosystem processes, alter plant community structure, and lower wildlife habitat quality. Road, highway, and related construction projects are some of the principal dispersal pathways for invasive plants and their propagules. Table 2.21-1 lists the invasive plant species identified by CDFA and Cal-IPC that are known to occur in the BSA (Natural Resources Conservation Service 2003; California Invasive Plant Council 2006, 2007). No plant species designated as federal noxious weeds have been identified in the BSA (Natural Resources Conservation Service 2014).

The infestation of the BSA by these species is generally limited. They occur primarily as scattered individuals, with the exception of tree of heaven, which occurs as the main overstory in several parcels within ruderal woodland habitat in the West Sacramento section of the BSA between 2nd Street and the levee.

Table 2.21-1. Invasive Plant Species Identified in the Biological Study Area

Species	CDFA	Cal-IPC
Tree of heaven (<i>Ailanthus altissima</i>)	–	Moderate
Wild oat (<i>Avena fatua</i>)	–	Moderate
Black mustard (<i>Brassica nigra</i>)	–	Moderate
Ripgut brome (<i>Bromus diandrus</i>)	–	Moderate
Soft chess (<i>Bromus hordeaceus</i>)	–	Limited
Red brome (<i>Bromus madritensis</i> ssp. <i>rubens</i>)	–	High
Cheatgrass (<i>Bromus tectorum</i>)	–	High
Italian thistle (<i>Carduus pycnocephalus</i>)	C	Moderate
Yellow star-thistle (<i>Centaurea solstitialis</i>)	C	High
Bindweed (<i>Convolvulus arvensis</i>)	C	–
Bermuda grass (<i>Cynodon dactylon</i>)	C	Moderate
Red-stemmed filaree (<i>Erodium cicutarium</i>)	–	Limited
Rattail fescue (<i>Festuca myuros</i>)	–	Moderate
Italian ryegrass (<i>Festuca perennis</i>)	–	Moderate
Edible fig (<i>Ficus carica</i>)	–	Moderate
Fennel (<i>Foeniculum vulgare</i>)	–	High
Cutleaf geranium (<i>Geranium dissectum</i>)	–	Limited
English ivy (<i>Hedera helix</i>)	–	High
Bristly ox-tongue (<i>Helminthotheca echioides</i>)	–	Limited
Foxtail barley (<i>Hordeum murinum</i> ssp. <i>leporinum</i>)	–	Moderate
Rough cat's-ear (<i>Hypochaeris radicata</i>)	–	Moderate
Perennial peppergrass (<i>Lepidium latifolium</i>)	B	High
Tree-tobacco (<i>Nicotiana glauca</i>)	–	Moderate
Sourgrass (<i>Oxalis pes-caprae</i>)	–	Moderate
English plantain (<i>Plantago lanceolata</i>)	–	Limited
Rabbitsfoot grass (<i>Polypogon monspeliensis</i>)	–	Limited
Wild radish (<i>Raphanus sativus</i>)	–	Limited
Black locust (<i>Robinia pseudoacacia</i>)	–	Limited
Himalayan blackberry (<i>Rubus armeniacus</i>)	–	High
Curly dock (<i>Rumex crispus</i>)	–	Limited
Red sesbania (<i>Sesbania punicea</i>)	B	High
Milk thistle (<i>Silybum marianum</i>)	–	Limited
London rocket (<i>Sisymbrium irio</i>)	–	Moderate
Johnson grass (<i>Sorghum halepense</i>)	C	–
Smilo grass (<i>Stipa miliacea</i>)	–	Limited
Puncturevine (<i>Tribulus terrestris</i>)	C	–

Species	CDFA	Cal-IPC
Rose clover (<i>Trifolium hirtum</i>)	–	Moderate
Periwinkle (<i>Vinca major</i>)	–	Moderate

Note: 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.

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.

2.21.3 Environmental Consequences

2.21.3.1 Build Alternatives

At similar levels under both build alternatives, the proposed project would temporarily create additional disturbed areas and could result in the introduction and spread of invasive plant species. Areas where temporary disturbance occurs would be more susceptible to colonization or spread by invasive plants.

2.21.3.2 No Build Alternative

Under the No Build Alternative, ground disturbance would not occur and the project area would not be more susceptible to the introduction or spread of invasive plant species.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measure will avoid or minimize the potential introduction and spread of invasive plant species.

Avoid the Introduction and Spread of Invasive Plants

The project proponent or their contractor will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the study area. Accordingly, the following measures will be implemented during construction.

- Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of invasive weeds.
- Dispose of invasive species material removed during project construction offsite at an appropriate disposal facility to avoid the spread of invasive plants into natural areas.

- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use weed-free imported erosion-control materials (or rice straw in upland areas).
- Use locally grown native plant stock and native or naturalized (noninvasive) grass seed during revegetation.
- If feasible, remove trees of heaven located in and adjacent to the temporary impact area on the east side of 2nd Street in the City of West Sacramento.

2.21.5 References Cited

California Invasive Plant Council. 2007. *New Weeds Added to Cal-IPC Inventory*. Cal-IPC News 15(1/2):10. Available: <<http://www.cal-ipc.org/ip/inventory/pdf/WebUpdate2007.pdf>>.

_____. 2006. *California Invasive Plant Inventory*. February. (Cal-IPC Publication 2006-02.) Berkeley, CA. Available: <<http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf>>.

ICF International. 2016. *Natural Environment Study – I Street Bridge Replacement Project, Sacramento and Yolo Counties*. February 23. Sacramento, CA.

Natural Resources Conservation Service. 2014. United States Department of Agriculture. *Federal Noxious Weed List*. Last Updated: October 30, 2014. Available: <http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/weedlist.pdf>. Accessed: May 26, 2015.

_____. 2003. *California State-Listed Noxious Weeds*. Available: <<http://plants.usda.gov/java/noxious?rptType=State&sort=sciname&statefips=06>>. Accessed: May 26, 2015.

2.22 Cumulative Impacts

2.22.1 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. A project's impact's contribution may be considerable when it worsens a significant cumulative impact, or if it results in a significant cumulative impact. CEQA case law has held that as a significant cumulative impact becomes more acute or severe, the smaller the incremental contribution that may be considered considerable. (*Communities for a Better Environment v. California Resources Agency* [2002] 103 Cal.App.4th 98.)

Cumulative impacts on resources in the project area may result from residential, commercial, industrial, and highway development, as well as activities that will take place along the Sacramento River. These land use activities contribute to impacts on aesthetics, air quality, biological resources, cultural resources, hydrology and water quality, and noise within the river and along the riverfront. They can also contribute to potential community impacts identified for the project, such as changes in community character and traffic patterns.

State CEQA Guidelines Section 15130 describes when a cumulative impact analysis is necessary 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 State CEQA Guidelines. A definition of cumulative impacts, under NEPA can be found in 40 CFR 1508.7 of the CEQ regulations.

2.22.2 Approach to Cumulative Impact Analysis

For each resource topic, the cumulative analysis takes into consideration other past, ongoing, and reasonably foreseeable projects in the same geographic area as the proposed project, as well as planned land uses and transportation projections. The approach is primarily plan and projection based, relying on the general plan and policy documents of the Cities of Sacramento (including the *Sacramento Railyards Specific Plan*) and West Sacramento (including the *Washington Specific Plan* and *Bridge District Specific Plan*) and the MTP/SCS to identify reasonably foreseeable future development. Individual projects such as the proposed Broadway Bridge and increased train traffic on the UPRR rail line are also considered when pertinent.

2.22.3 Assessment of Cumulative Impacts

The current health and historical context of the resources considered in this analysis are presented in the "Affected Environment" sections of Chapter 2. The build alternatives would not

contribute to a cumulative impact in the following resource areas because the resources are in generally good health and the build alternatives would result in beneficial impacts, no impacts, or minor impacts that would be fully mitigated (to a less-than-significant level under CEQA). Consequently, the contribution to a cumulative impact on the following resources would not be considerable.

- Land Use
- Growth
- Community Impacts/Environmental Justice
- Cultural Resources
- Utilities/Emergency Services
- Pedestrian and Bicycle Facilities
- Hydrology and Floodplain
- Water Quality
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Energy
- Biological Resources: Plant Species, Invasive Species

The incremental effects of the proposed project may contribute to considerable cumulative impacts in the resource areas discussed in the following sections.

2.22.3.1 Human Environment

Traffic and Transportation

The resource study area for cumulative impacts related to traffic and transportation is the same as that used for the traffic analysis (Figure 2.5-1). Projects that would contribute to potential cumulative impacts include all transportation and development projects assumed in the traffic modeling assumptions for the *Traffic Technical Data and Calculations* (Fehr & Peers 2015). This takes into account the general plans for the Cities of West Sacramento and Sacramento, the *Sacramento Railyards Specific Plan*, the MTP/SCS (through the SACMET regional travel model), and Caltrans' plans for I-5. As discussed in Section 2.5, traffic forecasts are for the future horizon year of 2040.

Other Current and Reasonably Foreseeable Projects

Continued development is expected to occur within the *Washington Specific Plan* area that will result in an incremental increase in traffic. Future land uses in the largely vacant Sacramento

Railyards will include major office, commercial, residential, and sport venue development that will generate substantial amounts of new traffic at the east end of the project.

Cumulative Conclusion

Temporary adverse effects associated with construction would be reduced by implementation of a TMP (see Section 2.3.1.4). Given that construction is expected to occur prior to build-out of the *Sacramento Railyards Specific Plan*, these temporary effects would not make a considerable contribution to a cumulative impact.

The project alternatives, to varying degrees, would result in net benefits to operational traffic and transportation. However, current information regarding the traffic impacts of development within the Sacramento Railyards indicates that there will be severe congestion on the east end of the bridge, primarily as a result of development of the Railyards. Therefore, although the project's contribution to operational traffic will be small, it is nonetheless considered to be cumulatively considerable in light of the severity of anticipated future congestion within the Railyards.

Implementation of the mitigation measure *Implement Roadway and Freeway Improvements* described in Section 2.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities," would reduce, but not eliminate, the cumulative contribution.

Visual/Aesthetics

As discussed in Section 2.6, "Visual/Aesthetics" and shown in Figure 2.6-1, the resource study area for aesthetics comprises the visual assessment units designated as Sacramento, West Sacramento, and River. The project's contribution to impacts on the Sacramento and West Sacramento visual assessment units is limited to the cumulative impact of development that will have a view of the project. The River visual assessment unit includes a longer expanse of riverfront and the cumulative study area is from the confluence of the American River to the area south of the future Broadway Bridge that will have a view of that bridge.

Construction and Operational Impacts

Both alternatives would introduce a new intersection where none presently exists, and the different intersection designs would not result in substantial visual differences from one another. The proposed bridge would be designed in a manner that carries forward elements from the nearby Tower and I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. As described in Section 2.6, viewers within the project area are familiar with existing bridges along this segment of the river, and the proposed bridge would largely be in keeping with the existing visual environment. Views associated with the River visual assessment unit would not be greatly affected because the proposed project would introduce a new structure that would be located and grouped with other similar structures.

Other Current and Reasonably Foreseeable Projects

The adopted general plans for the cities of Sacramento and West Sacramento anticipate additional development along the riverfront and in the Sacramento Railyards (as represented by

the *Sacramento Railyards Specific Plan*). In particular, the *Sacramento Railyards Specific Plan* and the *City of West Sacramento General Plan 2035* forecast additional multi-story development along the dry side of the Sacramento River levees on both sides of the river. The Broadway Bridge is a reasonably foreseeable new bridge connecting Sacramento and West Sacramento at Broadway Avenue that will markedly change views along this reach of the Sacramento River. It is not represented on the general plan of either city, but is in the early planning stages. No other reasonably foreseeable projects of substantial potential for aesthetic impact are known.

Cumulative Conclusion

Because the new structure would be located and grouped with other similar structures, it would not result in a cumulative worsening of views on the River visual assessment unit. Further, implementation of the avoidance, minimization, and/or mitigation measures identified in Section 2.6, “Visual/Aesthetics,” would minimize the project’s impact on visual resources in the Sacramento and West Sacramento visual assessment units. Therefore, the project would not contribute to a cumulative adverse change in aesthetics.

2.22.3.2 Physical Environment

Air Quality

As discussed in Section 2.13, “Air Quality” and shown in Figure 2.13-1, the resource study area for air quality is the Sacramento air basin. The study area for cumulative impacts is the same. Air quality modeling is based largely on projected future traffic levels, taking into account the MTP/SCS projections, and future improvements in technology and the vehicle fleet that will reduce individual vehicle emissions. The YSAQMD and SMAPCD have adopted thresholds of significance for criteria pollutants based on regional projections of future emissions. This is essentially a projection approach to cumulative impact analysis. In any case, the analysis of air quality impacts is inherently cumulative in nature.

Construction Activities

Construction emissions were estimated using the SMAQMD’s Roadway Construction Emissions Model Version 8.1.0. Construction of each of the build alternatives involves the same general level of activity. Therefore, one model run was used to evaluate construction emissions for all build alternatives. It was assumed construction would begin in 2018 and require approximately 30 months to complete. Construction would occur in seven phases due to the scale of the proposed project and the need to minimize traffic impacts and maintain traffic during construction.

Operational Impacts

The AADT on the I-Street Bridge under 2040 design year conditions is forecasted to reach 33,030. Accordingly, based on the FHWA’s 2012 Mobile Source Air Toxics (MSAT) guidance, the proposed project has low potential for meaningful differences in MSAT emissions among project alternatives.

Other Current and Reasonably Foreseeable Projects

The regional emissions modeling and analysis were based on the emissions inventories of the YSAQMD and SMAQMD and the planned and programmed regional transportation projects included in the MTP/SCS and Metropolitan Transportation Improvement Program adopted by SACOG. This effectively provides an overview of future projects within the region that will contribute emissions within the air quality basin.

Cumulative Conclusion

The project would not exceed any air quality thresholds of the YSAQMD and SMAQMD during construction. Further, as described in Section 2.13.3.1, regulatory requirements and avoidance, minimization, and/or mitigation measures would avoid releasing NOA and ADL to the environment during construction. SMAQMD's (2016) *CEQA Guidelines* only consider PM10 and PM2.5 emissions below their 82- and 80-pound-per-day thresholds, respectively, to be less than considerable *after* the application of BMPs. Therefore, with implementation of the measures described in Section 2.13.4, construction activities would not make a cumulatively considerable contribution to emissions.

There could be localized differences in MSAT from the indirect effects of the project, such as associated access traffic, emissions of evaporative MSAT (e.g., benzene) from parked cars, and emissions of DPM from delivery trucks (modified depending on the type and extent of the associated development). Travel to other destinations would be reduced with subsequent decreases in emissions at those locations. Because the estimated regional VMT under the build alternatives and the No Build Alternative are nearly the same, no appreciable difference is expected in overall MSAT emissions between the No Build Alternative and the build alternatives. In addition, there is a negligible difference in 2020 regional emissions between the full-run and assignment-only VMT scenarios. Emissions are virtually certain to be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the project area are likely to be lower in the future than they are today. Emissions from operation of the proposed project would not result in a cumulatively considerable contribution to MSAT emissions in the project area.

Noise

The resource study area for noise is the area around the project containing the sensitive receptors shown on Figure 2.14-2. Both build alternatives would result in the same changes in noise levels.

Construction and Operational Impacts

Temporary increases in noise are expected to occur during construction activities. The project would be required to implement Caltrans' Standard Specifications and applicable local noise standards to minimize the temporary noise effects of construction. Other projects are required to adopt similar noise-reduction measures either as directed by Caltrans or as a result of local noise

ordinances. Even with appropriate measures in place, isolated louder construction activities could exceed applicable City standards for non-transportation sources but would be temporary and are not expected to substantially contribute to cumulative noise impacts.

For consideration of cumulative impacts from *operation* of the proposed project, this analysis examines whether implementation of the project would make a considerable contribution to noise levels compared to design year (2040) no-build conditions. The analysis of noise level changes resulting from roadway operations is inherently cumulative because the traffic forecasts use build-out assumptions. Noise levels for design year no-build conditions range from 49 to 73 dBA Leq(h). Under design year build conditions (under any of the build alternatives), predicted traffic noise levels range from 49 to 74 dBA Leq(h). Because traffic noise levels are predicted to approach or exceed the federal noise abatement criteria for some residential and recreational land uses in the project area, noise abatement was considered (see the discussion of noise abatement in Section 2.14, “Noise”).

In addition to roadway noise, freight and passenger train operations on the railroad line are a continuing source of noise that affects sensitive receptors along the rail corridor. Both freight and passenger operations are reasonably foreseeable to increase in frequency in future years. Together with the increase in traffic noise levels, this is considered a significant cumulative impact.

Other Current and Reasonably Foreseeable Projects

Contributors to current and future noise levels include the existing railroad and traffic expected to be generated by reasonably foreseeable development under the general plans of the Cities of West Sacramento and Sacramento, and the *Sacramento Railyards Specific Plan*.

Cumulative Conclusion

The proposed project’s increase in noise levels would contribute to a temporary cumulative noise impact during construction activities but the contribution would not be cumulatively considerable because implementation of measures to minimize the temporary effects of construction noise would be required. Implementation of federal noise abatement measures (e.g., construction of soundwalls) investigated as part of the federal noise analysis to reduce operational noise are not feasible because they would not be effective in reducing traffic noise impacts of the project. However, implementation of mitigation identified in Chapter 3 for impacts under CEQA would ensure that operational noise levels of the project would be in compliance with local noise standards. Therefore, the project’s contribution to noise impacts is expected to be less than cumulatively considerable.

2.22.3.3 Biological Environment

The resource study area for the biological environment is generally the BSA, except as noted below. As described in Sections 2.16 through 2.21, the BSA generally comprises the limits of disturbance (including areas to accommodate temporary construction activities and staging) and undeveloped habitats within 100 feet of these limits to account for potential indirect effects on nearby aquatic resources and elderberry shrubs. The extent of the BSA is shown in

Figure 2.16-1. The general BSA consists of the Sacramento River, riparian woodland and open space with bike/pedestrian trails along the Sacramento River, local roads, elevated roads (viaducts) and bridge approach structures, residential areas, and commercial development. The BSA has a relatively high level of historical and ongoing disturbance.

Natural Communities

Both project alternatives would result in the same permanent and temporary impacts on cottonwood riparian forest, the only non-wetland vegetation community in the BSA that would qualify as a natural community of special concern. The only common natural community that would be affected by the proposed project is ruderal woodland. The loss of ruderal woodland vegetation in the BSA is not considered an adverse effect from a botanical standpoint, because this habitat supports nonnative and invasive plant species and is not considered a sensitive community type.

Construction and Operational Impacts

Construction of the proposed project would result in permanent loss of up to 1.44 acres of cottonwood riparian forest within the area designated as the limits of disturbance. Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result from activities related to construction of two fixed-span bridge approach structures, the bikeway along Jibboom Street in Sacramento, and the new residential access road connecting C Street and 3rd Street in West Sacramento. The riparian area between the permanent footprint of the bridge abutments and the bikeway on the Sacramento side or the road on the West Sacramento side also would be considered permanently removed. In this area, vegetation would be removed during construction and would be unlikely to revegetate after construction due to low clearance and shading from the bridge. Temporary disturbance of up to 1.52 acres of riparian forest would occur during construction of the proposed project. Temporary impacts would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access.

Riparian communities are considered sensitive locally, regionally, and statewide because of their habitat value and declining distribution. CDFW has adopted a no-net-loss policy for riparian habitat values. The USFWS mitigation policy identifies California's riparian habitats in Resource Category 2 (habitat is of high quality that is relatively scarce or becoming scarce on a national basis or in the ecoregion), and no net loss of existing habitat value is recommended (46 FR 7644). Additionally, riparian forest contains native trees that are subject to the tree preservation ordinances of the City of Sacramento and City of West Sacramento. State and federal agencies will require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. The loss or disturbance of riparian forest vegetation is considered adverse because this vegetation provides a variety of important ecological functions and values.

Other Current and Reasonably Foreseeable Projects

General development is described under the general plans of West Sacramento and Sacramento. The Sacramento Railyards contains little or no natural community land that would be affected by future development. The levees on both sides of the Sacramento River south of the BSA to the

Pioneer Bridge retain only narrow strips of riparian forest at the base of the levees. Within West Sacramento, the areas within and adjacent to the BSA are already disturbed and are not proposed for substantial changes in the footprint of existing development.

Cumulative Conclusion

Within and beyond the BSA, riparian forest has been subjected to the extensive removal by past and existing development along the Sacramento River. This is a significant cumulative effect. The project, although affecting less than 3 acres of riparian forest and subject to minimization requirements and revegetation, will contribute to this loss. Due to the severity of this cumulative effect, the project's contribution will be considerable. Measures to achieve no net loss of existing in-kind riparian and SRA cover habitat values are identified in Section 2.16.4. With implementation of these measures, the project's contribution to the loss of riparian forest is expected to be less than cumulatively considerable.

Animal Species

Based on a review of the CNDDDB search results; the USFWS list of endangered, threatened, and proposed species within the project region; and species' distribution and habitat data, 26 special-status wildlife species were determined to have the potential to occur in the project region (see Table 2.19-1). After completion of the field survey, the biologists determined that most of these species would not occur in the BSA because the area lacks suitable habitat or is outside the species' known range. An explanation for the absence of each of these species from the BSA is provided in Table 2.19-1. Suitable habitat is present in the BSA for western pond turtle, white tailed kite, purple martin, pallid bat, and western red bat, and several fish species.

Construction and Operational Impacts

Both build alternatives could result in direct and indirect impacts on animal species. These potential impacts are discussed in detail in Section 2.19.3. Avoidance, minimization, and/or mitigation measures to reduce effects on these special-status species are identified in Section 2.19.4. The proposed project would affect potential western pond turtle nesting habitat on both sides of the Sacramento River. Construction of the proposed project would result in a total of 3.3 acres of permanent impacts and 3.4 acres of temporary impacts on areas that could serve as nesting habitat (cottonwood riparian forest, riparian forest/shrub wetland, and ruderal woodland). Injury or mortality could result from placement of equipment and materials into the river channel and on the river banks. In addition, underwater vibrations from pile driving could result in injury to pond turtles if they are in the vicinity. Construction activities, including noise and visual disturbance, also could temporarily discourage pond turtles from foraging and basking near the project site.

The proposed project would affect potential white-tailed kite nesting habitat on both sides of the Sacramento River. Construction of the proposed project would result in a total of 3.8 acres of permanent impacts and 4.0 acres of temporary impacts on areas that could support suitable nest trees. Noise and visual disturbances associated with project construction during the nesting season may disrupt white-tailed kite nesting behavior to the point of nest abandonment or forced fledging that results in mortality of young. Nests that are located within or adjacent to the BSA

could be affected by typical construction noise and visual disturbances. Because the BSA has high levels of pedestrian, bike, vehicle, and boat traffic and associated noise, most construction activities may not substantially increase noise and visual disturbance above baseline conditions. However, pile driving and the use of cranes near an active nest is expected to exceed existing levels of noise disturbance. Bridge construction will require impact pile driving spread over two summers. These loud noises could startle white-tailed kites beyond the BSA and disrupt normal behaviors, including nesting. Because white-tailed kite is a fully protected species, removal of trees with active nests and activities that may result in loss of white-tailed kites are prohibited.

The proposed project would result in the removal of the approach structures and thus the removal of the purple martin nesting habitat within the BSA. Based on the most recent population estimates, the loss of nesting habitat within the BSA would displace approximately 25 percent of the Sacramento population of purple martins, which is the only extant population in the Central Valley. Removal of the approach structures, if not timed properly, could remove active nests or directly disrupt breeding behavior and potentially result in mortality and injury of adults, young, and eggs. As part of the proposed project, landscaping would be incorporated along the road improvements on the West Sacramento side of the BSA, which would provide purple martins a source for gathering nesting materials, if replacement habitat is situated nearby. In addition, the levee on the West Sacramento side will remain vegetated in herbs and grasses, which would provide another area for purple martins to gather nesting material if they nest on the West Sacramento side of the bridge and if additional replacement habitat is located in this area.

The removal of the existing I Street and Jibboom Street approach structures also would eliminate potential roosting habitat for pallid bat. The proposed project also would affect buildings on the West Sacramento side of the BSA that could be used by pallid bats for roosting. The cottonwood riparian forest, riparian forest/shrub wetland, landscaped, and ruderal woodland on both sides of the river provide potential roosting habitat in the BSA for western red bats.

Potential project effects on fish species and their habitat include both short-term and long-term effects, as discussed in Section 2.19, “Animal Species.” Short-term effects include temporary construction-related impacts on fish and aquatic habitat that may last from a few hours to days (e.g., suspended sediment and turbidity, construction noise, artificial lighting). Long-term effects (addition of overwater structure, loss of aquatic habitat [substrate and water column], loss of SRA cover habitat) typically would last months or years, or would be permanent. These effects are generally due to physical alteration of important habitat attributes of the channel, shoreline, and adjacent bank. Based on the area of disturbance and timing of pile driving operations, some disturbance to the movement and feeding of special-status fish is anticipated. In addition, pile driving activities would not be continuous but would start and stop during the course of each day of pile driving (including cessation of pile driving activities at night), providing opportunities for fish to continue with their movements and feeding without substantial delays. In addition, general construction noise may act to disperse fish away from the construction area before impact driving is initiated.

Disturbance and resuspension of river bottom sediments during in-water construction pose a risk to juvenile and adult fall- and late fall–run Chinook salmon because of potential increases in the exposure to contaminated sediments. Given the relatively short exposure time and the restricted area of in-water construction relative to the distribution and temporal occurrence of adult and

juvenile fall- and late fall–run Chinook salmon between May 1 and November 30, the effect of contaminants mobilized by in-water construction is not expected to result in significant effects on the survival and growth of fall- and late fall–run Chinook salmon.

Construction activities that occur in or near the Sacramento River channel can result in the discharge of contaminants that are potentially lethal to the special status fish. Also, site clearing, earthwork, driving of permanent piles, driving and removal of piles for the temporary trestles, vibrating and removal of sheet piles for cofferdams, and installation of RSP would result in disturbance of soil and riverbed sediments, resulting in temporary increases in turbidity and suspended sediments in the Sacramento River. Dewatering and soil removal from the inside of the cofferdams could result in temporary increases in turbidity and suspended sediments in the river, if water (and associated spoils) from within the cofferdams is not properly disposed of or contained and treated before being discharged back to the river.

The proposed project would result in added impervious surface, with the potential to increase runoff volume in the Sacramento River. Increased traffic loads on the new bridge resulting from improved access could result in increased deposition of particulates onto the bridge deck that could then be transported to the Sacramento River with road runoff. Although the new bridge would represent added impervious surface area, the proposed project would not represent a substantial increase in impervious surface area in the BSA relative to existing conditions. The new bridge would replace the vehicle portion of the existing I Street Bridge, and existing traffic would be re-routed to the new bridge. In addition, storm water runoff from the new bridge would be directed to the existing storm water collection systems. Therefore, it is not anticipated that the proposed project would contribute to a cumulative water quality impact during operations.

The proposed project would result in the temporary and permanent loss of aquatic habitat area and volume, including foraging and rearing habitat for juvenile fall- and late fall–run Chinook salmon. Table 2.19-9 shows the temporary and permanent loss of aquatic habitat that would occur as a result of constructing the proposed project. Compensation for impacts on critical habitat, as described in Section 2.20.4, would offset the effects of permanent impacts on the substrate and water column resulting from construction of the new bridge piers.

Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in the permanent loss of up to 1.44 acres and temporary loss of up to 1.52 acres of cottonwood riparian forest within the BSA, of which approximately 0.44 acres is below the OHWM and contributes to overhead (shade) and in-stream SRA cover. SRA cover habitat is an important component of anadromous fish habitat. USFWS mitigation policy identifies California’s riparian habitats, including SRA cover habitat, in Resource Category 2. The designation criteria for habitat in Resource Category 2 is “habitat to be impacted is of high quality for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section” (U.S. Fish and Wildlife Service 2015b), for which “no net loss of in-kind habitat value” is recommended (46 FR 7644; January 23, 1981). In addition, NMFS recommends revegetating onsite at a 3:1 ratio (3 units replaced for every 1 unit of affected habitat) with native riparian species to facilitate the development of SRA cover habitat (Rea pers. comm.).

Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that prey on juvenile fishes. Temporary

shading attributable to the presence of the temporary trestles, work platforms, and barges during bridge construction and permanent shading from the new bridge potentially could reduce primary productivity of affected habitats. Temporary shading also could increase the number of predatory fishes (e.g., striped bass, largemouth bass) holding in the study area and/or their ability to prey on juvenile fishes. Compensation for impacts on critical habitat, as described in Section 2.19, would offset the effects of bridge shading on aquatic habitats in the Sacramento River.

During construction, operation of barges and other in-water equipment originating from regions or areas outside the project area could result in the introduction and spread of AIS, including the Asian overbite clam (*Corbula amurensis*), quagga mussel (*Dreissena bugensis*), zebra mussel (*Dreissena polymorpha*), hydrilla (*Hydrilla verticillata*), and Brazilian elodea (*Egeria densa*) (California Department of Fish and Game 2008). These species can adversely affect native fishes and other ecologically and economically important species through a number of mechanisms, including competition for resources, predation, parasitism, interbreeding, disease transmission, and changes in the physical or chemical attributes of aquatic habitat.

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over the Sacramento River, and permanent lighting associated with the new bridge may result in increased nighttime light intensity on the water surface of the Sacramento River. Increases in direct lighting of the Sacramento River at night may affect the migratory behavior of juvenile fish; alter behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats; or make juvenile fish more visible to predators, thereby leading to increased mortality of fish through increased predation.

Project impacts on Sacramento splittail, river lamprey, and Pacific lamprey would be similar to those described for fall- and late fall–run Chinook salmon.

Other Current and Reasonably Foreseeable Projects

The BSA adequately describes the area of cumulative impact for avian and terrestrial species. The BSA is relatively restricted for purposes of evaluating impacts on fish which range throughout the Sacramento River system and its delta and, in some cases, beyond to San Francisco Bay and the Pacific Ocean. In addition to the project, future work on the I Street Bridge, construction of the Broadway Bridge, and work on improving flood protection for West Sacramento by rebuilding the Sacramento River levees should be taken into consideration for a cumulative analysis. Other planned activities along the Sacramento River shown in the planning documents of the Cities of West Sacramento and Sacramento consist of low-impact actions such as park and greenway construction.

Cumulative Conclusion

With implementation of the avoidance, minimization, and/or mitigation measures identified in Section 2.19.4, the project's contribution to cumulative impacts for all animal species but purple martin will be less than cumulatively considerable. As discussed above and in Section 2.19, the loss of purple martin nesting habitat within the BSA would displace approximately 25 percent of the Sacramento population of purple martins. Measures to reduce the project's effects on purple martin are identified in Section 2.19.4. However, considering the proportion of this population

that would be directly affected and uncertainty of whether purple martins would colonize the habitat recreated in the new bridge, the project’s contribution to the loss of purple martin habitat is considered cumulatively considerable.

Wetlands and Other Waters

As discussed in Section 2.17, “Wetlands and Other Waters,” each of the build alternatives would result in permanent and temporary effects on non-wetland waters of the United States and waters of the State in the Sacramento River, which is classified as a perennial stream.

Construction and Operational Impacts

Both of the build alternatives would result in the same permanent and temporary effects on waters of the United States and waters of the State, including a perennial stream (the Sacramento River, in this case). These impacts would occur as a result of placement of permanent fill into the Sacramento River. Permanent fill would result from construction of bridge fixed-spans and moveable spans, a bridge fender system, and installation of RSP around bridge abutments and piers and along the shoreline adjacent to the bridge. Temporary impacts would occur due to installation of two cofferdams and approximately 141 temporary trestle piles during construction to construct the bridge. Additional indirect impacts caused by erosion or sedimentation could occur in portions of other waters that lie outside the project footprint. The project would not affect wetlands.

Other Current and Reasonably Foreseeable Projects

General development is described under the general plans of West Sacramento and Sacramento. Other nearby projects include those identified in the *Sacramento Railyards Specific Plan* and the Broadway Bridge. These projects will be subject to the regulations described in Section 2.17 and will not contribute to the cumulative impact on wetlands and other waters.

Cumulative Conclusion

The project proponent will comply with the CWA by obtaining a permit from the Sacramento District of the USACE, and will comply with the Porter-Cologne Act by obtaining a permit from the Central Valley RWQCB before discharging fill into, or excavating within, federally or state-regulated waters. The project proponent will obtain an individual permit from the USACE or authorization under a Nationwide Permit to comply with Section 404 of the CWA. The project proponent will also obtain water quality certification from the Central Valley RWQCB to comply with Section 401 of the CWA and the Porter-Cologne Act. These laws require no net loss of the function or value of the nation’s or state’s wetlands. Although this may not be achieved on every project, regulations ensure that, on the whole, cumulative impacts on wetlands under state and federal jurisdiction are reduced, and even improved, over time. The avoidance, minimization, and/or mitigation measures described in Section 2.17.4 would reduce the impact to a less-than-significant level and compensate for the loss of waters of the United States. Consequently, the project is not anticipated to result in a considerable contribution to cumulative impacts on wetlands and other waters.

Threatened and Endangered Species

As discussed in Section 2.20, “Threatened and Endangered Species,” six federally listed species (VELB, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, the southern DPS of North American green sturgeon, and delta smelt) and six state-listed species (Mason’s lilaepsis, Swainson’s hawk, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, delta smelt, and longfin smelt) could occupy the BSA based on the presence of suitable habitat. Surveys of the site indicate that the potential for actual occurrence of Mason’s lilaepsis is very small.

Construction and Operational Impacts

Both build alternatives could result in direct and indirect impacts on these species. Potential impacts on listed wildlife and fish species are discussed in detail in Section 2.20.3. Avoidance, minimization, and/or mitigation measures to reduce effects on these special-status species are identified in Section 2.20.4. Consultation with USFWS and NMFS has been initiated under Section 7 of FESA for the project’s impacts on VELB, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, the southern DPS of North American green sturgeon, and delta smelt.

Other Current and Reasonably Foreseeable Projects

General development is described under the general plans of West Sacramento and Sacramento. Other nearby projects include those identified in the *Sacramento Railyards Specific Plan* and the Broadway Bridge. All projects will be subject to the regulations described in Section 2.20 and will not contribute to the cumulative impact on listed species.

Cumulative Conclusion

Avoidance, minimization, and/or mitigation measures to reduce effects on special-status species are identified in Section 2.20. In addition, as part of consultation with USFWS and NMFS under Section 7 of FESA, the project impacts on VELB, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, the southern DPS of North American green sturgeon, delta smelt, and longfin smelt will be addressed.

Other projects are also required to comply with FESA and protect threatened and endangered species or compensate for impacts to ensure the continued existence of the species. These avoidance, minimization, and/or mitigation measures would reduce or mitigate project impacts so that no effect on the long-term health or stability of these species, and no cumulative impact, would result from project implementation.

2.22.4 References Cited

Fehr & Peers. 2015. *Traffic Technical Data and Calculations*. Prepared for the City of Sacramento.

Chapter 3 California Environmental Quality Act (CEQA) Evaluation

3.1 Determining Significance under CEQA

The proposed project is subject to federal, as well as City of Sacramento and state environmental review requirements because the City of Sacramento proposes the use of federal funds from the FHWA. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. The City of Sacramento is the project proponent and the lead agency under CEQA. 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 Caltrans under its assumption of responsibility pursuant to 23 USC 327.

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 a 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 City of Sacramento 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 this project and CEQA significance.

The CEQA Guidelines (Section 15125[a]) state that existing conditions at the time environmental review begins "normally" constitutes the baseline for environmental analysis. Determining the significance of an impact by comparing anticipated project conditions to existing conditions in the area affected by a project is a relatively straightforward analysis for most resource issues (e.g., biological and cultural resources). However, estimating operational traffic impacts (and traffic-related air quality, greenhouse gas, noise, and energy impacts) is different than most environmental considerations because existing conditions do not generally represent the level of traffic at the time a project becomes operational and do not take into account both expected road improvements that may reduce traffic congestion and expected new development that may worsen it. The California Supreme Court has found that a future baseline can be used in limited situations. *Neighbors for Smart Rail v. Exposition Metro Line*

Construction Authority (2013) 57 Cal.4th 439 authorizes a lead agency, where appropriate, to adopt a future baseline that accounts for a major change in environmental conditions that is expected to occur before project implementation. The Supreme Court held that: “while an agency preparing an EIR does have discretion to omit an analysis of the project's significant impacts on existing environmental conditions and substitute a baseline consisting of environmental conditions projected to exist in the future, the agency must justify its decision by showing an existing conditions analysis would be misleading or without informational value.”

Because final design and construction of the project will take several years, the bridge project will not be operational until years after the time environmental review was initiated. The distribution of existing traffic volumes and the existing plus project traffic volumes, assuming a future roadway network planned for The Railyards development, was conducted for the proposed project and is presented in Section 2.5.3.3. However, using the existing 2014 conditions as the CEQA baseline for traffic and the associated air quality, noise and greenhouse gas analyses would be misleading because: (1) existing conditions do not include Railyards Boulevard in the transportation network because it was not yet constructed in 2014 and without it requires either assuming all bridge traffic would connect to Jibboom Street and Bercut Drive, or identifying future network conditions as existing (2014) conditions; (2) existing conditions include the existing I Street Bridge and approach roadways that will not be utilized for vehicle traffic when the project is complete; and (3) the proposed new I Street Bridge will be on a different alignment than the existing bridge and will have different access roads than the existing bridge. Further, because 2014 roadway conditions will not exist at the time the project is constructed and open to traffic, the analysis of such a scenario provides no value for the determination of the project impacts on traffic, or traffic-related air quality, greenhouse gas, noise, and energy impacts. Therefore, the CEQA impact assessment for these resource topics uses a predicted 2020 baseline.

3.2 CEQA Impact Assessment

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this environmental document. The following 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 project indicate no impacts. A No Impact answer in the last column reflects this determination. A discussion of the significance of the project's impacts, broken down by those that are less-than-significant, significant, or unavoidable, follows the checklist. The words “significant” and “significance” used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

I. Aesthetics		Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:					
a.	Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III. Air Quality		Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e.	Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IV. Biological Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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:				
1. 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site that 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IX. Hydrology and Water Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in 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 that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 that would result in substantial erosion or siltation onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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 that would result in flooding onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j. Contribute to inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

X. Land Use and Planning	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XV. Recreation	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

XVI. Transportation/Traffic	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

XVII. Utilities and Service Systems	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in a determination by the wastewater treatment provider that 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.1 Discussion of Significance of Impacts

3.2.1.1 Less-Than-Significant Effects of the Proposed Project

Air Quality

Expose sensitive receptors to substantial pollutant concentrations?

While all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation), significant health impacts are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). In particular, because O₃ precursors (ROGs and NO_x) affect air quality on a regional scale, associated health effects are the product of emissions generated by numerous sources throughout a region. Minor increases in regional air pollution from project-generated ROGs and NO_x therefore would have nominal or negligible impacts on human health.

As such, an analysis of impacts on human health associated with project-generated ROG and NO_x is not included in this analysis. Rather, consistent with the current state-of-practice and published guidance by SMAQMD (2016), YSAQMD (2007), and other state air quality management agencies, the analysis of project-related impacts on human health focuses only on those pollutants with the greatest potential to result in a significant, material impact on human health. These are DPM, localized CO concentrations, and asbestos and lead.

Diesel Particulate Matter

Heavy-duty equipment would generate DPM during roadway-widening activities. As shown in Table 2.13-5, DPM emissions would be minor and occur only over a period of 2.5 years. The short-term construction period is well below the 70-year exposure period typically associated with increased cancer risks. Moreover, DPM from construction equipment would be transitory and spread throughout the entire project area, as opposed to concentrated at a single location. Accordingly, construction of the proposed project would not expose sensitive populations to substantial pollutant concentrations. This impact is considered less than significant. No mitigation is required.

As described in the *Air Quality Study Report* (Terry A. Hayes Associates 2016), implementation of the build alternative would result in a 2 percent increase in truck percentage on the I Street Bridge compared to the No Build Alternative under opening (2020) conditions and a 1 percent increase in truck percentage under design (2040) conditions. However, total ADT under build alternative conditions is 25,479 and 33,310, respectively, under opening (2020) and design (2040) conditions while truck ADT under build alternative conditions is 4,504 and 5,728, respectively, under 2020 and 2040 conditions. ARB (2005) defines high-traffic urban roads as those with greater than 100,000 total ADT and a typical urban freeway as having 10,000 to 20,000 truck ADT. Consequently, I Street Bridge under build alternative conditions would not be considered a high-traffic road nor a roadway with significant diesel volume. While operation of

the new bridge would relocate some traffic closer to sensitive receptors off C Street in the City of West Sacramento and Railyard Blvd in the City of Sacramento, the project does not meet any of the project types considered to be a project of air quality concern by EPA’s Final Rule.

Also, as shown in Table 3-1, long-term operation of the project would not exceed project screening levels for traffic volumes in SMAQMD’s *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways* (SMAQMD 2011).

Table 3-1. Project screening levels

Criteria	Project Exceeds Screening Level?
Sensitive receptors located within 500 feet of project?	Yes
Urban roadway with greater than 100,000 vehicles/day or rural roadway with greater than 50,000 vehicles/day?	No

Source: SMAQMD 2011.

Accordingly, operation of the proposed project would not expose sensitive populations to substantial pollutant concentrations. This impact is considered less than significant. No mitigation is required.

Asbestos and Lead

According to the California Department of Conservation’s 2000 publication, *A General Location Guide for Ultramafic Rocks in California*, no geologic features normally associated with NOA (i.e., serpentine rock or ultramafic rock near fault zones) are 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. With respect to structural asbestos and lead, the project proponent would develop an Asbestos Abatement Plan, per SMAQMD Rule 902 (Asbestos), and a Lead Abatement Plan (*Develop a Lead and Asbestos Abatement Plan*). Accordingly, this impact is considered less than significant. No mitigation is required.

Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

As discussed in Section 2.7, “Cultural Resources,” two historic era built-environment resources within the project area are considered historical resources for the purposes of CEQA: the I Street Bridge and a segment of the Sacramento River East Levee (P-34-000490). Under either build alternative, impacts to one of these resources are considered less than significant.

A segment of the Sacramento River East Levee (P-34-000490) is considered a historical resource under CEQA. No specific changes to the segment of the Sacramento River East Levee are proposed under either build alternative. Work along or adjacent to the levee segment will be limited to removal of existing I Street Bridge approach structures on the east side of the bridge as well as construction of the new proposed bridge. The proposed project will not diminish the

integrity of the resource and will not destroy or adversely affect any qualifying characteristics of the property. Consequently, the impact is considered less than significant.

Refer to Section 2.7, “Cultural Resources” for additional discussion of potential impacts on cultural resources.

Greenhouse Gas Emissions

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Climate change is a complex phenomenon with the potential to alter local climatic patterns and meteorology. Increases in anthropogenic GHG emissions have been unequivocally linked to recent warming and climate shifts (Intergovernmental Panel on Climate Change 2007). Although modeling indicates that climate change will result globally and regionally, uncertainty remains with regard to characterizing the precise *local* climate characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that some degree of climate change is expected as a result of past and future GHG emissions.

The most common GHGs resulting from transportation projects are CO₂, methane (CH₄), and nitrous oxide (N₂O). Although there is currently no federal law specifically related to climate change or the reduction of GHGs, the EPA is developing proposed regulations under the CAA. California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the State’s long-term GHG reduction and climate change adaptation program. Of particular importance is Assembly Bill 32 (AB 32), which establishes a statewide goal to reduce GHG emissions back to 1990 levels by 2020, and SB 375 supports AB 32 through coordinated transportation and land use planning with the goal of more sustainable communities. Senate Bill 32 extends the state’s GHG policies and establishes a near-term GHG reduction goal of 40 percent below 1990 emissions levels by 2030. EO S-03-05 identifies a longer term goal for 2050.¹

Construction activities would generate short-term emissions of CO₂, CH₄, and N₂O from the use of equipment (e.g., graders) and on-road vehicles (e.g., employee commuter cars). GHG emissions generated by construction activities were estimated using SMAQMD’s RCEM (Version 8.1.0). Construction of the proposed project would occur for 30 months, and a total of 2,470 metric tons of carbon dioxide equivalent (CO₂e) would be generated, equal to an average of 988 metric tons CO₂e per year.

Operational emissions for existing (2014), opening (2020), and design (2040) year conditions were modeled using ARB’s EMFAC model and are presented in Tables 3-2 and 3-3. Compared to the No Build Alternative, the build alternatives would result in negligible changes in GHG emissions (i.e., less than a 0.1-percent increase or even a decrease under some analysis

¹ EO S-03-05 has set forth a reduction target to reduce GHG emissions by 80 percent below 1990 levels by 2050. This target has not been legislatively adopted.

conditions). Relative to existing conditions, however, the build alternatives would result in substantial emissions reductions, predominately due to improvements in exhaust emissions.

Table 3-2. Estimated 2020 Annual GHG EMISSIONS

Source	Metric Tons per Year
Existing Conditions	8,808,881
No Build Alternative 2020	9,105,807
Build Alternative 2020	9,108,369
Net Change from 2020 No Build to Alternative	2,562 0.0%
Net Change from Existing Conditions	299,488 3%
Build Alternative 2020 with No Build Trip Distribution	9,102,277
Net Change from 2020 No Build to Alternative	(3,350) 0.0%
Net Change from Existing Conditions	293,396 3%

Source: Emission rates from the carb emfac2014 model.

Table 3-3. Estimated 2040 Annual GHG EMISSIONS

Source	Metric Tons Per Year
Existing Conditions	9,204,771
No Build Alternative 2040	8,258,923
Build Alternative 2040	8,258,626
Net Change from 2040 No Build to Alternative	297 0.0%
Net Change from Existing Conditions	(946,145) (6%)

Source: Emission rates from the carb emfac2014 model.

The State CEQA Guidelines do not indicate what amount of GHG emissions would constitute a significant impact on the environment. Instead, they authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (State CEQA Guidelines Sections 15064.4[a] and 15064.7[c]). The California Supreme Court decision² in the *Centers for Biological Diversity et al. vs.*

² It should be noted that the defendants in the Newhall Ranch case have requested a rehearing from the California Supreme Court on a number of grounds. If the Supreme Court decides to rehear the case, it is possible that the ruling may change.

California Department of Fish and Wildlife, the Newhall Land and Farming Company (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) confirmed that there are multiple potential pathways for evaluating project-level GHG emissions consistent with CEQA, depending on the circumstances of a given project. These potential pathways include reliance on a business-as-usual (BAU) model,³ use of numeric thresholds, tiering from a qualified climate action plan (CAP), and compliance with regulatory programs.

Use of a BAU threshold is most applicable to land use development projects with emission sources covered by the AB 32 scoping plan. Likewise, there are currently no drafted, adopted, or recommended numeric thresholds relevant to the analysis of GHG emissions from transportation projects. The City of Sacramento has adopted a CAP to reduce community-wide GHG emissions. However, the individual measures outlined in the CAP primarily apply to land use development projects, as opposed to new roadway projects. SMAQMD has also adopted a threshold of 1,100 metric tons CO₂e for construction and operation of land use development projects, such as new residential and commercial projects. While not explicitly applicable to transportation projects, it is important to note that construction of the project would generate an average of 988 metric tons CO₂e per year, which is below SMAQMD's construction threshold.

The most applicable GHG regulation to transportation projects is SB 375. SB 375 was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. Under this law, SACOG is tasked with developing a sustainable communities strategy that provides a plan for meeting per capita CO₂ emissions levels allocated to SACOG by ARB. These levels are 7 percent below 2005 emissions levels by 2020 and 16 percent below 2005 levels by 2035. Accordingly, the targets established by SB 375 address not only near-term (2020) emissions but also long-term (2035) emissions consistent with statewide executive orders, judicial attention,⁴ and recommendations made by the Association of Environmental Professionals Climate Change Committee.⁵ Since compliance with regulatory programs (i.e., SB 375) is currently the most applicable approach for analyzing transportation-related GHG emissions, it is used as the basis for the significance determination.

The proposed project would improve connectivity to, and accessibility of, businesses, recreational areas, and new development opportunity sites in the urban core of Sacramento and West Sacramento. The new bridge also would provide pedestrian and bicycle facilities. This is consistent with the Sacramento's CAP to support connected neighborhoods and alternative transportation. The proposed project also is listed in the 2016 MTP/SCS. The Final EIR for the 2016 MTP/SCS demonstrates that projects identified in the MTP/SCS meet the ARB's issued SB 375 GHG targets for the SACOG region in 2020 and 2035. GHG emissions associated with the 2016 MTP/SCS, including those projects identified in the 2016 MTP/SCS, therefore would be

³ Only if "an examination of the data behind the Scoping Plan's business-as-usual model allowed the lead agency to determine what level of reduction from business as usual a new land use development at the proposed location must contribute in order to comply with statewide goals."

⁴ See the California Appellate Court, 4th District 2014 rulings in the *Cleveland National Forest Foundation et al. v. SANDAG* and *Sierra Club vs. County of San Diego* cases.

⁵ The Association of Environmental Professional's *Beyond 2020: The Challenge of Greenhouse Gas Reduction Planning by Local Governments in California* white paper states that long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target."

considered less than significant (Sacramento Area Council of Governments). The design concept and scope of the proposed project are consistent with the project description in both documents. Since the proposed project is identified and consistent with SACOG's 2016 MTP/SCS, which was found to have a less-than-significant GHG impact, project-level GHG emissions would be consistent with SB 375. Accordingly, this impact is considered less than significant. No mitigation is required.

While not required to achieve a less-than-significant conclusion, the project proponent will implement SMAQMD's recommended BMPs, as outlined in Section 3.4 under *Implement SMAQMD's Recommended Construction GHG BMPs*. Implementation of these measures will further reduce short-term construction emissions, consistent with the City of Sacramento's commitment to GHG mitigation.

Hazards and Hazardous Materials

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?

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction activities uses heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area. Measures to help protect workers, such as site assessment, soil testing, safe handling practices, proper disposal methods, and lead compliance training also will help keep the public safe from inadvertent exposure to hazards and hazardous wastes. These hazards are applicable to both build alternatives. Implementation of the measures described in Section 2.12, "Hazardous Waste/Materials" (*Develop and Implement Plans to Address Worker Health and Safety; Conduct Phase II Site Assessments; Conduct a Detailed Review of Existing Records; Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow/White Traffic Striping; Perform Soil Testing and Appropriately Dispose of Soils Contaminated with ADL; Develop a Lead and Asbestos Abatement Plan; Comply with the Land Use Covenant for the Northern Shops and Sacramento Station Study Areas; Comply with the Land Use Covenant or Guidance Documents for the Manufactured Gas Plant Study Area*) will reduce potential impacts associated with human or environmental contact with hazards and hazardous wastes to less-than-significant levels.

Would the project be located on a site that 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?

As described in Section 2.12, "Hazardous Waste/Materials," 12 sites with potentially hazardous material conditions were identified within or immediately adjacent to the project area. Disturbance of these areas during construction activities could expose humans and the environment to contaminated soil under both build alternatives. Implementation of the measures described in Section 2.12 (*Conduct Phase II Site Assessments, Conduct a Detailed Review of*

Existing Records) to conduct Phase II site assessments and perform soil and groundwater testing will reduce this potential impact to a less-than-significant level.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction of the project could result in some temporary disruptions to traffic flow, where temporary lane shifts or closures are required. During bridge construction, emergency vehicles may need to stop temporarily or slow in order to ensure that they can safely pass through the study area. Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP). As described in Section 2.3, “Community Impacts” (*Prepare a Transportation Management Plan*), the project proponent will notify all emergency services prior to construction so they can plan alternative routes, if necessary. Implementation of the TMP would minimize disruptions to traffic and to emergency services during construction. Implementation of this measure will ensure that the project does not interfere with any emergency response or evacuation plans. Accordingly, this impact is considered less than significant.

Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements?

Construction-related activities would result in surface disturbances that have the potential to violate water quality standards or waste discharge requirements if sediment- or contaminant-laden runoff from disturbed work areas enters storm drains or other pathways leading to receiving waters, or if fuel or other construction chemicals are accidentally spilled or leaked into the water. These temporary construction-related impacts will be reduced to less-than-significant levels through compliance with Waste Discharge Requirements that apply to the City of Sacramento (the Sacramento County MS4 Permit) (NPDES No. CAS082597; Order No. R5-2015-0023) and the City of West Sacramento’s State Water Board's Phase II MS4 Permit.

Additionally, increased impervious surface area under the build alternatives would increase the runoff and sediment-laden storm water and change the erosion and accretion patterns in the project area. Incorporation of Construction General Permit SWPPP post-construction measures, site design measures, LID measures, and other permanent erosion control elements found in Caltrans’ MS4 program guidance documents, the Sacramento Stormwater Quality Partnership’s SQIP, and the City of West Sacramento’s SWMP, will ensure that impacts related to storm water runoff are reduced to less-than-significant levels.

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 that would result in substantial erosion or siltation onsite or offsite?

During operation, new impervious surface areas and changes in topography could alter surface runoff drainage patterns. However, project drainage has been considered in the design. The proposed roadway drainage would be conveyed to the existing storm drain system installed within Railyards Boulevard and C Street. Railyards Boulevard currently drains storm water to

the east along the roadway and then into a retention basin south of Railyards Boulevard. C Street drains storm water west along the roadway and then ultimately south beyond the project limits. Drainage from the bridge itself would be directed to drains located on the bridge and routed to the abutment, where it would enter the storm drainage system. This impact is considered 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 that would result in flooding onsite or offsite?

The amount of impervious surface area would increase under the build alternatives, increasing storm water runoff. As described above, measures have been taken to account for the changes to drainage patterns related to storm water runoff rates and volumes. The preliminary hydraulic impact analysis for the project shows that the effects of the proposed bridge on hydraulics and water surface elevations is minimal; thus, any changes to river flow patterns that would result in increased river flooding are considered a less-than-significant impact.

Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As previously described, project drainage has been considered in the design. Any additional runoff created by the build alternatives will be routed into the existing storm water drainage network, which has the available capacity. This impact is considered less than significant.

Would the project place within a 100-year flood hazard area structures that would impede or redirect floodflows?

The preliminary hydraulic impact analysis for the project indicates that the build alternatives would result in minimal increases in the 100-year flood water surface elevations. This impact is considered less than significant.

Land Use and Planning

Would the project physically divide an established community?

The project would not construct any new structures or roadways that would significantly alter the divisions already existing in the community or that could further divide existing communities. The project's new C Street alignment would cut off the existing access from C Street to four residential parcels and one multifamily parcel located along 2nd Street, north of C Street. However, as part of the project, a new connection to C Street from 2nd Street would be constructed to allow continued access to the residential properties. The new bridge would maintain the connectivity provided by the existing I Street Bridge. The transportation infrastructure being constructed in the Sacramento Railyards Specific Plan area would connect the new bridge location to downtown Sacramento, and the access point in West Sacramento would not change. In addition, the new bridge would provide bicycle and pedestrian facilities

that would improve bicycle and pedestrian connectivity between Sacramento and West Sacramento.

Although traffic patterns would change slightly on local streets, there is little potential for cut-through traffic to disrupt existing neighborhoods or community areas. The project could cause traffic delays in the study area during active construction periods; however, implementation of a TMP as described in Section 2.3 (*Prepare a Transportation Management Plan*) will reduce the temporary access and circulation impacts of the project to less-than-significant levels.

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, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The relevant local planning documents contain goals and policies that promote safe transportation, increased pedestrian and bicycle facilities, and enhanced connectivity. The project is consistent with and supports the goals and policies of the relevant local planning documents, which include the following:

- *Sacramento 2035 General Plan*
- *Sacramento Railyards Specific Plan*
- *River District Specific Plan*
- *City of Sacramento Pedestrian Master Plan*
- *City of Sacramento Bicycle Master Plan*
- *City of West Sacramento General Plan 2035*
- *Washington Specific Plan*
- *Washington Realized-Sustainable Community Strategy*
- *West Sacramento Bicycle, Pedestrian, and Trails Master Plan*

The *Sacramento River Parkway Plan* contains policies to protect the parkway and promote coordination among public jurisdictions. The project involves acquisition of approximately 1.246 acres of the Sacramento River Parkway. The project is a collaboration between the Cities of Sacramento and West Sacramento and Caltrans to construct an improved bridge, which will improve accessibility to the Sacramento River Parkway. The acquisition of 1.246 acre does not represent a significant portion of the parkway and does not preclude the use of the recreational areas. Therefore, this impact is considered less than significant.

Population and Housing

Would the project induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?

The potential for the project to cause growth-related impacts in the surrounding communities is described in Section 2.2. The project entails replacing the existing I Street Bridge with a new bridge and would not increase roadway capacity. The land uses surrounding the project vicinity are generally built-out. Most of the development planned for the study area is infill, such as within the Sacramento Railyards Specific Plan and Washington Specific Plan areas, and roadway and other infrastructure currently are under construction. Some vacant parcels in West Sacramento are planned for future development under the *Washington Specific Plan* (City of West Sacramento 1996). Growth is expected in the surrounding region and would not be attributable to, or otherwise influenced by, the project. Consequently, potential impacts of the project related to growth pressure are considered less than significant.

Transportation Traffic

Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Transit Facilities

Impacts on the transit system are considered significant if the proposed project would result in any of the following conditions.

- Generate ridership that exceeds the available or planned system capacity
- Disrupt an existing facility or service
- Interfere with a planned facility or service

The build alternatives would result in increased multi-modal travel choices in the study area because the new bridge would provide for all travel modes, including bus and rail transit. Bus transit is not allowed on the existing I Street Bridge because of height and width limitations. The build alternatives will accommodate buses and the proposed future streetcar route. As a result, impacts on transit facilities are considered less than significant under opening year and cumulative (2040) conditions.

Bicycle Facilities

Impacts on the bicycle system are considered significant if the proposed project would result in the following.

- Disrupt an existing facility or interfere with the implementation of a planned facility.

The build alternatives would dismantle portions of the roadway network connecting the existing I Street Bridge to streets in the City of Sacramento. This change would disrupt a travel route

currently used by bicyclists. The proposed project would provide new on-street and off-street bicycle facilities that replace the existing travel route across the existing I Street Bridge. Some small differences in travel length (less than 0.25 mile) may occur, depending on specific trip origins and destinations; but the new facilities will comply with applicable safety and design standards and therefore provide a more desirable travel route.

The preliminary design concepts for the build alternatives incorporate a number of features that would improve bicycle facilities in the study area. Incorporation of these features will avoid significant effects on bicycle facilities.

As a result, impacts on bicycle facilities are considered less than significant under opening year and cumulative (2040) conditions.

Pedestrian Facilities

Impacts on the pedestrian system are considered significant if the Proposed Project would result in the following.

- Disrupt an existing facility or interfere with the implementation of a planned facility.

The build alternatives would dismantle portions of the roadway network connecting the existing I Street Bridge to streets in the City of Sacramento. This change would disrupt a travel route currently used by pedestrians. The proposed project would provide new pedestrian facilities that replace the previous travel route across the existing I Street Bridge. Some small differences in travel length (less than 0.25 mile) may occur, depending on specific trip origins and destinations; but the new facilities will comply with applicable safety and design standards (including ADA) and therefore provide a more desirable travel route.

As a result, impacts on pedestrian facilities are considered less than significant under opening year and cumulative (2040) conditions.

Utilities and Service Systems

Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

As discussed in Section 2.8, “Hydrology and Floodplain,” the proposed project would increase the amount of impervious surface area, increasing the amount of storm water runoff. Increases in impervious surfaces could increase flow velocity and the peak and quantity of storm water runoff due to reduced natural infiltration (groundwater recharge) and uptake from native soils and vegetation. Further, if periodic maintenance of the bridge were to require in-water work, the potential would exist for sediment disturbance and turbidity. Minimal impacts are expected on the Sacramento River. Implementation of the SWPPP and associated BMPs will reduce the potential for impacts on the watershed. The increase in stormwater runoff would not require expansion of existing storm water drainage facilities or require new facilities to be constructed outside the project footprint. This impact therefore is considered less than significant.

For additional discussion of potential impacts related to storm water runoff and sediment disturbance, see Sections 2.4., 2.8, 2.9, and 2.17.

3.2.1.2 Significant Environmental Effects of the Proposed Project

Visual/Aesthetics

Substantially degrade the existing visual character or quality of the site and its surroundings?

As discussed in Section 2.6, “Visual/Aesthetics,” the largest visual change in the Sacramento Visual Assessment Unit associated with the proposed project is the introduction of a new bridge across the river that could be seen from various locations within the visual assessment unit. The Sacramento River Parkway realignment, levee modification, new intersection, and removal of the Jibboom Street viaduct structure would not greatly alter visual resources within the Sacramento Visual Assessment Unit. Levee modifications and associated vegetation removal would slightly alter views within the West Sacramento Visual Assessment Unit. The removal of the C Street viaduct to the I Street Bridge and 2nd Street would reduce the amount of roadway infrastructure to a degree, while the proposed bridge and C Street connection would introduce new structures and roadway features in this unit. Views associated with the River Visual Assessment Unit would not be greatly affected because the proposed project would introduce a new structure that would be located and grouped with other similar structures.

Although the bridge design has not been solidified, it would be designed in a manner that carries forward elements from the nearby Tower and existing I Street Bridges or that creates a new visual focal point to facilitate creation of a new gateway between Sacramento and West Sacramento. As described in Section 2.6, viewers within the project area are familiar with existing bridges along this segment of the river, and the proposed bridge would largely be in keeping with the existing visual environment. While a very small subset of the larger viewer group may view the project negatively because they would be adversely affected by the 2nd Street access changes, many roadway neighbors and users are likely to view the project in a positive manner because of the improved connectivity it would provide. The changes in all visual assessment units have the potential to result in significant impacts resulting from vegetation removal and if the public and affected viewers do not favor the look of the proposed final bridge design. Implementation of the measures described in Section 2.6 (*Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover], Work with Stakeholders to Determine Bridge Aesthetics, Implement Project Landscaping*) will ensure that the existing visual character and quality of views in the project area are not greatly altered and that visual changes associated with the proposed bridge do not create an eyesore. Implementation of these measures will reduce potentially significant visual impacts to less-than-significant levels.

Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Nighttime construction would not occur; therefore, high-intensity nighttime lighting would not be needed under either build alternative. The resulting visual impacts on light and glare from construction would be minor. The bridge structure could be a source of glare, depending on the

color selection for the structure, and vegetation removal would slightly increase glare in the project area. However, glare associated with the river is already a prominent visual element in the River Visual Assessment Unit and within the Sacramento and West Sacramento Visual Assessment Units where gaps in vegetation allow views of the river. In addition, the new bridge structure would shade the river's surfaces, slightly reducing reflective glare from the river within the River Visual Assessment Unit, which also could be seen from the Sacramento and West Sacramento Visual Assessment Units.

New bridge, roadway, and intersection lighting could include LED lighting for security and safety purposes that could affect sensitive receptors if not properly designed, as described in Section 2.6. This could result in a significant impact by creating a substantial source of nighttime light and glare that could negatively affect nighttime views in the area. Implementation of the measure described in Section 2.6 (*Apply Minimum Lighting Standards*) will reduce this potentially significant impact to a less-than-significant level.

Air Quality

Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction

The proposed project would construct a new bridge upstream of the existing I Street Bridge. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, paving activities, bridge demolition and erection, and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather. SMAQMD's RCEM (Version 8.1.0) and information provided by the project engineers were used to estimate construction-related emissions. Table 2.13-5 in Section 2.13, "Air Quality" summarizes maximum daily emissions levels in the SMAQMD and YSAQMD.

Table 2.13-5 indicates that construction of the project would not exceed SMAQMD's or YSAQMD's numeric thresholds of significance. However, SMAQMD's (2016) *CEQA Guidelines* only consider PM10 and PM2.5 emissions below their 82- and 80-pound-per-day thresholds, respectively, to be less than significant with application of BMPs. Construction activity within the Sacramento Railyards Specific Plan area also is required to comply with the mitigation measures contained in the adopted *Mitigation Monitoring Plan* for the Railyards development (City of Sacramento 2016). Therefore, this is considered a potentially significant impact.

Implementation of the mitigation measure described in Section 3.3 (*Implement Control Measures for Construction Emissions of Fugitive Dust*), including compliance with the *Sacramento Railyards Specific Plan* dust control BMPs, will reduce potentially significant construction-related PM emissions to less-than-significant levels.

Operation

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, and PM_{2.5} for existing (2014), opening (2020), and design (2040) year conditions were evaluated through modeling conducted using ARB's EMFAC2014 model. Table 2.13-4 in Section 2.13, "Air Quality" summarizes modeled emissions and compares build emissions to no build and existing conditions.

As shown in Table 2.13-4, implementation of the build alternatives would result in a negligible change compared to the No Build Alternative. Pollutant emissions would decrease for most pollutants, except particulate matter. Despite decreased exhaust emissions, particulate matter emissions would increase in certain conditions due to re-entrained dust, break wear, and tire wear emissions. These emissions related to VMT would be directly correlated to the regional VMT relationship between the alternatives. This is considered a long-term air quality benefit. No mitigation is required.

Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

SMAQMD and YSAQMD have identified project-level thresholds to evaluate criteria pollutant impacts. In developing these thresholds, the air districts considered levels at which project emissions would be cumulatively considerable. The project-level criteria pollutant thresholds therefore represent the maximum emissions the project may generate before contributing to a cumulative impact on regional air quality. Consequently, exceedances of the project-level thresholds would be cumulatively considerable. As shown in Tables 2.13-4 and 2.13-5, neither construction nor operation of the build alternatives would exceed SMAQMD's or YSAQMD's thresholds of significance. However, SMAQMD's (2016) *CEQA Guidelines* only consider PM₁₀ and PM_{2.5} emissions below their 82- and 80-pound-per-day thresholds, respectively, to be less than significant with application of BMPs. Therefore, construction emissions of PM are considered to result in a cumulatively considerable contribution to a net increase of the pollutant. With implementation of the mitigation measure described in Section 3.3 (*Implement Control Measures for Construction Emissions of Fugitive Dust*) the potentially significant construction-related PM contribution is reduced to less-than-significant levels. Accordingly, the project's contribution to a cumulative net increase in any criteria pollutants is considered less than cumulatively considerable with mitigation.

Biological Resources

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?

As discussed in Sections 2.19 and 2.20, the build alternatives could result in direct and indirect impacts on VELB, western pond turtle, white-tailed kite, Swainson's hawk, pallid bat, western

red bat, other migratory birds, other bat species, Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV fall- and late fall-run Chinook salmon, CV steelhead, the Southern DPS of North American green sturgeon, delta smelt, longfin smelt, Sacramento splittail, Pacific lamprey, and river lamprey. Avoidance, minimization, and mitigation measures to reduce effects on these special-status species are identified in Sections 2.19 and 2.20 (*Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources; Conduct Environmental Awareness Training for Construction Employees; Conduct Periodic Biological Monitoring; Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]; Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands; Compensate for Loss of Perennial Stream; Conduct Preconstruction Surveys for Western Pond Turtle and Allow Turtles to Leave Work Area Unharmful; Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers; Conduct Tree Removal during Non-Sensitive Periods for Wildlife; Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures; Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures; Replace Bat Roosting Habitat Lost from Demolition of Approach Structures; Monitor Bat Replacement Habitat; Conduct All In-Water Construction Activities between May 1 and November 30 and Only during Daylight Hours; Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving; Develop and Implement a Hydroacoustic Monitoring Plan; Monitor Turbidity in the Sacramento River; Implement Cofferdam Restrictions; Prepare and Implement a Fish Rescue and Relocation Plan; Prevent the Spread or Introduction of Aquatic Invasive Species; Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River; Avoid and Minimize Impacts on Valley Elderberry Longhorn Beetle; Transplant Elderberry Shrubs that Cannot be Avoided; Compensate for Impacts on Valley Elderberry Longhorn Beetle Habitat; Conduct Focused Surveys for Nesting Swainson's Hawk Prior to Construction; Monitor Active Swainson's Hawk Nest During Pile Driving and Other Construction Activities*).

In addition, as part of consultation under Section 7 of FESA, Biological Assessments were prepared to address project impacts on delta smelt and VELB (USFWS) and Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and the Southern DPS of North American green sturgeon (NMFS). Implementation of measures incorporated into the project and measures required in the Biological Opinions issued by USFWS and NMFS (see Appendix G) will reduce or mitigate potentially significant project impacts to less-than-significant levels.

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?

Each of the build alternatives would result in permanent and temporary impacts on vegetation communities that would qualify as natural communities of special concern, including, non-wetland riparian forest. Native trees are present within this community type that also would be affected. Implementation of the avoidance, minimization, and mitigation measures described in Section 2.16, "Natural Communities" (*Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources, Conduct Environmental*

Awareness Training for Construction Employees, Conduct Periodic Biological Monitoring, Compensate for Loss of Protected Trees not in Riparian Habitat; Purchase Channel Enhancement Credits for Impacts on Critical Habitat; Avoid the Introduction and Spread of Invasive Plants) would compensate for the loss of natural communities and reduce potentially significant impacts to less-than-significant levels.

Each of the build alternatives also would result in permanent and temporary impacts on SRA cover. Implementation of the measure described in Section 2.16 (*Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]*) will reduce this potentially significant impact to a less-than-significant level.

Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?

As discussed in Section 2.17, “Wetlands and Other Waters,” each of the build alternatives would result in permanent and temporary effects on non-wetland waters of the United States and waters of the State in the Sacramento River, which is a perennial stream. Implementation of the measures described in Section 2.17 (*Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources, Conduct Environmental Awareness Training for Construction Employees, Conduct Periodic Biological Monitoring, Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands*) will reduce the potentially significant impact to a less-than-significant level and compensate for the loss of waters of the United States.

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?

As described in Sections 2.19 and 2.20, the movement of fish species present in the Sacramento River could be affected by short-term work activities occurring in or adjacent to the river channel. Most adults and juveniles would be expected to move upstream or downstream of the immediate project area in response to disturbance, although some fish may be injured or killed as a result of exposure to harmful levels of noise during pile driving. Displacement could reduce spawning success by causing adults to be delayed in reaching upstream spawning areas, and affect survival of young by increasing the exposure of juveniles to predators and possibly increasing competition with other juveniles, especially if suitable rearing habitat is limited or not readily available. Although juveniles are capable of actively moving away from disturbances, some juveniles may seek cover in active work areas, where they may be injured or killed by exposure to harmful levels of noise, suspended sediment, contaminants, or other factors.

Implementation of the measures described in Section 2.19, “Animal Species” and Section 2.20, “Threatened and Endangered Species” (*Conduct All In-Water Construction Activities between May 1 and November 30 and Only during Daylight Hours, Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving, Develop and Implement a Hydroacoustic Monitoring Plan, Monitor Turbidity in the Sacramento River, Implement Cofferdam Restrictions, Prepare and Implement a Fish Rescue and Relocation Plan, Minimize or*

Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River,) will avoid or minimize the potential for the proposed project to interfere substantially with the movement of fish species and reduce this potentially significant impact to a less-than-significant level.

Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

As discussed in Section 2.16, “Natural Communities,” both build alternatives would remove heritage trees in the City of Sacramento and the City of West Sacramento. Implementation of the avoidance, minimization, and mitigation measures described in Section 2.16 (*Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources, Conduct Environmental Awareness Training for Construction Employees, Conduct Periodic Biological Monitoring, Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover], Compensate for Loss of Protected Trees not in Riparian Habitat*) will compensate for the loss of protected trees and reduce potential impacts to less-than-significant levels.

Refer to Sections 2.16, 2.17, 2.18, 2.19, and 2.20 for additional discussion of potential impacts on biological resources.

Cultural Resources

Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

As discussed in Section 2.7, “Cultural Resources,” two historic era built-environment resources within the project area are considered historical resources for the purposes of CEQA: the I Street Bridge and a segment of the Sacramento River East Levee (P-34-000490). Under either build alternative, potentially significant impacts could occur to the I Street Bridge.

I Street Bridge, constructed in 1911, is a double-deck, steel-swing bridge extending from the city of Sacramento to the city of West Sacramento. While the existing I Street Bridge over the Sacramento River would remain in place, the approach structures leading up to the bridge from both directions would be demolished under both build alternatives. Removal of the approach structures will not diminish the integrity of the resource and will not destroy or adversely affect any qualifying characteristics of the property. The project will remove the historical non-rail vehicular use of the bridge.

Implementation of the following measure, *Develop Interpretive Display for the I Street Bridge*, will reduce this impact to a less-than-significant level. The display would document the historical vehicular uses of this bridge. Details on implementation of the interpretive display will be coordinated through Caltrans in consultation with the SHPO. With the implementation of the interpretive display, the impact on the I Street Bridge as a historical resource is considered less than significant. Refer to Section 2.7, “Cultural Resources” for additional discussion of potential impacts on cultural resources.

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

One archaeological resource has been identified in the APE, previously recorded resource CA-SAC-658H, which is discussed further in Section 2.7.2.3, “Cultural Resources Identified.” Project activities proposed for this site’s location would occur only at the site’s ramp and would consist of establishing temporary construction access routes with only temporary impacts. The project-related ground-disturbing activities nearest to the resource that would result in permanent impacts would be bike lane construction, approximately 10 feet northeast of the ramp, and removal of the Jibboom Street approach superstructure, approximately 15 feet east of the ramp. The former would include ground disturbance to a depth of approximately 15 feet and the latter to a depth of 3 feet. The *Archaeological Survey Report* (ICF International 2016a) recommends that (1) considering the resource as a whole as eligible for listing in the NRHP and CRHR for the purposes of this project only; and (2) establishing an ESA to ensure that the resource is not affected during project implementation. Sensitivity training of project personnel prior to the start of construction and monitoring by a qualified archaeologist and a Native American monitor of all construction activities that involve ground disturbance (e.g., vegetation removal, grading, excavation, bridge construction) also will take place.

It is also possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives. This impact would be considered a significant impact on previously unknown cultural resources.

Implementation of the measures identified in Section 2.7, “Cultural Resources” (*Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel, Establish an Environmental Sensitive Area for Resource CA-SAC-658H, Implement a Programmatic Agreement, Implement Avoidance and Notification Procedures for Cultural Resources*) will reduce potentially significant impacts to less-than-significant levels.

Disturb any human remains, including those interred outside of formal cemeteries?

As discussed in Section 2.7, “Cultural Resources,” the APE is generally sensitive for archaeological deposits, including human remains. Earth-disturbing and (i.e., excavation and grading) construction activities could damage human remains if present in the project area. If human remains are inadvertently 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 shall be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The project proponent will work with the MLD to avoid the remains and, if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

In addition, implementation of the following measures, *Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel, Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction*, will reduce this impact to a less-than-significant level. Refer to Section 2.7 for additional discussion of potential effects on cultural resources.

Geology and Soils

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

As discussed in Section 2.11, “Paleontology,” the paleontological sensitivity of the geologic unit that underlies the project site is considered to be low. However, it is possible that a lower portion of the unit could contain paleontological resources. Earth-disturbing and (i.e., excavation and grading) construction activities could damage fossils if present in the project area. Substantial damage to or destruction of significant paleontological resources as defined by the Society of Vertebrate Paleontology would be a significant impact. Subsequent to public review, this section is updated to reflect that the provisions related to the protection of paleontological resources contained in Caltrans’ 2015 Standard Specifications number 14-7.03 are not mitigation because they are adopted policy that must be followed. To minimize effects on paleontological resources, the project proponent will implement Caltrans’ standard specification 14-7.03, Discovery of Unanticipated Paleontological Resources, if needed during construction. The standard specification describes the following procedures.

If unanticipated paleontological resources are discovered at the job site, do not disturb the resources and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Secure the area
3. Notify the Engineer

The project proponent will investigate the discovery and modify the dimensions of the secured area if needed. Do not move paleontological resources or take them from the job site. Do not resume work within the radius of discovery until authorized.

Compliance with the standard specification and implementation of measures to educate construction personnel to recognize fossil materials and stop work if fossil remains are encountered (*Educate Construction Personnel in Recognizing Fossil Material, Stop Work if Substantial Fossil Remains Are Encountered during Construction*.) will reduce this potentially significant impact to a less-than-significant level.

Noise

Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Operational Noise

The City of Sacramento is the CEQA lead agency. However, all of the noise-sensitive land uses in the project area are in the City of West Sacramento. Consequently, the City of Sacramento is evaluating noise impacts under CEQA using City of West Sacramento’s noise standards. Further, the analysis of noise level changes resulting from roadway operations is inherently cumulative because the traffic forecasts use build-out assumptions.

Chapter 17.32 of the West Sacramento Municipal Code sets noise level performance standards for transportation noise sources, which are summarized in Table 3-4. Noise sensitive receptors adjacent to the project are located in the Washington Specific Plan area. As such, an exterior noise level of 70 dB L_{dn} is allowed at receptors in this area, as described in footnote 4 of Table 3-4.

Table 3-4. City of West Sacramento Maximum Allowable Noise Exposure from Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹ $L_{dn}/CNEL$, dB	Interior Spaces	
		$L_{dn}/CNEL$, dB	L_{eq} , dB ²
Residential	60 ^{3, 4}	45	—
Transient lodging	60 ^{3, 4}	45	—
Hospitals, nursing homes	60 ^{3, 4}	45	—
Theaters, auditoriums, music halls	—	—	35
Churches, meeting halls	60 ³	—	40
Office buildings	—	—	45
Schools, libraries, museums	—	—	45
Playgrounds, neighborhood parks	70	—	—

¹ Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

² As determined for a typical worst-case hour during period of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB $L_{dn}/CNEL$ or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB $L_{dn}/CNEL$ may be allowed, provided that practical exterior noise level reduction measures have been implemented and that interior noise levels are in compliance with this table. An exterior noise level of 70 dB $L_{dn}/CNEL$ shall be allowed in the triangle specific plan area and the Washington specific plan area.

⁴ Outdoor activity areas such as private balconies on residential buildings may be constructed within the bridge district specific plan area in areas that are predicted to exceed 70 L_{dn} provided that an alternative common outdoor activity area for the residences is designated that meets the city's performance criteria.

The *Noise Study Report* (NSR) prepared for this project (ICF International 2015) presents noise impacts and abatement evaluation consistent with NEPA and 23 CFR 772. To evaluate noise levels relative to City of West Sacramento noise limits, supplemental modeling locations were selected to evaluate noise levels at building interiors and outdoor locations of frequent human use. Traffic noise levels were predicted using the FHWA Traffic Noise Model (TNM), Version 2.5. The NSR evaluates traffic noise impacts based on the worst noise hour equivalent sound level (L_{eq}). The City of West Sacramento uses the day-night level (L_{dn}), which is a 24-hour weighted average. Continuous 24-hour measurements conducted in the project area for the NSR indicate that L_{dn} values are typically 2 dB greater than the worst noise hour L_{eq} . As such, a 2 dB conversion factor was added to modeled noise levels to express existing and predicted traffic noise levels in terms of L_{dn} . Impacts are determined based on limits for interior spaces and outdoor activity areas as shown in Table 3-4.

Predicted traffic noise levels in interior spaces and at outdoor frequent human use areas are shown in Table 3-5. Using City of West Sacramento's criteria, noise impacts are predicted to occur at both interior and exterior locations. The impact due to noise emissions from operation of motor vehicles in excess of City of West Sacramento standards is therefore considered to be significant.

Table 3-5. Predicted Traffic Noise Levels at Outdoor Use Areas and in Interior Spaces

Road	Location	Residential Interior Spaces ¹			Residential Outdoor Activity Areas ²			
		Noise Level, L _{dn} ^{1,3}	Allowable Limit, L _{dn}	Significant?	Noise Level, L _{dn} ^{2,3}	Type of use	Allowable Limit, L _{dn}	Significant?
C Street	West of 6th Street	49	45	Yes	71	community outdoor space	70	Yes
C Street	between 5th and 6th Street	47	45	Yes	72	front yard	70	Yes
C Street	between 4th and 5th Street	49	45	Yes	73	community garden	70	Yes
C Street	between 3rd and 4th Street	47	45	Yes	69	back yards	70	No
C Street	between Future 2nd and 3rd Street	48	45	Yes	71	back yards	70	Yes
B Street	between Existing 2nd and 3rd Street	39	45	No	63	back yards	70	No
3rd Street	between B and C Street	39	45	No	64	front yard	70	No

¹ Predicted levels calculated at the nearest building façade locations along the roadway segment.

² Predicted levels calculated at outdoor activity area locations, which are different from the façade locations.

³ Assumes that standard building construction will typically provide at least 25 dB of exterior-to-interior noise reduction with windows closed. Actual interior levels will vary by noise reduction of window, wall and door assemblies.

In all locations shown in Table 3-5, construction of noise barriers to reduce noise impacts is not feasible because driveway and street access must be maintained. However, other mitigation measures are available to reduce impacts. Implementation of the mitigation measure listed in Section 3.3.6, *Build Pavement Surface Designed to Reduce Tire-Pavement Noise* would reduce impacts at both outdoor use areas and interior spaces to a less-than-significant level. As indicated in the measure, noise level testing will be done after roadway surfacing at locations in line with building façade locations to determine compliance with City noise limits. If levels continue to exceed 70 L_{dn}, implementation of the mitigation measure listed in Section 3.3.6, *Ensure Building Compliance with City Noise Limits for Interior Spaces* would reduce this impact to a less-than-significant level.

Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The City of West Sacramento General Plan 2035 Policy Document (adopted November 2016) identifies significance criteria for assessing the significance of permanent noise increases for roadway improvement projects. The significance criteria for traffic noise impacts are tied to both

the absolute traffic noise level and the increase in noise caused by the project. These increase thresholds are used to compare future with-project noise levels to future no-project levels:

- a. Where existing or projected future traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of residential uses, increase of over 5 dB L_{dn} due to a roadway improvement project will be considered significant; and
- b. Where existing or projected future traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of over 3 dB L_{dn} due to a roadway improvement project will be considered significant; and
- c. Where existing or projected future traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of over 1.5 dB L_{dn} increase due to a roadway improvement project will be considered significant.

The design-year no build noise level has been compared to the design-year build noise level in order to assess the significance of noise impacts under the criteria described above. The predicted increase in traffic noise levels due to the project is shown in Table 3-6.

Table 3-6. Predicted Traffic Noise Level increase at Residential Outdoor Use Areas

Road	Location	Outdoor Activity Areas				
		Future No-Project Noise Level, L _{dn}	Future With-Project Noise Level, L _{dn}	Increase, dB	Allowable Increase, dB	Significant?
C Street	West of 6th Street	70	71	+1	+1.5	No
C Street	between 5th and 6th Street	71	72	+1	+1.5	No
C Street	between 4th and 5th Street	71	73	+2	+1.5	Yes
C Street	between 3rd and 4th Street	67	69	+2	+1.5	Yes
C Street	between Future 2nd and 3rd Street	70	71	+1	+1.5	No
B Street	between Existing 2nd and 3rd Street	60	63	+3	+3	Yes
3rd Street	between B and C Street	62	64	+2	+3	No

As shown in Table 3-6, substantial permanent increases in noise are considered to occur at the outdoor use areas. In all locations shown in Table 3-6, construction of noise barriers to reduce noise impacts is not feasible because driveway and street access must be maintained. However, implementation of the mitigation measure listed in Section 3.3.6, *Build Pavement Surface Designed to Reduce Tire-Pavement Noise* would reduce this impact to a less-than-significant level.

Recreation

Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Multiple parks, trails, and open space areas are located throughout the study area, particularly along the riverfront (Figure 2.1-4). As discussed in Section 2.1.3. “Parks and Recreational Facilities,” the project would result in temporary and permanent impacts—including acquisition of land—on the riverfront parks in both the Sacramento and West Sacramento portions of the project area. The specific potential impacts and proposed acquisitions are discussed in Section 2.1.4.1.

The parkland acquisitions required for the project would be minor and would not affect the overall viability of the parks and recreational facilities in the community. The project would result in an acquisition from the Sacramento River Parkway, but it would not significantly alter the recreational opportunities in that area, which mainly include use of the Sacramento River Parkway Trail. The trail would be detoured for 2 years and then would be restored within the Sacramento River Parkway. Implementation of measures described in Section 2.1, “Land Use” (*Restore Sacramento River Parkway Trail after Construction, Provide Advance Notification of Sacramento River Parkway Trail Closures*) will reduce this impact to a less-than-significant level.

Transportation/Traffic

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?

While some analysis locations show improved traffic operations or no change, the following locations are projected to experience worse conditions under the build alternatives that would result in potentially significant impacts.

City of West Sacramento Intersections

The build alternatives would cause unacceptable LOS conditions for the intersections listed in Tables 3-7 and 3-8 in the City of West Sacramento, resulting in a significant impact under 2020 and cumulative (2040) conditions.

Table 3-7. Peak Hour Intersection Operations – Opening Year (2020)

LOS / Delay				
Intersection	Traffic Control	Existing Conditions	2020 No Build	2020 Build Alternatives
5th Street / Tower Bridge Gateway	Signal	C / 34	E / 78 *	F / 89 *
		D / 45	E / 68 *	E / 79 *

Notes

- ¹ LOS / Delay is reported for the AM peak hour (top) and PM peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ LOS is based on *Highway Capacity Manual* (Transportation Research Board 2010).

Table 3-8. Peak Hour Intersection Operations – Design Year (2040)

LOS / Delay				
Intersection	Traffic Control	Existing Conditions	2040 No Build	2040 Build Alternatives
4. 5th Street / E Street	Side-Street Stop	A / 8	D / 27	E / 37
		A / 7	D / 26	<u>F / 72</u>
6. 5th Street / F Street	Side-Street Stop	A / 9	D / 29	<u>F / 72</u>
		A / 10	E / 46	<u>F / 79</u>

Notes:

- ¹ LOS / Delay is reported for the AM peak hour (top) and PM peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ LOS is based on *Highway Capacity Manual* (Transportation Research Board 2010).

City of Sacramento Intersections

The project alternatives would cause unacceptable LOS conditions for the intersections listed in Tables 3-9 and 3-10 in the City of Sacramento, resulting in a significant impact under 2020 and cumulative (2040) conditions.

Table 3-9. Peak Hour Intersection Operations – Opening Year (2020)

LOS / Delay				
Intersection	Traffic Control	Existing Conditions	2020 No Build	2020 Build Alternatives
N 7th Street / N B Street	Signal	B / 14	F / 127 *	<u>F / 148</u> *
		B / 17	F / 88 *	E / 77 *

Notes:

- ¹ LOS / Delay is reported for the AM peak hour (top) and PM peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ LOS is based on *Highway Capacity Manual* (Transportation Research Board 2010).

Table 3-10. Peak Hour Intersection Operations – Design Year (2040)

LOS / Delay				
Intersection	Traffic Control	Existing Conditions	2040 No Build	2040 Build Alternatives
14. Bercut Dr / Richards Boulevard	Signal	B / 12	D / 41 *	C / 33 *
		C / 21	E / 65 *	<u>F / 83</u> *
15. N 3rd Street / Richards Boulevard	Signal	B / 18	C / 23 *	B / 16 *
		C / 32	F / 139 *	<u>F / 145</u> *

Notes:

- ¹ LOS / Delay is reported for the AM peak hour (top) and PM peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ LOS is based on *Highway Capacity Manual* (Transportation Research Board 2010).

Freeway Facilities

The project alternatives would worsen LOS F conditions for the freeway facility listed in Table 3-11, resulting in a significant impact under 2020 conditions. No freeway facilities would experience significant impacts under 2040 conditions.

Table 3-11. Freeway Operations – Opening Year (2020)

LOS / Density				
Freeway Segment	Type	Existing Conditions	2020 No Build	2020 Build Alternatives
I-5 Southbound				
Garden Highway to Richards Boulevard	Weave	E	F	<u>F</u>
		C	E	<u>E</u>

Notes:

- ¹ LOS / Density is reported for basic and merge segments in the AM peak hour (top) and PM peak hour (bottom) for each freeway segment.
- ² Density is measured in passenger car equivalents per lane per mile. Density was not calculated for weave segments or any segment with LOS F.
- ³ LOS in bold and underline font represents an impact. An impact is a change between no build and build alternative scenarios in LOS from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ Freeway operations were analyzed using procedures described in the *Highway Capacity Manual* (Transportation Research Board 2010), except for weave segments. Weave segments were analyzed using the Leisch method.

Implementation of the measures listed in Section 2.5 (*Prepare a Transportation Management Plan, Implement Roadway and Freeway Improvements*) will reduce these potentially significant impacts to less-than-significant levels.

Result in inadequate emergency access?

Access and circulation would change in the project area, including changing access to specific properties and routes for emergency responders. In addition, the project would create a cul-de-sac that exceeds the maximum length allowed by West Sacramento Standard Specifications and Details (Division 1, Design Standards, Section 3.05G, Street Design, Dead-end Length) associated with public safety access and egress. Depending on what direction the emergency service is driving, the route could be shorter or up to about 1 mile longer. With the implementation of the following measures to reduce potential impacts on the response times of emergency service providers (including law enforcement, fire protection, and ambulance service providers) caused by potential construction delays, and restore adequate emergency access, this impact is considered less than significant: *Prepare a Transportation Management Plan, Construct Mid-block East West Road*. The effects of implementation of these measures are described in Section 2.3.1.4.

3.2.1.3 Unavoidable Significant Environmental Effects

Biological Resources

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?

As discussed in Section 2.19.3.1, the proposed project would result in removal of the approach structures and thus removal of the purple martin nesting habitat within the BSA. Based on the most recent population estimates, the loss of nesting habitat within the BSA would displace approximately 25 percent of the Sacramento population of purple martins, which is the only extant population in the Central Valley. Avoidance, minimization, and mitigation measures have been identified to address impacts on purple martins (*Avoid and Minimize Impacts on Purple Martins during Construction Activities, Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures, Conduct Staff Training, Enhance Existing Colony Entrance Holes, Create Purple Martin Replacement Habitat, Prepare and Implement a Monitoring and Management Plan for the I Street Bridge Purple Martin Colony Replacement Habitat*).

Considering the proportion of the population that would be directly affected and uncertainty of whether purple martins would colonize the habitat recreated in the new bridge, this impact is considered significant and unavoidable.

Noise

Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Construction Noise

The City of West Sacramento noise ordinance, which is set forth in Chapter 17.32 of the West Sacramento Municipal Code, is the primary enforcement tool for operation of locally regulated noise sources, such as construction activity. The noise ordinance sets noise level performance standards for non-transportation noise sources, which are summarized in Table 3-12. Examples of non-transportation noise sources are construction equipment, industrial operations, outdoor recreation facilities, HVAC units, and loading docks. The City of West Sacramento's noise ordinance does not specify an exemption for temporary daytime construction activity; therefore, the daytime and nighttime limits specified in the noise ordinance are considered to apply to all construction associated with the proposed project.

Table 3-12. City of West Sacramento Non-Transportation Noise Level Standards

Land Use	Noise Level Descriptor	Exterior Noise Levels		Interior Noise Levels	
		Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Residential	Hourly L _{eq} , dBA	50	45	45	35
	Max. Level, dBA	70	65	–	–
Transient lodging	Hourly L _{eq} , dBA	–	–	45	35
Hospital, nursing homes	Hourly L _{eq} , dBA	–	–	45	35
Theatres, auditoriums, music halls	Hourly L _{eq} , dBA	–	–	35	35
Churches, meeting halls	Hourly L _{eq} , dBA	–	–	40	40
Office buildings	Hourly L _{eq} , dBA	–	–	45	45
Schools, libraries, museum	Hourly L _{eq} , dBA	–	–	45	45

dBA = A-weighted decibel

L_{eq} = equivalent sound level

Note: Each noise level specified above will be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Construction of the proposed project would result in temporary increases in noise levels in the project vicinity. Table 3-13 summarizes typical noise levels associated with public works projects such as the proposed project. (U.S. Environmental Protection Agency 1971).

Table 3-13. Construction Noise

Construction Phase	Public Works				
	Distance from Construction (feet)				
	50	100	200	400	800
	Sound Level dBA				
Ground Clearing	88	82	76	70	64
Excavation	90	84	78	72	66
Foundations	92	86	80	74	68
Building/Facility Construction	88	82	76	70	64
Finishing and Clean-up	90	84	78	72	66

Source: U.S. Environmental Protection Agency 1971.

Because residential uses are located within 50 to 100 feet of locations where construction activity will occur, the results in Table 3-13 indicate that construction noise could exceed applicable City standards for non-transportation sources. This impact therefore is considered significant.

Implementation of the measure described in Section 3.3.6 (*Use Noise-Reducing Construction Practices*) would reduce the impact, but it is not anticipated that feasible measures would be available in all situations to reduce noise to below the applicable noise ordinance limits. This impact therefore is considered significant and unavoidable.

Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

As discussed above, construction of the proposed project would result in temporary increases in noise levels in the project vicinity. Table 3-13 summarizes typical noise levels associated with public works projects such as the proposed project. Increases in construction noise are expected to result in noise levels that exceed applicable city noise standards at nearby residential uses. These increases therefore are considered substantial, and this impact is considered significant.

Implementation of the measure described in Section 3.3.6 (*Use Noise-Reducing Construction Practices*) will reduce the impact, but it is not anticipated that feasible measures would be available in all situations to reduce construction noise to below the applicable noise ordinance limits. This impact therefore is considered significant and unavoidable.

Expose persons to or generate excessive groundborne vibration or groundborne noise levels?

The operation of construction equipment has the potential to generate groundborne vibration. Impact equipment such as pile drivers and hoe rams have the greatest potential to generate perceptible vibration. The City of West Sacramento has not adopted specific limits on vibration. Caltrans, however, has developed guidance related to annoyance and damage potential from construction vibration. Tables 3-14 and 3-15 provide a summary of this guidance.

Table 3-14. Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

PPV = peak particle velocity

Note:

Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation 2013.

Table 3-15. Guideline Vibration Damage Potential Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/ Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

PPV = peak particle velocity

Note:

Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: California Department of Transportation 2014.

Table 3-16 summarizes typical vibration level generated by construction equipment (Federal Transit Authority 2006). In general, vibration that exceeds a peak particle velocity of 0.1 inch/second (in/sec) has the potential to result in annoyance or damage to historic or older buildings. Vibration amplitudes that are about equal to or greater than 0.1 in/sec are bolded in Table 3-16.

Table 3-16. Vibration from Construction Equipment

Equipment	Distance from Construction (feet)					
	25 feet	50 feet	75 feet	100 feet	175 feet	200 feet
	Peak Particle Velocity (in/sec)					
Pile driver (impact)	1.518	0.5367	0.2921	0.1898	0.0820	0.0671
Pile drive (sonic)	0.734	0.2595	0.1413	0.0918	0.0396	0.0324
Vibratory roller	0.21	0.0742	0.0404	0.0263	0.0113	0.0093
Hoe ram	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Large bulldozer	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Caisson drilling	0.089	0.0315	0.0171	0.0111	0.0048	0.0039
Loaded truck	0.076	0.0269	0.0146	0.0095	0.0041	0.0034
Jackhammer	0.035	0.0124	0.0067	0.0044	0.0019	0.0015
Small bulldozer	0.003	0.0011	0.0006	0.0004	0.0002	0.0001

Note:

Vibration amplitudes that are about equal to or greater than 0.1 in/sec are bolded, indicating the potential to result in annoyance or damage to historic or older buildings

Source: Federal Transit Authority 2006.

The results in Table 3-16 indicate that vibration from impact pile driving located within about 175 feet of the activity could result in vibration in excess of 0.1 in/sec and potential annoyance or damage to historic buildings. The distance for sonic pile driving is about 100 feet, and the

distance for a vibratory roller is about 50 feet. Other construction equipment is not anticipated to result in vibration in excess of 0.1 in/sec beyond 25 feet.

The results in Table 3-16 indicate that pile driving and use of a vibratory roller could result in annoyance or potential damage to nearby structures. This impact therefore is considered significant.

Implementation of the measure described in Section 3.3.3 (*Use Vibration-Reducing Construction Practices*) will reduce this impact. However, it is not anticipated that feasible measures would be available in all situations to reduce vibration during construction to below the acceptable levels. This effect therefore is considered significant and unavoidable.

Transportation/Traffic

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?

The project alternatives would worsen LOS F conditions for the City of Sacramento intersection listed in Table 3-17. Mitigation to widen the travel lanes would reduce the level of this impact but also would remove bicycle and pedestrian facilities which would conflict with the City of Sacramento’s General Plan policy to provide bicycle and pedestrian facilities at this intersection. As such, mitigation was considered infeasible. This impact would remain significant even after implementation of the measures listed in Section 2.5 (*Prepare a Transportation Management Plan, Implement Roadway and Freeway Improvements*). This effect therefore is considered significant and unavoidable.

Table 3-17. Peak Hour Intersection Operations – Design Year (2040)

LOS / Delay					
Intersection	Traffic Control	Existing Conditions	2040 No Build	2040 Alternative 1	2040 Alternative 2
19. N 12th Street / N B Street	Signal	B / 15 B / 17	F / 135 * F / 138 *	F / 135 * <u>F / 153</u> *	

Notes:

- ¹ LOS / Delay is reported for the AM peak hour (top) and PM peak hour (bottom) for each intersection.
- ² For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
- ³ LOS in bold and underline font represents an impact. An impact is a change in LOS between no build and build alternative scenarios from acceptable to unacceptable or a worsening of an unacceptable condition.
- ⁴ LOS noted with an asterisk indicates that the percent of demand volume served during the peak hour is less than 95 percent. Delay (and LOS) may be worse than reported.
- ⁵ LOS is based on *Highway Capacity Manual* (Transportation Research Board 2010).

3.3 Mitigation Measures for Significant Impacts under CEQA

3.3.1 Visual/Aesthetics

Work with Stakeholders to Determine Bridge Aesthetics

The project proponent will conduct a focused outreach effort and will conduct a public meeting or charrette session with public stakeholders to develop an aesthetic design approach to aid in reducing the visual impact of the proposed bridge. This measure will allow concerned viewers to contribute to creating a bridge that is visually appealing to the general public, while balancing the need for increased circulation access at this location. Affected stakeholders will be able to provide input on the preferred architectural style and coloring of the proposed bridge.

Implement Project Landscaping

The project proponent will install landscaping where space and safety considerations allow. This will improve the visual quality of the project corridor by improving corridor aesthetics and helping to reduce the apparent scale of new and reconfigured intersections, in addition to replacing some of the vegetation lost through construction. Prior to approval of the roadway design, the City of Sacramento and /or City of West Sacramento project landscape architect will review project designs to ensure that the following elements are implemented in the project landscaping plan.

- Design and implement low impact-development (LID) measures that disperse and reduce runoff by using such features as vegetated buffer strips/medians between paved areas that catch and infiltrate runoff. In addition, pervious paving will be evaluated for use in the proposed project to improve infiltration and to reduce the amount of surface runoff from entering waterways and the storm water system. LID measures will not be used where infiltration could result in adverse environmental effects. LID measures, such as cobbled swales and aggregate mulching, can be used as an aesthetic design element to create an attractive view while reducing water use.
- Require construction contractors to incorporate native grass and wildflower seed to standard seed mixes, which may be non-native, for erosion control measures that will be applied to all exposed slopes. Wildflowers will provide seasonal interest to areas where trees and shrubs are removed and grasslands are disturbed. Only wildflower and grass species that are native will be incorporated into the seed mix, and under no circumstances will any invasive grass or wildflower plant species be used as any component in any erosion control measures. Species will be chosen that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, upland grass and wildflower species will be chosen for drier, upland areas, and wetter species will be chosen for areas that will receive more moisture. If not appropriate to the surrounding habitat, wildflowers should not be included in the seed mix.
- Require the species list to include trees, shrubs, and an herbaceous understory of varying heights, as well as both evergreen and deciduous types. Plant variety will increase the effectiveness of the roadside planting areas by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease. Evergreen groundcovers or low-growing

plants, such as *Ceanothus* spp., should be used in areas where taller vegetation would potentially cause driving hazards by obscuring site distances. Species used will be native and indigenous to the project area and California. Native plant species can be used to create attractive spaces, high in aesthetic quality, that are not only drought-tolerant but also attract more wildlife than traditional landscape plant palettes. Use of native species promotes a visual character of California that is being lost through development and reliance on non-native ornamental plant species.

- Use vegetative accents and screening to reduce the perceived scale and mass of the built features, while accentuating the design treatments that will be applied to built features. Special attention should be paid to plant choices near residences to ensure that species chosen are of an appropriate height, and rely on evergreen species to provide year-round light screening from nuisance light, if applicable.
- Under no circumstances will any invasive plant species be used at any location.
- Plant vegetation within the first 6 months following project completion.
- Implement an irrigation and maintenance program during the plant establishment period and carried on, as needed, to ensure plant survival. However, design of the landscaping plan will try to maximize the use of planting zones that are water efficient. The design also may incorporate aesthetic features, such as cobbling swales or shallow detention areas, which can reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, use a smart watering system in areas that are irrigated to evaluate the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, manage the irrigation system in such a manner that any broken spray heads, pipes, or other components are fixed within 1-2 days, or the zone or system will be shut down until it can be repaired.

Apply Minimum Lighting Standards

All artificial outdoor lighting and overhead street lighting is to be limited to safety and security requirements and the minimum required for driver safety. Lighting will be designed using Illuminating Engineering Society's design guidelines and in compliance with International Dark-Sky Association-approved fixtures. All lighting will be designed to have minimum impact on the surrounding environment and will use downcast, cut-off type fixtures that are shielded and direct the light only toward objects requiring illumination. Therefore, lights will be installed at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties or open spaces, or backscatter into the nighttime sky. The lowest allowable wattage will be used for all lighted areas, and the amount of nighttime lights needed to light an area will be minimized to the highest degree possible. Light fixtures will have non-glare finishes that will not cause reflective daytime glare. Lighting will be designed for energy efficiency, with daylight sensors or timers with an on/off program. Lights will provide good color rendering with natural light qualities, with the minimum intensity feasible for security, safety, and personnel access. Lighting, including light color rendering and fixture types, will be designed to be aesthetically pleasing.

LED lighting will avoid the use of blue-rich white light lamps and use a correlated color temperature that is no higher than 3,000 Kelvin, consistent with the International Dark-Sky Association's Fixture Seal of Approval Program (International Dark-Sky Association 2010a, 2010b, 2015). In addition, LED lights will use shielding to ensure that nuisance glare and that light spill does not affect sensitive residential viewers.

Lights along pathways and bridge safety lighting will use shielding to minimize offsite light spill and glare, and will be screened and directed away from adjacent uses to the highest degree possible. The amount of nighttime lights used along pathways will be minimized to the highest degree possible to ensure that spaces are not unnecessarily over-lit. For example, the amount of light can be reduced by limiting the amount of ornamental light posts to higher use areas and by using bollard lighting on travel way portions of pathways.

Technologies to reduce light pollution evolve over time; design measures that are currently available may help but may not be the most effective means of controlling light pollution once the project is designed. Therefore, all design measures used to reduce light pollution will use the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

3.3.2 Air Quality

Implement Control Measures for Construction Emissions of Fugitive Dust

Caltrans' Standard Specification Section 14, "Environmental Stewardship" addresses the construction contractor's responsibility on many items of concern, such as air pollution; protection of lakes, streams, reservoirs, and other waterbodies; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.02 includes specifications relating to air pollution control for work performed under a contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust. Caltrans' Standard Specifications are incorporated into all Caltrans' construction contracts.

Sacramento Metro Air Quality Management District

Additional measures to control dust in Sacramento County will be borrowed from SMAQMD's recommended list of dust control measures and implemented to the extent practicable when the measures have not already been incorporated in, and do not conflict with, the requirements of Caltrans' Standard Specifications, special provisions, the NPDES permit, the Biological Opinions, the CWA Section 404 permit, CWA Section 401 Certification, and other permits issued for the project. The following measures are taken from SMAQMD's (2016) CEQA Guide and represent their basic control measures for fugitive dust.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 mph.
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

Yolo Solano Air Quality Management District

Additional measures to control dust in Yolo County will be borrowed from YSAQMD's recommended list of dust control measures and implemented to the extent practicable when the measures have not already been incorporated in, and do not conflict with, the requirements of Caltrans' Standard Specifications, special provisions, the NPDES permit, the Biological Opinions, the CWA Section 404 permit, CWA Section 401 Certification, and other permits issued for the project. The following measures are taken from YSAQMD's Construction Dust Mitigation Measures (Yolo Solano Air Quality Management District 2007).

- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch.
- Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

Sacramento Railyards Specific Plan

Construction activity within the *Sacramento Railyards Specific Plan* area will comply with the mitigation measures contained in the adopted *Mitigation Monitoring Plan* for the Railyards development (City of Sacramento 2016). Wet suppression and wind speed reduction are the two

most common methods used to control open dust sources at construction sites because a source of water and material for wind barriers tend to be readily available on a construction site.

3.3.3 Biological Resources

Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The project proponent and/or their contractor will install orange construction fencing between the construction area and adjacent sensitive biological resource areas. Sensitive biological resources that occur adjacent to the construction area that could be directly affected by the project include natural communities of special concern; special-status wildlife habitats for valley elderberry longhorn beetle; nest sites of Swainson's hawk, purple martin, or other migratory birds; roosting bats; and protected trees to be avoided.

Barrier fencing around sensitive areas will be installed as one of the first orders of work and prior to equipment staging. Before construction begins, the construction contractor will work with the project engineer and a resource specialist to identify the locations for the orange construction fencing, and will place stakes around the sensitive resource sites to indicate these locations. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans and described in the specifications. To minimize the potential for snakes and other ground-dwelling animals from being caught in the orange construction fencing, the fencing will be placed with at least a 1-foot gap between the ground and the bottom of the orange construction fencing. The exception to this condition is where construction barrier fencing overlaps with erosion control fencing and must be secured to prevent sediment runoff. Barrier fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed after completion of construction.

Conduct Environmental Awareness Training for Construction Employees

The project proponent will retain a qualified biologist to conduct environmental awareness training for construction crews before project implementation. The awareness training will be provided to all construction personnel and will brief them on the need to avoid effects on sensitive biological resources (e.g., native trees, natural communities of special concern, and special-status species habitats in and adjacent to the construction area). The education program will include a brief review of the special-status species with the potential to occur in the BSA (including their life history and habitat requirements, and photographs of the species). The training will identify the portions of the BSA in which the species may occur, as well as their legal status and protection. The program also will cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on these species during project implementation. This will include the steps to be taken if a sensitive species is found within the construction area (i.e., notifying the crew foreman, who will call a designated biologist). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations. An environmental awareness handout that describes and illustrates sensitive resources to be avoided during project construction and identifies all relevant permit conditions will be provided to each crew member.

The crew foreman will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Education programs will be conducted for appropriate new personnel as they are brought on the job during the construction period.

Conduct Periodic Biological Monitoring

The project proponent will retain a qualified biological monitor for the project who will visit the site a minimum of once per week to ensure that fencing around environmentally sensitive areas is intact and that activities are being conducted in accordance with the agreed upon project schedule and agency conditions of approval. The monitor will provide the project proponent with a monitoring log for each site visit.

Certain activities will require a biological monitor to be present for the duration of the activity or during the initial disturbance of an area to ensure that impacts on special-status species are avoided. The activities that require specific monitoring are identified in Sections 2.17, 2.18, 2.19, and 2.20.

Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (including SRA Cover)

The project proponent will compensate for the permanent loss of up to 1.44 acres of riparian forest. In addition, any unavoidable loss of riparian forest in the temporary work area will be mitigated. The project proponent will implement onsite and, if necessary, offsite compensation measures and/or purchase mitigation bank credits to compensate for losses of cottonwood riparian forest on the waterside slope of the existing levees, including riparian forest supporting SRA cover habitat (as described in Section 2.20, “Threatened and Endangered Species,” portions of the cottonwood riparian forest in the BSA also provide SRA cover habitat for fish). Onsite compensation will be used to the maximum extent practicable. Compliance with the USACE levee vegetation policy (U.S. Army Corps of Engineers 2014), the Urban Levee Design Criteria (California Department of Water Resources 2012), or other engineering constraints may limit the ability to achieve full onsite compensation. Therefore, offsite compensation and/or purchase of mitigation bank credits may be needed to achieve no net loss of existing in-kind riparian and SRA cover habitat values. Each of these options is discussed below.

1. Onsite and/or Offsite Restoration and/or Enhancement along the Sacramento River.

Riparian habitat restoration and/or enhancement onsite or offsite should occur in the same year construction is completed. For onsite or offsite replacement plantings, the project proponent will prepare 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 for the mitigation plantings will be similar to those removed from the project area and will include native species, such as Fremont cottonwood, valley oak, black walnut, Oregon ash, boxelder, and black willow. The final planting plan will be developed based on results of the arborist survey for species to be removed (see additional discussion below). All plantings will be fitted with exclusion cages or other suitable protection from herbivory. Plantings will be irrigated for up to 3 years or until established. Plantings will be monitored annually for 3 years or as required in the project permits. If 75 percent 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.

- 2. Mitigation Bank Credit Purchase.** If this option is chosen, the project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The amount to be paid will be the fee that is in effect at the time the fee is paid. The mitigation will be approved by CDFW and may be modified during the permitting process. Mitigation can be in the form of creation and/or preservation credits. If mitigation is in the form of restoration/creation credits, the mitigation will be at a minimum ratio of 1:1 (1 acre of restored or created riparian habitat for each acre of riparian habitat removed). If mitigation is in the form of preservation credits, the mitigation will be at a minimum ratio of 2:1 (2 acres of preserved riparian habitat for each acre of riparian habitat removed). The final compensation ratio will be approved by CDFW in order to result in no net loss of riparian habitat. The project proponent will purchase riparian habitat credits from an approved mitigation bank near the project, such as the Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, or Elsie Gridley Mitigation Bank. Replacement riparian forest habitat will include trees species that would support nesting Swainson's hawk (i.e., oak, cottonwood) and will occur within the range of nesting Swainson's hawk within the Sacramento Valley.

To provide a more accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90 percent design plans for the project. In addition to a description of the tree, the arborist survey report will include the precise location of the trunk and size of the dripline for all trees whose trunk or canopy overlap with the project footprint. Riparian forest compensation will be consistent with the requirements of the City of West Sacramento and City of Sacramento tree ordinances to ensure compensation for losses of individual protected trees.

In addition to mitigating for the loss of riparian forest habitat, specific measures will be included to satisfy National Marine Fisheries Service requirements and compensate for the loss of SRA cover (area and linear feet). However, the acreage will not be duplicated, such that the acreage of riparian forest habitat restored for SRA cover mitigation will apply toward riparian forest habitat mitigation requirements. SRA cover mitigation will include the following riparian replacement requirements.

- Replace the 890 linear feet and 0.44 acre of affected SRA cover vegetation (see Section 2.19.3.1, “Loss of Shaded Riverine Aquatic Cover”) at a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected and 3 acres replaced for every acre affected) by planting native riparian trees in temporary impact areas and along existing onsite or offsite unshaded banks along the Sacramento River.
- Plant native riparian trees onsite to the maximum extent practicable, followed by planting on adjacent reaches of the Sacramento River to minimize the need for purchasing offsite mitigation bank credits.
- Plant riparian trees that are intended to provide SRA cover along the water's edge at summer low flows up to the OHWM and at sufficient densities to provide shade along at

least 85 percent of the bank's length when the trees reach maturity. This will ensure that riparian plantings intended for SRA cover mitigation will contribute to instream SRA cover when they are inundated during winter/spring flows and overhead cover (shade) during summer flows when they approach maturity.

- Monitor and evaluate the revegetation success of riparian plantings intended for SRA cover mitigation as described above.

If mitigation for SRA cover is in the form of offsite mitigation bank credits, credits will need to be purchased from an approved mitigation bank within the approved service area for the project that provides riparian forest floodplain conservation credits as off-site compensation for impacts on state- and federally listed fish species, designated critical habitat, and essential fish habitat for Pacific salmon (i.e., Chinook salmon).

Compensate for Loss of Protected Trees not in Riparian Habitat

Within 1 year prior to construction, the project proponent will have a certified arborist conduct a preconstruction inventory of all heritage trees to be removed within the areas defined as ruderal woodland and landscaped land cover types. The inventory will include the location, species, and diameter of all trunks; approximate height and canopy diameter; and approximate age, in support of a tree permit for removal of the heritage trees. All conditions of the tree permit will be implemented.

The project proponent will mitigate the loss of protected trees using one or a combination of the two following options.

- Because it is unlikely that adequate space will be available in the project area for tree planting after construction, pay an in-lieu fee to the City of West Sacramento, which would be used to purchase and plant trees elsewhere in West Sacramento. Replacement trees will be required at a ratio of 1:1 (i.e., 1-inch diameter of replacement tree planted for every 1-inch diameter of tree removed). Replacement trees will be of the same species, except for the replacement of tree of heaven and black locust, which are invasive species and will be replaced with native tree species. Mitigation will be subject to approval by the City's tree administrator and will take into account species affected, replacement species, location, health and vigor, habitat value, and other factors to determine fair compensation for tree loss. Replacement trees will be monitored annually for 3 years to document vigor and survival. If any of the replacement trees die within 3 years of the initial planting, the project proponent will plant additional replacement trees and monitor them until all trees survive for a minimum of 3 years after planting.
- If feasible, plant replacement trees at or near the location of the tree removal, following the same replacement ratio, species, monitoring, and tree survival requirements described for the option above.

Protect Water Quality and Prevent Erosion and Sedimentation in Drainages and Wetlands

The project proponent and/or their construction contractor will comply with all construction site BMPs specified in the *Water Quality Assessment Report* prepared for the project (ICF

International 2016b) and the final SWPPP that will be developed for the project, as well as any other permit conditions to minimize introduction of construction-related contaminants and mobilization of sediment in the Sacramento River and the riparian forest/shrub wetland near the construction area. Broadly, these BMPs will address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices. The BMPs will be based on the best conventional and best available technology.

The proposed project is subject to storm water quality regulations established under the NPDES, described in Section 402 of the federal CWA. In California, the NPDES program requires that any construction activity disturbing 1 or more acres comply with the statewide General Permit, as authorized by the State Water Board. The General Permit requires elimination or minimization of non-storm water discharges from construction sites and development and implementation of a SWPPP for the site. The primary elements of the SWPPP include the following.

- Description of site characteristics—including runoff and streamflow characteristics and soil erosion hazard—and construction procedures
- Guidelines for proper application of erosion and sediment control BMPs
- Description of measures to prevent and control toxic materials spills
- Description of construction site housekeeping practices

In addition to these primary elements, the SWPPP specifies that the extent of soil and vegetative disturbance would be minimized by control fencing or other means and that the extent of soil disturbed at any given time would be minimized. The SWPPP must be retained at the construction site.

The BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable; they are subject to review and approval by the project proponent. The project proponent will perform routine inspections of the construction area to verify that the BMPs are properly implemented and maintained. The project proponent will notify contractors immediately of a noncompliance issue and will require compliance.

The BMPs will include, but are not limited to, the following.

- All earthwork or foundation activities involving wetlands or the intermittent vegetated stream will occur in the dry season (between May 1 and October 31). All in-water work within the Sacramento River will be conducted between May 1 and November 30 to minimize or avoid potential impacts on sensitive life stages (migration, spawning, egg and embryo incubation, and rearing) of special-status fish species.
- 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 will be performed at least 300 feet from all streams. Any necessary equipment washing will be carried out where the water cannot flow into drainages or wetlands.
- Develop a hazardous material spill prevention control and countermeasure plan before construction begins. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling,

operating, storing, and staging construction equipment and to preventing and responding to spills. The plan also will identify the parties responsible for monitoring a spill response. During construction, any spills will be cleaned up immediately according to the spill prevention control and countermeasure plan. The project proponent will review and approve the contractors' spill prevention control and countermeasure plan before allowing construction to begin.

- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete, solvents and adhesives, thinners, paints, fuels, sawdust, dirt, gasoline, asphalt and concrete saw slurry, and heavily chlorinated water.
- Take any surplus concrete rubble, asphalt, or other rubble from construction to a local landfill.
- Prepare and implement an erosion and sediment control plan for the proposed project that will include the following provisions and protocols. The SWPPP for the project will detail the applications and type of measures and the allowable exposure of unprotected soils.
 - 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.
 - Apply temporary erosion control measures, such as sandbagged silt fences, throughout construction of the proposed project and remove them after the working area is stabilized or as directed by the engineer. 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 roads will be swept daily following construction activities.
 - The contractor will conduct periodic maintenance of erosion and sediment control measures.
 - Plant an appropriate seed mix of native species on disturbed areas upon completion of construction.
 - Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
 - Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. 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.
 - Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
 - Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) to control erosion from disturbed areas as necessary.

- Avoid earth or organic material from being deposited or placed where it may be directly carried into the channel.

The project proponent also will obtain a 401 Water Quality Certification from the Central Valley RWQCB, which may contain additional BMPs and water quality measures to ensure the protection of water quality.

Compensate for Loss of Perennial Stream

The project proponent will comply with any regulatory requirements determined as part of the state (Section 401 Water Quality Certification or WDRs, LSAA) and federal (Section 404 and Section 10 permits) processes for the work that would occur in the Sacramento River. The project proponent will compensate for the permanent fill of up to 1.85 acre of other waters of the United States in the Sacramento River by purchasing mitigation bank credits, which can be in the form of preservation and/or creation credits using the following minimum ratios.

- A minimum of 2:1 (2 acres of mitigation for each acre filled), for a total of up to 3.7 acres, if credits are for preservation of habitat; or
- A minimum of 1:1 (1 acre of mitigation for each acre filled), for a total of up to 1.85 acre, if credits are for creation of habitat.

The actual compensation ratios will be determined through coordination with the Central Valley RWQCB and USACE as part of the permitting process. The project proponent will compensate for permanent loss of perennial stream by implementing one or a combination of the following options.

- Purchase credits for created riparian stream channel at a USACE- approved mitigation bank with a service area that encompasses the project area, such as the Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, or Elsie Gridley Mitigation Bank. The project proponent will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits.
- Compensate out-of-kind for loss of perennial stream by implementing compensatory mitigation for cottonwood riparian forest impacts described in Section 2.16, “Natural Communities” (*Compensate for Temporary Effects to and Permanent Loss of Cottonwood Riparian Forest [including SRA Cover]*). The acreage restored or created to compensate for loss of perennial stream will be added to the acreage restored or created for loss of riparian habitat.

Conduct Preconstruction Surveys for Western Pond Turtle and Allow Turtles to Leave Work Area Unharmmed

To avoid potential injury to or mortality of western pond turtles, the project proponent will retain a qualified biologist to conduct a preconstruction survey for western pond turtles immediately prior to construction activities (including vegetation removal) along the banks of the Sacramento River. The biologist will survey the aquatic habitat, river banks, and adjacent riparian and ruderal habitat within the construction area immediately prior to disturbance.

If a western pond turtle is found within the immediate work area during the preconstruction survey or during project activities, work shall cease in the area until the turtle is able to move out of the work area on its own. Information about the location of turtles seen during the preconstruction survey will be included in the environmental awareness training (*Conduct Environmental Awareness Training for Construction Employees*) and provided directly to the construction crew working in that area to ensure that areas where turtles were observed are inspected each day prior to the start of work to ensure that no turtles are present.

If a western pond turtle nest is discovered during the preconstruction survey or during project construction, the project proponent will coordinate with CDFW to determine whether additional avoidance measures (e.g., no-disturbance buffer or monitoring) is prudent.

Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers

The project proponent will retain a qualified wildlife biologist to conduct nesting surveys before the start of construction. These nesting surveys will be conducted in conjunction with the Swainson's hawk nesting surveys (see *Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction* in Section 2.20) and will include a minimum of three separate surveys to look for active nests of migratory birds, including raptors. Surveys will include a search of all trees and shrubs, ruderal areas, and grassland vegetation that provide suitable nesting habitat within 50 feet of disturbance. In addition, a 0.25-mile area from the river will be surveyed for nesting raptors in order to identify raptors that might be affected by pile driving. Surveys should occur during the height of the breeding season (March 1 to June 1), with one survey occurring in each of the 2 consecutive months within this peak period and the final survey occurring within 1 week of the start of construction. If no active nests are detected during these surveys, no additional measures are required.

If an active nest is found in the survey area, a no-disturbance buffer will be established to avoid disturbance or destruction of the nest site until the end of the breeding season (September 15) or until after a qualified wildlife biologist determines that the young have fledged and moved out of the construction area (this date varies by species). The extent of these buffers will be determined by the biologist in coordination with CDFW and will depend on the level of noise or construction disturbance taking place, line-of-sight between the nest and the disturbance, ambient levels of noise and other non-project disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species.

Conduct Tree Removal during Non-Sensitive Periods for Wildlife

The project proponent will remove or trim trees during the non-breeding season for tree-nesting migratory birds and raptors, and prior to periods when bats would be hibernating (generally between September 15 and October 31). If tree removal cannot be confined to this period, the project proponent will retain a qualified wildlife biologist with knowledge of the wildlife species that could occur in the project area to conduct the appropriate preconstruction surveys and establish no-disturbance buffers for sensitive wildlife species as described under measures for Swainson's hawk (see *Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction* in Section 2.20), nesting birds, and roosting bats. Implementation of the following

measures will avoid and minimize impacts on purple martins, as well as other nesting birds and bats that use the approach structures.

Avoid and Minimize Impacts on Purple Martins during Construction Activities

No construction activity that results in ground disturbance, modification of the I Street Bridge approach structure, loud noises, and/or vibrations will be conducted within 100 feet of the edge of the purple martin colony during the purple martin nesting season (March 15 to August 15). In addition, no construction-related vehicles or machinery shall be operated or stored beneath the colony during this period or until a qualified biologist determines that the purple martins have completed nesting and are no longer occupying the structure.

Avoid and Minimize Impacts on Nesting Birds and Roosting Bats from Demolition of Approach Structures

Because all four of the approach structures that are associated with the I Street Bridge are used by nesting birds (including purple martin) and roosting bats, the removal of these structures will take place outside of the breeding season for migratory birds and bats, and will be conducted in the following manner to avoid and minimize direct harm and temporary disturbance to nesting birds and roosting bats.

Timing of Approach Structure Demolition

To avoid and minimize potential impacts on purple martins and bats, the approach structures will not be removed or be altered until after the new I Street Bridge and associated replacement habitat on the bridge and/or elsewhere is in place and available for use by birds and bats for at least one overlapping nesting/maternal season, which generally would be from March 15 to September 15. Exclusion activities will be initiated between September 15 and October 31 to avoid affecting nesting purple martins and other birds, and to avoid affecting maternal and hibernating bat roosts. The exact date of beginning exclusion will be determined based on the results of preconstruction surveys that will be conducted in mid- to late August to document the status of bird nests and bat roosts. Active nests will be periodically monitored until it is verified that they are no longer being used. The non-volant (non-flying) period for most young bats is between April and the beginning of September (Johnston et al. 2004:26).

To avoid and minimize potential noise impacts on migratory birds nesting adjacent to project demolition activities, all demolition activities resulting in loud noise will be conducted outside of the nesting season, which is generally September 15 to February 1, to the extent feasible.

Approach Structure Exclusion Measures

The following exclusion measures will be implemented before demolition of the approach structures and will be approved by the project proponent and CDFW prior to implementation.

The vent holes and expansions joints on the approach structures will be altered to exclude birds and bats from using them prior to initiating demolition activities. After it has been confirmed that purple martins or other birds are no longer nesting in the vent holes, one-way doors will be

installed on the vent holes to allow any wildlife (e.g., birds and bats) that may be occupying the hollow box-girders on the existing approach structure to exit and not re-enter. After the one-way doors have been in place for 48 hours, they will be removed and the vent holes will be sealed off to prevent any wildlife from re-entering prior to demolition.

One-way door devices also will be installed along the expansion joints to allow bats to exit but not re-enter. These one-way door devices will be designed such that they do not contain netting or wire mesh that bats could become entangled in. Once installed, a qualified biologist will observe the one-way door devices at locations confirmed to have contained bats to verify that bats are exiting the structures and being excluded. The one-way doors will remain in place for 48 hours, after which they will be inspected for remaining bats. Once each expansion joint is confirmed to be unoccupied, they will be sealed close with an expanding foam sealant to prevent bats from reoccupying the approach structures.

Implementation of the following measures will partially compensate for the loss of purple martin habitat and the long-term effects on the Sacramento area population.

Conduct Staff Training

The City of Sacramento will work with a wildlife biologist with knowledge of the life history, behavior, and habitat requirements of purple martin to conduct a training session for City project managers (i.e., project managers from the Public Works department) to inform staff of the biology, habitat requirements, regulatory status, and legal protection of purple martin as well as the mitigation requirements under CEQA and NEPA for the colonies in the City of Sacramento. The training will allow City staff to be informed for other City projects that could affect purple martins. The training session will occur prior to the demolition of the I Street Bridge approach structure.

Enhance Existing Colony Entrance Holes

To improve nesting success at other existing colonies within the city of Sacramento, nest guards will be installed in at least 50 nest entrance holes (unless there are fewer than 50 holes without guards already installed) across colony locations in the City used by martins in the previous 3 years. The nest guards will consist of 1/2-inch wire mesh installed along the interior edge of the previously used vent holes and will extend at least 1 inch above the floor of the structure chamber. Nest guards will be installed prior to the demolition of the I Street Bridge approach structure and outside of the nesting season (i.e., installation could generally occur between September 15 and February 1).

Create Purple Martin Replacement Habitat

Purple martin nesting habitat that will be lost due to demolition of the I Street Bridge approach structure will be mitigated in part with replacement habitat.

Replacement habitat will consist of at least 10 large (e.g., 4-foot tall) nest boxes placed at least 20 feet above the ground at the same location as the existing approach structure. An initial set of nest boxes will be installed prior to the 2019 nesting season to determine if they are used by

purple martins. The initial nest boxes will be strapped to the approach structure support columns. Nest box design, construction, and installation will be coordinated with a biologist with extensive experience with the nesting needs of the Sacramento region population of purple martins.

Nest boxes will be monitored in all years leading up to the demolition of the approach structure to determine their use by purple martins in order to make modifications to the design, location, and/or number of boxes to encourage and continue to support purple martins at the I Street colony location.

The final design and at least the minimum number of replacement boxes will be in place and overlap temporally with the approach structure for at least one season prior to demolition and removal of the approach structure. Prior to the demolition of the approach structure, the nest boxes may be removed (outside of the nesting season) to accommodate demolition activities but will be re-installed in advance of the subsequent nesting season on permanent poles within the same location as the approach structure.

Landscaping near the nesting habitat will be designed to not disrupt the flight access within 120 feet of replacement nesting habitat (i.e., will not physically or visually obstruct the space around the nesting habitat). Small to medium non-fruit-bearing trees will be incorporate into the landscaping plans. Where possible, pine trees (*Pinus* spp.) also will be incorporated into landscaping plans to provide a permanent source of nesting material for purple martins. If feasible, some mowed or cut vegetation along the West Sacramento levee in the BSA (see BSA limits shown on EIR/EA Figure 2.16-1) will be left in place between March 15 and May 15 to allow purple martins to use this material for nesting.

Prepare and Implement a Monitoring and Management Plan for the I Street Bridge Purple Martin Colony Replacement Habitat

The project proponent will develop and implement a monitoring and management plan for the I Street Bridge purple martin colony replacement habitat prior to the construction of the proposed project. The monitoring portion of the plan will be implemented at least one nesting season prior to the demolition of the existing approach structure near the I Street Bridge. At a minimum, the plan will include the following actions and requirements.

- Monitor annually the use of replacement habitat by purple martins at the I Street Bridge colony location over a minimum 10-year period with at least 7 of the years occurring after the completion of the new bridge and the demolition of the existing approach structure that provides nesting habitat for purple martins. The monitoring period may be extended if it is found that (1) purple martins are not using the replacement habitat; or (2) the replacement habitat is not functioning as intended and repairs are made, or additional replacement habitat is created.
- Monitor annually the other colonies in the Sacramento region to provide context for how the I Street Bridge colony is doing relative to the remaining population. Colonies will be monitored over the same period as the I Street Bridge colony.

- Annual monitoring will include up to 6 visits to each colony starting in March and ending in approximately June. Reproductive monitoring at colonies will be conducted using a pole mounted camera. Reproductive monitoring will occur during the latter part of the annual colony monitoring (approximately 3 of the total visits to a colony). At a minimum, the following information will be recorded.
 - Number of nesting pairs
 - Documentation of which vent holes and/or nest boxes are used
 - Documentation of use of perching structures
 - Effectiveness of landscaped areas and semi-natural areas (vegetated levee) in providing nesting materials
 - Observations of predation or presence of known predators
 - Changes in habitat in and around the colony
- Monitoring and management will be conducted by a wildlife biologist with knowledge of the life history, behavior, and habitat requirements of purple martin and with demonstrated prior experience in monitoring purple martin colonies.
- The monitoring and management plan will include adaptive management measures to correct problems with I Street Bridge Project replacement habitat, make other habitat improvements, and/or implement management recommendations within or adjacent to the BSA, or at other city of Sacramento colony locations where the City has existing rights to make modifications, in an attempt to boost nesting success. These measures may include but would not be limited to the following.
 - A commitment to replacing poor-functioning or damaged free-standing purple martin nesting and/or perching habitat such that there is no net loss in the amount of created habitat.
 - A process for making and implementing recommendations on the management of vegetation around colonies within the city of Sacramento.

The Director of the City of Sacramento Department of Public Works, or his or her designee, will be responsible on a continuing basis for the implementation of the mitigation measures relating to purple martin impacts, replacement habitat and the replacement habitat management plan. The Director will determine the manner in which mitigation shall proceed, and the resources, including staff commitment and consultants, that will be utilized in the effort.

Implementation of the following measure would ensure that construction activities avoid and minimize potential impacts on pallid bat and western red bat within and adjacent to the limits of disturbance associated with construction.

Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

To avoid and minimize potential impacts on pallid bat, western red bat, and non-special-status bat species from the removal of trees and buildings, the project proponent will implement the following actions.

Preconstruction Surveys

Within 2 weeks prior to tree trimming or removal and any building demolition (e.g., homes, sheds, other outbuildings), a qualified biologist will examine trees to be removed or trimmed and buildings planned for demolition for suitable bat roosting habitat. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, abandoned buildings, attics) will be identified, and the area around these features searched for bats and bat sign (e.g., guano, culled insect parts, staining). Riparian woodland and stands of mature broadleaf trees will be considered potential habitat for solitary foliage-roosting bat species.

If suitable roosting habitat and/or bat sign is detected, biologists will conduct an evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of 2 nights. Full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. If site security allows, detectors should be set to record bat calls for the duration of each night. All emergence and monitoring surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologist will analyze the bat call data using appropriate software and prepare a report that will be submitted to the project proponent and CDFW.

Timing of Tree Removal and Building Demolition

Trees and buildings planned for removal and demolition will have exclusion devices installed between September 15 and October 31 to avoid affecting maternal and hibernating bat roosts. The exact timing of removal and demolition will be determined based on preconstruction surveys of trees and buildings.

Protective Measures

Protective measures may be necessary if it is determined that bats are using buildings or trees in the BSA as roost sites, or if sensitive bats species are detected during acoustic monitoring. The following measures will be implemented when roosts are found within trees or buildings planned for removal according to the timing discussed above. Specific measures will be approved by the project proponent and CDFW prior to excluding bats from occupied roosts.

- Exclusion from buildings or bridge structures will not take place until temporary or permanent replacement roosting habitat is available.
- Exclusion from roosts will take place late in the day or in the evening to reduce the likelihood of evicted bats falling prey to diurnal predators, and will take place during weather and temperature conditions conducive to bat activity.
- Biologists experienced with bats and bat evictions will carry out or oversee the exclusion tasks and will monitor tree trimming and removal, and buildings if they are determined to be occupied.
- Trees that provide suitable roost habitat will be removed in pieces, rather than felling the entire tree and should be done late in the day or in the evening to reduce the likelihood of

evicted bats falling prey to diurnal predators, and will take place during warm weather conditions conducive to bat activity.

- Structural changes may be made to a known roost proposed for removal, to create conditions in the roost that are undesirable to roosting bats and encourage the bats to leave on their own (e.g., open additional portals so that temperature, wind, light and precipitation regime in the roost change). Structural changes to the roost will be authorized by CDFW and will be performed during the appropriate exclusion timing (listed above) to avoid harming bats.
- Non-injurious harassment at the roost site, such as ultrasound deterrents or other sensory irritants, may be used to encourage bats to leave on their own.
- One-way door devices will be used where appropriate to allow bats to leave the roost but not to return.
- Prior to building demolition and/or tree removal/trimming and after other eviction efforts have been attempted, any confirmed roost site will be gently shaken or repeatedly struck with a heavy implement such as a sledge hammer or an axe. Several minutes should pass before beginning demolition work, felling trees, or trimming limbs to allow bats time to arouse and leave the roost. A biological monitor will search downed vegetation for dead and injured bats. The presence of dead or injured bats will be reported to CDFW. Injured bats will be transported to the nearest CDFW-permitted wildlife rehabilitation facility.

Implementation of the following measures will compensate for the loss of bat roosting habitat on the approach structure and ensure that the habitat is functioning. The loss of any tree roosting habitat will be in part mitigated by the replacement of riparian forest and protected trees, which would restore and protect riparian habitat and compensate for the loss of protected trees.

Replace Bat Roosting Habitat Lost from Demolition of Approach Structures

Bat roosting habitat will be incorporated into the new bridge and, if necessary, additional free-standing roosting habitat (e.g., bat houses) will be created and installed within or adjacent to the BSA. At a minimum ratio of 1:1, 1,132 linear feet of roosting habitat will be created to compensate for the loss of bat roosting habitat associated with the approach structures. Bat replacement habitat will consist of crevice habitat built into the new bridge. Bat replacement habitat will be designed generally following the guidelines in *California Bat Mitigation Techniques, Solutions, and Effectiveness* (Johnston et al. 2004), which provides a review of mitigation options for bats in relation to Caltrans projects. Final plans for bat habitat replacement will be approved by the project proponent and CDFW.

Monitor Bat Replacement Habitat

The project proponent will be responsible for monitoring replacement bat habitat over a 5-year period for a minimum of 3 years (e.g., years 2, 3, and 5) to determine whether bats are using the habitat, determine whether the habitat is functioning as intended, and identify any corrective actions that need to be made to the habitat to improve its use by bats. Bat use will be documented through a combination of visual observation (bats and bat sign), which could be conducted during the day where roosting bats are visible or at night during an emergence survey. Acoustic recordings will be used in combination with emergence surveys to attempt to identify the species

of bat(s) using the replacement habitat. The locations and amount of occupied habitat will be recorded. Recommendations for corrective actions will be presented to the project proponent and CDFW for approval. Annual monitoring reports will be sent to the project proponent and CDFW.

Implementation of the following measures will avoid and/or minimize direct and indirect impacts on Central Valley fall- and late fall–run Chinook salmon and their habitat.

Conduct All In-Water Construction Activities between May 1 and November 30 and during Daylight Hours Only

The project proponent will conduct all in-water construction work and pile driving (in-water and shore-based within 250 feet of the Sacramento River), installation of cofferdams, removal of temporary sheet piles, and placement of rock revetment between May 1 and November 30 to avoid or minimize causing disturbance and injury to, or mortality of, special-status fish species in the affected reaches of the Sacramento River. In addition, in-water work will be conducted during daylight hours only to provide fish in the affected reaches of the Sacramento River with an extended quiet period during nighttime hours for feeding and unobstructed passage.

Limiting in-water construction to the May 1–November 30 period would achieve several goals.

- In-water construction activities with the potential to generate harmful levels of underwater noise (e.g., driving piles with an impact hammer) would avoid the primary migration periods of adults and juveniles of special-status fish species.
- The length of the in-water construction period would be maximized, thereby limiting the number of construction seasons that in-water construction would be needed and the number of year classes of fish species that potentially would be exposed to in-water construction effects.

Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving

The project proponent will require the contractor to implement the following measures, developed in coordination with project design engineers, to minimize the exposure of listed fish species to potentially harmful underwater sounds.

- If feasible, the contractor will vibrate all piles to the maximum depth possible before using an impact hammer.
- No more than 20 piles will be driven per day, and pile driving with an impact hammer will occur on no more than 75 individual days total during construction.
- During impact driving, the contractor will limit the number of strikes per day to the minimum necessary to complete the work and will limit the total number of hammer strikes to 16,000 strikes per day (i.e., 800 hammer strikes per pile, per day) for piles for the bridge piers and temporary trestles, and 20,000 strikes per day (i.e., 1,000 hammer strikes per pile, per day) for the piles for the bridge fender system.
- The smallest pile driver and minimum force necessary will be used to complete the work.

- During impact driving, the project proponent will require the contractor to use a bubble curtain or similar device, if feasible, to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded.
- No pile driving activity will occur at night, thereby providing fish with an extended quiet period during nighttime hours on days pile driving is being conducted for feeding and unobstructed passage.

Develop and Implement a Hydroacoustic Monitoring Plan

The project proponent and/or its construction contractor will develop and implement a hydroacoustic monitoring plan. The monitoring plan will be submitted to the resource agencies (CDFW, NMFS, and USFWS) for approval at least 60 days before the start of project activities. The plan will include the following requirements.

- The project proponent and/or its construction contractor will monitor underwater noise levels during all impact pile driving activities on land and in water to ensure that that peak and cumulative SELs do not exceed estimated values (Table 2.19-8).
- The monitoring plan will describe the methods and equipment that will be used to document the extent of underwater sounds produced by pile driving, including the number, location, distances, and depths of the hydrophones and associated monitoring equipment.
- The monitoring plan will include a reporting schedule for daily summaries of the hydroacoustic monitoring results and for more comprehensive reports to be provided to the resource agencies on a monthly basis during the pile driving season.
- The daily reports will include the number of piles installed per day; the number of strikes per pile; the interval between strikes; the peak SPL, SEL, and RMS per strike; and the accumulated SEL per day at each monitoring station.
- The project proponent or its contractors will ensure that a qualified fish biologist is on site during impact pile driving to document any occurrences of stressed, injured, or dead fish. If stressed, injured, or dead fish are observed during pile driving, the project proponent and/or its construction contractor will reduce the number of strikes per day to ensure that fish are no longer showing signs of stress, injury, or mortality.

Monitor Turbidity in the Sacramento River

The project proponent will require the construction contractor to monitor turbidity levels in the Sacramento River during in-water construction activities (e.g., pile driving, extraction of temporary sheet piles used for cofferdams, placement of RSP). Turbidity will be measured using standard techniques upstream and downstream of the construction area to determine whether changes in ambient turbidity levels exceed 20 percent, the threshold derived from the Sacramento and San Joaquin Rivers Basins Plan (Central Valley Regional Water Quality Control Board 2011). If it is determined that turbidity levels exceed the 20-percent threshold, then the project proponent and/or its contractors will adjust work to ensure that turbidity levels do not exceed the 20-percent threshold.

Implement Cofferdam Restrictions

The following restrictions will be implemented during installation of the cofferdams and cofferdam dewatering.

- The extent of cofferdam footprints will be limited to the minimum necessary to support construction activities.
- Sheet piles used for cofferdams will be installed and removed using a vibratory pile driver.
- Cofferdams will be installed and removed only during the proposed in-water work window (between May 1 and November 30).
- Cofferdams will not be left in place over winter where they could be overtopped by winter/spring flows and when juveniles of listed species are most likely to be present in the construction area.
- All pumps used during dewatering of cofferdams will be screened according to CDFW and NMFS guidelines for screens.
- Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure.

Prepare and Implement a Fish Rescue and Relocation Plan

The project proponent and/or its construction contractor will develop and implement a fish rescue and relocation plan to recover any fish trapped in cofferdams. The fish rescue and relocation plan will be submitted to the resource agencies (CDFW, NMFS, and USFWS) for approval at least 60 days before initiating activities to install cofferdams. At a minimum, the plan will include the following.

- A requirement that fish rescue and relocation activities will commence immediately after cofferdam closure and that dewatering has sufficiently lowered water levels inside cofferdams to make it feasible to rescue fish.
- A description of the methods and equipment proposed to collect, transfer, and release all fish trapped within cofferdams. Capture methods may include seining, dip netting, and/or electrofishing as approved by CDFW, NMFS, and USFWS. The precise methods and equipment to be used will be developed cooperatively by CDFW, NMFS, USFWS, and the project proponent and/or contractor.
- A requirement that only CDFW-, NMFS-, and USFWS-approved fish biologists will conduct the fish rescue and relocation.
- A requirement that fish biologists will contact CDFW, NMFS, and USFWS immediately if any listed species are found dead or injured.
- A requirement that a fish rescue and relocation report be prepared and submitted to CDFW, NMFS, and USFWS within 5 business days following completion of the fish relocation. Data will be provided in tabular form and at a minimum will include the species and number rescued and relocated, approximate size of each fish (or alternatively, approximate size range if large number of individuals are encountered), date and time of their capture, and general

condition of all live fish (e.g., good—active with no injuries; fair—reduced activity with some superficial injuries; poor—difficulty swimming/orienting with major injuries). For dead fish, additional data will include fork length and description of injuries and/or possible cause of mortality if it can be determined.

Prevent the Spread or Introduction of Aquatic Invasive Species

The project proponent or its contractors will implement the following actions to prevent the potential spread or introduction of AIS associated with the operation of barges and other in-water construction activities. Species of concern related to the operation of barges and other equipment in the lower Sacramento River include invasive mussels (e.g., quagga mussels [*Dreissena bugensis*] and zebra mussels [*Dreissena polymorpha*]) and aquatic plants (e.g., Brazilian waterweed [*Egeria densa*] and hydrilla [*Hydrilla verticillata*]) (California Department of Fish and Game 2008).

- The project proponent or its contractors will coordinate with the CDFW's Invasive Species Program to ensure that the appropriate BMPs are implemented to prevent the spread or introduction of AIS.
- Educate construction supervisors and managers about the importance of controlling and preventing the spread of AIS.
- Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of AIS.
- If feasible, prior to departure of vessels from their place of origin and before in-water construction equipment is allowed to operate within the waters of the Sacramento River, thoroughly inspect and remove and dispose of all dirt, mud, plant matter, and animals from all surfaces that are submerged or may become submerged, or places where water can be held and transferred to the surrounding water.

Minimize or Avoid Temporary Construction Lighting and Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The project proponent will minimize or avoid the effects of nighttime lighting on special-status fish species by implementing the following actions.

Temporary Construction Lighting

- Avoiding construction activities at night, to the maximum extent practicable.
- Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas.
- Shielding and focusing lights on work areas and away from the water surface of the Sacramento River, to the maximum extent practicable.

Permanent Bridge Lighting

- Minimizing nighttime lighting of the bridge structure for aesthetic purposes.

- Using the minimal amount of lighting necessary to safely and effectively illuminate vehicular, bicycle, and pedestrian areas on the bridge.
- Shielding and focusing lights on vehicular, bicycle, and pedestrian areas and away from the water surface of the Sacramento River, to the maximum extent practicable.

Avoid and Minimize Impacts on Valley Elderberry Longhorn Beetle

The following measures will be implemented prior to and during construction to ensure that the proposed project does not adversely affect elderberry shrubs adjacent to the project footprint.

- Contractors will be briefed on the need to avoid damaging the elderberry shrubs and the possible penalties for not complying with these requirements. Crews also will be educated on the status of the VELB and the need to protect its habitat.
- All elderberry shrubs that are outside of the permanent project footprint or that can be avoided will be identified on construction drawings, with notes indicating that they are sensitive resources to be avoided.
- Orange construction barrier fencing will be placed at a minimum of 20 feet from each shrub's dripline [fencing around shrub 6 (construction will be within 20 feet) will be placed as far out from the dripline as possible]. No construction activities will be permitted within the buffer zone other than those activities necessary to erect the fencing. *As specified in the Conservation Guidelines for the Valley Elderberry Longhorn Beetle (Guidelines) (U.S. Fish and Wildlife Service 1999), signs will be posted every 50 feet (at a minimum) along the perimeter of the buffer area fencing. The signs will contain the following information: This area 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.* The signs should be clearly readable from a distance of 20 feet and must be maintained for the duration of construction.
- Buffer area fences around the shrubs will be inspected weekly by a biological monitor during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor. The biological monitor will be responsible for ensuring that the contractor maintains the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to USFWS and the project proponent.

Transplant Elderberry Shrubs That Cannot Be Avoided

Elderberry shrubs that cannot be avoided will be transplanted to a USFWS-approved conservation area in accordance with the Guidelines (U.S. Fish and Wildlife Service 1999). Transplanting will occur during the plant's dormant phase (approximately November through the first 2 weeks of February, after they have lost their leaves). A qualified specialist familiar with elderberry shrub transplantation procedures will supervise the transplanting. The location of the conservation area transplantation site will be approved by USFWS before removal of the shrubs.

Implementation of the following measures will compensate for direct impacts on VELB habitat.

Compensate for Impacts on Valley Elderberry Longhorn Beetle Habitat

Before construction begins, the project proponent will compensate for direct impacts (including transplanting) on all elderberry stems measuring 1 inch or more at ground level (i.e., habitat for VELB) that are located within 20 feet of proposed construction activities. Compensation will include planting replacement elderberry seedlings or cuttings and associated native plantings in a USFWS-approved conservation area, at a ratio between 1:1 and 8:1 (ratio = 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 (U.S. Fish and Wildlife Service 1999).

Mitigation credits for VELB will be purchased at a USFWS-approved mitigation bank. The exact amount and location of compensatory mitigation will be based on consultation with USFWS.

Table 3-18 summarizes the compensation required for direct effects on up to five elderberry shrubs (shrubs 1, 2, 3, 5, and 7) that provide VELB habitat. Based on stem counts listed in Table 3-18 for these five shrubs and in accordance with the Guidelines, 34 elderberry seedlings and 34 associated native plants will be planted in a USFWS-approved conservation area. This compensation may be reduced if some of the shrubs occurring within temporary impact areas (shrubs 1, 2, 3, and 7) can be avoided once more detailed plans are available.

Table 3-18. Required Compensation for Directly Affected Elderberry Shrubs

Habitat	Stem Diameter	Number of Stems	Exit Holes?	Seedling Ratio	Native Plant Ratio	Total Seedling	Total Native Plants
Riparian	Stems >1" to <3"	0	No	2:1	1:1	0	0
	Stems >1" to <3"	0	Yes	4:1	2:1	0	0
	Stems >3" to <5"	0	No	3:1	1:1	0	0
	Stems >3" to <5"	0	Yes	6:1	2:1	0	0
	Stems >5"	1	No	4:1	1:1	4	4
	Stems >5"	0	Yes	8:1	2:1	0	0
Nonriparian	Stems >1" to <3"	22	No	1:1	1:1	22	22
	Stems >1" to <3"	0	Yes	2:1	2:1	0	0
	Stems >3" to <5"	1	No	2:1	1:1	2	2
	Stems >3" to <5"	0	Yes	4:1	2:1	0	0
	Stems >5"	2	No	3:1	1:1	6	6
	Stems >5"	0	Yes	6:1	2:1	0	0
Total		26				34	34

Implementation of the following measures will ensure that construction activities avoid or minimize potential impacts on Swainson’s hawk within and adjacent to the limits of disturbance associated with project construction.

Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction

The project proponent will retain a wildlife biologist experienced in surveying for Swainson's hawk to conduct surveys for the species in the spring/summer prior to construction. The surveys will be conducted within the limits of disturbance and in a buffer area up to 0.25 mile from the limits of disturbance. The size of the buffer area surveyed will be based on the type of habitat present and the line-of-sight from the construction area to surrounding suitable breeding habitat. Surveys will follow the methods in *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). A minimum of six surveys will be conducted according to these methods. If a variance of the survey distance or number of surveys is necessary, the project proponent will coordinate with CDFW regarding appropriate survey methods based on proposed construction activities. Surveys generally will be conducted from February to July. Survey methods and results will be reported to the project proponent and CDFW.

Conduct Tree Removal during Non-Sensitive Periods for Wildlife

The project proponent will remove or trim trees during the non-breeding season for tree-nesting migratory birds and raptors, and prior to periods when bats would be hibernating (generally between September 15 and October 31). If tree removal cannot be confined to this period, the project proponent will retain a qualified wildlife biologist with knowledge of the wildlife species that could occur in the project area to conduct the appropriate preconstruction surveys and establish no-disturbance buffers for sensitive wildlife species as described under measures for Swainson's hawk, nesting birds, and roosting bats.

Monitor Active Swainson's Hawk Nests during Pile Driving and Other Construction Activities

Active Swainson's hawk and white-tailed kite nests within 600 feet of the BSA will be monitored during pile driving and other construction activities. Monitoring will be conducted by a wildlife biologist with experience in monitoring Swainson's hawk and white-tailed kite nests. The monitor will document the location of active nests, coordinate with the project proponent and CDFW, and record all observations in a daily monitoring log. The monitor will have the authority to temporarily stop work if activities are disrupting nesting behavior to the point of resulting in potential take (i.e., eggs and young chicks still in nests and adults appear agitated and could potentially abandon the nest). The monitor will work closely with the contractor, the project proponent, and CDFW to develop plans for minimizing disturbance, such as modifying or delaying certain construction activities.

A minimum non-disturbance buffer of 600 feet (radius) will be established around all active Swainson's hawk and white-tailed kite nests. No entry of any kind related to construction will be allowed within this buffer while the nest is active, unless approved by CDFW through issuance of an Incidental Take Permit or through consultation during project construction. The buffer size may be modified based on site-specific conditions, including line-of-sight, topography, type of disturbance, existing ambient noise and disturbance levels, and other relevant factors. Entry into the buffer for construction activities will be granted when the biological monitor determines that

the young have fledged and are capable of independent survival or that the nest has failed and the nest site is no longer active. All buffer adjustments will be approved by CDFW.

Purchase Channel Enhancement Credits for Impacts on Critical Habitat

Permanent impacts on critical habitat (bank and substrate below the OHWM and water column habitat), totaling 1.33 acres (up to 2,949 square feet [0.07 acre] from the new bridge piers and RSP and up to 55,000 square feet [1.26 acre] from bridge shading of aquatic habitat) will be mitigated at a 3:1 ratio. The project proponent proposes to mitigate the permanent loss of critical habitat through purchase of 3.99 acres of mitigation credits at a NMFS-approved anadromous fish conservation bank.

Avoid the Introduction and Spread of Invasive Plants

The project proponent or their contractor will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the study area. Accordingly, the following measures will be implemented during construction.

- Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of invasive weeds.
- Dispose of invasive species material removed during project construction offsite at an appropriate disposal facility to avoid the spread of invasive plants into natural areas.
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use weed-free imported erosion-control materials (or rice straw in upland areas).
- Use locally grown native plant stock and native or naturalized (noninvasive) grass seed during revegetation.
- If feasible, remove trees of heaven located in and adjacent to the temporary impact area on the east side of 2nd Street in the City of West Sacramento.

3.3.4 Cultural Resources

Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Before any ground-disturbing work occurs in the project area, a qualified archaeologist will be retained to conduct mandatory contractor/worker cultural resources awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors), to brief them on the need to avoid effects on cultural resources adjacent to and within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements.

Develop Interpretative Display for the I Street Bridge

The project proponent will develop an interpretive display and erect the display in Old Sacramento at a site within clear view of the I Street Bridge. The display will focus on the

removal of vehicular uses from the I Street Bridge, to interpret for future generations the vehicular uses of the bridge. The project proponents will also assemble a freestanding interpretive panel that documents the history of the joint railroad-automobile use of the I Street Bridge, emphasizing the non-rail uses. Details on the implementation on the interpretive display will be coordinated through Caltrans in consultation with SHPO.

Establish an Environmental Sensitive Area for Resource CA-SAC-658H

An Environmentally Sensitive Area (ESA) will be established to ensure that resource CA-SAC-658H is not affected during project implementation. Prior to construction, the construction contractor will install high-visibility orange construction fencing and/or flagging, as appropriate, along the perimeter of the area of direct impact (ADI) located within the APE to restrict access to the portion of CA-SAC-658H outside the ADI. Prior to installation of the ESA fencing, the Environmentally Sensitive Area Action Plan will be reviewed as a stipulation of the project-specific Programmatic Agreement (project-specific PA) prepared for the project.

Implement a Programmatic Agreement for the Project

A project-specific PA between Caltrans, the City of Sacramento and the SHPO was developed for the project. The project-specific PA assures fulfillment of the NHPA requirements of Section 106 and ensures proper evaluation and treatment of any previously unknown archaeological resources uncovered during ground-disturbing construction activities. Additionally, the project-specific PA establishes responsibilities for the treatment of historic properties, the implementation of mitigation measures, and ongoing consultation efforts with Native American groups.

The project-specific PA includes development of a plan for archaeological test trenching within the APE on the West Sacramento side of the river, since this area has a high archaeological sensitivity for both historic-period and prehistoric material. A plan will be prepared for this work similar to a Caltrans Extended Phase I (XPI) Plan. Excavations will be conducted prior to construction, and will aid in the identification of unknown subsurface archaeological deposits that may be present within the APE. The project-specific PA also includes an Environmentally Sensitive Area Action Plan, as discussed above, for CA- SAC-658H. As part of the project-specific PA, a Cultural Resources Management Plan (CRMP) was prepared to Caltrans, City of Sacramento, and City of West Sacramento standards. The CRMP designates procedures for treatment of previously unidentified cultural resources encountered during test trenching or construction, including steps for the mitigation of resources that are determined eligible for the NRHP.

The CRMP specifies that a qualified archaeologist and a Native American monitor will be retained to monitor all initial ground disturbing activities (e.g., vegetation removal, grading, excavation, bridge construction). The purpose of the monitoring is to ensure that measures identified in the environmental document are properly implemented to avoid and minimize effects to cultural resources and to ensure that the project complies with all applicable permit requirements and agency conditions of approval. Conditions for monitoring and project reporting are specified in the CRMP.

Implement Avoidance and Notification Procedures for Cultural Resources

It is Caltrans' and the City of Sacramento's policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. All reasonable measures will be implemented to avoid, minimize, or mitigate further harm to the resource. If appropriate, the project proponent will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected resource.

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 shall be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The project proponent will work with the MLD to avoid the remains and, if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

3.3.5 Geology and Soils

Educate Construction Personnel in Recognizing Fossil Material

All construction personnel will receive training provided by a qualified professional paleontologist experienced in teaching non-specialists to ensure that construction personnel can recognize fossil materials in the event that any are discovered during construction.

Stop Work if Substantial Fossil Remains Are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, activities will stop immediately until a State-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may include preparation of a report for publication describing the finds. The project proponent will ensure that recommendations regarding treatment and reporting are implemented.

3.3.6 Noise

Build Pavement Surface Designed to Reduce Tire-Pavement Noise

Provide a "quieter pavement" surface on C Street that is designed to reduce noise from the tire-pavement interface. Pavement surfaces such as Open-Graded Asphalt Concrete have been shown to be effective at reducing vehicle noise emissions by 3 dB or more. Once the noise-reducing

surface is installed, post-construction noise level testing shall be done at locations in line with building façade locations to determine compliance with City exterior noise limits.

Ensure Building Compliance with City Noise Limits for Interior Spaces

This measure will only be implemented if measured noise level at a residential building façade exceeds 70 L_{dn} after implementation of quieter pavement. To comply with City noise standards for interior spaces, the Project Proponent shall ensure that building assemblies (composite of window, wall and door assemblies as applicable) provide a composite Outdoor-Indoor Transmission Class (OITC) rating of 29 as a minimum value, in residential facades facing C Street. Since closed windows are implicit in the OITC rating, buildings are required to include ventilation or air-conditioning system to provide adequate ventilation to interior spaces. The composite attenuation from building assemblies rated at OITC 29 or higher is expected to ensure compliance with the 45 L_{dn} City standard for interior spaces. Documentation of OITC performance of existing buildings may be available in architectural documents. However, in some cases, an acoustical consultant may be retained to determine performance of building assemblies, if architectural plans are not available. Where building assemblies do not meet an OITC value of 29, window, wall and door assemblies will be evaluated and replaced as appropriate. The sound-insulation performance of buildings facing the C Street segment of the project shall be documented in a supplemental report.

Use Noise-Reducing Construction Practices

To the extent feasible, construction contractors will control noise from construction activity such that noise does not exceed applicable noise ordinance standards specified by the City of West Sacramento. Measures that can be implemented to control noise include:

- Locate noise-generating equipment as far away as practical from residences and other noise-sensitive uses.
- Equip all construction equipment with standard noise attenuation devices such as mufflers to reduce noise and equip all internal combustion engines with intake and exhaust silencers in accordance with manufacturer's standard specifications.
- Establish equipment and material haul routes that avoid residential uses to the extent practical, limit hauling to the hours between 7:00 a.m. and 10:00 p.m., and specify maximum acceptable speeds for each route.
- Use electrically powered equipment in place of equipment with internal combustion engines where practical, where electric equipment is readily available, and where this equipment accomplishes project work as effectively and efficiently as equipment powered with internal combustion engines.
- Restrict the use of audible warning devices such as bells, whistles, and horns to those situations that are required by law for safety purposes.
- Provide noise-reducing enclosure around stationary noise-generating equipment.

- Provide temporary construction noise barriers between active construction sites that are in close proximity to residential and other noise-sensitive uses. Temporary barriers can be constructed or created with parked truck trailers, soil piles, or material stock piles.
- Route haul trucks away from residential areas where practical.

The construction contractor will develop a construction noise control plan which identifies specific feasible noise control measures that will be employed and the extent to which the measure will be able to control noise to specific noise ordinance limits. The plan will identify areas where it not considered feasible to comply with applicable noise ordinance limits. The noise control plan will be submitted to and approved by the project proponent before any noise-generating activity begins.

Use Vibration-Reducing Construction Practices

The construction contractor will, to the extent feasible, maintain the following minimum distances between vibration-generating construction activity and nearby buildings:

Impact pile driving – 200 feet
Sonic pile driving – 125 feet
Vibratory roller – 75 feet

For cases where this is not feasible, the resident or property owner will be notified in writing prior to construction activity that construction may occur within these distances of their building. The project proponent will inspect the potentially affected buildings prior to construction to inventory existing cracks in paint, plaster, concrete, and other building elements. The project proponent will retain a qualified acoustical consultant or engineering firm to conduct vibration monitoring at potentially affected buildings to measure the actual vibration levels during construction and to keep vibration at those buildings below 0.1 in/sec where feasible. Following completion of construction, the City will conduct a second inspection to inventory changes in existing cracks and new cracks or damage, if any that occurred as a result of construction-induced vibration. If new damage is found, then the City will promptly arrange to have the damaged repaired, or will reimburse the property owner for appropriate repairs.

In addition, if construction activity is required within 100 feet of residences or other vibration-sensitive buildings, a designated complaint coordinator will be responsible for handling and responding to any complaints received during such periods of construction. A reporting program will be required that documents complaints received, actions taken, and the effectiveness of these actions in resolving disputes.

3.3.7 Recreation

Restore Sacramento River Parkway Trail after Construction

In the event that any inadvertent damage occurs to the Sacramento River Parkway Trail, the area affected will be restored to the condition that existed prior to construction activities or better.

Provide Advance Notification of Sacramento River Parkway Trail Closures

The City of Sacramento will provide advance notification of the Sacramento River Parkway Trail closure on its websites and trailheads. Notices will include trail closure dates, approximate duration, and a description of the detour available during closure.

3.3.8 Traffic/Transportation

Prepare a Transportation Management Plan

Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP). Implementation of a TMP would minimize disruptions to traffic and to emergency services during construction and ensure that construction would not create major delays. A TMP is a program of activities for alleviating or minimizing work-related traffic delays by applying traditional traffic handling practices as well as innovative strategies. A TMP program includes public awareness campaigns, motorist information, demand management, incident management, system management, construction methods and staging, and alternate route planning. TMP strategies also strive to reduce the overall duration of work activities where appropriate. Typical components of a TMP can include measures such as implementation of staging, traffic handling, and detour plans; restricting construction work to certain days and/or hours to minimize impacts on traffic and pedestrians; coordination with other construction projects to avoid conflicts; and the use of portable changeable message signs to inform the public of construction activities.

Implementation of the measures in the TMP would reduce the temporary access and circulation impacts of the project that would be caused by potentially lengthy construction delays. In addition to the measures described above, the TMP will include the following measures:

- Any emergency service agency whose ability to respond to incidents will be affected by any lane closure must be notified prior to that closure.
- Work will be coordinated with the local busing system (including school buses and public systems) to minimize impacts on their bus schedules.

The project proponent will provide information to residents and businesses before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction.

Construct Mid-block East West Road

Construct a new east/west access road south of C Street, just south of the Washington Firehouse property, to restore on-street parking, emergency access, and circulation to parcels currently served by 2nd Street, and prevent creation of a cul-de-sac inconsistent with West Sacramento's Standard Specifications. The roadway will restore circulation that will be impaired or unusable due to bridge impacts on the parking lot and the adjacency of the new location of the southeast corner of 3rd and C Street to the driveway or curb cut into the Washington Firehouse parking. The roadway will be consistent with the 2nd Street reconfiguration shown in Figure 2.81 and Figure 2.85 of *Washington Realized* (City of West Sacramento 2015). Implementation of this

measure will occur concurrent with project construction and will require acquisition of rights-of-way from four parcels in West Sacramento, as listed in the table below.

Mid-block East West Road Parcel Acquisitions

Assessor's Parcel Number	Description	Proposed Acquisitions (acres)
010-371-007	Vacant – City of West Sacramento	0.091
010-371-008	Vacant – City of West Sacramento	0.221
010-371-009	Vacant – City of West Sacramento	0.044
010-372-002	Vacant waterfront – City of West Sacramento	0.191

Source: Mark Thomas and Company 2018.

The new access road will provide access to private parcels between 3rd Street and the Sacramento River and will accommodate pedestrian and bicycle use as well as provide limited vehicular access within the same street space. It will be designed to enhance and visually communicate the shared nature of the street. It may be a “Stubbed” access street connected to 3rd Street, then terminating in a hammer head or parking lot. Or it may be a “Connecting” access street connected to the existing 2nd Street and 3rd Street. The new access road will be a minimum of 60 feet wide with a 20-foot right-of-way for vehicles and a 20-foot “no structure” zone on each side which may accommodate semi-private uses or parking.

Implement Roadway and Freeway Improvements

5th Street/E Street, West Sacramento – Under 2040 conditions, construct westbound and eastbound left-turn lanes with at least 75 feet of storage. Install a traffic signal when warranted, due to increases in peak-hour volumes or to accommodate the planned streetcar. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS C or better.

This mitigation would increase crossing lengths for pedestrians and bicyclists, which would increase their exposure time to vehicles.

5th Street/F Street, West Sacramento – Under 2040 conditions, construct westbound and eastbound left-turn lanes with at least 75 feet of storage. Install a traffic signal when warranted, which was previously identified as mitigation for the Raley’s Landing project. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS C or better.

This mitigation would increase crossing lengths for pedestrians and bicyclists, which would increase their exposure time to vehicles.

5th Street/Tower Bridge Gateway, West Sacramento – Implement the planned modification of the 5th Street/West Capitol Avenue intersection, which would eliminate the vehicle connection to West Capitol Avenue. The proximity of this intersection to 5th Street/Tower

Bridge Gateway creates inefficient signal operations at 5th Street/Tower Bridge Gateway and 3rd Street/Tower Bridge Gateway. Implementation of this measure would result in the following.

2020 operations after mitigation = LOS D or better based on 2040 conditions that reflect this configuration with higher peak hour volumes.

North 7th Street/B Street, Sacramento – Under 2020 conditions, widen North 7th Street to four lanes through the intersection. This capacity expansion is part of the *Sacramento Railyards Specific Plan Update*. Implementation of this measure would result in the following.

2020 operations after modification = LOS B in the a.m. peak hour.

Modifications that require construction of additional lanes would increase crossing length for pedestrians and bicyclists, which would increase their exposure time to vehicles.

Bercut Drive/Richards Boulevard, Sacramento – Under 2040 conditions, extend the southbound right-turn lane to provide 200 feet of storage. Implementation of this measure would result in the following.

2040 operations after modification = LOS F (72 seconds of delay) in the p.m. peak hour.

This modification may take away on-street parking spots.

North 3rd Street/Richards Boulevard, Sacramento – Under 2040 conditions, operation of this intersection is constrained by the downstream intersection of I-5 northbound ramps/Richards Boulevard and Bercut Drive/Richards Boulevard. Providing additional capacity for motorists heading northbound onto I-5 would improve operations along the corridor, including at North 3rd Street/Richard Boulevard. This could be addressed by providing a second right-turn lane from Richards Boulevard westbound onto I-5 northbound through converting a westbound through lane to a through-right shared lane. This modification is consistent with the I-5/Richards Boulevard Interchange Project Study Report improvement alternatives but would require ramp modifications that are subject to Caltrans approval and may create a more hazardous conflict zone between bicyclists and vehicles. Implementation of this measure would result in the following.

2040 operations after mitigation = LOS F (104 seconds of delay) in the p.m. peak hour.

North 12th Street/North B Street, Sacramento – Under 2040 conditions, the vehicle traffic operations at this intersection are constrained by multimodal modifications planned for the intersection to better accommodate bicycle and pedestrian travel through the intersection, including a cycle track, bulb outs, and vehicle turn-movement restrictions. These modifications are consistent with the *Sacramento 2035 General Plan* for this area, where bicycle and pedestrian travel have high priorities. Physical mitigation to reduce vehicle delays would require taking space away from bicycles and pedestrians or from adjacent property to accommodate more vehicle lanes, which may not be feasible.

I-5 Southbound Weaving Segment between Garden Highway and Richards Boulevard – Modify ramp meter signal timings at the Garden Highway and West El Camino Avenue southbound I-5 on-ramps to reduce a.m. peak-hour flows onto the mainline such that mainline flows in the weaving segment are no higher than under 2020 no build conditions. Implementation of this measure would result in the following.

2020 operations after mitigation = a.m. peak hour LOS F (maximum service volume = 2,185)

Changing the ramp meter timing could cause queues to lengthen at the on-ramps, potentially affecting upstream arterial traffic operations on Garden Highway and West El Camino Avenue.

3.4 Best Management Measure for Less than Significant Impact

Implement SMAQMD's Recommended Construction GHG BMPs

The City will implement the following SMAQMD's recommended GHG reduction measures, to the extent feasible.

- Improve fuel efficiency from construction equipment:
 - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5 minute limit is required by the state airborne toxics control measure [Title 13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
 - Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
 - Train equipment operators in proper use of equipment.
 - Use the proper size of equipment for the job.
 - Use equipment with new technologies (repowered engines, electric drive trains).
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).
- Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power.
- Use an ARB-approved low carbon fuel for construction equipment. (NOx emissions from the use of low carbon fuel must be reviewed and increases mitigated.)
- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- Reduce electricity use in the construction office by using compact fluorescent bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones.

- Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75 percent by weight).
- Use locally sourced or recycled materials for construction materials (goal of at least 20 percent based on costs for building materials, and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products utilized should be certified through a sustainable forestry program.
- Minimize the amount of concrete for paved surfaces or utilize a low carbon concrete option.
- Produce concrete on-site if determined to be less emissive than transporting ready mix.
- Use SmartWay certified trucks for deliveries and equipment transport.
- Develop a plan to efficiently use water for adequate dust control.

3.5 References Cited

California Air Resources Board. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April. Available: < <https://www.arb.ca.gov/ch/handbook.pdf>>. Accessed: December 7, 2016.

California Department of Conservation. 2000. *A General Location Guide for Ultramafic Rock in California*. Division of Mines and Geology. (Open-File Report 2000-19.) August.

California Department of Fish and Game. 2008. *California Aquatic Invasive Species Management Plan*. January 2008. Available: <<http://www.dfg.ca.gov/invasives/plan/>>. Accessed: February 11, 2014.

California Department of Transportation. 2013. Transportation and construction vibration guidance manual. Sacramento, CA.

Central Valley Regional Water Quality Control Board. 2011. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region*. Fourth Edition, Revised October 2011 (with approved amendments). Available: <www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf>.

City of Sacramento. 2016. *Mitigation Monitoring Plan for the Sacramento Railyards Specific Plan Update, KP Medical Center, MLS Stadium, and Stormwater Outfall Projects*. Adopted November 10. Sacramento City Council Resolution 2016-0379. Exhibit B.

City of West Sacramento. 2015. *Washington Realized – a Sustainable Community Strategy*. Available: <<https://www.cityofwestsacramento.org/civica/filebank/blobload.asp?BlobID=13210>>. Accessed: April 18, 2017.

Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.). Available: <<http://www.ipcc.ch/report/ar4/wg1/>>. Accessed: September 30, 2016.

_____. 2015. *2035 General Plan Update Final Environmental Impact Report*. January. SCH# 2012122006. Certified by Sacramento City Council March 3, 2015 (Resolution 2015-0060).

Federal Transit Authority 2006. Transit noise and vibration impact assessment. Washington, D.C.

ICF International. 2016a. Archaeological Survey Report for the I Street Bridge Replacement Project, City of Sacramento, Sacramento County and City of West Sacramento, Yolo County, California. June. (00203.14.) Sacramento, CA. Prepared for Mark Thomas & Company and the City of Sacramento.

_____. 2016b. *Water Quality Assessment Report for the I Street Bridge Replacement Project*. Sacramento, CA. February.

_____. 2015. *Noise Study Report for the I Street Bridge Replacement Project*. Sacramento, CA. July.

Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.). Available: <<http://www.ipcc.ch/report/ar4/wg1/>>. Accessed: September 30, 2016.

International Dark-Sky Association. 2010a. Seeing Blue. April. *Nightscape 80*: 8-12. Available: <<http://www.darksky.org/assets/documents/SeeingBlue.pdf>>. Accessed: June 14, 2015.

_____. 2010b. Visibility, Environmental, and Astronomical Issues Associated with Blue-Rich White Outdoor Lighting. Available: <<http://www.darksky.org/assets/documents/Reports/IDA-Blue-Rich-Light-White-Paper.pdf>>. Document date: May 4, 2010. Accessed: June 14, 2015.

_____. 2015. IDA Issues New Standards on Blue Light at Night. April. *Nightscape 94*: 10. Available: <http://www.darksky.org/assets/documents/Nightscape/IDA_April2015_LowRes.pdf>. Accessed: June 14, 2015.

Johnston, D., G. Tatarian, and E. Pierson. 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared for California Department of Transportation and California State University Sacramento Foundation. (Project Number 2394-01.) December 29.

Mark Thomas and Company. 2018. Right of Way Acquisition. I Street Bridge Replacement. September.

Sacramento Metropolitan Air Quality Management District. 2011. *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways*. Available: <
<http://www.airquality.org/LandUseTransportation/Documents/Final%202011%20Recommended%20Roadway%20Protocol.pdf>>. Document date: March 2011. Accessed: December 6, 2016.

Swainson's Hawk Technical Advisory Committee. 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. May 31. Available: <https://www.dfg.ca.gov/wildlife/nongame/raptors/swha/>. Accessed July 1, 2015.

Transportation Research Board. 2010. *Highway Capacity Manual*. Fifth edition. Available: <http://hcm.trb.org/?qr=1>. Accessed: May 25, 2016.

U.S. Environmental Protection Agency 1971. Noise from construction equipment and operations, building equipment, and home appliances. Washington, D.C.

U.S. Fish and Wildlife Service. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. July 9.

Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for the proposed project have been accomplished through a variety of formal and informal methods, including community open house meetings, project development team meetings, stakeholder focus group meetings, interagency coordination meetings, and a public scoping meeting. This chapter summarizes the results of the City of Sacramento's and Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Scoping Process for the EIR/EA

4.1.1 Notice of Preparation

On September 22, 2014, a Notice of Preparation (NOP) of an EIR/EA was distributed to the following agencies. A copy of the NOP is included in Appendix G.

- California Governor's Office of Planning and Research – State Clearinghouse
- California Air Resources Board
- California Department of Fish and Wildlife, Habitat Conservation Planning Branch
- California Department of Fish and Wildlife-R2
- California Department of Fish and Wildlife-R2
- California Department of Parks and Recreation
- California Department of Water Resources
- California Department of Water Resources
- California Department of Water Resources, Hydrology Branch
- California Public Utilities Commission, Natomas Office
- California Public Utilities Commission, Sacramento Office
- California State Lands Commission – Div. of Environmental Planning and Management
- California Department of Transportation, District 3 –Planning
- California Department of Transportation, Office of Transportation Planning – South
- Central Valley Flood Protection Board
- City of West Sacramento, Community Development Department

- City of West Sacramento, Public Works
- Federal Highway Administration
- Regional Water Quality Control Board
- United States Army Corp of Engineers
- United States Bureau of Reclamation – Mid-Pacific Region
- United States Coast Guard, Eleventh Coast Guard District
- United States Coast Guard, Eleventh Coast Guard District
- United States Fish and Wildlife Service

The NOP requested comments from the responsible and trustee agencies regarding environmental issues, reasonable alternatives, and reasonable mitigation measures that should be discussed in the Draft EIR to address each agency’s specific concerns in their areas of responsibility. The NOP also invited agency representatives to attend a public scoping meeting held on October 9, 2014.

The 30-day comment period closed on October 21, 2014. Twelve letters/e-mails were received in response to the NOP. Brief summaries of these letters are below. The letters in their entirety are included in Appendix G.

California State Clearinghouse

The letter from the Clearinghouse is the Lead Agency copy of the NOP cover letter sent by the Clearinghouse to reviewing agencies. The letter includes attachments indicating to which agencies the NOP was sent and confirms the 30-day comment period. According to the Document Details Report attachment, the Clearinghouse distributed the NOP to the Resources Agency; Department of Boating and Waterways; CVFPB; Office of Historic Preservation; Department of Parks and Recreation; California Department of Water Resources, CDFW, Region 2; NAHC; Public Utilities Commission; State Lands Commission; California Highway Patrol; Caltrans, District 3; ARB, Transportation Projects; and Central Valley RWQCB, Region 5 (Sacramento).

California State Lands Commission

The California State Lands Commission (CSLS) identifies itself as a responsible agency and requests continued consultation. The CSLC states that the project is within their jurisdiction and describes CSLC’s understanding of the proposed project. The CSLC requests a thorough project description, specifically regarding all proposed work below the mean high tide line; consideration of special-status biological resources and proposed mitigation; analysis of construction and pile driving noise and its effect on birds and fish; a GHG emissions analysis, including sea-level rise; as well as analysis of submerged cultural resources; hydrology and flood protection; sediment quality testing for mercury and other toxins in the water; aesthetics; and cumulative impacts of the project.

Central Valley Flood Protection Board

The CVFPB identifies Sacramento River within their jurisdiction and that a Board permit is required pursuant to 23 CCR. The letter does not provide specific comments regarding the proposed alternatives but does describe the activities that require a permit from the CVFPB and the vegetation requirements, including accumulation and establishment of woody vegetation.

Central Valley Regional Water Quality Control Board

This letter describes the permits related to the RWQCB's responsibility to protect the quality of surface water and groundwater of the state: Construction Storm Water General Permit Order No. 2009-009-DWQ; CWA Section 401 permit – Water Quality Certification; and WDRs.

City of West Sacramento Flood Protection

The letter states that the proposed project could affect the West Sacramento Project (flood risk reduction plans) and requests that project design and the EIR consider potential impacts on the levee and future flood reduction improvements. Specifically, the letter requests that the project incorporate levee improvements or be compatible with future levee improvements.

Golden Gate Salmon Association

This letter requests that potential impacts on salmon and other fish as a result of night lighting on the proposed bridge be considered. An article written by the commenter discussing efforts to reduce predation of juvenile salmon and an associated attachment also were included.

International Dark Sky Association, California Chapter

The letter recommended specific types of lighting systems that would help reduce impacts on night skies while being more energy-efficient. The letter also included an attachment and links to articles on darksky.org.

Practical Cycle

This letter requests that improvements to the segment of bicycle trail between Old Sacramento and the Tower Bridge be included as part of this project.

Sacramento Area Bicycle Advocates

The letter from Sacramento Area Bicycle Advocates expresses overall support for a new bridge across the Sacramento River and emphasizes the importance of bicycle infrastructure in achieving the goals of the City of Sacramento's CAP. Specific concerns listed include separated bike lanes if vehicle speeds are above 30 mph, vehicle parking that reduces bicycle lanes, traffic control at intersections on both sides of the river, and convenient connections between bicycle lanes and bicycle paths on both sides of the river.

Sacramento Metropolitan Air Quality Management District

The letter requests that the project consider construction emissions, consistency with the existing Air Quality Management Plan, GHG emissions, and construction and operational emissions to ensure compliance with the *Mitigation Monitoring Plan* for the *Sacramento Railyards Specific Plan*. If the project exceeds SMAQMD thresholds, it is recommended that construction mitigation be adopted as part of an attached mitigation monitoring and reporting plan.

Sacramento Municipal Utility District

The letter requests that potential impacts concerning utility facilities, in particular, overhead/underground transmission lines and easements, electrical load needs, energy efficiency, utility line routing, and climate change be addressed.

WALKSacramento

The letter requests the EIR consider the impacts on pedestrians during construction and operation of the proposed bridge, specifically, mobility and safety issues that pedestrians might encounter with a new bridge landing point on the Sacramento side of the river. Also expressed is concern for pedestrians and bicyclists if sharing travel lanes and pedestrian safety along sidewalks.

4.1.2 Public Outreach and Scoping Meetings

4.1.2.1 June 19, 2014 Community Open House

A community open house for the project was held on June 19, 2014, from 5:30 to 7:30 p.m. at the Stanford Gallery, 111 I Street, Sacramento, California. Eighty members of the public attended the community open house. The purpose of the open house was to share information and receive input from community members on the project. Community open house post cards were mailed to more than 6,000 local residents and businesses. In addition, notification flyers were sent via e-mail to vicinity businesses, community groups, neighborhood associations, and interested individuals. A news release was coordinated through and distributed by the City of Sacramento, Department of Public Works. The open house provided the project background and schedule and current phase of work, as well as an opportunity for the community to provide feedback on specific bridge elements that should be considered. Representatives from the Cities of Sacramento and West Sacramento and the project consultant team were available to discuss the project and answer questions.

4.1.2.2 October 9, 2014 Community Open House

A public scoping meeting/community workshop for the project was held on October 9, 2014, from 3:30 to 6:30 p.m. at the Stanford Gallery, 111 I Street, Sacramento, California. Forty-six members of the public attended the community open house and walking tour of the project. The meeting was announced in the NOP and via post cards mailed to more than 6,000 local residents and businesses. In addition, notification flyers were sent via e-mail to vicinity businesses, community groups, neighborhood associations, and interested individuals. The purpose of the

open house was to provide the public the opportunity to provide early input on the environmental review process. Project background, maps, schedule, and current phase of work; environmental considerations; and input gathered at a previous open house (June 19, 2014) were provided.

In general, commenters supported the addition of a bridge. Comments received included bridge design suggestions and preferences. Commenters also expressed concern for a number of issues, including the safety of pedestrian and bicyclists, types of construction impacts/detours, number and widths of traffic lanes, and light pollution. There was also a suggestion to leave the existing I Street Bridge open to pedestrians and bicyclists.

4.1.2.3 October 26, 2017 Community Open House

A community open house for the project was held on October 26, 2017, from 5:00 p.m. to 6:30 p.m. at the Stanford Gallery, 111 I Street, Sacramento, California. The meeting coincided with the public comment period for the Draft EIR/EA. Over 70 members of the public attended the open house. The purpose of the open house was to provide an update on the status of the project and to gather public input on the Draft EIR/EA. The open house provided the project background and schedule and current phase of work as well as an opportunity for the community to provide feedback on specific bridge elements that should be considered when the project moves into the design phase, and to view other planning efforts within the project area. The Draft EIR/EA was available to for community members to review and provide input on via comment cards. Comment cards could be submitted at the open house, or returned via email, fax, or mail. A total of 17 community members submitted feedback via comment cards. Most comments received during the meeting centered on ideas for pedestrians and cyclists and concerns for the bat population utilizing the current I Street Bridge viaduct structures.

4.2 Consultation and Coordination with Public Agencies

During preparation of the technical studies for the proposed project, formal and informal coordination was conducted with the federal, state, and local agencies and the entities listed below.

4.2.1 U.S. Army Corps of Engineers

A preliminary jurisdictional determination of wetlands and other waters of the United States was submitted by the City of Sacramento to the USACE on May 3, 2016. The USACE responded on July 7, 2016, concurring with the delineation. The Preliminary Jurisdictional Determination Form was signed by the City of Sacramento on July 18, 2016. An application for authorization under CWA Section 404 for fill of waters of the United States has not yet been initiated.

4.2.2 U.S. Fish and Wildlife Service

A species list was requested of USFWS and is included in Appendix G (March 25, 2019). Inter-agency consultation with USFWS under Section 7 of FESA is required for potential effects of

the proposed project on VELB and delta smelt (including designated critical habitat for delta smelt). A Biological Assessment was submitted by Caltrans to USFWS on August 4, 2016, (California Department of Transportation 2016a) in order to initiate FESA consultation and request a determination on the effects of the project. A Biological Opinion was issued by USFWS for the proposed project on June 15, 2017, concluding formal consultation. The Biological Opinion is included in Appendix G.

4.2.3 National Marine Fisheries Service

Inter-agency consultation with NMFS under Section 7 of FESA is required for potential effects of the proposed project on Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CV steelhead, and green sturgeon (including designated critical habitat). A Biological Assessment and EFH assessment were submitted by Caltrans to NMFS on August 4, 2016 (California Department of Transportation 2016b), in order to initiate FESA consultation and request a determination on the effects of the project on these species. A species list (March 25, 2019) is included in Appendix G.

Federal fisheries and EFH consultation (informal or formal) with NMFS is required for potential effects of the project on CV steelhead. An EFH assessment addressing Pacific salmon was included in the documentation submitted to NMFS.

A Biological Opinion was issued by NMFS for the proposed project on June 26, 2018, concluding formal consultation. The Biological Opinion is included in Appendix G.

4.2.4 Native American Heritage Commission and Coordination with Local Native American Tribes

The NAHC was contacted on April 7, 2015, to request a sacred lands database search and provide a list of Native American representatives who might have any information or concerns regarding the project. On April 28, 2015, the NAHC provided both sacred lands search results and a list of 16 Native American representatives, who were contacted by letter on June 10, 2015. Of those contacted, three representatives responded with letters. The letters are included in Appendix G.

In a letter to ICF dated June 25, 2015, James Kinter of the YDWN requested a site visit and additional project information. In a letter to the City of Sacramento on June 30, 2015, Daniel Fonseca of the Shingle Springs Band of Miwok Indians (Shingle Springs), requested completed records searches, any cultural resources surveys completed for the project, and that Shingle Springs be included as a consulting party. On August 7, 2015, Gene Whitehouse of the UAIC requested copies of archaeological reports and future environmental documents for the project, in addition to a site visit to the project to confirm the locations of suspected cultural resources.

On November 4, 2015, the City of Sacramento sent letters to the same 16 contacts originally provided by the NAHC to invite the representatives to attend an onsite informational meeting for the project. Follow-up phone calls were made on November 13, 2015.

The onsite information meeting was conducted on November 16, 2015. In attendance were representatives from YDWN, UAIC, City of Sacramento, City of West Sacramento, ICF, and Mark Thomas & Company. Information on the archaeological studies to date for the project was provided to YDWN and UAIC representatives. Both YDWN and UAIC expressed interest in continuing consultation throughout the project. UAIC representative, Tristan Evans requested that another meeting be set up with the City of Sacramento to discuss potential cultural resources within the project area.

Another onsite meeting was held with representatives from UAIC on November 14, 2016. The following day, UAIC also provided a sensitivity map and suggested mitigation measures. In response, the City of Sacramento sent a letter on November 21, 2016 stating that UAIC will be offered an opportunity to be a concurring partner to the Programmatic Agreement (PA) to be prepared for the project and that standard legal practices (PRC 5097.98) will be regarding the identification of human remains will be followed and described in the PA. Also on November 21, 2016, a letter was sent to Leland Kinter of YDWN to inform the tribe that they will also be offered an opportunity to be a concurring partner to the PA. Between October 2018 and January 2019 both UAIC and YDWN were given the opportunity to review the PA and discuss and provide comments. The final document reflects the comments received. Consultation is ongoing.

4.2.5 North Central Information Center

Two different CHRIS repositories cover the portion of California in which the APE is located. The NCIC contains records for the Sacramento County portion of the APE, and the NWIC has those associated with the Yolo County portion of the APE.

A records search was conducted on April 3, 2014, and May 11, 2015, at the NWIC at Sonoma State University, Rohnert Park, for those portions of the APE in Yolo County. On April 10, 2014, NCIC staff conducted a records search at the NCIC, California State University, Sacramento, for those portions of the APE in Sacramento County.

4.2.6 State Historic Preservation Officer

On February 4, 2016, a meeting with the SHPO, Caltrans, and consulting cultural resources specialists was held at the Stanford Gallery, 111 I Street, Sacramento, California. The purpose of this meeting was to present preliminary findings of cultural resources in the APE.

On December 27, 2016, the SHPO was contacted to request concurrence with the following findings.

- Consultation and identification efforts identified the I Street Bridge, a property listed in the National Register of Historic Places (NRHP), within the APE.
- Sacramento River East Levee Segment (P-34-00490) is individually eligible for listing in the NRHP.

- Seven other built-environment properties are not eligible for listing in the NRHP individually or as contributors to a potential NRHP eligible district.
- CA-Sac-658H, remnants of the Pioneers Flour Mill, is eligible for purposes of the project.

The SHPO responded in a letter dated February 7, 2017, concurring with the above determinations.

On September 11, 2018, the SHPO was contacted with a request for concurrence with the FOE and execution of the project-level PA. In a letter dated October 9, 2018, the SHPO concurred with the project's effects. The finding for the project as a whole is "no adverse effect with standard conditions." A project-specific PA between Caltrans and the SHPO was developed for the project and executed on March 22, 2019. The Cities of Sacramento and West Sacramento and Caltrans District 3 also signed the agreement.

Copies of the consultation correspondence, and the FOE and executed PA, are included in Appendix G.

4.3 Circulation of Draft EIR/EA and Comments Received

A Notice of Completion form and copies of the Draft EIR/EA were submitted to the State Clearinghouse on September 28, 2017. A notice of the availability of the Draft EIR/EA and of the public hearing was published in the Daily Recorder and mailed to the distribution list of agencies, organizations and individuals identified in Chapter 6, Distribution List.

The Draft EIR/EA was available for public review for a 45-day period starting September 28, 2017, and ending November 12, 2017. The October 26, 2017 community open house mentioned above was held during the 45-day comment period.

Comments received on the Draft EIR/EA and responses to those comments are provided in Appendix I. A total of 38 comment letters/emails and comment cards were received during the public comment period. Because November 12 was a Sunday, comments that arrived on Monday, November 13, are also included in this Final EIR/EA. Table 4-1 contains a list of the individuals, organizations, and agencies that submitted comments on the Draft EIR/EA.

Table 4-1. List of Agencies, Individuals, and Organizations Commenting on the Draft EIR/EA

Commenter	Format of Comment (letter, email, comment card)	Date Comment Received
Agencies		
Sacramento Municipal Utility District, Jamie Cutlip	Letter via email	11/7/2017
California Department of Fish and Wildlife, Juan Torres	Email	11/9/2017
California State Lands Commission, Cy R. Oggins	Letter via email	11/13/2017
State Clearinghouse, Scott Morgan	Letter	11/14/2017
Individuals		
Tim Castleman	Email	10/2/2017
Tim Castleman	Letter via email	10/5/2017
Fernando and Ellen Maurizio	Letter via email	10/8/2017
JoEllen Arnold	Comment card	10/26/2017
Kim Fettke	Comment card	10/26/2017
Kim Fettke	Comment card	10/26/2017
Bill Leddy	Comment card	10/26/2017
Susan Martimo	Comment card	10/26/2017
Rick Mocerin	Comment card	10/26/2017
Steve Peterson	Comment card	10/26/2017
Russell Rawlings	Comment card	10/26/2017
Will Rowe	Comment card	10/26/2017
Dan Roy	Comment card	10/26/2017
Peter Saucerman	Comment card	10/26/2017
Rosanna Southern	Comment card	10/26/2017
Chris Tucker	Comment card	10/26/2017
Anonymous 1	Comment card	10/26/2017
Anonymous 2	Comment card	10/26/2017
JoEllen Arnold	Comment card	10/26/2017
Kim Fettke	Comment card	10/26/2017
Heather Johnson	Comment card	10/26/2017
Heather Johnson	Comment card	10/26/2017
David Krasko	Letter	11/8/2017
Melissa Buckley	Letter via email	11/9/2017
Susan Greene	Letter	11/9/2017
Gail Ann Overhouse, Gary Bonetti, Sandy Kay Cunha, Michael and Carol Edmonds	Letter via email	11/12/2017
Mabel Salon	Email	11/12/2017
Rob Turner	Email	11/12/2017
Port Telles	Email	11/13/2017
Organizations		
Powerhouse Science Center	Letter via email	10/27/2017
Sacramento Audubon Society	Letter via email	10/31/2017
Central Valley Bird Club, Audubon California, Yolo Audubon	Letter via email	11/9/2017
Environmental Council of Sacramento, Habitat 2020	Letter via email	11/9/2017
Western Purple Martin Working Group	Letter via email	11/13/2017

4.4 References Cited

California Department of Transportation. 2016a. *Biological Assessment: I Street Bridge Replacement Project, Sacramento and Yolo Counties*. (Federal Project No.: BRLS 5002[164]). June. Cities of Sacramento and West Sacramento, CA.

_____. 2016b. *Biological Assessment/Essential Fish Habitat Assessment: I Street Bridge Replacement Project, Sacramento and Yolo Counties*. (Federal Project No.: BRLS 5002[164]). June. Cities of Sacramento and West Sacramento, CA.

Chapter 5 List of Preparers

The following agency staff and consultants contributed to the preparation of this EIR/EA.

5.1 City of Sacramento

- Jesse Gothan, Project Manager
- Tom Buford, Principal Planner, Environmental Services Manager

5.2 City of West Sacramento

- Jason McCoy, AICP, Project Manager, Senior Transportation Planner
- Rafael Martinez, Traffic Engineer/Transportation Manager
- David Tilley, Principal Planner
- Katie Yancey, Senior Program Manager
- Katy Jacobson, Community Investment Manager

5.3 Caltrans

- Harminder Bassi, P.E., Project Manager
- Laura Loeffler, Environmental Senior, Section 4(f) oversight
- Thaleena Bhattal, Environmental Coordinator
- Chris Kuzak, Architectural History oversight
- Erin Dwyer, Archaeology oversight
- David Price, Archaeology oversight
- Lisa Machado, Historical Archaeology oversight
- Bojana Gutierrez, Traffic oversight
- María Alicia Beyer-Salinas, Hazardous Waste/Materials oversight
- Kathleen Grady, Aesthetics oversight
- Ken Russo, Biology oversight
- Jason Lee, Air Quality/Climate Change oversight
- Saeid Zandian, Noise oversight

5.4 ICF

- Maggie Townsley, Project Director
- Claire Bromund, Project Manager
- Tina Sorvari, Project Coordinator, Hazardous Waste/Materials
- Christine McCrory, Technical Editor and Publications Specialist
- Lindsay Christensen, Land Use, Growth, Community Impacts, Utilities, Emergency Services
- Jennifer Stock, Visual/Aesthetics
- Steve Pappas, Archaeology
- Mark Robinson, Archaeology
- Melissa Cascella, Historical Archaeology
- Katie Haley, Architectural History
- Brendan Belby, Hydrology Floodplain, Water Quality, Stormwater
- Ellen Unsworth, Geology/Soils; Paleontology
- Darrin Trageser, Air Quality, Energy
- Jason Volk, Noise, Vibration
- John Howe, Wildlife Biology
- Lisa Webber, Botany, Wetland Ecology
- Jeff Kozlowski, Fisheries Biology

5.5 Mark Thomas & Company

- Rob Himes, P.E., Project Manager
- Zach Siviglia, P.E., Project Manager
- Jason Hickey, P.E., Project Engineer
- Kira Davis, P.E., Project Engineer

5.6 Modjeski and Masters

- Jeff Newman, Moveable Bridge Design Lead
- Kevin Johns, Moveable Bridge Design

5.7 Fehr & Peers

- David Stanek, P.E., Traffic Engineering
- Ronald T. Milam, AICP, PTP, Traffic Engineering

5.8 Terry A. Hayes Associates, Inc.

- Sam Silverman, Air Quality

5.9 MBK Engineers

- Michael Archer, P.E., Hydrology

5.10 Blackburn Consulting, Inc.

- Patrick Fisher, P.E., C.E.G., Hazardous Materials
- Laura Long, Hazardous Materials

5.11 GEI Consultants, Inc.

- Richard Sanchez, P.E., Engineering Manager
- Mark Freitas, P.E., Geotechnical/Foundation Study
- Madison Weber, P.E., Geotechnical/Foundation Study
- Ian Maki, P.E., Geotechnical/Foundation Study

5.12 Aim Consulting, Inc.

- Gladys Cornell, Public Outreach

5.13 Egret, Inc.

- Joan Lynn, Lead Technical Editor

Chapter 6 Distribution List

The following agencies, organizations, and individuals were sent a copy of the Draft EIR/EA.

Federal Agencies and Tribal Representatives

Federal Emergency Management Agency
Federal Highway Administration
National Marine Fisheries Service, Sacramento Office
Native American Heritage Commission
U.S. Army Corps of Engineers, Sacramento District
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service, Sacramento Office
U.S. Department of the Interior, Bureau of Reclamation
Shingle Springs Band of Miwok Indians
United Auburn Indian Community of the Auburn Rancheria
Yocha Dehe Wintun Nation

State Agencies

California Air Resources Board
California Department of General Services
California Department of Housing and Community Development
California Department of Toxic Substances Control
California Department of Water Resources
California Department of Fish and Wildlife, North Central Region
California Department of Parks and Recreation
California Energy Commission
California Highway Patrol
California Integrated Waste Management
California Office of Historic Preservation
California Public Utilities Commission
California Resources Agency
California Reclamation Board
California State Clearinghouse

California State Lands Commission
California State Water Resources Control
California Regional Water Quality Control Board, Central Valley Region
Central Valley Flood Protection Board
California Department of Education, School Facilities Planning Division
California Transportation Commission
Caltrans, Division of Environmental Analysis

The following agencies, organizations, and individuals were sent notification of availability of the Draft EIR/EA.

Local Agencies

City of Sacramento
City of West Sacramento
County of Sacramento
County of Yolo
Sacramento Fire Department
West Sacramento Fire Department
Sacramento Police Department
West Sacramento Police Department
Sacramento County Sheriff Department
Yolo County Sheriff Department
Sacramento Metropolitan Air Pollution Control District
Yolo-Solano Air Quality Management District
Sacramento Area Flood Control District
West Sacramento Area Flood Control District
Sacramento Regional Transit
Yolo County Transportation District

Schools and School Districts

Twin Rivers Unified School District in Sacramento

- Smythe Academy of Arts and Science

Washington Unified School District in West Sacramento

- Elkhorn Village Elementary School

Federal Elected Officials

United States Senate, Barbara Boxer

United States Senate, Diane Feinstein

United States Congress, Doris Matsui, 6th District

State Elected Officials

California State Senator Richard Pan, District 6

California State Assembly, Kevin McCarty, District 7

Local Elected Officials

All members of the Sacramento City Council

All members of the West Sacramento City Council

Other Individuals and Organizations

West Sacramento Chamber of Commerce

Sacramento Metropolitan Chamber of Commerce

The following organizations and individuals previously requested notices regarding the Draft EIR/EA.

United States Coast Guard, Carl T. Hausner

United States Coast Guard, David H. Sulouff

Riverbank Marina, Kelsey Follett

Chevy's Fresh Mex Restaurant

Crawdads on the River Restaurant

Pearl on the River Restaurant

Sacramento Marine Sales