

Broadway Bridge Project

YOLO AND SACRAMENTO COUNTY, CALIFORNIA
DISTRICT 3 YOL, SAC
TGR2DGL 5447(043)

Draft Environmental Impact Report/ Environmental Assessment



Prepared by the
**State of California, Department of Transportation
and City of West Sacramento**

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 FHWA and Caltrans.



June 2021

General Information about This Document

What's in this document:

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

What you should do:

- Please read this document. Additional copies of this document and the related technical studies are available for review at 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:
<https://www.cityofwestsacramento.org/government/departments/capital-projects-and-transportation/projects/broadway-bridge-projects>.
- Attend the public meeting. A virtual public meeting will be held to present the project and solicit comments on the Draft EIR/EA. The meeting will be on Wednesday, July 28, at 5:00 p.m. Register at <http://bit.ly/BroadwayBridgeProject>.
- Tell us what you think. If you have any comments about the proposed project, please attend the public meeting and send your written comments by the deadline.
- Send comments and comment letters via email to: mccoyj@cityofwestsacramento.org.
- Send comments via postal mail to:
Jason McCoy, Supervising Transportation Planner
Capital Projects and Transportation Department,
1110 West Capitol Ave, 1st Floor, West Sacramento, CA 95691
- Be sure to send comments by the deadline: August 23, 2021

What happens next:

After comments are received from the public and reviewing agencies, the City of West Sacramento and Caltrans, as assigned by the FHWA, may (1) give environmental approval to the proposed project; (2) do additional environmental studies; or (3) abandon the project. If the project is given environmental approval and funding is obtained, the project proponent could design and construct all or part of the project.

Alternative formats:

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.

A new bridge across the Sacramento River between the cities of West Sacramento and Sacramento, downstream of the Pioneer Bridge. The bridge will connect South River Road on the west landing and Broadway on the east landing.

**DRAFT ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL ASSESSMENT**

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

THE STATE OF CALIFORNIA
Department of Transportation
and
City of West Sacramento

Cooperating and Responsible Agencies
U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Coast Guard, U.S. Army Corps of Engineers
City of Sacramento, California Department of Fish and Wildlife, California State Lands Commission,
California Public Utilities Commission

June 23, 2021

Date



Mike Bartlett, Office Chief
North Region Environmental Services
California Department of Transportation, District 3
NEPA Lead Agency

June 23, 2021

Date



City of West Sacramento
CEQA Lead Agency

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

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Summary

S.1 Introduction

The City of West Sacramento, in cooperation with the City of Sacramento, the California Department of Transportation (Caltrans), and the Federal Highway Administration (FHWA), proposes to construct a new bridge over the Sacramento River south of the Pioneer Bridge (US 50). The Broadway Bridge (proposed project) would provide local interconnectivity across the river and between neighborhoods. The new connection would serve multiple modes of transportation and comply with current American Association of State Highway and Transportation Officials, Caltrans, and local agency design standards.

S.2 Joint California Environmental Quality Act/National Environmental Policy Act Documentation

The project is subject to federal, as well as City of West Sacramento, City of Sacramento, and state environmental review requirements, because the City of West Sacramento proposes the use of federal funds from FHWA. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and NEPA. The City of West Sacramento is the project proponent and the lead agency under CEQA. The City of Sacramento is a responsible agency under CEQA. 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 USC 327 and the NEPA Assignment MOU dated December 23, 2016.

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, 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, a Final EIR/EA will be prepared. The City of West Sacramento and Caltrans may prepare additional environmental and engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative. If the decision is made to approve the project, a Notice of Determination will be published for compliance with CEQA, and Caltrans will decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement for compliance with NEPA. A Notice of Availability of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

S.3 NEPA Assignment

California participated in the Surface Transportation Project Delivery Pilot Program pursuant to 23 USC 327, for more than 5 years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (Public Law 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 (MOU) pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The National Environmental Policy Act (NEPA) Assignment MOU became effective on October 1, 2012, and was renewed on December 23, 2016, for a term of 5 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 U.S. Department of Transportation Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local

Assistance Projects off 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.

S.4 TIGER Planning Grant NO. 15

The City of West Sacramento was awarded a grant from FHWA under provisions of the Consolidated Appropriations Act, 2014, regarding National Infrastructure Investments. The grant program is referred to as “Fiscal Year 2014 TIGER¹ Discretionary Grants.” The grant provides funding to the City of West Sacramento to help support the preliminary engineering design and environmental documentation for the Broadway Bridge Project.

This material is based on work supported by FHWA under Grant Agreement P-15. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of FHWA.

S.5 Overview of Project Area

S.5.1 River Crossing Studies

In 2011, a *Sacramento River Crossing Alternatives Study* (Fehr & Peers 2011) was prepared for the cities of West Sacramento and Sacramento that studied multiple Sacramento River crossing locations. Among the alternatives for new crossings considered in the study, a new bridge at the proposed Broadway Bridge location was included as an option for the South Market area (crossings south of Pioneer Bridge).

In December 2015, the Cities of West Sacramento and Sacramento completed the *Feasibility Study, Broadway Bridge, West Sacramento, California* (feasibility study) (CH2M 2015) for the Broadway Bridge that analyzed bridge crossing alignments. To develop alternatives for the proposed project, the alignments assessed in the feasibility study were reviewed with consideration of the approved future roadway network and additional design refinements. The feasibility study is available on the internet at https://blob.cityofwestsacramento.org/city/depts/pw/major_projects/bbfs.asp.

S.5.2 Related Plans and Projects

The proposed Broadway Bridge is included in many planning documents developed by both the Cities of West Sacramento and Sacramento. In addition to being included in the General Plans for both cities, the following plans and projects are in same general area as the proposed project. They relate to the proposed project in that they direct or define future development and land use within the project area that could be affected by the proposed project, or they provide context for the future land uses proposed in the project area.

S.5.2.1 West Sacramento Plans and Projects

Pioneer Bluff Transition Plan

In West Sacramento, the Pioneer Bluff District is an approximately 125-acre area along a 1-mile stretch of South River Road. Current land uses include storage and distribution facilities for petroleum products, the West Sacramento Public Works Department corporation yard, and other industrial and commercial uses. In 2014, the City of West Sacramento approved the *Pioneer Bluff Transition Plan* (City of West

¹ TIGER stands for Transportation Investment Generating Economic Recovery.

Sacramento 2014). The plan discusses the de-industrialization and planning efforts needed to facilitate transition of the Pioneer Bluff District to urban land uses. The transition plan provides initial guidelines and actions needed for de-industrialization and coordination with city and regional planning activities. The de-industrialization process started prior to preparation of the transition plan and has continued as demonstrated by the following.

- **Decommissioning of Wastewater Treatment Plant.** In 2008, one of the first steps toward de-industrialization occurred. West Sacramento decommissioned the wastewater treatment plant located at the southern end of the Pioneer Bluff District.
- **Relocation of Cemex Cement Terminal.** In 2009, Cemex relocated its cement terminal operations from its riverfront location on South River Road at 15th Street. Demolition of the silos and other facilities at the site began in 2014. At the same site, decommissioning of the pier in the Sacramento River is currently underway.
- **Construction of the Mike McGowan Bridge.** The bridge, which opened to traffic in 2014, connects the Pioneer Bluff and Stone Lock Districts via the northern and southern segments of South River Road.
- **Acquisition and Decommissioning of Shell Oil Facility.** In 2017, the Port of West Sacramento secured an option to purchase the Shell Oil petroleum tank farm located on South River Road south of 15th Street. Through an agreement with the tank farm operator, operations of the tank farm will gradually phase out by March 2021.

The plans for de-industrialization of Pioneer Bluff also include relocation of the Union Pacific Railroad (UPRR) line known as the “east-side rail line” that parallels the east side of Jefferson Boulevard. Relocation of the tracks is discussed further below under *Yolo Rail Relocation*.

The Broadway Bridge roadway connection in West Sacramento would be in the Pioneer Bluff District.

Pioneer Bluff and Stone Lock Reuse Master Plan

The City of West Sacramento is preparing a master plan for the reuse of both the Pioneer Bluff and Stone Lock Districts. In preparation of the plan, a phased multi-modal transportation circulation network for the plan area was developed and approved by City of West Sacramento City Council in January 2018 (approved mobility network). For use by the proposed project, the City of West Sacramento summarized in a memorandum the approved mobility network and maximum employment and dwelling unit projections for the plan area (City of West Sacramento 2018). The memorandum also included the approximate timeline for implementation of the phases of the mobility network, and the timeline for reuse and development of the other land in the plan area.

The 10- to 15-year phase and the 15+ year phase of the approved mobility network were used to define the assumed interim (2030) and design year (2040) conditions in West Sacramento. The future condition assumptions are discussed further in Chapter 1, *Proposed Project*.

Bridge District Specific Plan

The *Bridge District Specific Plan*, formerly the *Triangle Plan*, initially was adopted by the City of West Sacramento in 1993. A significantly updated version was adopted in 2009 (City of West Sacramento 2009). The *Bridge District Specific Plan* provides a framework for development of a waterfront-oriented urban district in an area of West Sacramento bounded by Tower Bridge Gateway, US 50, and the Sacramento River; the plan also includes a small area along the river south of US 50.

Riverfront Street Extension Project

As part of the implementation of the *Bridge District Specific Plan*, the City of West Sacramento is proposing to extend Riverfront Street approximately 0.15 mile to the south to accommodate circulation and access for a streetcar vehicle maintenance facility. The extension project also would widen the east side of 5th Street/South River Road between Mill Street and 15th Street to add bicycle and pedestrian amenities, provide frontage, and place underground the overhead utilities. The bicycle and pedestrian amenities would include sidewalk along the east side of 5th Street, a cycle track (two-way bike lane) to close a gap in the bike lane network, and enhancements at the Bridge Street and 5th intersection to route bicycles between the River Walk and 5th Street.

Yolo Rail Relocation

In 2014, the City of West Sacramento, along with the Cities of Davis and Woodland and Yolo County, created the Yolo Rail Realignment Partnership to jointly assess the feasibility of relocating and decommissioning rail lines within their jurisdictions. The assessments prepared for the Partnership identified four conceptual project phases (1, 2A, 2B, and 2C). Phase 2A includes removal of the east-side rail line and six at-grade crossings in West Sacramento, and the addition of a new rail connection between the UPRR mainline and the Port of West Sacramento spur rail terminus.

To advance the relocation of tracks in West Sacramento independently from the overall rail realignment project, in 2017 West Sacramento arranged for a more detailed engineering, environmental, and financial analysis of Phase 2A. The results of the analysis were documented in *Yolo Rail Realignment Project, Phase 2A Technical Analysis of Alternatives* (City of West Sacramento 2017). West Sacramento currently is exploring mechanisms to proceed with implementation of the report's recommendations.

Advancing Phase 2A of the rail relocation is consistent with the timeline for the phased multi-modal transportation circulation network adopted by West Sacramento City Council in 2018 (City of West Sacramento 2018). The approved mobility network for Pioneer Bluff assumes that relocation of the UPRR east-side rail line would occur by 2030. Relocation of the east-side rail line is a necessary component of the redevelopment of Pioneer Bluff and facilitates transportation circulation patterns for the proposed Broadway Bridge.

S.5.2.2 Sacramento Plans and Projects

Broadway Complete Streets Plan and Project

In 2016, the City of Sacramento approved the *Broadway Complete Streets Plan* (City of Sacramento 2016a) that proposes improvements along Broadway from 3rd Street east to Franklin Boulevard. The first phase of the plan, from 3rd Street to 16th Street, is expected to be constructed in 2022. As part of the first phase, Broadway would be modified to have two travel lanes, a center two-way left-turn lane, buffered bike lanes, and on-street parking.

The new roadway connection and river crossing that would be created by the proposed project would connect with the improvements that are part of the Broadway Complete Streets Project.

West Broadway Specific Plan

The City of Sacramento developed a specific plan for an area called West Broadway. The 240-acre plan area generally is bounded by the Sacramento River to the west, US 50 and Broadway to the north, Muir Way and 5th Street to the east, and 4th Avenue and Merkley Way to the south. The Broadway Bridge

connection in Sacramento is located within the West Broadway Specific Plan area, and the bridge is recognized in the plan as a future roadway connection and gateway opportunity.

The plan area includes the Northwest Land Park Planned Unit Development area, an infill project (under construction) known as The Mill at Broadway, Alder Grove Public Housing Community and Marina Vista Public Housing community, William Land Woods Affordable Housing Community; Leataata Floyd Elementary School, Health Professionals High School, approximately 32 acres of existing industrial land uses, Miller Regional Park, and the Sacramento Marina (Ascent Environmental 2020).

The *West Broadway Specific Plan* defines the land use regulations and policies for infill development and redevelopment within the plan area and identifies necessary public improvements to support new urban development. The anticipated development will be consistent with the framework of the General Plan, which anticipates a mix of traditional and urban-scale housing with neighborhood commercial uses. The City of Sacramento Community Development Department led the preparation of the Specific Plan (Ascent Environmental 2020). The plan was adopted by Sacramento City Council on August 25, 2020.

Central City Mobility Project

Following the installation of bikeways in downtown Sacramento in 2018, the Central City Mobility Project is the next step for implementing transportation improvements identified for the central city in the City's *Grid 3.0* and the *Central City Specific Plan*. *Grid 3.0* (City of Sacramento 2016b) integrates a number of transportation projects and programs to further enhance the downtown grid. The *City of Sacramento Central City Specific Plan* (City of Sacramento 2018) establishes a policy framework to guide development and infrastructure decisions in the central city area. The Central City Mobility Project will extend the bikeway network by adding 62 blocks of protected bikeways and converting two segments of one-way streets to two-way, including 5th Street from Broadway north to I Street.

S.6 Purpose and Need

S.6.1 Purpose

The primary purpose of the project is to increase the number of river crossings over the Sacramento River between West Sacramento and Sacramento. The objectives of the project are listed below.

- Increase the number of river crossings that meet current design standards and encourage travel by walking, bicycling, low-energy vehicles, and public transit.
- Increase the number of persons that can safely, efficiently, and reliably cross the river.
- Increase options for emergency response teams to cross the river.
- Increase options for evacuations.
- Improve the connectivity to, and accessibility of, business, recreational areas, and new or redevelopment opportunity sites located in the urban core of Sacramento and West Sacramento without affecting the use of Miller Regional Park or the Sacramento Marina and without precluding, or negatively restricting, redevelopment options in the Pioneer Bluff or West Broadway areas of the cities.
- Reduce trip length distances across the river between major origins and destinations.
- Reduce the growth in transportation-related energy use, air pollution emissions, and greenhouse gas emissions.
- Reduce the growth in vehicle traffic on local neighborhood streets, especially cut-through traffic.

- Alleviate the growth of local trips on the State Highway System.
- Provide a project design that does not preclude the future addition of light-rail, streetcar, or other mass transit mode, as a separate stand-alone project.
- Provide a new public crossing that meets the requirements of Sacramento’s Neighborhood Friendly Bridge policy that the Sacramento City Council adopted by resolution on October 18, 2011.

S.6.2 Need

The project is needed for the following reasons.

- Limited connectivity across the river creates longer trip lengths, which discourage walking and bicycling.
- Longer trip lengths create dependence on automobile use that generates negative public health effects and adverse environmental effects such as emissions of air pollutants and greenhouse gases.
- Limited connectivity across the river creates concentrated vehicle traffic flows on existing bridges and their connecting approach roadways, resulting in undesirable travel delays for vehicular traffic, including public bus transit during weekday peak periods and special events.
- Limited connectivity across the river reduces options for emergency response teams, thereby increasing response times and limiting alternatives for evacuations.
- Limited connectivity across the river is a barrier to economic activity, social exchanges, and recreational opportunities and limits access to jobs within the urban core of Sacramento and West Sacramento.
- Limited connectivity to the riverfront reduces the potential to achieve planned urban development and redevelopment of opportunity sites identified in the adopted plans of Sacramento and West Sacramento.
- Limited connectivity reduces opportunities to use the riverfront for enjoyment and recreation.
- Peak AM/PM congestion is caused by local intercity commuters using the State Highway System as a result of having few local river crossing options.

Construction of the proposed project has independent utility because it can provide a local roadway connection between West Sacramento and Sacramento and their existing roadway networks that does not rely on construction of other facilities to operate. The project would meet the purpose and need without being dependent on construction of other projects or improvements.

S.7 Proposed Action

The proposed project is in both Yolo and Sacramento Counties in California and would cross over the Sacramento River between the cities of West Sacramento and Sacramento. The proposed project is located approximately 400 to 1,000 feet south of the Pioneer Bridge. The total length of the project is approximately 1.0 mile from Jefferson Boulevard in West Sacramento to the 5th Street and Broadway intersection in Sacramento.

The proposed project would construct a new public crossing of the Sacramento River consistent with the adopted findings of the *Sacramento River Crossings Alternatives Study* for the South Market area. The new bridge would meet the requirements of Sacramento’s Neighborhood Friendly Bridge policy (adopted by Sacramento City Council Resolution on October 18, 2011). In addition, the project would include pedestrian and bicycle facilities in the new public crossing that meet Americans with Disabilities Act

requirements and would facilitate connections to and from the new crossing and the Sacramento River Parkway and West Sacramento Riverwalk Trail. The proposed structure would be a movable bridge that satisfies the vertical clearance and river navigation requirements of the U.S. Coast Guard. The project is needed because of the existing limited connectivity and longer trip lengths currently required.

The project limits include the combined area of each of the proposed project alternatives. In general, the project limits start in West Sacramento, along 15th Street at Jefferson Boulevard, continuing east and over the Sacramento River into the City of Sacramento along Broadway to the 5th Street intersection. The project limits also extend along Jefferson Boulevard approximately 1,300 feet south of the 15th Street intersection to Alameda Boulevard, along South River Road approximately 1,300 feet south and 650 feet north of 15th Street, along Marina View Drive approximately 400 feet south of Broadway, along Front Street approximately 350 feet north and south of Broadway, along 3rd Street approximately 350 feet north of Broadway to X Street, and along 5th Street approximately 200 feet north and south of Broadway. The project limits include proposed improvements to the northbound Interstate 5 off-ramp to Broadway.

A fiber optic cable is proposed to interconnect operational communications of the proposed project, the Tower Bridge, and the I Street Replacement bridge. The fiber optic line would be placed in West Sacramento under Riverfront Street north to Tower Bridge Gateway and 3rd Street, ending at the intersection of 3rd Street and C Street. Staging areas that would be accessed via South River Road in West Sacramento and Front Street in Sacramento also are proposed and included in the project limits.

The build alternatives under consideration are two alignments for the new bridge and approach roadways. A No Build (No-Project) Alternative also is considered.

- Alternative B would realign 15th Street to connect to Jefferson Boulevard in West Sacramento and connect to Broadway at 5th Street in Sacramento. This alignment would require modification to the planned mobility network for South River Road and 15th Street in Pioneer Bluff.
- Alternative C (a modified Alignment C from the *Broadway Bridge Feasibility Study*) would connect as a “T” intersection to South River Road in West Sacramento and connect to Broadway at 5th Street in Sacramento. This alignment would require modification to the planned mobility network for South River Road in Pioneer Bluff.
- The No Build (No-Project) Alternative would not build a bridge across the Sacramento River from the Pioneer Bluff area of West Sacramento to Broadway in Sacramento. The future no project conditions planned by both cities would be developed as proposed.

The Cities of West Sacramento and Sacramento have identified Alternative B as the locally preferred alternative, subject to public review. Alternative B satisfies the purpose and objectives of the project better than Alternative C because it would require fewer changes to the approved mobility network in West Sacramento, would result in greater congestion relief, and would cause a lesser amount of permanent and temporary impacts on sensitive terrestrial and aquatic habitats.

S.8 Potential Environmental Consequences and Avoidance, Minimization, and/or Mitigation Measures

The primary consequence of the proposed project would be the creation of a new bridge over the Sacramento River. Construction of the new bridge and its associated roadway and bikeway connections would result in effects related to 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, Other Waters, Animal Species, Threatened and Endangered Species, and Invasive Species.

Significant and unavoidable impacts under CEQA would occur in the following resource area: Noise (construction only). 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 identified under CEQA. Table S-3, which follows Table S-2, summarizes the significant impacts under CEQA.

S.9 Coordination with Public and Other Agencies

A Notice of Preparation (NOP) was published on July 12, 2017. 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 H.

A public scoping meeting/community open house for the EIR/EA was held on July 27, 2017, from 5:00 to 6:30 p.m. at Arthur A. Benjamin Health Professions High School, 451 McClatchy Way, Sacramento, California. The meeting was announced in the NOP and via email to more than 7,000 interested community members. Printed flyers also were distributed to the Marina Vista and Alder Grove neighborhoods and job centers in Sacramento. 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 West Sacramento and City of 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.cityofwestsacramento.org/government/departments/capital-projects-and-transportation/projects/broadway-bridge-projects>.

During public scoping and outreach for the preparation of this EIR/EA, concerns were raised about the potential for the proposed project to negatively affect adjacent neighborhoods—including, but not limited to, detrimentally increasing traffic volumes on Broadway and adjacent residential streets, increasing noise levels from motor vehicles, and increasing pollution within the project area. These issue areas are addressed in this EIR/EA.

The Cities of West Sacramento and Sacramento have identified Alternative B as the locally preferred alternative, subject to public review. After the public circulation period, all comments will be considered. The City of West Sacramento, in cooperation with the City of Sacramento, and Caltrans will select an alternative and make the final determination of the project's effect on the environment. No other issues with other agencies related to the project remain unresolved, except for consideration of applications for the required permits and authorizations that would allow construction to proceed. The table below lists the permits and approvals that would be required for construction of the project.

Table S-1. Permits and Approvals

Agency	Permit/Approval	Status
City of West Sacramento	City Council approval of project	Not yet initiated
City of Sacramento	City Council approval of project as co-sponsor and responsible agency	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 to determine required length of moveable bridge span
U.S. Army Corps of Engineers	Section 404 Clean Water Act authorization for fill of waters of the United States Section 408 Clean Water Act authorization for excavations in regulated levees	Not yet initiated
National Marine Fisheries Service	Coordination regarding threatened and endangered species	Biological Assessment submitted and consultation initiated
U.S. Fish and Wildlife Service	Coordination regarding threatened and endangered species	Biological Assessment submitted and Biological Opinion issued
California Department of Fish and Wildlife	Section 1602 Department of Fish and Game Code Streambed Alteration Agreement	Not yet initiated
California Public Utilities Commission	Permit to modify at-grade railroad crossing in Sacramento	Not yet initiated
State Water Resources Control Board	Statewide National Pollutant Discharge Elimination System Permit (NPDES) compliance Statewide construction general permit stormwater pollution prevention plan (SWPPP) compliance	Not yet initiated
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification NPDES permit compliance Waste Discharge Requirements compliance for stormwater discharges and surface water protection	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
Union Pacific Railroad	Approval of installation of fiber optic line that would pass under tracks (north/south) at 3rd Street in West Sacramento	Not yet initiated

Table S-2. Comparison of Alternatives

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
HUMAN ENVIRONMENT				
Consistency with State, Regional, and Local Plans and Programs				
Consistency with <i>Sacramento Riverfront Master Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>City of West Sacramento General Plan 2035</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with approved mobility network adopted in advance of the not yet adopted <i>Pioneer Bluff and Stone Lock District Reuse Master Plan</i>	Consistent	Inconsistent. Would require minor modifications to the approved network	Inconsistent. Would require modifications to the approved network	No measures necessary
Consistency with <i>Bridge District Specific Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>City of Sacramento 2035 General Plan</i>	Inconsistent. Conflicts with goals and policies related to constructing new multi-modal crossings over the Sacramento River	Consistent	Consistent	No measures necessary
Consistency with <i>Broadway Complete Streets Plan</i>	Consistent	Consistent	Consistent	No measures necessary

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Consistency with <i>West Broadway Specific Plan</i>	Inconsistent. Plan assumes river crossing in addition to updated roadway network	Consistent	Consistent	No measures necessary
Consistency with <i>Central City Specific Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>Sacramento River Parkway Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>City of Sacramento Pedestrian Master Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Consistency with <i>City of Sacramento Bicycle Master Plan</i>	Consistent	Consistent	Consistent	No measures necessary
Parks and Recreational Facilities				
Effects on riverfront parks in West Sacramento	No effect	Effects not adverse. Temporary impacts on River Walk Trail as cyclists and pedestrians would be required to use an alternative route. Temporary visual impacts from construction near Sutter Health Park.	Effects not adverse. Effects similar to those under Alternative B.	Detours and alternative routes would be identified in the Transportation Management Plan. Boating access would be maintained during construction.

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Effects on riverfront parks in Sacramento	No effect	<p>Effects not adverse. Temporary impacts on vehicle access to Miller Park and Sacramento Marina during construction.</p> <p>Temporary noise and dust impacts associated with project construction.</p> <p>Temporary bicycle detour in West Sacramento and Sacramento.</p> <p>Temporary views of construction-related activities from the Sacramento Southern Railroad Excursion Train when crossing Broadway, but no change in use of the train.</p> <p>Permanent changes to Sacramento River Parkway Trail.</p> <p>Additional access to the riverfront and associated parks; improvement of bicycle and pedestrian mobility.</p>	<p>Effects not adverse. Effects similar to those under Alternative B. Alternative C would encroach approximately 150 feet farther into Frederick Miller Regional Park than Alternative B.</p>	<p>Detours and alternative routes would be identified in the Transportation Management Plan.</p>
Community Impacts				
Effects on community character and cohesion	No change from existing conditions	<p>Effects not adverse. Enhanced connectivity between West Sacramento and Sacramento; no separation or division of an existing neighborhood.</p>	<p>Effects not adverse. Enhanced connectivity between West Sacramento and Sacramento; no separation or division of an existing neighborhood.</p>	<p>No measures necessary</p>
Temporary effects on roadways in the study area during construction	No effect	<p>Effects not adverse. Temporary lane closures and delays during periods of active construction.</p>	<p>Effects not adverse. Temporary lane closures and delays during periods of active construction.</p>	<p>Prepare and implement a Transportation Management Plan during construction as part of environmental commitments included in project description.</p>

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Effects on approved mobility network	No effect	Effects not adverse. Disruptions to partially built development and community plans.	Effects not adverse. Disruptions to partially built development and community plans. "T" intersection with South River Road would cause a greater disruption to plans than Alternative B.	No measures necessary
Relocations and Real Property Acquisition				
Total permanent right-of-way acquisition needed	0	Effects not adverse. 4.621 acres in West Sacramento 5.409 acres in Sacramento	Effects not adverse. 5.268 acres in West Sacramento 5.533 acres in Sacramento	As part of project implementation, all acquisitions would be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act.
Total temporary construction easement area	0	Effects not adverse. 1.280 acres in West Sacramento 0.658 acre in Sacramento.	Effects not adverse. 0.474 acres in West Sacramento 0.816 acre in Sacramento.	As part of project implementation, all acquisitions would be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act.
Total number of business displaced	0	Effects not adverse. Commercial businesses: 2 businesses on 2 parcels in West Sacramento Industrial (petroleum) businesses: 2 businesses on 4 parcels in Sacramento	Effects not adverse. Commercial businesses: 1 business on 1 parcel in West Sacramento Industrial (petroleum) businesses: 3 businesses on 5 parcels – 1 in West Sacramento, 4 in Sacramento	As part of project implementation, all acquisitions would be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act.
Utilities/Emergency Services				
Effects on public and private utilities	No effect	Effects not adverse. Interruption of service during relocation of above-ground utilities or adjustment to grade of access to underground utilities (including existing water, sewer, gas, electric, and communication facilities within Broadway, South River Road, 15th Street, and Jefferson Boulevard).	Effects not adverse. Effects similar to those under Alternative B.	Provide advance notice to utility service providers.

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Effects on police, fire, and emergency service providers	No effect	Effects not adverse. Changes to access and circulation during construction and post construction.	Effects not adverse. Changes to access and circulation during construction and post construction.	As part of project implementation, a Transportation Management Plan would be prepared and implemented during construction to minimize effects of detours and temporary closures.
Traffic and Transportation/Pedestrian and Bicycle Facilities				
Opening year (2030) intersection operations	In West Sacramento, increased congestion at Jefferson Boulevard/Alameda Boulevard intersection. In Sacramento, increased congestion on future 5th Street at ramp terminal intersection during the p.m. peak hours.	Effects not adverse. In West Sacramento and Sacramento all intersections would operate within acceptable levels of service	Potential for adverse effects. In West Sacramento, project would cause three intersections locations to operate at unacceptable level of service (F) and would contribute to cumulative worsening of traffic operations.	MM TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C). Construction modifications to three roadway locations by open-to-traffic year and a fourth location by 2040.
Design year (2040) intersection operations	In West Sacramento, congestion would increase at intersections along Jefferson Boulevard. In Sacramento, increased congestion along future 5th Street during p.m. peak hour at the ramp terminal intersections.	Effects not adverse. All intersections would operate within acceptable levels of service. Increased delay in West Sacramento bridge approach at South River Road/15th Street, but still within acceptable levels of service during both a.m. and p.m. peak hours. In Sacramento, increased traffic at Broadway/5th Street, but still within acceptable levels of service.	Potential for adverse effects. In West Sacramento, project would cause one intersection location would operate at unacceptable level of service (F) during a.m. peak hour and would contribute to cumulative worsening of traffic operations.	MM TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C). Construction modifications to three roadway locations by open-to-traffic year and a fourth location by 2040.

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Opening year (2030) roadway segment operations	In West Sacramento, four roadway segments would operate at unacceptable levels of service. In Sacramento, traffic operations would worsen but still would operate within acceptable levels of service.	Effects not adverse. In West Sacramento, four roadway segments would operate at unacceptable levels of service. In Sacramento, traffic operations would worsen, but still would operate within acceptable levels of service. unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project,	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary
Design year (2040) roadway segment operations	In West Sacramento, three roadway segments would operate at unacceptable levels of service. In Sacramento, traffic operations would worsen but still would operate within acceptable levels of service.	Effects not adverse. In West Sacramento, three roadway segments would operate at unacceptable levels of service. In Sacramento, traffic operations would worsen but still would operate within acceptable levels of service. Unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project.	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary
Opening year (2030) freeway operations	No change from existing conditions.	Effects not adverse. Some decrease in off-ramp queuing. Queues would remain within available storage capacity.	Effects not adverse. Queues would remain within available storage capacity.	No measures necessary
Design year (2040) freeway operations	US 50 eastbound off-ramp at 5th Street/X Street intersection during p.m. peak hour would exceed available queue storage capacity.	Effects not adverse. Queues would remain within available storage capacity.	Slightly improved queue storage capacity at US 50 eastbound off-ramp at 5th Street/X Street intersection during p.m. peak hour compared to No Build Alternative.	No measures necessary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Changes in vehicle miles traveled	Changes consistent with planned growth projections.	Effects not adverse. Increases in VMT over time is consistent with changes in travel behavior that would coincide with the planned increase in growth and changes in land use included in local general plans and reflected in the SACMET regional travel demand model.	Effects not adverse. Slightly greater increase in VMT than under Alternative B (less than 1%).	No measures necessary
Transit system	No change from existing conditions until design year (2040), when West Sacramento intersection would deteriorate to unacceptable level of service (F) during a.m. peak hour, potentially affecting transit services.	Effects not adverse. Would provide an additional connection across river for transit services.	Potential for adverse effects. Worsening intersection operations in the future could affect transit services. Would provide an additional connection across river for transit services.	MM TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C). Construction modifications to three roadway locations by open-to-traffic year and a fourth location by 2040.
Pedestrian and bicycle facilities	No change from existing conditions. Pedestrians and bicycles would use Tower Bridge or I Street Bridge to cross the Sacramento River.	Effects not adverse. Would provide an additional connection across the river for pedestrians and bicycles.	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary
Visual/Aesthetics				
Effects on scenic resources	No effect	No effect	No effect	No measures necessary
Visual changes from construction activities	No effect	Effects not adverse. Temporary visual changes from introduction of heavy equipment and associated vehicles, installation of falsework platforms and cofferdams, construction signaling, signage, and lighting.	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Visual changes from introduction of a new bridge and roadway connections	No effect	Effects not adverse. Permanent visual changes from introduction of a new bridge over the Sacramento River.	Effects not adverse. Effects similar to those under Alternative B.	AMM AES-1: Work with Stakeholders to Determine Bridge Aesthetics, and AMM AES-2: Implement Project Landscaping would ensure that the proposed bridge design meets the expectations of the larger communities within West Sacramento and Sacramento and that landscaping is installed in a manner that is consistent with the city streetscape standards.
Introduction of light and glare	No effect	Effects not adverse. 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.	Effects not adverse. Effects similar to those under Alternative B.	AMM AES-3: Apply Minimum Lighting Standards. All artificial outdoor lighting and overhead street lighting will be limited to safety and security requirements and the minimum required for driver safety. All lighting will be designed to have minimum impact on the surrounding environment.
Cultural Resources				
Effects on Sacramento River levees (west, assumed eligible; east, eligible), assumed-eligible Sacramento Northern Railway, and eligible Walnut Grove Branch Line	No effect	No adverse effect. Bridge structures would span levees and bicycle under-crossings and would set on top of the levee but would not affect the character-defining features of the levees. Proposed project would not diminish the integrity of the resources and would not destroy or adversely affect any qualifying characteristics of the properties.	No adverse effect. Effects similar to those under Alternative B.	No measures necessary
Effects on archaeological resource P-34-000619	No effect	No adverse effect. Proposed project would place fill on top of part of the site but would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property.	No adverse effect. Effects similar to those under Alternative B.	No measures necessary.

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Effects on unidentified cultural resources or human remains	No effect	Potential for unknown archaeological resources or human remains to be uncovered during ground-disturbing construction activities.	Effects similar to those under Alternative B.	<p>AMM CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel.</p> <p>AMM CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction.</p> <p>AMM CUL-3: Stop Work if Human Remains Are Encountered during Ground-Disturbing Activities Measure would ensure proper training for construction personnel and identify and implement proper procedures if resources are encountered.</p>
PHYSICAL ENVIRONMENT				
Hydrology and Floodplain				
Changes in water surface elevation	No effect	Effects not adverse. Negligible increase in water surface elevation of 0.02 foot immediately upstream of the project and 0.06-0.07 foot reduction immediately downstream.	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary
Increased runoff from added impervious surfaces	No effect	Effects not adverse. Minor additional impervious surface with the potential to increase runoff volume in the Sacramento River.	Effects not adverse. Effects similar to those under Alternative B.	<p>Implement Construction General Permit Stormwater Pollution Prevention Plan post-construction measures, site design measures, low-impact development measures, erosion control measures from the Caltrans MS4 program guidance documents, Sacramento's Stormwater Quality Partnership's Stormwater Quality Improvement Plan, and West Sacramento's Storm Water Management Plan.</p> <p>Because the project involves more than 1 acre of newly created or replaced impervious area, permanent treatment best management practices (BMPs) need to be considered. Permanent treatment BMPs may include bioretention areas and vegetated swales. Erosion and sediment control BMPs (e.g., drainage swales, geotextile, slope drains, mulch, stream bank stabilization, and sediment traps) also would be implemented to control any runoff from the project site.</p>

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Effects on drainage	No effect	Effects not adverse. Temporary effects on ability of water to drain in the surrounding area from relocating onsite drainage systems.	Effects not adverse. Effects similar to those under Alternative B.	Install and maintain temporary BMPs to control any runoff or erosion from the project site that may discharge into the surrounding storm drain systems and waterways.
Incompatible floodplain development	No effect	No adverse effect. Would not support incompatible floodplain development.	No adverse effect. Effects similar to those under Alternative B.	No measures necessary
Water Quality				
Disturbance of substrate	No effect	Effects not adverse. 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.	Effects not adverse. Effects similar to those under Alternative B.	<p>Implement measures to protect water quality during construction, operation, and maintenance. Implement Construction General Permit Stormwater Pollution Prevention Plan post-construction measures, site design measures, low-impact development measures, erosion control measures from the Caltrans MS4 program guidance documents, Sacramento's Stormwater Quality Partnership's Stormwater Quality Improvement Plan, and West Sacramento's Storm Water Management Plan.</p> <p>Proposed BMPs may include bioretention areas and vegetated swales. Erosion and sediment control BMPs (e.g., drainage swales, geotextile, slope drains, mulch, stream bank stabilization, and sediment traps) also would be implemented to control any runoff from the project site.</p> <p>Implementation of these measures would ensure that stormwater runoff does not cause soil erosion and would reduce or avoid permanent impacts on water quality.</p>
Effects on drainage	No effect	Effects not adverse. Change in drainage that could affect ability of water to drain during a rain event and alter surface runoff from new impervious surface and changes in topography.	Effects not adverse. Effects similar to those under Alternative B.	<p>Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. Implement erosion and sediment control BMPs (e.g., soil stabilization, slope drains, and geotextiles and mats) to control any runoff and erosion from the project site.</p> <p>Establish a new storm drainage system to convey road runoff.</p>

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Increase in turbidity / suspended sediment	No effect	Effects not adverse. Potential short-term increases in turbidity from soil erosion and suspended solids being introduced into the Sacramento River, both from in-water and land construction activities and particularly during in-water work for bridge construction. Permanent loss of 1.06 acres of levee slope vegetation for rock slope protection and permanent structures. Added impervious surface (approximately 2.0 acres) with the potential to increase storm runoff volume in Sacramento River	Effects not adverse. Effects similar to those under Alternative B. Permanent loss of 1.67 acres of levee slope vegetation for rock slope protection and permanent structures. Added impervious surface (approximately 2.2 acres) with the potential to increase stormwater runoff volume in Sacramento River.	Implement measures to protect water quality during construction, operation, and maintenance. Implement Construction General Permit Stormwater Pollution Prevention Plan post-construction measures, site design measures, low-impact development measures, erosion control measures from the Caltrans MS4 program guidance documents, Sacramento's Stormwater Quality Partnership's Stormwater Quality Improvement Plan, and West Sacramento's Storm Water Management Plan. Proposed BMPs may include bioretention areas and vegetated swales. Erosion and sediment control BMPs (e.g., drainage swales, geotextile, slope drains, mulch, stream bank stabilization, and sediment traps) also would be implemented to control any runoff from the project site.
Introduction of pollutants of concern or toxic chemicals to the project site	No effect	Effects not adverse. 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.	Effects not adverse. Effects similar to those under Alternative B.	Implement measures to protect water quality during construction; implement measures to protect water quality during project operation and maintenance. Proposed BMPs would address soil stabilization, sediment control, vehicle tracking control, non-storm water management, and waste management practices. 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	Effects not adverse. Potential change in water temperature or dissolved oxygen levels from removal of streamside vegetation and new overwater structures.	Effects not adverse. Effects similar to those under Alternative B.	Implement measures to protect water quality during construction, operation, and maintenance. Implement Construction General Permit Stormwater Pollution Prevention Plan post-construction measures, site design measures, low-impact development measures, erosion control measures from the Caltrans MS4 program guidance documents, Sacramento's Stormwater Quality Partnership's Stormwater Quality Improvement Plan, and West Sacramento's Storm Water Management Plan.

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Geology/Soils/Seismic/Topography				
Risk of seismic hazard and slope instability	No effect	Effects not adverse. Low risk of strong seismic ground shaking in the project area; risk of secondary seismic hazards related to slope instability and liquefaction.	Effects not adverse. Effects similar to those under Alternative B.	All structures would 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, possibly 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 would be performed as part of the final bridge design process.
Increase in soil erosion rates and/or loss of topsoil	No effect	Effects not adverse. Potential increase in soil erosion rates and/or loss of topsoil from ground-disturbing earthwork.	Effects not adverse. Effects similar to those under Alternative B.	Compliance with City of West Sacramento's Standard Construction Specifications (2002) and Stormwater Management Program Planning Document (2003); City of Sacramento's Grading, Erosion, and Sediment Control Ordinance; and the Caltrans Construction Site Best Management Practices (BMPs) Manual and the Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual are required.
Effects from landslides	No effect	Effects not adverse. Very low risk of landslide during construction.	Effects not adverse. Effects similar to those under Alternative B.	All structures would be designed using the Caltrans Seismic Design Criteria to meet the minimum seismic requirements for highway bridges designed in California.
Effects from expansive soil	No effect	Effects not adverse. Expansive soils not extensive in the project area but could occur locally.	Effects not adverse. Effects similar to those under Alternative B.	Design of project structures would take into account the results of site-specific geotechnical data gathered as part of the final design effort. All construction and engineered fills would comply with the Caltrans Standard Specifications, and all construction would compact the roadway subgrade in accordance with the Caltrans Standard Specifications.

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Paleontology				
Damage to significant fossils	No effect	Effects not adverse. Potential damage to fossils during earth-disturbing activities.	Effects not adverse. Effects similar to those under Alternative B.	<p>AMM PAL-1: Educate Construction Personnel in Recognizing Fossil Material.</p> <p>AMM PAL-2: Stop Work if Fossil Remains Are Encountered during Construction.</p> <p>AMM PAL-3: Include Resource Stewardship Measures in Standard Specifications for the Project.</p> <p>If paleontological resources are discovered, work will stop, the area will be protected, and the project engineer will arrange for paleontological monitoring.</p>
Hazardous Waste/Materials				
Hazards associated with underground transmission lines	No effect	Potential for adverse effects. Explosive hazard potential associated with proximity of Kinder-Morgan and PG&E gas transmission lines.	Potential for adverse effects. Effects similar to those under Alternative B.	<p>AMM HAZ-1: Conduct Phase II Site Assessments prior to Construction. A Phase II screening of subsurface soils or groundwater will be conducted prior to construction.</p> <p>AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.</p>
Exposure to soil and/or groundwater contamination	No effect	Potential for adverse effects. High to moderate risk of recognized environmental conditions for 36 parcels located within the project area.	Potential for adverse effects. Effects similar to those under Alternative B. High to moderate risk of recognized environmental conditions for 36 parcels located within the project area.	<p>AMM HAZ-1: Conduct Phase II Site Assessments prior to Construction. A Phase II screening of subsurface soils or groundwater will be conducted prior to construction.</p> <p>AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.</p>
Exposure to previously unknown hazardous materials	No effect	Potential for adverse effects. Moderate risk of previously unreported hazardous materials being discovered during construction.	Potential for adverse effects. Effects similar to those under Alternative B.	<p>AMM HAZ-1: Conduct Phase II Site Assessments prior to Construction. A Phase II screening of subsurface soils or groundwater will be conducted prior to construction.</p> <p>AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.</p>

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Exposure of known hazardous materials to humans or the environment	No effect	Potential for adverse effects. Potential for presence of hazardous materials in the form of aerially deposited lead, lead or chromium in yellow/white traffic striping; heavy metals, total petroleum hydrocarbons, and polychlorinated biphenyls along railroad tracks; industrial facilities sites. Construction workers could be exposed to hazardous materials during ground-disturbing activities at any of the areas known to contain hazardous substances.	Potential for adverse effects. Effects similar to those under Alternative B.	AMM HAZ-1: Conduct Phase II Site Assessments prior to Construction. A Phase II screening of subsurface soils or groundwater will be conducted prior to construction. AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.
Exposure to hazardous conditions from construction equipment	No effect	Potential for adverse effects. Potential exposure of humans and the environment to hazardous conditions from accident release of hazardous materials during construction.	Potential for adverse effects. Effects similar to those under Alternative B.	AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.
Air Quality				
Emissions of criteria pollutants during operation	No effect	Effects not adverse. Reduction of daily regional vehicle miles traveled in 2030 compared to No Build Alternative would result in a decrease in daily emissions of VOC, CO, PM10, PM2.5, and NOX. By 2040, daily criteria pollutant emissions would increase, although incrementally and would be dispersed throughout six counties and remain below thresholds.	Effects not adverse. Negligible differences in criteria pollutant emissions compared to Alternative B. Otherwise, similar.	No measures necessary

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Emissions of dust and exhaust during construction	No effect	Potential for adverse effects. 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.	Potential for adverse effects. Effects similar to those under Alternative B.	Implement control measures for construction emissions of fugitive dust, including compliance with the Caltrans Standard Specifications Section 14, "Environmental Stewardship" and dust control measures recommended by Yolo-Solano Air Quality Management District. AMM AQ-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust. Measures identified in YSAQMD's Construction Dust Mitigation Measures that are not already in, or conflict with, Caltrans Standard Specifications will be implemented.
Exposure to asbestos	No effect	Potential for adverse effects. Low risk of construction activity encountering naturally occurring asbestos.	Potential for adverse effects. Effects similar to those under Alternative B.	Implement a variety of project-required dust control measures, including watering and measures outlined in AMM AQ-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust.
Exposure to lead	No effect	Potential for adverse effects. Risk of encountering aerially deposited lead in soils during construction and grading activities.	Potential for adverse effects. Effects similar to those under Alternative B.	AMM HAZ-2: Develop and Implement Plans to Address Worker Health and Safety. Implement plans and measures to address worker safety when working with potentially hazardous materials.
Increase in mobile source air toxics	No effect	Effects not adverse. 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.	Effects not adverse. Effects similar to those under Alternative B.	No measures necessary
Noise				
Traffic noise	No effect	Potential for adverse effects. Traffic noise levels would approach or exceed the noise abatement criteria for residential uses and park uses.	Potential for adverse effects. Effects similar to those under Alternative B.	Following 23 Code of Federal Regulations 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 of access requirements for alleys and driveways intersecting Route 84.

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Construction noise	No effect	Potential for adverse effects. Temporary increase in noise levels due to transport and operation of construction equipment, and other construction activities.	Potential for adverse effects. Effects similar to those under Alternative B.	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.
BIOLOGICAL ENVIRONMENT				
Natural Communities				
Effects on cottonwood riparian forest	No effect	Potential for adverse effects. Permanent loss of up to 1.112 acres and temporary disturbance of up to 0.786 acres of cottonwood riparian forest from vegetation removal; potential indirect effects on riparian habitat from shading by new bridge approach structures.	Potential for adverse effects. Permanent loss of up to 1.176 acres and temporary disturbance of up to 1.149 acres of cottonwood riparian forest from vegetation removal; potential indirect effects on riparian habitat from shading by new bridge approach structures.	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources AMM NC-2: Conduct Environmental Awareness Training for Construction Employees Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)
Effects on protected trees	No effect	Potential for adverse effects. Removal of up to up to four protected riparian trees and several street trees in West Sacramento; removal of up to eight protected riparian trees and additional street trees in Sacramento; potential temporary effects on trees from trimming for construction access.	Potential for adverse effects. Removal of up to six protected riparian trees and several street trees in West Sacramento; removal of up to 13 protected riparian trees and additional street trees in Sacramento; potential temporary effects on trees from trimming for construction access.	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources AMM NC-2: Conduct Environmental Awareness Training for Construction Employees AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval. MM NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat. Conduct preconstruction survey of all trees to be removed. Compensate as required in the tree ordinances of the Cities of West Sacramento and Sacramento.
Effects on wildlife corridors	No effect	Effects not adverse. Removal of riparian habitat could contribute to existing barriers; however, wildlife acclimated to urban areas would be able to move through area under bridges.	Effects similar to those under Alternative B.	No measures necessary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
Wetlands and Other Waters				
Effects on wetlands	No effect	No effect	No effect	No measures necessary
Effects on waters of the United States and waters of the State	No effect	Potential for adverse effects. Permanent loss of 0.432 acre and temporary effects on 4.729 acres of perennial stream (Sacramento River).	Potential for adverse effects. Permanent loss of 0.482 acre and temporary effects on 4.969 acres of perennial stream (Sacramento River).	Comply with the SWPPP and CWA Section 401 permit conditions and implement AMM NC-1: Install Construction Fencing; AMM NC-2: Conduct Environmental Awareness Training; NC-3: Conduct Periodic Biological Monitoring to reduce effects on the Sacramento River. Implement MM WW-1: Compensate for Loss of Perennial Stream. Purchase mitigation credits for permanent fill of non-wetland waters.
Animal Species				
Effects on western pond turtle	No effect	Potential for adverse effects. Permanent effects on 4.199 acres and temporary effects on 6.545 acres of potential nesting habitat; potential injury or mortality during construction or from underwater vibrations during pile driving.	Potential for adverse effects. Permanent effects on 3.501 acres and temporary effects on 6.989 acres of potential nesting habitat; potential injury or mortality during construction or from underwater vibrations during pile driving.	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources AMM NC-2: Conduct Environmental Awareness Training for Construction Employees AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval. MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits. MM WW-1: Compensate for Loss of Perennial Stream. Purchase mitigation credits for permanent fill of non-wetland waters. AMM AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures. Survey prior to construction and implement avoidance measures as needed.
Effects on white-tailed kite	No effect	Potential for adverse effects. Permanent effects on 0.786 acres and temporary effects on 4.0 acres of potential nesting habitat (from	Potential for adverse effects. Permanent effects on 1.149 acres and temporary effects on 4.0	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
		removal of trees); potential disruption of nesting behavior during construction.	acres of potential nesting habitat (from removal of trees); potential disruption of nesting behavior during construction.	<p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits.</p> <p>AMM AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife. Remove or trim trees during the non-breeding season.</p> <p>AMM AS-3: Monitor Active Swainson’s Hawk and White-Tailed Kite 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.</p> <p>AMM AS-4: Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers. Conduct nesting surveys before the start of construction and establish no-disturbance buffers.</p>
Effects on migratory birds	No effect	Potential for adverse effects. Potential effects on nesting birds through direct injury or mortality during ground-disturbing activities or by disrupting normal behaviors.	Potential for adverse effects. Greater permanent and temporary effects on habitat than Alternative B.	<p>AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources</p> <p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits.</p>

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
				<p>AMM AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife. Remove or trim trees during the non-breeding season.</p> <p>AMM AS-4: Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers. Conduct nesting surveys before the start of construction and establish no-disturbance buffers.</p>
Effects on bats	No effect	Potential for adverse effects. Loss of potential roosting habitat from removal of approach structures and trees.	Potential for adverse effects. Greater permanent and temporary effects on habitat than Alternative B.	<p>AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources</p> <p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>AMM AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife. Remove or trim trees during the non-breeding season.</p> <p>AMM AS-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures. Protective measures may be necessary if bats are using buildings or trees in the BSA as roost sites, or if sensitive bats species are detected during acoustic monitoring.</p>
Effects on Central Valley fall- and late fall-run Chinook salmon, white sturgeon, Sacramento splittail, Sacramento hitch, and hardhead, Pacific lamprey, and western river lamprey	No effect	Potential for adverse effects. 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	Potential for adverse effects. Effects similar to those under Alternative B. However, Alternative C would result in greater temporary effects on substrate and water column habitat, fewer permanent effects on substrate habitat from rock slope protection placement, greater permanent and temporary effects on riparian habitat,	<p>AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources</p> <p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits.</p>

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
		<p>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.</p>	<p>greater effects on shaded riverine aquatic cover habitat along the Sacramento River, slightly greater permanent shade effects on the Sacramento River, and a slightly greater amount of added impervious surfaces.</p>	<p>AMM AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving. Contractor will implement measures to minimize the exposure of listed fish species to potentially harmful underwater sound.</p> <p>AMM AS-7: Develop and Implement a Hydroacoustic Monitoring Plan. Monitor underwater noise levels during impact pile driving. Document extent of underwater sounds produced.</p> <p>AMM AS-8: Monitor Turbidity in the Sacramento River. Monitor turbidity levels during in-water construction activities.</p> <p>AMM AS-9: Implement Cofferdam Restrictions. Restrictions apply during installation, dewatering, and removal.</p> <p>AMM AS-10: Prepare and Implement a Fish Rescue and Relocation Plan. Rescue and relocate fish trapped within coffer dams.</p> <p>AMM AS-11: Develop and Implement a Barge Operations Plan. Plan will address bottom scour, bank erosion, material spillage and benthic community disturbance.</p> <p>AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species. Educate construction supervisors, inspect vessels used during construction and remove materials that could harbor invasive species.</p> <p>AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River.</p> <p>TE-3: Purchase Channel Enhancement Credits for Impacts on Critical Habitat. Purchase mitigation credits at a NMFS- and USFWS-approved anadromous fish and delta smelt conservation bank.</p>
Threatened and Endangered Species				
Effects on valley elderberry longhorn beetle	No effect	Potential for adverse effects. Loss of suitable habitat from direct (by removal or trimming) and indirect	Potential for adverse effects. Slightly greater permanent and temporary effects on cottonwood	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
		(from construction activities) effects on elderberry shrubs.	riparian habitat along the Sacramento River. Otherwise, effects similar to those under Alternative B.	<p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>AMM TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle. Implement measures adapted from the <i>Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle</i>.</p>
Effects on Swainson's hawk	No effect	Potential for adverse effects. Permanent loss of up to 1.112 acres and temporary disturbance of 0.786 acres of potential nesting habitat; disruption of nesting behavior during construction.	Potential for adverse effects. Permanent loss of up to 1.176 acres and temporary disturbance of 1.149 acres of potential nesting habitat; disruption of nesting behavior during construction.	<p>AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources</p> <p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees</p> <p>AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval.</p> <p>MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits.</p> <p>AMM AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife. Remove or trim trees during the non-breeding season.</p> <p>AMM AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite 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.</p> <p>AMM TE-2: Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction. Conduct surveys for the species in the spring/summer prior to construction.</p>
Effects on Sacramento River winter-run Chinook	No effect	Potential for adverse effects. Adverse temporary effects on the water column (underwater noise	Potential for adverse effects. Greater temporary effects on substrate and	AMM NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
<p>salmon, CV spring-run Chinook salmon, CV steelhead, southern distinct population segments of North American green sturgeon, delta smelt, and their designated critical habitat, and longfin smelt; effects on essential fish habitat.</p>		<p>and sound pressure, and water quality impacts) and channel substrate (cofferdams and trestles). Disturbance and mortality related to noise and vibration associated with impact pile driving; potential increased exposure to contaminants 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.</p>	<p>water column habitat, fewer permanent effects on substrate habitat from placement of rock slope protection, greater permanent and temporary effects on riparian habitat, greater effects on shaded riverine aquatic cover habitat along the Sacramento River, slightly greater permanent shade effects on the Sacramento River, and slightly greater amount of added impervious surfaces.</p>	<p>AMM NC-2: Conduct Environmental Awareness Training for Construction Employees AMM NC-3: Conduct Periodic Biological Monitoring. Retain a qualified biological monitor to ensure that activities are being conducted in accordance with agency conditions of approval. MM NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover). Implement onsite and, if necessary, offsite compensation measures or purchase mitigation bank credits. AMM AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving. Contractor will implement measures to minimize the exposure of listed fish species to potentially harmful underwater sound. AMM AS-7: Develop and Implement a Hydroacoustic Monitoring Plan. Monitor underwater noise levels during impact pile driving. Document extent of underwater sounds produced. AMM AS-8: Monitor Turbidity in the Sacramento River. Monitor turbidity levels during in-water construction activities. AMM AS-9: Implement Cofferdam Restrictions. Restrictions apply during installation, dewatering, and removal. AMM AS-10: Prepare and Implement a Fish Rescue and Relocation Plan. Rescue and relocate fish trapped within coffer dams. AMM AS-11: Develop and Implement a Barge Operations Plan. Plan will address bottom scour, bank erosion, material spillage and benthic community disturbance. AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species. Educate construction supervisors, inspect vessels used during construction and remove materials that could harbor invasive species.</p>

Summary

Impact	No Build	Alternative B	Alternative C	Avoidance, Minimization, and/or Mitigation Measures
				AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River. TE-3: Purchase Channel Enhancement Credits for Impacts on Critical Habitat. Purchase mitigation credits at a NMFS- and USFWS-approved anadromous fish and delta smelt conservation bank.
Invasive Species				
Introduction and spread of invasive plant species	No effect	Potential for adverse effects. Potential introduction and spread of invasive plant species from temporarily created additional disturbed areas.	Potential for adverse effects. Effects similar to those under Alternative B.	AMM IS-1: 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 project's study area.

AMM = Avoidance and Minimization Measure

MM = Mitigation Measure

Table S-3. Summary of Significant Impacts under CEQA

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
Visual/Aesthetics			
<i>Substantially degrade the existing visual character or quality of the site and its surroundings</i>			
AES-1: Change in Visual Character Consistent with Local Regulations (Alternatives B and C)	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.	AES-1: Work with Stakeholders to Determine Bridge Aesthetics AES-2: Implement Project Landscaping	LTS
<i>Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area</i>			
AES-2: Create a New Source of Light or Glare (Alternatives B and C)	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.	AES-3: Apply Minimum Lighting Standards	LTS
Air Quality			
<i>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</i>			
AIR-1: Construction-Related Particulate Matter Emissions in Excess of Thresholds (Alternatives B and C)	Exceedances of the project-level thresholds would be cumulatively considerable.	AIR-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust	LTS
<i>Result in exposure of sensitive receptors to regional criteria pollutants during construction</i>			
AIR-3: Exposure of Sensitive Receptors to Regional Criteria Pollutants during Project Construction (Alternatives B and C)	Regional criteria pollutant concentrations during construction that would exceed Sacramento Metropolitan Air Quality Management District thresholds without application of BMPs.	AIR-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust	LTS
Biological Resources			
<i>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, or NOAA Fisheries</i>			
BIO-1: Impacts on Valley Elderberry Longhorn Beetle (Alternatives B and C)	Loss of cottonwood riparian habitat could create barriers to the dispersal of valley elderberry longhorn beetle along riparian corridor, contributing to fragmented habitat and the isolation of existing populations.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring	LTS

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
		NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle	
BIO-2: Impacts on Western Pond Turtle (Alternatives B and C)	Impacts on perennial stream, cottonwood riparian, and ruderal area would affect western pond turtle's nesting and basking habitat.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures	LTS
BIO-3: Impacts on White-Tailed Kite (Alternatives B and C)	Construction activities during the nesting season may disrupt white-tailed kite and Swainson's hawk nesting behavior, possibly resulting in nest abandonment or forced fledging that results in young mortality.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities AS-4: Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers	LTS
BIO-4: Impacts on Swainson's Hawk (Alternatives B and C)	Loss of cottonwood riparian forest, individual trees in landscaped areas, and buildings could result in injury or mortality to the species.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities	LTS

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
		TE-2: Conduct Focused Surveys for Nesting Swainson’s Hawk prior to Construction	
BIO-5: Impacts on Roosting Bats (Alternatives B and C)		NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) AS-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures	LTS
BIO-6: Impacts on Special-Status Fish Species, Designated Critical Habitat, and Essential Fish Habitat (Alternatives B and C)	During construction, pile-driving noise, water quality impacts, fish entrapment in cofferdams, and direct physical injury could affect special-status fish. Introduction of aquatic invasive species through construction could affect special-status fish species. Temporary and permanent shading of aquatic habitat and temporary construction and permanent bridge lighting could affect the migratory behavior of special-status fish or the vulnerability of species to predators.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving AS-7: Develop and Implement a Hydroacoustic Monitoring Plan AS-8: Monitor Turbidity in the Sacramento River AS-9: Implement Cofferdam Restrictions AS-10: Prepare and Implement a Fish Rescue and Relocation Plan AS-11: Develop and Implement a Barge Operations Plan AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River TE-3: Purchase Channel Enhancement Credits for Impacts on Critical Habitat	LTS

Summary

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
<i>Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service</i>			
BIO-7: Impacts on, and Loss of, Cottonwood Riparian Forest (Alternatives B and C)	Permanent and temporary effects on cottonwood riparian forest.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)	LTS
<i>Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means</i>			
BIO-8: Impacts on State and Federally Protected Waters (Alternatives B and C)	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.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring WW-1: Compensate for Loss of Perennial Stream	LTS
<i>Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance</i>			
Impact BIO-10: Impacts on Protected Trees (Alternatives B and C)	Removal of riparian trees and street trees in West Sacramento and Sacramento.	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat	LTS
Cultural Resources			
<i>Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.</i>			
CUL-2: Potential for Adverse Change in Significance of an Archaeological Resource (Alternatives B and C)	Ground-disturbing activities could affect previously unknown archaeological resources.	CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction	LTS

Summary

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
<i>Disturb any human remains, including those interred outside of formal cemeteries</i>			
CUL-3: Potential Disturbance of Human Remains (Alternatives B and C)	Earth-disturbing (i.e., excavation and grading) and construction activities could damage human remains if present in the project area.	CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction CUL-3: Stop Work if Human Remains are Encountered during Ground-Disturbing Activities	LTS
Geology and Soils			
<i>Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature</i>			
GEO-5: Potential to Destroy a Unique Paleontological Resource (Alternatives B and C)	Earth-disturbing (i.e., excavation and grading) and construction activities could damage fossils if present in the project area.	PAL-1: Educate Construction Personnel in Recognizing Fossil Material PAL-2: Stop Work if Fossil Remains Are Encountered during Construction	LTS
Hazards and Hazardous Materials			
<i>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</i>			
HAZ-2: Risk of Public or Environmental Exposure to Released Hazardous Materials (Alternatives B and C)	Exposure of humans and the environment to accidental release of hazardous materials (e.g., fuel, oils) during construction activities.	HAZ-1: Conduct Phase II Site Assessments prior to Construction HAZ-2: Develop and Implement Plans to Address Worker Health and Safety	LTS
<i>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</i>			
HAZ-4: Risk from Ground Disturbance at Known Hazardous Materials Sites (Alternatives B and C)	Disturbing soil or groundwater at known hazardous materials sites could expose humans and the environment to contaminants.	HAZ-1: Conduct Phase II Site Assessments prior to Construction	LTS
Noise			
<i>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</i>			
NOI-1: Construction Noise in Exceedance of Local Standards (Alternatives B and C)	Construction noise impacts could exceed local standards at residences in West Sacramento and live-aboard vessels in Sacramento.	NOI-1: Use Best Noise Control Practices during Construction	SU

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
Transportation			
<i>Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities</i>			
TRA-2: Changes in Intersection Operations (Alternative C)	Under Alternative C only, unacceptable level of service at three West Sacramento intersections under opening year (2030); unacceptable level of service at Jefferson Boulevard/Alameda Boulevard in West Sacramento during design year (2040).	TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (Alternative C)	LTS
TRA-6: Effects on Transit Operations in West Sacramento (Alternative C)	Under Alternative C only, worsening of intersection operations (see above) would worsen operating conditions for transit services.	TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (Alternative C)	LTS
Considerable Contributions to Significant Cumulative Impacts			
CI-2: Contribution to Cumulative Worsening of Traffic Operations (Alternative C)	Under Alternative C only, cumulative contribution to significant cumulative impacts (unacceptable level of service) at three West Sacramento intersections under opening year (2030); and at Jefferson Boulevard/Alameda Boulevard in West Sacramento during design year (2040).	TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (Alternative C)	LTCC
CI-5: Cumulative Contribution to Pollutant Emissions during Project Construction (Alternatives B and C)	Exceedances of the project-level thresholds would be cumulatively considerable.	AQ-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust	LTCC
CI-6: Contribution to Cumulative Noise Levels from Non-Transportation Sources in Exceedance of Local Standards (Alternatives B and C)	Temporary noise levels from use of heavy equipment during construction are predicted to exceed local standards for stationary sources in West Sacramento and Sacramento, contributing to cumulative noise levels in both cities. Noise control practices may not be feasible in all situations to reduce noise below the allowed limits.	NOI-1: Use Best Noise Control Practices during Construction	CC
CI-7: Contribution to Cumulative Loss of Cottonwood Riparian Forest (Alternatives B and C)	Cumulative contribution to the considerable loss of cottonwood riparian forest through removal of 1.112 acres (Alternative B) or 1.176 acres (Alternative C).	NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)	LTCC

Summary

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
<p>CI-8: Contribution to Cumulative Loss of Perennial Stream (Alternatives B and C)</p>	<p>Direct and indirect effects on the Sacramento River, a perennial stream, through placement of fill, rock slope protection, and bridge components in the river channel and on riverbanks could contribute to considerable cumulative impacts.</p>	<p>NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) WW-1: Compensate for Loss of Perennial Stream</p>	<p>LTCC</p>
<p>CI-9: Contribution to Cumulative Loss of Animal Species (Alternatives B and C)</p>	<p>Direct and indirect impacts of the project could contribute to the considerable cumulative loss of habitat for, and direct loss of, western pond turtle, white-tailed kite, migratory birds, bat species, Central Valley fall- and late fall-run Chinook salmon, white sturgeon, Sacramento splittail, Sacramento hitch, hardhead, Pacific lamprey, and western river lamprey.</p>	<p>AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities AS-4: Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers AS-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving AS-7: Develop and Implement a Hydroacoustic Monitoring Plan AS-8: Monitor Turbidity in the Sacramento River AS-9: Implement Cofferdam Restrictions AS-10: Prepare and Implement a Fish Rescue and Relocation Plan AS-11: Develop and Implement a Barge Operations Plan AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources NC-2: Conduct Environmental Awareness Training for Construction Employees NC-3: Conduct Periodic Biological Monitoring</p>	<p>LTCC</p>

Summary

Significant Impact	Impact Summary	Mitigation Measure	Significance after Mitigation
		NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover) NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat	
CI-10: Contribution to Cumulative Loss of Threatened and Endangered Species (Alternatives B and C)	Direct and indirect impacts of the project would considerably contribute to the cumulative loss of habitat for six federally listed species (VELB, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, the southern distinct population segment of North American green sturgeon, and delta smelt) and five state-listed species (Swainson's hawk, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, delta smelt, and longfin smelt). Both build alternatives could result in direct and indirect impacts that could contribute to cumulatively considerable impacts on the long-term health or stability of these species.	TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle TE-2: Conduct Focused Surveys for Nesting Swainson's Hawk prior to Construction TE-3: Purchase Channel Enhancement Credits for Impacts on Critical Habitat	LTCC

LTS = less than significant
 SU = significant and unavoidable
 LTCC = less than cumulatively considerable
 CC = cumulatively considerable and unavoidable

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Chapter 1 Proposed Project

1.1 Introduction

The City of West Sacramento, in cooperation with the City of Sacramento and the California Department of Transportation (Caltrans), proposes to construct a new bridge over the Sacramento River south of the Pioneer Bridge (US 50) to provide local interconnectivity across the river and between neighborhoods. The new connection would serve multiple modes of transportation and comply with current American Association of State Highway and Transportation Officials (AASHTO), Caltrans, and local agency design standards.

The project is subject to state and federal environmental review requirements because of use of 2014 Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants 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 West Sacramento is the lead agency under CEQA, with the City of 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 and the Memorandum of Understanding dated December 23, 2016, executed by FHWA and Caltrans.

This project is included in the Sacramento Area Council of Governments (SACOG) *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (2020 MTP/SCS) and in the SACOG *2021–2024 Metropolitan Transportation Improvement Program* (2021 MTIP). The proposed project is included in both plans with ID YOL19328. The project also is identified in the 2003 *Sacramento Riverfront Master Plan*, the 2011 *Sacramento River Crossings Alternatives Study*, the 2014 *Pioneer Bluff Transition Plan*, the 2015 *Broadway Bridge Feasibility Study*, the West Sacramento *General Plan 2035*, the I-5 Subregional Corridor Mitigation Program, Sacramento's *West Broadway Specific Plan*, and a plan currently being prepared—West Sacramento's *Pioneer Bluff and Stone Lock Reuse Master Plan*.

1.1.1 Project Location

The project would be located over the Sacramento River between the cities of West Sacramento and Sacramento, approximately 1,000 feet south of the existing Pioneer Bridge (Figure 1-1). The project limits include the combined area of each of the proposed project alternatives. In general, the project limits start in West Sacramento, along 15th Street at Jefferson Boulevard continuing east and over the Sacramento River into the City of Sacramento along Broadway to the 5th Street intersection. The project limits also extend along Jefferson Boulevard approximately 1,300 feet south of the 15th Street intersection to Alameda Boulevard, along South River Road approximately 1,300 feet south and 650 feet north of 15th Street, along Marina View Drive approximately 400 feet south of Broadway, along Front Street approximately 350 feet north and south of Broadway, along 3rd Street approximately 350 feet north of Broadway to X Street, and along 5th Street approximately 200 feet north and south of Broadway. The project limits include proposed improvements to the northbound Interstate 5 (I-5) off-ramp to Broadway.

The limits of the installation of a proposed fiber optic line that would be placed in West Sacramento to connect communications of the Broadway Bridge with the proposed replacement for the I Street Bridge—the future connection over the river between C Street and Railyards Boulevard—and the existing Tower Bridge are depicted on Figure 1-1 as extending north along Riverfront Street to Tower Bridge Gateway

and 3rd Street, ending at the intersection of 3rd Street and C Street. Last, staging areas that would be accessed via South River Road in West Sacramento and Front Street in Sacramento also are proposed and included in the project limits.

1.1.2 Background

1.1.2.1 Related Plans and Projects

The proposed Broadway Bridge is included in many planning documents developed by both the cities of West Sacramento and Sacramento. The following plans and projects relate to the proposed project in that they direct or define future development and land use within the project area that could be affected by the proposed project, or they provide context for the future land uses proposed in the project area.

Multi-Jurisdictional Plans and Programs

Sacramento Riverfront Master Plan

In 2003, the Cities of West Sacramento and Sacramento adopted the jointly prepared *Sacramento Riverfront Master Plan, a Partnership between the Cities of West Sacramento and Sacramento* (WRT, LLC/Solomon ETC 2003). The master plan is an update to two earlier plans from 1994, the *West Sacramento Riverfront Master Plan* and *Sacramento Riverfront Master Plan*. The current master plan describes the vision and framework for redevelopment of the riverfront and establishes four guiding principles: creating riverfront neighborhoods and districts, establishing a web of connectivity, enhancing the green backbone of the community, and creating places for celebrations (WRT, LLC/Solomon ETC 2003:2). The master plan identifies a river crossing from Pioneer Bluff to Broadway and calls for the bridge to be multi-modal.

I-5 Subregional Corridor Mitigation Program

In 2014, the Cities of West Sacramento and Sacramento, along with the City of Elk Grove, SACOG, and Caltrans, executed a Memorandum of Understanding to develop the I-5 Subregional Corridor Mitigation Program. In 2017, the voluntary program was adopted by West Sacramento and Sacramento as an in-lieu fee mitigation option for development projects that would result in significant effects on freeway mainline traffic volumes.

The in-lieu mitigation fee generates a portion of the funds needed for local transportation improvements within the Subregional Improvement Plan that would offset congestion impacts on local freeway mainlines by reducing vehicle delay and congested vehicle miles traveled. Local transportation projects identified in the plan, such as the proposed project, can reduce congestion on freeway mainlines by providing alternatives to the freeway for local trips. The Broadway Bridge would provide a local roadway connection alternative for travel between West Sacramento and Sacramento.

West Sacramento Plans and Projects

City of West Sacramento General Plan 2035

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) guides how the City should develop over time and specifies locations for various land uses, transportation improvements, new parks and open spaces, and other public infrastructure. *General Plan 2035* includes statements to promote the enhancement of river crossings and bridges (e.g., Mobility Element Policies M-2.11 and M-3.15) and to minimize barriers to accessibility such as the Sacramento River

(Mobility Element Policy M-1.8). The plan identifies a crossing of the Sacramento River between Pioneer Bluff and Broadway.

Pioneer Bluff Transition Plan

In West Sacramento, the Pioneer Bluff District is an approximately 125-acre area along a 1-mile stretch of South River Road. Current land uses include storage and distribution facilities for petroleum products, the West Sacramento Public Works Department corporation yard, and other industrial and commercial uses. In 2014, the City of West Sacramento approved the *Pioneer Bluff Transition Plan* (City of West Sacramento 2014). The plan discusses the de-industrialization and planning efforts needed to facilitate transition of the Pioneer Bluff District to urban land uses. The transition plan provides initial guidelines and actions needed for de-industrialization and coordination with city and regional planning activities. The de-industrialization process started prior to preparation of the transition plan and has continued as demonstrated by the following.

- **Decommissioning of Wastewater Treatment Plant.** In 2008, one of the first steps toward de-industrialization occurred. West Sacramento decommissioned the wastewater treatment plant located at the southern end of the Pioneer Bluff district.
- **Relocation of Cemex Cement Terminal.** In 2009, Cemex relocated its cement terminal operations from its riverfront location on South River Road at 15th Street. Demolition of the silos and other facilities at the site began in 2014. At the same site, decommissioning of the pier in the Sacramento River is currently underway.
- **Construction of the Mike McGowan Bridge.** The bridge, which opened to traffic in 2014, connects the Pioneer Bluff and Stone Lock Districts via the northern and southern segments of South River Road.
- **Acquisition and Decommissioning of Shell Oil Facility.** In 2017, the Port of West Sacramento secured an agreement to purchase the Shell Oil petroleum tank farm located on South River Road south of 15th Street. Through an agreement with the tank farm operator, operations of the tank farm will gradually phase out and be non-operational by April 2021.

The plans for de-industrialization of Pioneer Bluff also include relocation of the Union Pacific Railroad (UPRR) line known as the east-side rail line that parallels the east side of Jefferson Boulevard. Relocation of the tracks is discussed further below under *Yolo Rail Relocation*.

The Broadway Bridge roadway connection in West Sacramento would be in the Pioneer Bluff District.

Pioneer Bluff and Stone Lock Reuse Master Plan

The City of West Sacramento is preparing a master plan for the reuse of both the Pioneer Bluff and Stone Lock Districts. In preparation of the plan, a phased multi-modal transportation circulation network for the plan area was developed and approved by City of West Sacramento City Council in January 2018 (approved mobility network). For use by the proposed project, the City of West Sacramento summarized in a memorandum the approved mobility network and maximum employment and dwelling unit projections for the plan area (City of West Sacramento 2018). The memorandum also included the approximate timeline for implementation of the phases of the mobility network, and the timeline for reuse and development of the other land in the plan area.

The 10- to 15-year phase and the 15+ year phase of the approved mobility network were used to define the assumed interim (2030) and design year (2040) conditions in West Sacramento. The future condition assumptions are discussed further under Section 1.1.3, *Existing and Future No-Project Conditions* below.

Bridge District Specific Plan

The *Bridge District Specific Plan*, formerly the *Triangle Plan*, initially was adopted by the City of West Sacramento in 1993. A significantly updated version was adopted in 2009 (City of West Sacramento 2009). The *Bridge District Specific Plan* provides a framework for development of a waterfront-oriented urban district in an area of West Sacramento bounded by Tower Bridge Gateway, US 50, and the Sacramento River; the plan also includes a small area along the river south of US 50.

The northernmost roadway connection alternative for the Broadway Bridge in West Sacramento would be at the southern limits of the *Bridge District Specific Plan* area.

Riverfront Street Extension Project

As part of the implementation of the *Bridge District Specific Plan*, the City of West Sacramento is proposing to extend Riverfront Street approximately 0.15 mile as a two-lane roadway with sidewalks, lighting, and landscaping, from its terminus just south of Mill Street, underneath US 50, to a cul-de-sac. The extension project will also widen 5th Street between Mill Street and 15th Street, construct a Class IV bikeway and sidewalk, underground overhead utilities on the east side of 5th Street, and install new wet utilities, lighting, and landscaping. 5th Street will be restriped between Bridge Street and Mill Street to include a Class IV bikeway. Traffic signals at the 5th Street/Bridge Street intersection and at the 5th Street/South River Road/15th Street intersection will be modified to accommodate new pedestrian crossings and the Class IV bikeway. Mill Street will be signed and striped to be a Class III bikeway.

Yolo Rail Relocation

In 2014, the City of West Sacramento, along with the Cities of Davis and Woodland and Yolo County, created the Yolo Rail Realignment Partnership to jointly assess the feasibility of relocating and decommissioning rail lines within their jurisdictions. The assessments prepared for the Partnership identified four conceptual project phases (1, 2A, 2B, and 2C). Phase 2A includes removal of the east-side rail line and six at-grade crossings in West Sacramento, and the addition of a new rail connection between the UPRR mainline and the Port of West Sacramento spur rail terminus.

To advance the relocation of tracks in West Sacramento independently from the overall rail realignment project, in 2017 West Sacramento arranged for a more detailed engineering, environmental, and financial analysis of Phase 2A. The results of the analysis were documented in *Yolo Rail Realignment Project, Phase 2A Technical Analysis of Alternatives* (City of West Sacramento 2017). West Sacramento currently is exploring mechanisms to proceed with implementation of the report's recommendations.

Advancing Phase 2A of the rail relocation is consistent with the timeline for the phased multi-modal transportation circulation network adopted by West Sacramento City Council in 2018 and described in the memorandum titled *Pioneer Bluff and Stone Lock Reuse Master Plan–Broadway Bridge Integration* (City of West Sacramento 2018). The approved mobility network for Pioneer Bluff assumes that relocation of the UPRR east-side rail line would occur by 2030. Relocation of the east-side rail line is a necessary component of the redevelopment of Pioneer Bluff and facilitates transportation circulation patterns for the proposed Broadway Bridge.

Sacramento Plans and Projects

Sacramento 2035 General Plan

The *Sacramento 2035 General Plan* (City of Sacramento 2015) defines the guiding vision for the city and establishes citywide goals and policies. The General Plan citywide goals and policies for mobility specify constructing new multi-modal crossings over the Sacramento River (Policy M1.3.2a). The Citywide Circulation Diagram indicates a planned arterial crossing of the Sacramento River at Broadway.

Broadway Complete Streets Plan and Project

In 2016, the City of Sacramento approved the *Broadway Complete Streets Plan* (City of Sacramento 2016) that proposes improvements along Broadway from 3rd Street east to Franklin Boulevard. The first phase of the plan, from 3rd Street to 16th Street, is expected to be constructed in 2022. As part of the first phase, Broadway would be modified to have two travel lanes, a center two-way left-turn lane, buffered bike lanes, and on-street parking. ***

The new roadway connection and river crossing that would be created by the proposed project would connect with the improvements that are part of the Broadway Complete Streets Project.

West Broadway Specific Plan

The City of Sacramento developed a specific plan for an area called West Broadway. The 240-acre plan area generally is bounded by the Sacramento River to the west, US 50 and Broadway to the north, Muir Way and 5th Street to the east, and 4th Avenue and Merkley Way to the south. The Broadway Bridge connection in Sacramento is located within the West Broadway Specific Plan area, and the bridge is recognized in the plan as a future roadway connection.

The plan area includes the Northwest Land Park Planned Unit Development area, an infill project (under construction) known as The Mill at Broadway, Alder Grove Public Housing Community and Marina Vista Public Housing community, William Land Woods Affordable Housing Community; Leataata Floyd Elementary School, Health Professionals High School, approximately 32 acres of existing industrial land uses, Miller Regional Park, and the Sacramento Marina (Ascent Environmental 2020).

The *West Broadway Specific Plan* defines the land use regulations and policies for infill development and redevelopment within the plan area and identifies necessary public improvements to support new urban development. The anticipated development will be consistent with the framework of the General Plan, which anticipates a mix of traditional and urban-scale housing with neighborhood commercial uses. The City of Sacramento Community Development Department led the preparation of the Specific Plan (Ascent Environmental 2020). The plan was adopted by Sacramento City Council on August 25, 2020.

Central City Mobility Project

Following the installation of bikeways in downtown Sacramento in 2018, the Central City Mobility Project is the next step for implementing transportation improvements identified for the central city in the City's *Grid 3.0* and the *Central City Specific Plan*. *Grid 3.0* (City of Sacramento 2016b) integrates a number of transportation projects and programs to further enhance the downtown grid. The *City of Sacramento Central City Specific Plan* (City of Sacramento 2018) establishes a policy framework to guide development and infrastructure decisions in the central city area. The Central City Mobility Project will extend the bikeway network by adding 62 blocks of protected bikeways and converting two segments of one-way streets to two-way, including 5th Street from Broadway north to I Street.

1.1.2.2 River Crossing Studies

Sacramento River Crossing Alternatives Study

In 2011, a *Sacramento River Crossing Alternatives Study* (Fehr & Peers 2011) was prepared for the cities of West Sacramento and Sacramento that studied multiple Sacramento River crossing locations. Among the alternatives for new crossings considered in the study, a new bridge at the proposed Broadway Bridge location was included as an option for the South Market area (crossings south of Pioneer Bridge). Subsequent to preparation of the *Sacramento River Crossings Alternatives Study* in October 2011, Sacramento City Council defined by resolution that new crossings of the Sacramento River shall be “neighborhood friendly.” The definition of such crossings includes serving local, rather than regional, travel; being designed with a target speed equal to or less than the approach roadways; having capacity no greater than that already planned for existing approach roadways; serving all users; and, having architecturally pleasing and contextually appropriate aesthetics and dimensions.

Broadway Bridge Feasibility Study

In December 2015, the Cities of West Sacramento and Sacramento completed the *Feasibility Study, Broadway Bridge, West Sacramento, California* (feasibility study) (CH2M 2015) for the Broadway Bridge that analyzed four bridge crossing alignments. The four crossing locations identified in the study are listed below.

- Alignment A, connecting directly to Jefferson Boulevard at 15th Street in West Sacramento and Broadway in Sacramento.
- Alignment B, connecting directly to Jefferson Boulevard at 15th Street in West Sacramento, but reconfiguring the South River Road at 15th Street intersection and connecting to Broadway in Sacramento.
- Alignment C1/C2, connecting directly to South River Road in West Sacramento approximately 500 feet south of the existing South River Road at 15th Street intersection and connecting to Broadway in Sacramento.
- Alignment D, connecting directly to South River Road in West Sacramento approximately 1,300 feet south of the existing South River Road at 15th Street intersection and connecting to Broadway in Sacramento.

To develop alternatives for the proposed project, the alignments assessed in the feasibility study were reviewed with consideration of the approved future roadway network and additional design refinements. The feasibility study is available on the internet at

https://blob.cityofwestsacramento.org/city/depts/pw/major_projects/bbfs.asp.

1.1.3 Existing and Future No-Project Conditions

Because the proposed project would be constructed in the future, the conditions that are in the project area now will be different based on implementation of the planned future development and infrastructure improvements identified in the related plans and projects described in the *Background* section above. The following sections describe existing conditions and the assumed future conditions for the proposed project in two different future years: an interim year of 2030 and a design year of 2040.

1.1.3.1 Existing Conditions without the Project

In West Sacramento, Pioneer Bluff's existing non-conforming land uses are industrial, including tank farms and corporation yards. The road network comprises Jefferson Boulevard and South River Road as the north-south connection and 15th Street as the east-west connection. The area also includes the UPRR east-side rail line that runs in the north-south direction parallel to and just east of Jefferson Boulevard.

In Sacramento, the existing land uses in the project area are both industrial and recreational, including tank farms and Miller Regional Park/Sacramento Marina. The road network consists of Broadway as the east-west connection and Marina View Drive and Front Street as the north-south connections. A two-lane off-ramp from northbound I-5 connects to Broadway between Front Street and 3rd Street (south). The area also includes railroad tracks owned by California State Parks that run through the project area in the north-south direction.

1.1.3.2 Interim Year (2030) Conditions without the Project

West Sacramento

The approved mobility network was used to develop the network for the interim year (opening day 2030) conditions without the proposed project in West Sacramento. The land use plans for the area include pipeline and tank farm removal or relocation and de-industrialization of Pioneer Bluff.

The following assumptions are for the interim (opening day 2030) roadway network conditions without the proposed project (see Figure 1-2). The figure includes locations for a "Universal Street," a multi-modal urban street design concept.

- Realignment of 15th Street between Jefferson Boulevard and South River Road to approximately 300 feet south from its existing location.
- Rail Street constructed from Merkley Avenue to 15th Street.
- Eastbound US 50 on-ramp modifications constructed at South River Road.
- Riverfront Street extended to connect to South River Road.
- Widening of South River Road to a four-lane facility (two northbound and two southbound lanes) with a median or left-turn pocket, and a sidewalk on both sides of the road. At the US 50 on-ramp, the cross section would include two northbound left-turn lanes onto US 50. The widening would be from Mill Street to approximately 200 feet south of the new 15th Street and South River Road intersection.
- River Walk Trail extended south from Mill Street to run along the Sacramento River and extended west along the Barge Canal to connect to Jefferson Boulevard.
- A planned transportation maintenance facility designed under US 50 near Riverfront Street. The facility would include storage tracks and a maintenance building.
- Relocation of the UPRR east-side rail line that parallels Jefferson Boulevard (also known as the Sacramento Northern Railway). Yolo County and the City of West Sacramento plan to relocate the UPRR tracks. The relocation is part of the de-industrialization effort being made in the Pioneer Bluff area (City of West Sacramento 2014).

Deviations from the above roadway network that are part of the proposed project are noted in Section 1.3.1, *Build Alternatives* below.

Sacramento

The design of the Broadway Complete Street Project was used to develop the interim and design year conditions in Sacramento. The following assumptions are for the interim (opening day 2030) conditions in Sacramento without the proposed project.

- Broadway from 3rd Street to Franklin Boulevard converted from a four-lane to a two-lane facility with a two-way left-turn lane.
- Buffered bike lanes on Broadway.
- On-street parking on Broadway in locations where it can be accommodated.

1.1.3.3 Design Year (2040) Conditions without the Project

West Sacramento

The approved mobility network was used to develop the network for design year (2040) conditions without the project in West Sacramento. The roadway network would include the network items listed above for the interim year, in addition to those listed below (also see Figure 1-3).

- South River Road realigned to the east.
- Rail Street extended from 15th Street to Stone Boulevard.
- Riverfront Street extended from Jefferson Boulevard to South River Road.
- East-west local roadway connections from Jefferson Boulevard to South River Road constructed at Circle Street, Alameda Boulevard, 17th Street, and 19th Street.

Deviations from the above roadway network that are part of the proposed project are noted in Section 1.3.1, *Build Alternatives* below.

Sacramento

In Sacramento, design year conditions without the proposed project were assumed to be the same as those listed for the interim year.

1.2 Purpose and Need

1.2.1 Purpose

The primary purpose of the project is to increase the number of river crossings over the Sacramento River between West Sacramento and Sacramento. The objectives of the project are listed below.

- Increase the number of river crossings that meet current design standards and encourage travel by walking, bicycling, low-energy vehicles, and public transit.
- Increase the number of persons that can safely, efficiently, and reliably cross the river.
- Increase options for emergency response teams to cross the river.
- Increase options for evacuations.
- Improve the connectivity to, and accessibility of, business, recreational areas, and new or redevelopment opportunity sites located in the urban core of Sacramento and West Sacramento without affecting the use of Miller Regional Park or the Sacramento Marina and without precluding,

or negatively restricting, redevelopment options in the Pioneer Bluff or West Broadway areas of the cities.

- Reduce trip length distances across the river between major origins and destinations.
- Reduce the growth in transportation-related energy use, air pollution emissions, and greenhouse gas (GHG) emissions.
- Reduce the growth in vehicle traffic on local neighborhood streets, especially cut-through traffic.
- Alleviate the growth of local trips on the State Highway System.
- Provide a project design that does not preclude the future addition of light-rail, streetcar, or other mass transit mode, as a separate stand-alone project.
- Provide a new public crossing that meets the requirements of Sacramento’s Neighborhood Friendly Bridge policy that the Sacramento City Council adopted by resolution on October 18, 2011.

1.2.2 Need

The project is needed for the following reasons.

- Limited connectivity across the river creates longer trip lengths, which discourage walking and bicycling.
- Longer trip lengths create dependence on automobile use that generates negative public health effects and adverse environmental effects such as emissions of air pollutants and GHGs.
- Limited connectivity across the river creates concentrated vehicle traffic flows on existing bridges and their connecting approach roadways, resulting in undesirable travel delays for vehicular traffic, including public bus transit during weekday peak periods and special events.
- Limited connectivity across the river reduces options for emergency response teams, thereby increasing response times and limiting alternatives for evacuations.
- Limited connectivity across the river is a barrier to economic activity, social exchanges, and recreational opportunities and limits access to jobs within the urban core of Sacramento and West Sacramento.
- Limited connectivity to the riverfront reduces the potential to achieve planned urban development and redevelopment of opportunity sites identified in the adopted plans of Sacramento and West Sacramento.
- Limited connectivity reduces opportunities to use the riverfront for enjoyment and recreation.
- Peak AM/PM congestion is caused by local intercity commuters using the State Highway System as a result of having few local river crossing options.

Construction of the proposed project has independent utility because it can provide a local roadway connection between West Sacramento and Sacramento and their existing roadway networks that does not rely on construction of other facilities to operate. The project would meet the purpose and need without being dependent on construction of other projects or improvements.

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 minimizing environmental impacts where feasible. The proposed project is in both Yolo and Sacramento Counties and would cross over the

Sacramento River between the cities of West Sacramento and Sacramento. The proposed project is located approximately 400 to 1,000 feet south of the Pioneer Bridge (Figure 1-1). The total length of the project is approximately 1.0 mile from Jefferson Boulevard in West Sacramento to the 5th Street and Broadway intersection in Sacramento.

The purpose of the project is to increase the number of river crossings over the Sacramento River between West Sacramento and Sacramento. The proposed project would construct a new public crossing of the Sacramento River consistent with the adopted findings of the *Sacramento River Crossings Alternatives Study* for the South Market area. The new bridge would meet the requirements of Sacramento's Neighborhood Friendly Bridge policy (adopted by Sacramento City Council Resolution on October 18, 2011). In addition, the project would include pedestrian and bicycle facilities in the new public crossing that meet Americans with Disabilities Act (ADA) requirements, and would facilitate connections to and from the new crossing and the Sacramento River Parkway and West Sacramento Riverwalk Trail. 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 is needed because of the existing limited connectivity and longer trip lengths currently required.

The build alternatives under consideration are two alignments for the new bridge and approach roadways. The lettering of each build alternative reflects its similarity to alignments considered in the feasibility study. Figure 1-4 depicts the location of the build alternatives. Appendix A includes preliminary plan view drawings, by phase. A No Build (No-Project) Alternative also is considered.

- Alternative B would realign 15th Street to connect to Jefferson Boulevard in West Sacramento and connect to Broadway at 5th Street in Sacramento. This alignment would require modification to the planned mobility network for South River Road and 15th Street in Pioneer Bluff.
- Alternative C (a modified Alignment C from the *Broadway Bridge Feasibility Study*) would connect as a "T" intersection to South River Road in West Sacramento and connect to Broadway at 5th Street in Sacramento. This alignment would require modification to the planned mobility network for South River Road in Pioneer Bluff.
- The No Build (No-Project) Alternative would *not* build a bridge across the Sacramento River from the Pioneer Bluff area of West Sacramento to Broadway in Sacramento. The future no-project conditions planned by both cities would be developed as proposed.

1.3.1 Build Alternatives

The build alternatives proposed to satisfy the purpose and need for the project are discussed in this section. Each alternative includes design features common to both build alternatives such as construction of a new bridge across the Sacramento River and roadway modifications in West Sacramento and Sacramento. The common design features are discussed first, followed by the unique features of each alternative.

1.3.1.1 Common Design Features of the Build Alternatives

The proposed project would construct a new bridge over the Sacramento River between West Sacramento and Sacramento to facilitate vehicular and multi-modal traffic over the river and reduce traffic congestion, improve multi-modal transportation, and increase emergency response options.

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

New Bridge Construction and Roadway Modifications

Bridge Construction

The proposed project would construct a new bridge over the Sacramento River, south of the Pioneer Bridge. The total length of the new bridge would vary from approximately 800 to 1,020 feet, with an up to 83-foot-wide deck consisting of two vehicle lanes, a median, on-street Class II buffered bike lanes, and sidewalks along both sides of the bridge. The bridge would include two fixed-span approach structures that tie into the banks of the river; the structures would vary from approximately 200 to 300 feet in length on the West Sacramento bank and from approximately 450 to 600 feet in length on the Sacramento bank. The center span of the bridge would be movable (see below under *Bridge Type* for more information on the movable span). The bridge soffit elevation would be set a minimum of 3 feet above the 200-year water surface elevation to comply with the Central Valley Flood Protection Board (CVFPB) freeboard requirements. Rock slope protection (RSP) (assumed 1/4 ton stone weight, machine positioned [i.e., Method B]) would be installed on the river side of the bridge abutments both above and below the ordinary high-water mark (OHWM) to stabilize approximately 400 linear feet of shoreline on each side of the river.

The two fixed-span approach structures would have a superstructure depth (or total bridge thickness) of approximately 4 to 10 feet depending on the selected alternative. Each approach structure would be a one- to six-span bridge.

The required length of the movable span portion of the bridge was determined through coordination with the USCG. The movable span would provide a 170- to 230-foot clear channel opening (depending on the alignment alternative) that would line up with the western pier of the existing Pioneer Bridge (US 50 bridge) located upstream. The new bridge would have the same minimum vertical clearance of 59 feet above the maximum river elevation of 31 feet in the open position that the existing Pioneer Bridge provides (measured to the 29 National Geodetic Vertical Datum).

Bridge Type

One of three movable span types would be constructed: a vertical lift span, a swing span, or a bascule span. Each bridge alignment alternative could be built as any one of the three types. To address the possible impacts of the bridge type that ultimately is built, the largest in- and over-water footprint and the greatest number of construction-related impacts of the three types were assumed for the analysis.

After an alignment alternative is selected and the project is approved, final aesthetic design criteria would be developed in cooperation with the selected bridge architect. Some of the guiding principles of the bridge aesthetics would be how the bridge fits within the surrounding setting and within the overall Sacramento region history, values, and vision. Selection of the type of movable span would be part of the aesthetic design of the bridge.

Regardless of the bridge type that is constructed over the Sacramento River as part of the proposed project, a bridge fender system would be installed around the movable span piers to protect the piers from errant watercrafts that are navigating along the river.

A brief description of each of the three movable span types follows.

- *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 upstream of the proposed Broadway Bridge is an example of a vertical lift span bridge.

- *Swing span* bridges rotate the movable span on a center pivot pier, allowing navigational traffic to pass the bridge on either side of the center pier. Because of the span lengths required by the USCG for the proposed project and the requirement of creating a neighborhood-friendly river crossing with low vertical grades, the superstructure of a swing span most likely would be a through-truss design (the truss would be cross-braced above and below vehicular traffic). The existing I Street Bridge is an example of a swing span bridge.
- *Bascule span* bridges operate 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.

Over-Water Construction Site Access

Temporary trestles and barges would be used to provide the contractor with access to the river portion of the project area. Together, the trestles and barges would be used to stage construction materials, to provide a working platform for cranes, and for general construction support. The temporary trestles would consist of steel piles that would be driven into place with an impact hammer. Although the temporary work platforms would be removed at the end of the first construction season before the onset of winter, the temporary trestle piles could remain in place for the duration of construction. The barges would be anchored to the river bottom with piles that would be driven into place with an impact hammer. Up to two barges would be anchored in the river at one time. The barges would be repositioned in the channel throughout construction only as needed to complete the work. The barges and temporary piles would be removed after bridge construction is completed.

In-Water Construction Activities

In-water construction activities consist of those that would occur below the OHWM. The activities would be limited to the period of May 1 to November 30 during the two construction seasons. The in-water construction window allows sufficient time for most in-water work to be completed within the first “in-water work season,” thus limiting potential impacts on fish and other species from the activities to primarily one construction season. The in-water work window was selected after consideration of agency in-water work restrictions, timing of the presence of multiple special-status fish species, timing of breeding seasons for other special-status species in the project area, and other constraints. Other construction activities occurring above the OHWM (e.g., work on the abutments and approach superstructure) would not be limited to the in-water window of May 1 to November 30. Additional information on sequencing of construction activities is provided in Figure 1-5.

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. In-water construction activities would include the following.

- Installation and removal of steel piles with a vibratory hammer and an impact hammer for the temporary falsework platforms (trestles).
- Installation and removal of steel piles with an impact hammer for anchoring barges.
- Installation of steel sheet piles with a vibratory driver for temporary cofferdams.

- Installation of steel piles for the piers with an impact hammer for the new bridge (although work would occur within dewatered cofferdams, underwater sound would propagate beyond the dewatered cofferdams).
- Installation of steel casings for the piers with a vibratory hammer or hydraulic oscillator/ rotator system for the new bridge.
- Installation of concrete piles with an impact hammer for the new bridge fender system.

Above-Water Construction Activities

After the temporary cofferdams are installed around the piers, forms would be constructed and concrete poured in the dewatered cofferdams to construct the pile caps. Work then would focus on the pier column construction. After the casings are installed, a rebar cage would be placed into the pile, and concrete would be poured into the steel shell. A cast-in-place concrete pier cap would be placed atop the columns to serve as the substructure.

Work then would focus on constructing the approach superstructure. The movable span superstructure likely would be constructed offsite, floated in, and erected when construction of the foundations is completed.

Bridge Construction Sequence

Figure 1-5 shows the sequencing of construction activities. All in-water work would be conducted between May 1 and November 30.

Roadway Modifications

Proposed roadway modifications that would be part of all build alternatives are described below. Roadway modifications dependent on a specific alternative are described in Section 1.3.1.2, *Unique Features of Build Alternatives*.

City of West Sacramento

In West Sacramento, all build alternatives would include a new intersection for the bridge roadway at South River Road.

City of Sacramento

In Sacramento, common roadway modifications include repaving and reconstructing the sidewalk along Broadway from the new bridge east to 5th Street. Roadway modifications also would include a modified intersection at Marina View Drive and Broadway; widening of the northbound I-5 off-ramp at Broadway to two left-turn lanes and one right-turn lane; and improvements at intersections of Broadway and Front Street, 3rd Street (south), 3rd Street (north), and 5th Street to transition bridge traffic into the roadway network.

Class I Bikeway Improvements

City of West Sacramento

A future Class I River Walk trail extension is planned in West Sacramento. The trail is proposed within the levee setback. As part of the proposed project, the grade of the trail would be separated to allow it to

pass under the proposed bridge structure. Cyclists and pedestrians approaching Broadway Bridge in either direction from the trail would have the option to continue along the trail under the new structure, avoiding the need to cross the roadway, or to connect to the structure and cross the river into Sacramento or travel westward in West Sacramento.

City of Sacramento

The existing Class I Sacramento River Parkway Trail would be reconstructed approximately 1,000 feet north and 300 feet south of Broadway as part of the proposed project. To reconstruct the trail, permanent right-of-way acquisition from four adjacent private parcels would be necessary (acquisitions and easements are discussed in detail in Section 1.3.1.2, *Unique Features of Build Alternatives* below.). The trail would be grade-separated under the proposed bridge structure. Cyclists and pedestrians approaching Broadway in either direction would have the option to continue along the trail under the new structure, avoiding the need to cross the roadway, or to connect to the structure and cross the river into West Sacramento or travel westward on Broadway in Sacramento.

Access to Navigable Rivers

The proposed project would maintain and improve existing public access to the navigable Sacramento River for public recreational purposes. The nearest public access to the Sacramento River, including boat access, is the Sacramento Marina boat ramp at the southern end of Sacramento's Miller Regional Park (just south of the proposed bridge). Boat access also is available from West Sacramento's Broderick Boat Ramp, about 1.7 mile upstream of the project. The proposed project would improve access to the Sacramento River by improving access to existing boat ramps and moving the Sacramento River Parkway Trail closer to the river within the limits of the proposed project. Access to the river from the banks also would be publicly available from planned Class I trails along the river levee in West Sacramento.

Bridge Communication Fiber Optic Line

A fiber optic cable is proposed to interconnect operational communications of the proposed project (the new Broadway Bridge), the Tower Bridge, and the I Street Replacement bridge. The fiber optic line would be placed in West Sacramento under Riverfront Street. From the proposed project, the fiber optic line would run north until Riverfront Street turns into 3rd Street and would end at the intersection of 3rd Street and C Street (see Figure 1-4.). The fiber optic line would be installed within an existing City of West Sacramento-owned conduit along Riverfront Street to Tower Bridge Gateway. North of Tower Bridge Gateway, a new conduit would be placed within the 3rd Street right-of-way north to the intersection of 3rd Street and C Street. The new conduit would cross under the UPRR tracks west of the I Street Bridge. To minimize ground disturbance, the construction method for the new fiber optic line would be jack and bore.

Stormwater Drainage Management

Stormwater and road runoff drainage for the proposed roadway would be conveyed in a new storm drain system installed approximately 5 feet below the finished road grade of South River Road, 15th Street, and Circle Street in West Sacramento and of Broadway in Sacramento. New storm drain outfalls into the Sacramento River would be constructed near each of the bridge abutments in West Sacramento and Sacramento.

Staging, Storage, and Proposed Access during Construction

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 construction equipment when not in use. In West Sacramento, staging area options are the West Sacramento Corporation Yard (1951 South River Road) or the Shell property recently purchased by the Port of West Sacramento (1509 South River Road). Both staging areas in West Sacramento would be accessed via South River Road and are options on the condition that they are still available (have not been redeveloped) at the time the proposed project is constructed.

In Sacramento, one option for a staging area would be closing Broadway to traffic west of Front Street and using the road as a staging area, with access via Broadway to the east. This option would require a traffic detour for continued access to Marina View Drive using Front Street and Miller Park Circle. Another staging area option in Sacramento is use of a vacant lot north of the California Automobile Museum, with access via Front Street.

Staging areas would be in use throughout the construction duration; the areas would be returned to their pre-project conditions at completion of the project.

Utility Relocations

Access points to several public and private underground utilities would need to be adjusted to the new ground elevation as part of the proposed project, including access to existing underground electric, water, sewer, gas, and communication facilities within Broadway, South River Road, 15th Street, and Jefferson Boulevard. Overhead electric and communication facilities may need to be relocated to match new roadway widths and alignments. Two existing gas transmission lines, Kinder Morgan and Pacific Gas and Electric (PG&E), and a communication line run under the Sacramento River between West Sacramento and Sacramento in the vicinity of the proposed bridge. The proposed project would not create a conflict with the location of these three utility lines. Utility relocations and grade adjustments would be conducted prior to or during construction. As part of the final project design process, prior rights would be used to determine who is responsible for the utility relocations.

Traffic Management and Detours during Construction

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

In West Sacramento, to construct the proposed project—including the new intersection at South River Road, a portion of South River Road would be closed to traffic. Closure of 15th Street also may be necessary. Travelers on South River Road south of the project area needing to get to South River Road north of the project area would be detoured around the project to the south and directed to travel over the Mike McGowan Bridge, turn right onto Locks Drive, right onto Jefferson Boulevard, right onto Tower Bridge Gateway, and then right onto 5th Street that becomes South River Road. The detour would be repeated in reverse for travelers on South River Road north of the project area with the desire to travel south on South River Road.

In Sacramento, construction of street widening and sidewalk improvements under the I-5 viaduct structures would be phased to allow traffic access to Front Street for the duration of construction. Miller Reginal Park and Sacramento Marina traffic would travel on westbound Broadway, turn left onto southbound Front Street, right onto Miller Park Circle, and then left onto Marina View Drive. About 3,400 feet of the Sacramento River Bike Trail would be closed north and south of Broadway, and

detoured to the bike lane on Front Street between the Sacramento Marina and where the Sacramento River Bike Trail meets the R Street bicycle/pedestrian bridge.

Project Construction Sequence

The project may be constructed in two phases or in a single phase. The decision to construct in one or two phases will be driven by the extent of redevelopment and implementation of the approved mobility network in the Pioneer Bluff area of West Sacramento at the time project construction starts. If constructed in two phases, an interim (opening day) design phase for the proposed project would include constructing the new bridge and approach roadways with temporary pavement transitions along the existing alignment of South River Road. Construction of this first phase is expected to take approximately 36 months, with two seasons of in-water work. A subsequent phase, the design year phase, would take approximately 6 months and would complete the remaining project roadway construction consistent with full buildout of the approved mobility network (Figure 1-3). The roadway connection to the bridge and all other project improvements in Sacramento would be constructed during the first phase. If the project is built in a single phase, construction is expected to take 36 months. Information on the sequencing of construction activities is provided in Figure 1-5.

Environmental Commitments

This project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections found in Chapter 2.

Each project build alternative includes environmental commitments that are part of the project description. The environmental commitments, such as best management practices (BMPs), are to be considered in conducting the environmental analysis and determining effects and findings. The purpose of environmental commitments is to reflect and incorporate best practices into the project that avoid, minimize, or offset potential environmental effects. Note: The term “mitigation” is specifically applied in this document only to designate measures required to reduce environmental effects triggering a finding of significance. These best practices tend to be relatively standardized and compulsory; they represent sound and proven methods to reduce the potential effects of an action. The rationale behind including environmental commitments is that the project proponent commits to undertake and implement these measures in good faith as part of the project in advance of effect findings and determinations in order to improve the quality and integrity of the project, streamline the environmental analysis, and demonstrate responsiveness and sensitivity to environmental quality.

Runoff and Erosion Control Practices

As is standard with all construction projects that disturb soil, the construction contractor would be required to install temporary BMPs to control any runoff or erosion from the project site into the surrounding storm drain systems and waterways in order to be compliant with local, state, and federal water quality regulations. Temporary BMPs would be installed prior to any construction operations and would be in place for the duration of the contract. Removal of the temporary BMPs would be the final operation, along with project site cleanup.

In-Water Construction Activity Timing

All in-water construction work, including 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 will occur 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 only during daylight hours to provide fish in the affected reaches of the Sacramento River an extended quiet period during nighttime hours for feeding and unobstructed passage.

In-Water Sound and Shock Level Minimization

The following BMPs would be implemented during construction of pier columns for the bridge and during placement and driving of piles and temporary sheet piles for cofferdams (if needed). The cofferdams would be removed when pier column construction is completed.

- Install bubble curtains around piles during impact driving and proofing operations to dampen underwater sound shockwaves.
- Conduct several dry or dead blows with the hammer initially to frighten fish away from the pile before the pile is driven or proofed with an impact pile driver. Implementation of several dry or dead blows with the hammer initially to frighten fish away is being proposed because the use of a cushioning block or similar feature would result in more strikes being needed to drive the piles, thereby resulting in a greater chance of exceeding the cumulative sound exposure levels (SELs) without significantly reducing peak SELs.

Transportation Management Plan

A Transportation Management Plan (TMP) would be developed for use during project construction. The TMP would incorporate strategies described in the *California Manual on Uniform Traffic Control Devices* (California Department of Transportation 2020) and Caltrans' *Transportation Management Plan Guidelines* (TMP Guidelines) (California Department of Transportation 2015), selected in accordance with the scale and scope of the project and the variety of transportation facility types and jurisdictions in the project area. The TMP would direct the process and procedures for dissemination of information to the public and motorists, provide guidance for implementation of incident management, describe construction strategies for traffic handling and guiding traffic through work zones, address traffic demand management during construction, and describe and direct the implementation of alternate routes or detours. As part of the implementation of the TMP, the following emergency service providers, and other identified providers, as appropriate, would be notified prior to any road closures.

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

Environmental Stewardship

Construction and implementation of the proposed project would conform with applicable policies in the elements of the West Sacramento and Sacramento General Plans, requirements of the West Sacramento and Sacramento city codes, and Caltrans *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:225–240). In addition to environmental protections

established by state and federal law, City and Caltrans policies and standards address responsibilities for many environmental areas, such as air pollution; noise limits; protection of lakes, streams, and other water bodies; handling of hazardous materials; use of pesticides; safety; sanitation; convenience for the public; and damage or injury to any person or property as a result of construction.

1.3.1.2 Unique Features of Build Alternatives

Two combined bridge and roadway alignments are being considered (Figure 1-4). While each could be constructed in a single phase, the discussion of each alternative's unique features is separated into the components that would be constructed as part of an interim (opening day) phase and the remaining components that would be constructed as part of the design year phase. At the interim year, the new bridge across the Sacramento River would be constructed and open to traffic. By the design year, the remaining improvements and roadway connections proposed as part of the project would be constructed to allow the full, final design of the proposed project to be operational. See Section 1.1.3, *Existing Conditions* for interim and design year condition assumptions without the project. If the project is constructed in a single phase, the efforts needed to construct the new bridge and the ultimate (design year) roadway alignment configuration would be completed at the same time.

Appendix A includes preliminary plan view drawings for each alternative, by phase.

Deviations from the approved mobility network in West Sacramento that are part of the proposed project are noted by alternative in the subsections below.

Alternative B

Alternative B would realign 15th Street between Jefferson Boulevard and South River Road, consistent with the approved mobility network shown in Figure 1-2, to connect the new bridge to the roadway network in West Sacramento. The bridge would connect to Broadway on the Sacramento side.

Interim Year Features of Alternative B

Under Alternative B, project features that would be constructed and in operation by 2030 include the following.

- New bridge and roadway modifications, including a redesigned intersection connection for the bridge at 15th Street and new turn pockets on South River Road to facilitate traffic turning movements at the bridge connection in West Sacramento.
- Stormwater drainage management features.
- Utility relocations.
- Fiber optic cable installation for operational communications.

In West Sacramento, modifications to the approved mobility network would be necessary for construction of Alternative B. These modifications include the following.

- Constructing a northbound right-turn pocket on South River Road at 15th Street.
- Constructing a southbound right-turn pocket on South River Road at 15th Street.

In Sacramento, Alternative B requires the following modifications to the existing (or planned opening day) conditions.

- Reconstructing 350 feet of Marina View Drive to provide for a new connection to Broadway.

- Modifying property access along Broadway west of I-5.

The existing at-grade State Parks railroad crossing at Broadway would remain in the same location.

Construction of the interim year design of Alternative B would create 2.0 acres of new impervious surface.

RSP would be installed on the river side of the bridge abutments both above and below the OHWM to stabilize the shoreline on each side of the river. The estimated linear feet and area, and the volume above and below the OHWM are shown in Table 1-1.

Table 1-1. Estimated Rock Slope Protection Needed for Alternative B

Location	Linear Feet of Shoreline	Area (square feet)	Area below OHWM (square feet)	Volume below OHWM (cubic yards)	Volume above OHWM (cubic yards)
West Sacramento shoreline	426	31,033	12,833	1,569	2,224
Sacramento shoreline	398	27,589	11,293	1,380	1,992
Total	824	58,622	24,126	2,949	4,216

OHWM = ordinary high-water mark.

Design Year Features of Alternative B

Under Alternative B, project features that would be constructed by 2040 include the following.

- Roadway alignment modifications in West Sacramento necessary to shift the alignment of South River Road and connection of the new bridge to the east to conform with the approved mobility network alignment of South River Road.
- Roadway striping and turn pocket additions on Jefferson Boulevard, South River Road, and Alameda Boulevard.

In both West Sacramento and Sacramento, no additional modifications to the assumed design year conditions without the project would be needed.

Construction of the design year features of Alternative B would not increase impervious surface area from that created during the interim year phase.

Property Acquisitions, Alternative B

Under Alternative B, permanent property acquisitions or permanent easements would be necessary to construct the proposed project. Temporary construction easements (TCEs) also would be needed. The acquisitions described below assume that the project is constructed in two phases. The acquisitions that would be needed for the interim and ultimate design years are identified in Table 1-2.

Table 1-2. Property Acquisitions Needed for Alternative B

Parcel Number	Total Parcel Size (acres)	Interim Year Permanent Acquisition (acres)	Design Year Permanent Acquisition (acres)	Interim Year TCE (acres)	Design Year TCE (acres)	Business Relocation Necessary? (yes, no)
West Sacramento						
058-027-006	2.579		0.023		0.013	No
058-027-014	7.568	0.120		0.015		No
058-028-003	3.530	1.005	0.056	0.089	0.012	No
058-028-005	6.010	2.920	0.200	0.325	0.065	No
058-028-006	0.473	0.056		0.055		Yes
058-028-007	0.911	0.177		0.027		Yes
843-57-5-7	6.477	0.064		0.019		No
Sacramento						
009-0012-008	1.598	0.220		0.074		Yes*
009-0012-038	0.033	0.033				No
009-0012-064	2.673	2.673				No
009-0012-065	0.793	0.793				No
009-0012-071	2.494	0.378		0.159		Yes*
009-0012-072	6.903	0.049		0.068		Yes*
009-0020-001	1.525	0.605		0.083		No
009-0030-054	5.616	0.657		0.274		Yes*

TCE = temporary construction easement.

* Assumes the fill slopes shown along realigned Broadway in Appendix A. No business relocation would be necessary if retaining walls are constructed instead of fill slopes to support the increase in elevation and widening of Broadway between the bridge and Front Street.

Alternative C

Alternative C (modified from the feasibility study) would connect to South River Road at a new intersection between 15th Street and Circle Street on the West Sacramento side and would connect to Broadway on the Sacramento side.

Interim Year Features of Alternative C

Under Alternative C, project features that would be constructed and in operation by 2030 include the following.

- New bridge and roadway modifications, including construction of a new “T” intersection on the existing alignment of South River Road.
- Stormwater drainage management features.
- Utility relocations.
- Fiber optic cable installation for operational communications.

In West Sacramento, modifications to the approved mobility network shown in Figure 1-2 would be necessary for Alternative C. These modifications include the following.

- Creating a “T” intersection on South River Road between 15th Street and the future Circle Street location.
- Constructing an interim northbound right-turn pocket on the existing alignment of South River Road at Broadway.
- Constructing an interim southbound left-turn pocket on the existing alignment of South River Road at Broadway.

In Sacramento, Alternative C requires the following modifications to existing conditions.

- Reconstructing 350 feet of Marina View Drive to provide for a new connection to Broadway.
- Modifying property access along Broadway west of I-5.

The existing at-grade State Parks railroad crossing at Broadway would remain in the same location.

Construction of the interim year design of Alternative C would create 2.2 acres of new impervious surface.

RSP would be installed on the river side of the bridge abutments both above and below the OHWM to stabilize the shoreline on each side of the river. The estimated linear feet and area, and the volume above and below the OHWM are shown in Table 1-3.

Table 1-3. Estimated Rock Slope Protection Needed for Alternative C

Location	Linear Feet of Shoreline	Area (square feet)	Area below OHWM (square feet)	Volume below OHWM (cubic yards)	Volume above OHWM (cubic yards)
West Sacramento shoreline	466	29,455	10,779	1,317	2,283
Sacramento shoreline	395	19,363	8,652	1,058	1,309
Total	861	48,818	19,431	2,375	3,592

OHWM = ordinary high-water mark.

Design Year Features of Alternative C

Under Alternative C, project features that would be constructed by 2040 include the following.

- Roadway alignment modifications in West Sacramento necessary to shift the alignment of South River Road and the “T” intersection connection of the new bridge approximately 100 feet to the east to conform with the approved mobility network alignment of South River Road.
- Roadway striping and turn pocket additions on Jefferson Boulevard, South River Road, and Alameda Boulevard.

In West Sacramento, additional modifications to the approved mobility network would be necessary to construct the design year components of Alternative C. Leading up to the design year, development in Pioneer Bluff will occur following a new alignment of South River Road (road shifting to the east as shown in Figure 1-3). After construction of the proposed project in the interim year, the new alignment of South River Road would require the proposed project to reconstruct the bridge’s roadway connection to match. Modifications to the approved mobility network in West Sacramento include the following.

- Creating a new “T” intersection matching the new more eastern alignment of South River Road between 15th Street and Circle Street.

- Constructing the final northbound right-turn pocket on South River Road at Broadway.
- Constructing the final southbound left-turn pocket on South River Road at Broadway.

In Sacramento, no additional changes from the interim design are needed.

Construction of the design year features of Alternative C would not increase impervious surface area from that created during the interim year phase.

Property Acquisitions, Alternative C

As with Alternative B, permanent property acquisitions or permanent easements would be necessary for Alternative C. TCEs also would be needed. The acquisitions described below assume that the project is constructed in two phases. The acquisitions that would be needed for the interim and ultimate design years are identified in Table 1-4.

Table 1-4. Property Acquisitions Needed for Alternative C

Parcel Number	Total Parcel Size (acres)	Interim Year Permanent Acquisition (acres)	Design Year Permanent Acquisition (acres)	Interim Year TCE (acres)	Design Year TCE (acres)	Business Relocation Necessary? (yes, no)
West Sacramento						
058-027-006	2.579	0.777	0.810	0.080	0.058	Yes
058-027-007	0.450	–	0.104	–	0.025	No
058-027-014	7.568	2.762	–	0.102	–	Yes
058-028-005	6.010	0.680	0.136	0.137	0.071	No
Sacramento						
009-0012-008	1.598	0.223	0.223	0.074	0.074	Yes*
009-0012-038	0.033	0.033	0.033	0.000	0.000	No
009-0012-064	2.673	2.673	2.673	0.000	0.000	No
009-0012-065	0.793	0.793	0.793	0.000	0.000	No
009-0012-071	2.494	0.394	0.394	0.158	0.155	Yes*
009-0012-072	6.903	0.063	0.063	0.074	0.069	Yes*
009-0020-001	1.525	0.682	0.682	0.082	0.081	No
009-0030-054	5.616	0.672	0.672	0.428	0.270	Yes*

TCE = temporary construction easement.

* Assumes the fill slopes shown along realigned Broadway in Appendix A. No business relocation would be necessary if retaining walls are constructed instead of fill slopes to support the increase in elevation and widening of Broadway between the bridge and Front Street.

1.3.2 No Build (No-Project) Alternative

Under the No Build Alternative, a bridge across the Sacramento River from the Pioneer Bluff area of West Sacramento to Broadway in Sacramento would not be built. In West Sacramento, the redevelopment of Pioneer Bluff would continue as Riverfront Mixed-Use following the City’s General Plan and the guidance in the *Pioneer Bluff Transition Plan* (approved in 2014), the *Pioneer Bluff and Stone Lock Reuse Master Plan* (pending approval), and the approved mobility network (as approved by West Sacramento City Council in 2018).

In Sacramento, plans for, and implementation of, roadway improvements and redevelopment would continue consistent with the *West Broadway Specific Plan* and the *Broadway Complete Streets Plan*.

1.4 Comparison of Alternatives

The selection of an alternative for the project will be based on how well an alternative satisfies the purpose of the project and meets the specific project objectives identified compared to other alternatives. In addition, the consideration of alternatives will include the following factors.

- Level of change needed to the approved mobility network and redevelopment plans.
- Level of effect on the environment and need to reduce adverse effects.
- Overall project cost, after purpose and objectives are considered.

The environmental effects of Alternatives B and C, and the No Build Alternative, are assessed and compared in Chapter 2. Their primary benefits, design differences, and environmental effects are summarized in Table 1-5.

Table 1-5. Comparison of Alternatives

Feature or Effect	Alternative B	Alternative C	No Build Alternative
Ability to satisfy project purpose and objectives	Satisfies purpose and objectives, and better than Alternative C	Satisfies purpose and objectives, but not as well as Alternative B	Does not satisfy the purpose or objectives
Need for changes to approved mobility network	New turn pockets on South River Road Reconstruction of Marina View Drive Modification of property access on Broadway west of I-5	Additional changes needed, compared to Alternative B, due to new "T" intersection added to the West Sacramento mobility network	No change
Change in traffic congestion	Congestion within acceptable limits in study area	Congestion within acceptable limits in study area except at three intersections in West Sacramento	Congestion within acceptable limits in study area
Change in vehicle miles of travel (VMT)	Decrease in VMT by 2020 and minor increase in VMT by 2040	Decrease in VMT by 2020 and larger increase in VMT by 2040, compared to Alternative B	Increase in VMT compared to both build alternatives
Total number of businesses relocated*	4	4	0
Effects on existing petroleum tank farm operations	Directly affects Shell Oil petroleum tank facilities in West Sacramento; directly affects Phillips 66 tank facilities in Sacramento*	No direct impacts on tank farm operations in West Sacramento; directly affects Phillips 66 tank facilities in Sacramento*	No direct impact on tank farm operations in West Sacramento or Sacramento
Utility conflicts/ relocations	Relocation of some overhead utilities within project limits and adjustment of elevation of access points of underground utilities	Relocation of some overhead utilities within project limits and adjustment of elevation of access points of underground utilities	No conflicts

Feature or Effect	Alternative B	Alternative C	No Build Alternative
Moveable span length (strongly affects cost)	170 feet	180 feet	Not applicable
New impervious surface	2.0 acres	2.2 acres	0
Linear feet and area of rock slope protection along Sacramento River	824 linear feet of shoreline 58,622 square feet (sq ft) total area 24,126 sq ft below ordinary high water mark (OHWM)	861 linear feet of shoreline 48,818 sq ft total area 19,431 sq ft below OHWM	0
Level of effects on sensitive terrestrial habitat	Lesser amount of permanent and temporary impacts on cottonwood riparian forest, compared to Alternative C	Greater amount of permanent and temporary impacts on cottonwood riparian forest, compared to Alternative B	No effect as a result of the project
Level of effects on protected riparian trees	Removal of up to 4 trees in West Sacramento and up to 8 in Sacramento	Removal of up to 6 trees in West Sacramento and up to 13 in Sacramento	No effect as a result of the project
Level of effects on aquatic habitat	Lesser amount of permanent and temporary impacts on Sacramento River, compared to Alternative C	Greater amount of permanent and temporary impacts on Sacramento River, compared to Alternative B	No effect as a result of the project
Estimated cost	\$277,000,000	\$278,000,000	n/a

* Relocations in Sacramento could be avoided if retaining walls are constructed instead of fill slopes to support the increase in elevation and widening of Broadway between the bridge and Front Street. See Tables 1-2 and 1-4, and Chapter 2 for more information. In Sacramento, the need for relocations results from direct effects on a tank farm and other related facilities.

After comparing and weighing the benefits and impacts of the feasible alternatives, some of which are summarized in Table 1-5, the Cities of West Sacramento and Sacramento have identified Alternative B as the locally preferred alternative, subject to public review.

After the public circulation period, all comments will be considered; and the City of West Sacramento, in cooperation with the City of Sacramento, and Caltrans will select a preferred alternative and make the final determination of the project’s effect on the environment. A Final EIR will be prepared that will include responses to comments received on the Draft EIR/EA and identify the preferred alternative. Under CEQA, the City of West 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 of West Sacramento will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, whether mitigation measures were included as conditions of project approval, that findings were made, and that a Statement of Overriding Considerations was adopted. Similarly, if Caltrans, as assigned by FHWA, determines that the NEPA action does not significantly affect the environment, Caltrans will issue a Finding of No Significant Impact (FONSI). If it is determined that the project is likely to have a significant effect on the environment, an Environmental Impact Statement will be prepared.

1.5 Alternatives Considered but Eliminated from Further Discussion

As part of development of the project and identification of a range of feasible and reasonable alternatives, and through initial coordination between the USCG and Caltrans, several bridge alignments and roadway connection options were evaluated. Detailed evaluations of the alignments and other options are included in the *Broadway Bridge Alignment Memo* (Mark Thomas 2020), attached to this document as Appendix B, and in the feasibility study (CH2M 2015) available on the internet at <https://www.cityofwestsacramento.org/government/departments/capital-projects-and-transportation/projects/broadway-bridge-projects>. The *Broadway Bridge Alignment Memo* also summarizes the progression of the conceptual alignments and other options as they were designed, reconfigured, and refined into possible project alternatives. The progression summary is included in Appendix B as Attachment D. A summary of the alternatives identified by the studies, considered in additional analyses, and then eliminated from further discussion, is presented below.

1.5.1 Alignments A and D

As mentioned in Section 1.1.2, Alignments A and D were identified in the feasibility study as two of the river crossing locations for the new bridge. From Broadway in Sacramento, Alignment A connected directly to Jefferson Boulevard at 15th Street in West Sacramento, and Alignment D connected directly to South River Road in West Sacramento approximately 1,300 feet south of the existing intersection of South River Road at 15th Street. As alternatives for the proposed project were refined, the alignments assessed in the feasibility study were reviewed with additional consideration of effects on the approved mobility network and other redevelopment plans, effects related to the location of existing petroleum facilities and their associated contamination hazards, and bridge length and construction cost.

Alignments A and D were eliminated from further discussion based on the attributes listed below.

- Alignment A was eliminated from further discussion primarily due to the following.
 - Requires realignment of the planned extension of Riverfront Street in West Sacramento, a conflict with the approved mobility network as well as a factor in the cost of this alignment.
 - Conflicts with planned redevelopment on the former Cemex property.
 - Requires revisions to the planned redevelopment in Sacramento described in the *West Broadway Specific Plan*.
 - Unlike other alignments considered, Alignment A requires a change in elevation of 1,000 feet of State Parks railroad tracks and a new location for the roadway crossing of the tracks at Broadway. Other alignments require only minor modifications to the existing track crossing.
- Alignment D was eliminated from further discussion primarily due to the following.
 - The traffic circulation pattern that would result from the alignment and the volume of traffic added to Circle Street requires widening Circle Street to an arterial roadway from its local street design shown in the approved mobility network for the roadway between Jefferson Boulevard and South River Road. An arterial roadway would not be consistent with the residential character envisioned for that area of Pioneer Bluff.
 - The volume of traffic added to Circle Street requires a signalized intersection at Jefferson Boulevard and Circle Street, inconsistent with the approved mobility network.
 - The movable bridge span length, the greatest factor in project cost, is 35% longer than the span length needed for Alignment B and 28% longer than the length needed for Alignment C.

Therefore, the cost of the movable bridge span is significantly greater for Alternative D compared to the other alternatives.

More information is provided in Appendix B.

1.5.2 Variations on Alignment C

The feasibility study considered variations for Alignment C and put forward two recommendations, Alignments C1 and C2. Both connected directly to South River Road in West Sacramento approximately 500 feet south of the existing intersection of South River Road at 15th Street and to Broadway in Sacramento. As described in the feasibility study, Alignment C2 aimed to optimize the bridge skew across the river and to minimize impacts on the Phillips 66 facilities. Alignment C2 conflicted with the active Kinder Morgan petroleum line that runs in the vicinity of Broadway and under the Sacramento River. Alignment C1 avoided the Kinder Morgan line but affected the Phillips 66 facilities and created a greater skew across both the river and railroad tracks (CH2M 2015). Following the feasibility study, variations on Alignment C were assessed further. A single project alternative was developed with similar connection locations on both sides of the river while minimizing the utility and property conflicts: Alternative C, studied herein. There was no need to carry forward multiple over-river alignments with similar on-land connection points, so other variations were eliminated from further discussion.

1.5.3 Connection to X Street in Sacramento

Connecting eastbound vehicular traffic from the new bridge to X Street instead of to Broadway was considered in response to community concerns over the potential for a large increase in traffic volumes on Broadway and adjacent streets, including the residential streets south of Broadway.

Traffic volumes and travel patterns with the new bridge and a connection to X Street were modeled to determine effects on the existing street network. The same analysis was done for a connection directly to Broadway. The analysis found that vehicles from the Broadway Bridge would disperse mostly using Front Street but also would use 3rd Street and 5th Street to access downtown Sacramento.

To align the new roadway connection with X Street, the southbound I-5 off-ramp to X Street would need to be closed, diverting traffic to other exits. Closure of the southbound I-5 off-ramp to X Street would increase traffic volumes at the US-50 eastbound off-ramp to 15th Street, I-5 southbound off-ramp to Q Street, and the I-5 southbound off-ramp to Sutterville Road. Caltrans informed the project team that it would not support closure of the X Street off-ramp because of the resultant effects on the other off-ramps.

The evaluation of traffic volumes and intersection level of service with a bridge connection directly to Broadway found that the future daily traffic volume on Broadway would be well within the City's capacity threshold for the roadway and that roadway intersections along Broadway east of the bridge would operate at acceptable levels. The street grid that serves the area has redundancy in north-south connections to downtown that allows traffic to quickly disperse off Broadway. East of 5th Street, because of the well-connected street grid, there was little difference in traffic volumes on Broadway between the X Street and Broadway bridge connections. See Appendix B for more information.

Further, the City of Sacramento plans, through separate capital projects, to convert 3rd Street between X Street and W Street from a southbound one-way road to a two-way road, and to convert 5th Street between X Street and H Street from a northbound one-way road to a two-way road. Converting these roads to two-way travel would provide more opportunities for traffic to disperse from the new bridge through downtown.

Because closure of the X Street off-ramp was not acceptable to Caltrans and because the traffic that would be added to Broadway from the bridge would quickly disperse north into the downtown area, the X Street connection was eliminated from further discussion.

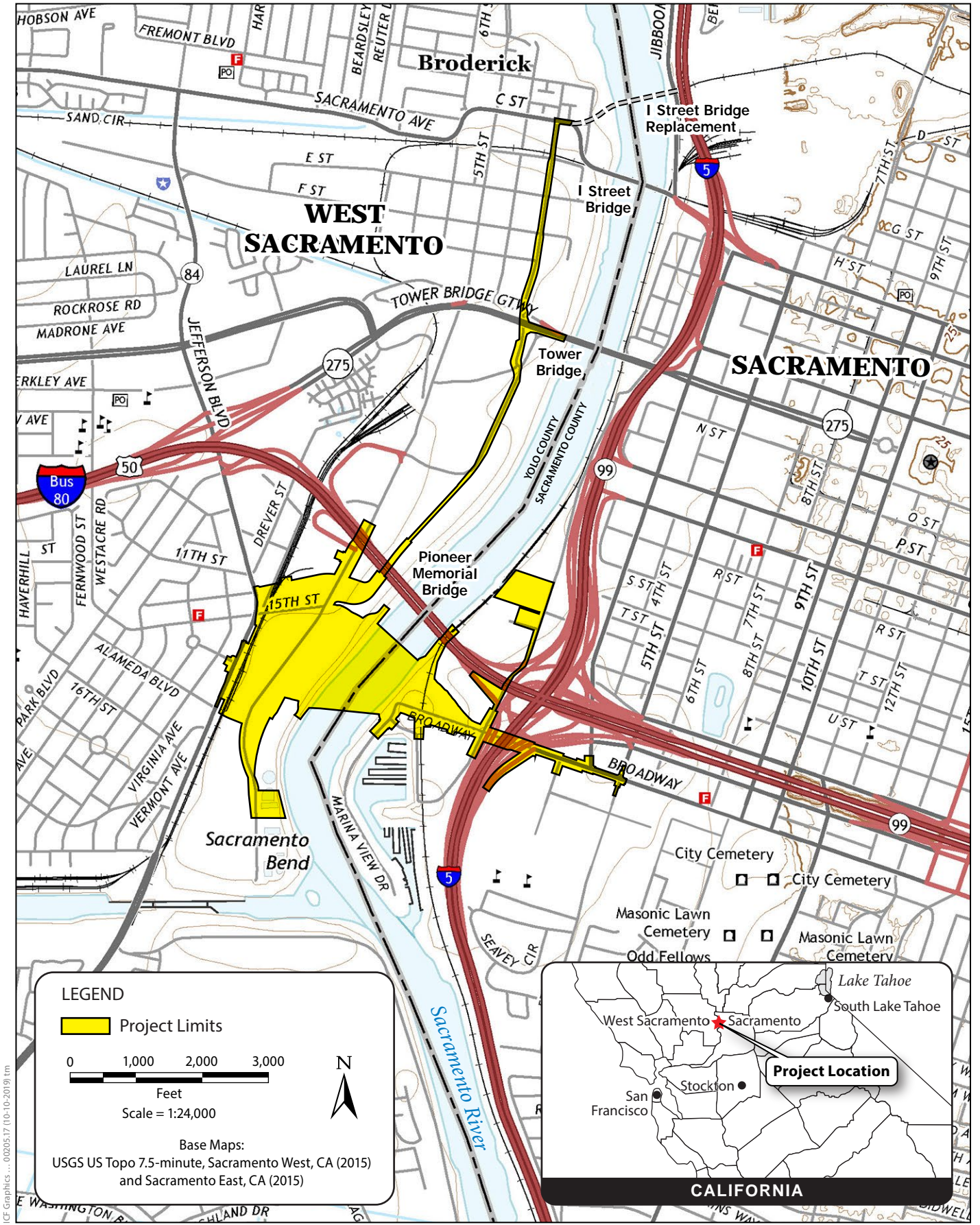
1.6 Permits and Approvals Needed

Table 1-6 identifies the permits, approvals, and coordination that would be required for the proposed project and their status.

Table 1-6. Permits and Approvals Needed

Agency	Permit/Approval	Status
City of West Sacramento	City Council approval of project	Not yet initiated
City of Sacramento	City Council approval of project as co-sponsor and responsible agency	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 to determine required length of moveable bridge span
U.S. Army Corps of Engineers	Section 404 Clean Water Act authorization for fill of waters of the United States Section 408 Clean Water Act authorization for excavations in regulated levees	Not yet initiated
National Marine Fisheries Service	Coordination regarding threatened and endangered species	Biological Assessment submitted and consultation initiated
U.S. Fish and Wildlife Service	Coordination regarding threatened and endangered species	Biological Assessment submitted and Biological Opinion issued
California Department of Fish and Wildlife	Section 1602 Department of Fish and Game Code Streambed Alteration Agreement	Not yet initiated
California Public Utilities Commission	Permit to modify at-grade railroad crossing in Sacramento	Not yet initiated
State Water Resources Control Board	Statewide National Pollutant Discharge Elimination System Permit (NPDES) compliance Statewide construction general permit stormwater pollution prevention plan (SWPPP) compliance	Not yet initiated
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification NPDES permit compliance Waste Discharge Requirements compliance for stormwater discharges and surface water protection	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

Agency	Permit/Approval	Status
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
Union Pacific Railroad	Approval of installation of fiber optic line that would pass under tracks (north/south) at 3rd Street in West Sacramento	Not yet initiated



**Figure 1-1
Location Map**

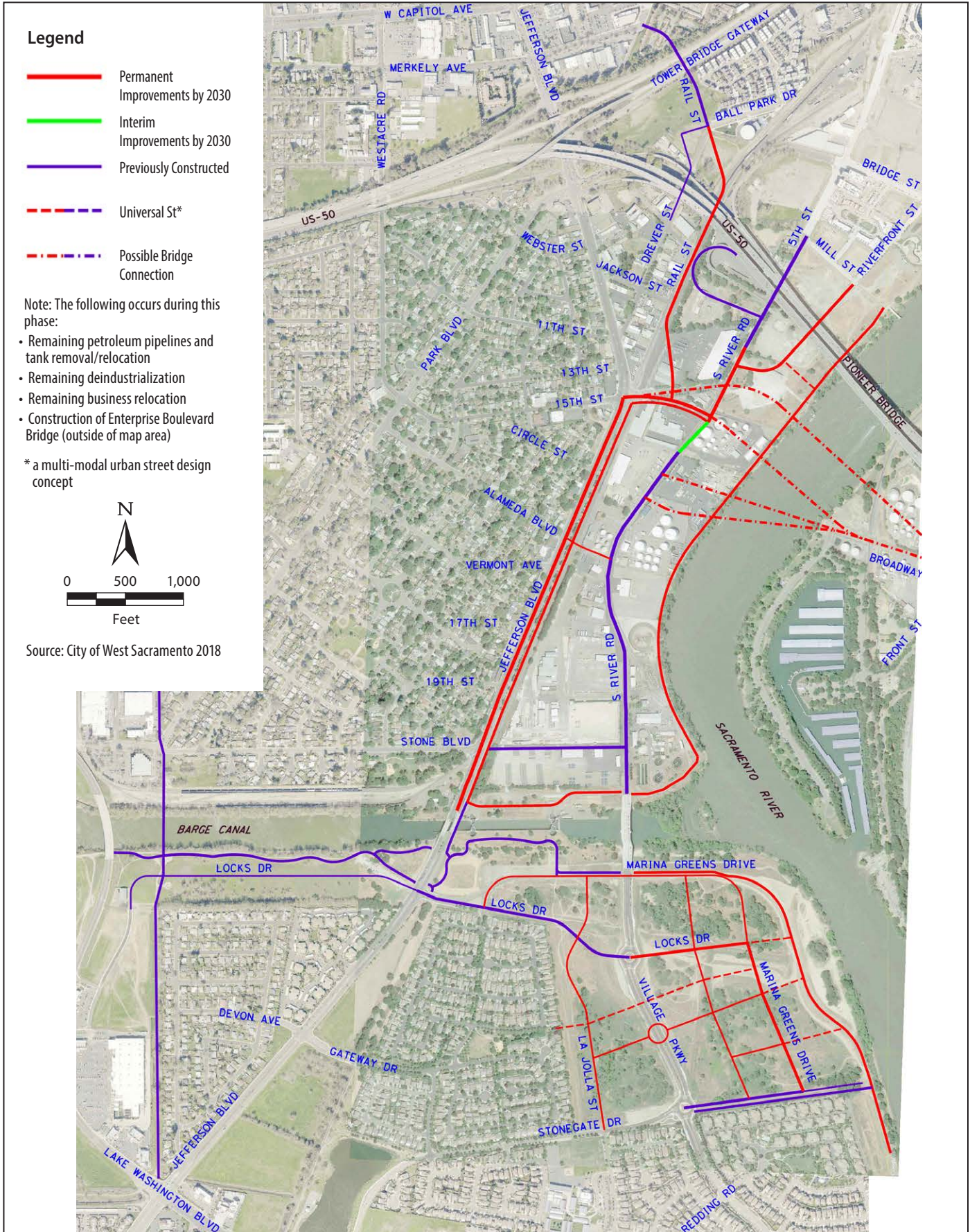


Figure 1-2
Interim Year (2030) Pioneer Bluff and Stone Lock
Approved Mobility Network Phasing Diagram

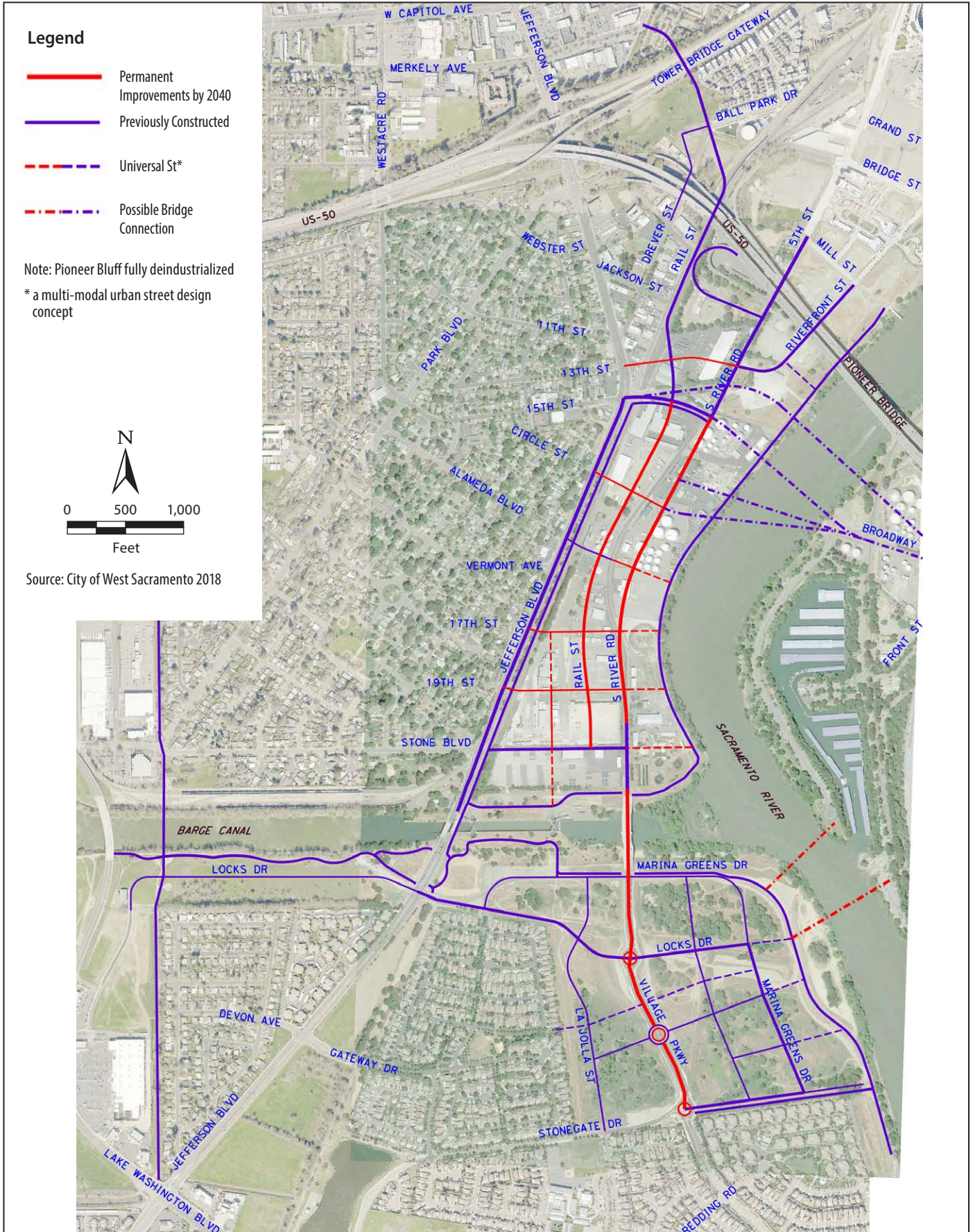
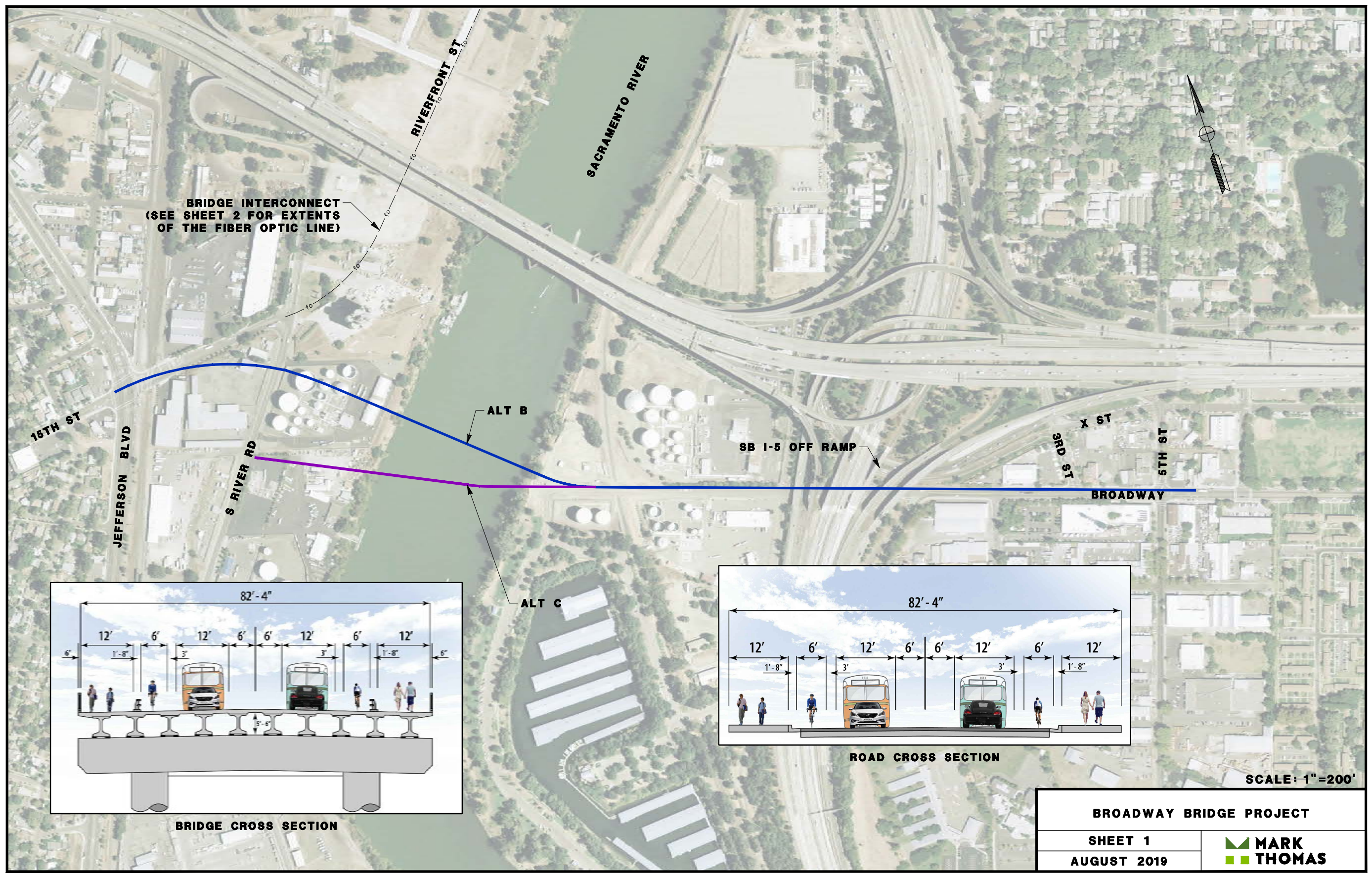
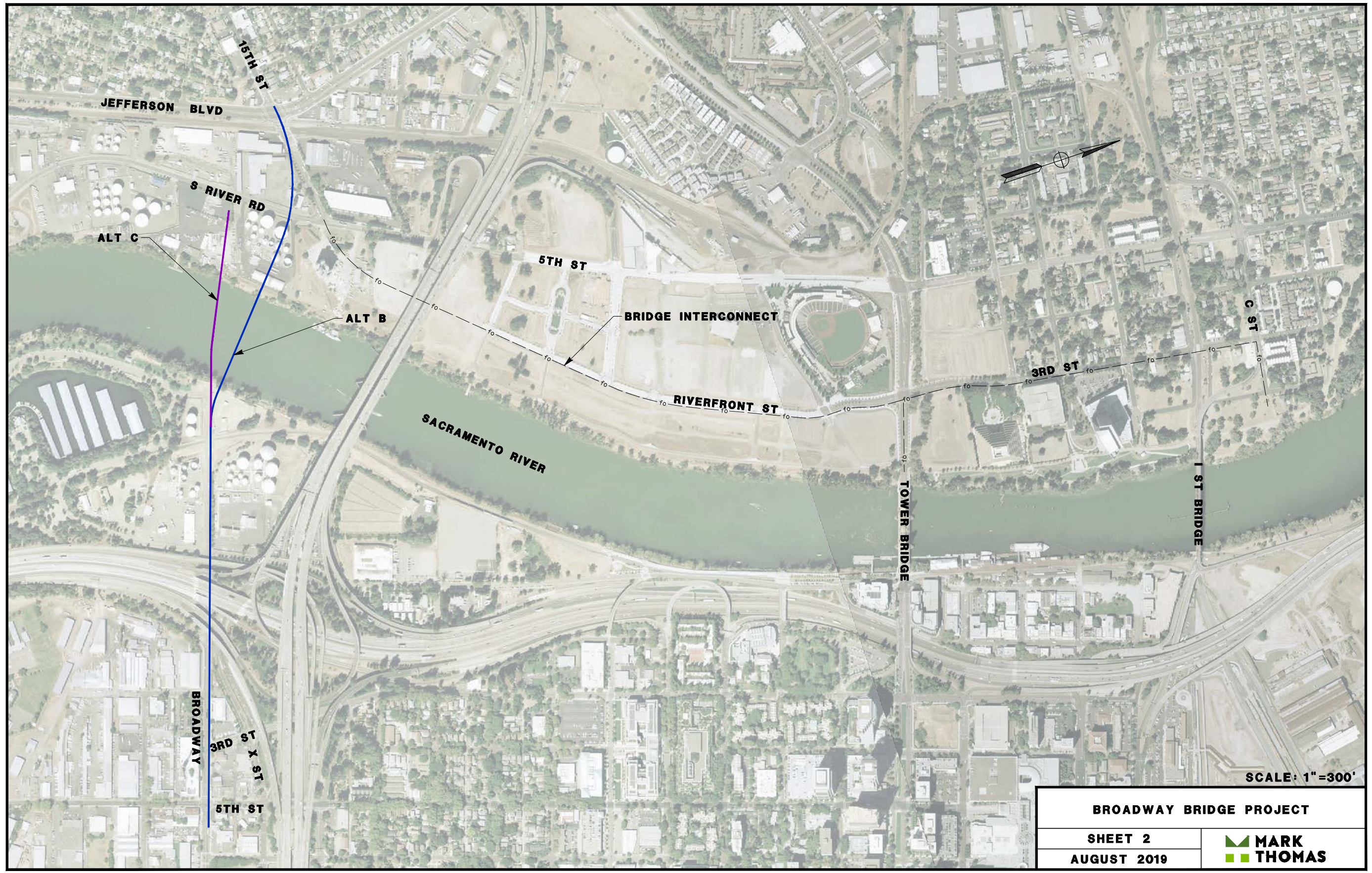


Figure 1-3
Design Year (2040) Pioneer Bluff and Stone Lock
Approved Mobility Network Phasing Diagram



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Figure 1-4a
Project Alignment Alternatives

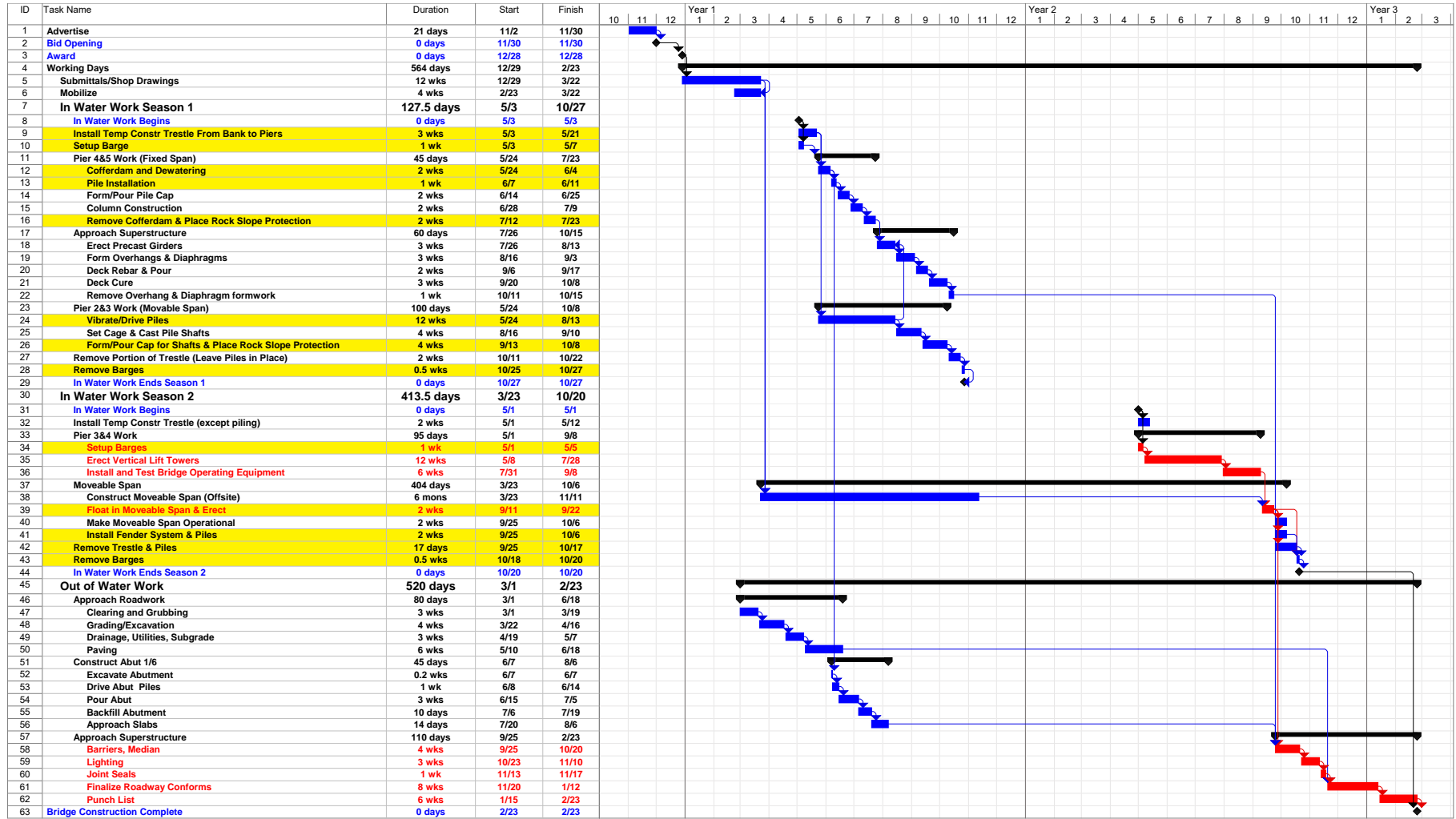


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Figure 1-4b
Project Alignment Alternatives

Preliminary Bridge Construction Schedule

7-Day Work Week



Construction Activities with In-water Effects
 Task

Critical Task
 Milestone

Summary

Figure 1-5
 Preliminary Bridge Construction Schedule

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.

Topics Considered but Determined Not to be Relevant

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

There will be no effects on coastal resources because the project is not located within the coastal zone.

Wild and Scenic Rivers

The Sacramento River is not designated as Wild and Scenic. The proposed project is over 2 miles downstream of the confluence of the American River. 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 would not affect designated Wild and Scenic rivers.

Growth

The proposed project is located in a built-up urban area where plans for redevelopment of existing and non-conforming land uses would proceed without or with the proposed project. Growth also is expected in the surrounding region, but growth would not be attributable to, or otherwise influenced by, the proposed project. The new river crossing would serve the existing residents of both cities and serve as another option for all modes of transportation, including pedestrians and bicyclists, to cross the river and utilize the existing and planned recreational and economic opportunities available in both cities (ICF 2020).

Environmental Justice

Impacts related to construction and operation of the proposed project borne by residents of minority or low-income populations would be no greater than impacts borne by all populations within the project area. Minority and low-income populations are scattered throughout the project area, not concentrated in one specific place. They would not experience a disproportionately high or adverse effect. For this reason, and in consideration of the benefits that the project would provide to all minority and low-income residents of the project area by increasing access across the Sacramento River, improving connectivity between West Sacramento and Sacramento and enhancing bicycle and pedestrian facilities, the proposed project is not considered to cause disproportionately high and adverse human health and environmental

effects on minority and low-income residents. No minority or low-income populations that would be adversely affected by the proposed project have been identified as determined above. Therefore, this project is not subject to the provisions of Executive Order 12898.

Energy

Construction of the proposed project would require temporary energy consumption, including fuel for construction and personnel equipment and vehicles, and electricity for night lighting. During operation of the project, the overall transportation network performance would be improved compared to no build conditions, which would improve fuel efficiency. The new bicycle and pedestrian crossing also may encourage non-automobile transport. While energy, mostly in the form of electricity, would be used for bridge lighting and for equipment related to the movable bridge portion, the proposed project would not result in adverse 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 or adverse energy impacts.

Plants

Searches of the California Natural Diversity Database (CNDDDB), the California Native Plant Society (CNPS) rare plant inventory, and the U.S. Fish and Wildlife Service (USFWS) website were conducted to develop a list of special-status plants with potential to occur in the biological study area (California Department of Fish and Wildlife 2019; California Native Plant Society 2019; U.S. Fish and Wildlife Service 2020). Based on the search results and the natural communities identified in the biological study area, potential habitat for five special-status plant species was identified, but none were recorded as occurring in the study area. Special-status plant surveys were conducted during August 2017 and February 2018, and no special-status plants were found in the biological study area. Details of data base search results and special-status plant surveys conducted in the biological study area are provided in Appendix S. The high level of historical and ongoing disturbance that is present in most of the biological study area detracts from the quality of potential habitat for special-status plant species. Based on the field survey results, level of disturbance in potential habitat, and lack of recorded occurrences in the biological study area, this report concludes that no special-status plant species are present. Therefore, construction of the project is not expected to cause any direct or indirect impacts on special-status plants. For federally listed plant species, preliminary *no effect* findings are included in Table 2.3.4-1 of Section 2.3.4, *Threatened and Endangered Species*.

2.1 Human Environment

2.1.1 Existing and Future Land Use

This section was prepared using information from the *Community Impact Assessment (CIA)* technical report prepared for the project (ICF 2020). The report is available in Appendix K. 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 proposed project.

2.1.1.1 Existing Land Uses and Development Trends

As described in Chapter 1, *Introduction*, the project would be located over the Sacramento River between the cities of Sacramento and West Sacramento, approximately 1,000 feet south of the existing Pioneer Bridge (Figure 1-1). A land use study area was defined using the U.S. Census Bureau–designated block groups that intersect the project area. Figure 2.1.1-1 depicts the land use study area and shows the individual block groups (BGs): Census Tract (CT) 10201 BG 1, CT 02200 BG 1, CT 02200 BG 2, and CT 02100 BG 1.

2.1.1.2 Existing Land Uses

The proposed project spans portions of two counties (Yolo and Sacramento) and two cities (West Sacramento and Sacramento). Overall, the land use study area is densely developed and is surrounded by commercial, industrial, and residential uses.

West Sacramento

The portion of the study area west of the Sacramento River (CT 010201 BG 1) north of US 50 contains several recreational and open space land uses, including Sutter Health Park, Garden Park, and the River Walk Trail along the waterfront; and high-density, riverfront mixed-use and central business district government and commercial uses. Land uses are primarily industrial south of US 50 between Jefferson Boulevard and the waterfront, and primarily comprise oil companies and other business services. West of Jefferson Boulevard is developed as low-density residential neighborhoods.

Sacramento

The portion of the study area east of the Sacramento River and north of Broadway (CT 002100 BG 1) contains various commercial, industrial, and residential uses, as well as the I-5 and US 50 interchange. Industrial uses associated with the Chevron Terminal facility are located west of I-5, north of Broadway. Other land uses in this block group include a variety of commercial businesses ranging from restaurants to auto services. The Sacramento River Bike Trail is adjacent to the river.

The portion of the study area east of the Sacramento River and south of Broadway (CT 002200 BG 1 and BG 2) is considered the Upper Land Park neighborhood.

BG 2 that is east of the Sacramento River and west of 5th Street contains a variety of land uses. This block group contains Miller Regional Park, the Sacramento Marina, and the Latino Center of Art and Culture west of I-5. The Sacramento River Bike Trail traverses this block group parallel to the river. East of I-5, a wide variety of industrial and commercial land uses are along Broadway. Leataata Floyd Elementary School and Health Professions High School are located in this area along McClatchy Way.

Residential uses, including the Marina Vista low-income public housing community, are located in this block group.

BG 1 that is east of 5th Street and west of Riverside Boulevard contains commercial and industrial uses along 5th Street, including auto services and distribution centers. Alder Grove, a low-income public housing project, is located east of the commercial/industrial uses. Single-family residences make up the rest of this block group between McClatchy Way and Vallejo Way. BG 1 also contains the Sacramento Old City Cemetery.

2.1.1.3 Land Use Designations

Most of the land in the West Sacramento portion of the study area is designated as Riverfront Mixed Use, with the remaining designated as Neighborhood Mixed Use and Commercial. See Figure 2.1.1-2 for the General Plan land use designations in the West Sacramento portion of the study area.

Most of the land in the Sacramento portion of the study area is designated as Public/Quasi-Public and Recreation, with the remaining as Low Urban Corridor and Medium Urban Neighborhood. See Figure 2.1.1-3 for the General Plan land use designations in the Sacramento portion of the study area.

2.1.1.4 Development Trends

West Sacramento

West Sacramento has experienced rapid population growth since 1990, which has brought significant land use change, including new residential development in the outlying areas and redevelopment within existing built-up areas. West Sacramento has adopted specific plans to help guide and implement land use planning in different areas of the city. As stated in Chapter 1, the *Pioneer Bluff and Stone Lock Reuse Master Plan* is being prepared for redevelopment of both the Pioneer Bluff and Stone Lock Districts in West Sacramento. The plan would de-industrialize the Pioneer Bluff District and transition this land to urban waterfront development. The Stone Lock District would include improved recreational facilities.

Sacramento

SACOG's 2020 *Metropolitan Transportation Plan/Sustainable Communities Strategy* (Sacramento Area Council of Governments 2019:24) projects that the region will have approximately 1.3 million employees and 1.2 million housing units by 2040. The *Sacramento 2035 General Plan* (City of Sacramento 2015) identifies the Sacramento portion of the project area as an existing urban area that will experience dramatic change by 2035 from major development and redevelopment projects. Just within the Central City Community Plan area, it is anticipated that up to 13,401 new housing units, approximately 3.8 million square feet (sf) of new non-residential uses, and 750 hotel rooms would be built. Anticipated development within the proposed *West Broadway Specific Plan* area generally includes public improvements to support new development, such as a mix of urban housing with neighborhood and commercial uses.

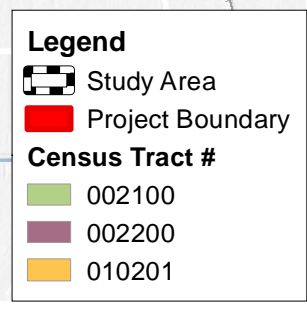
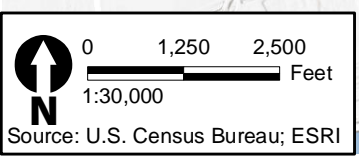
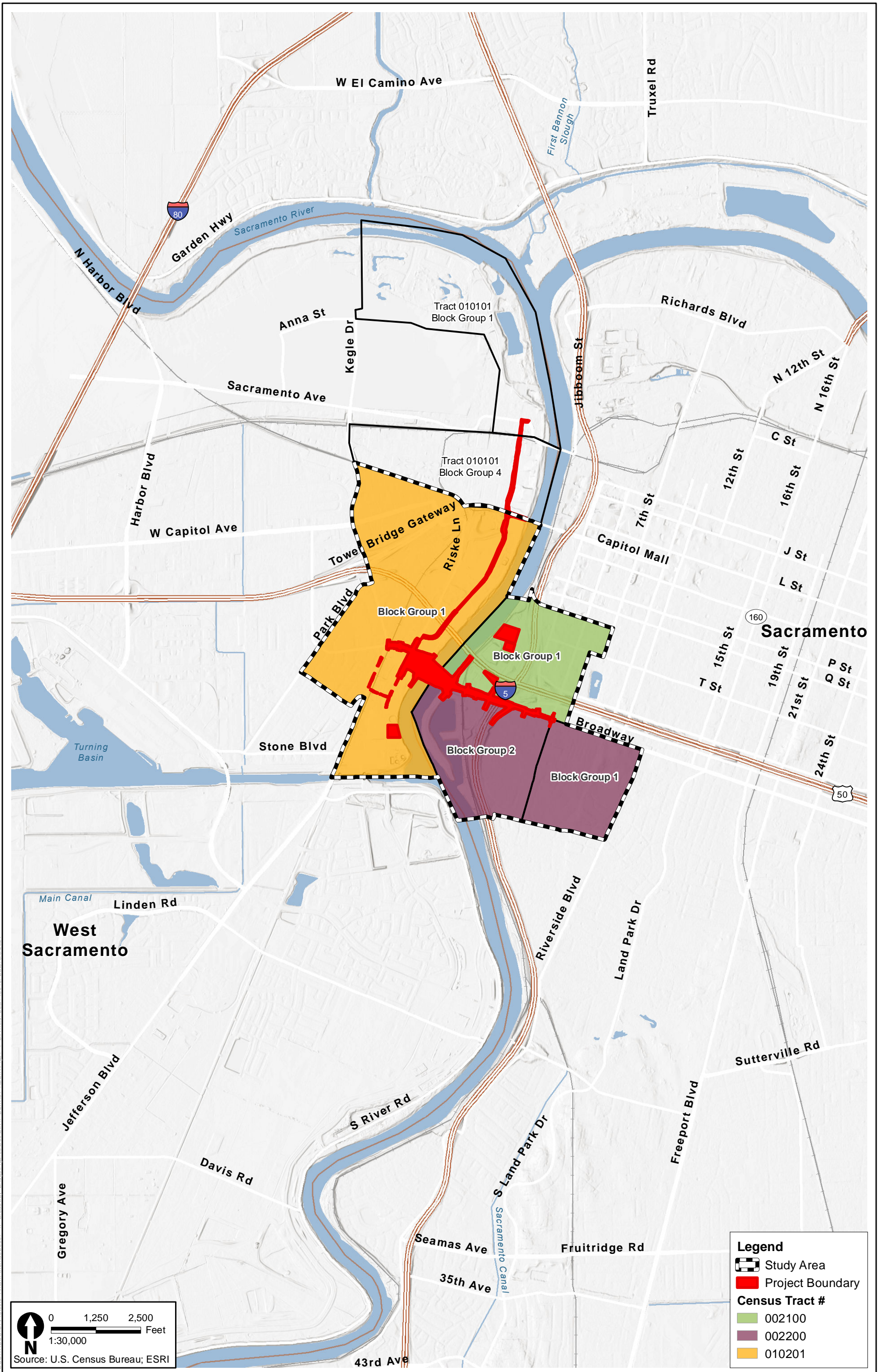
























Figure 2.1.1-1
Land Use Study Area

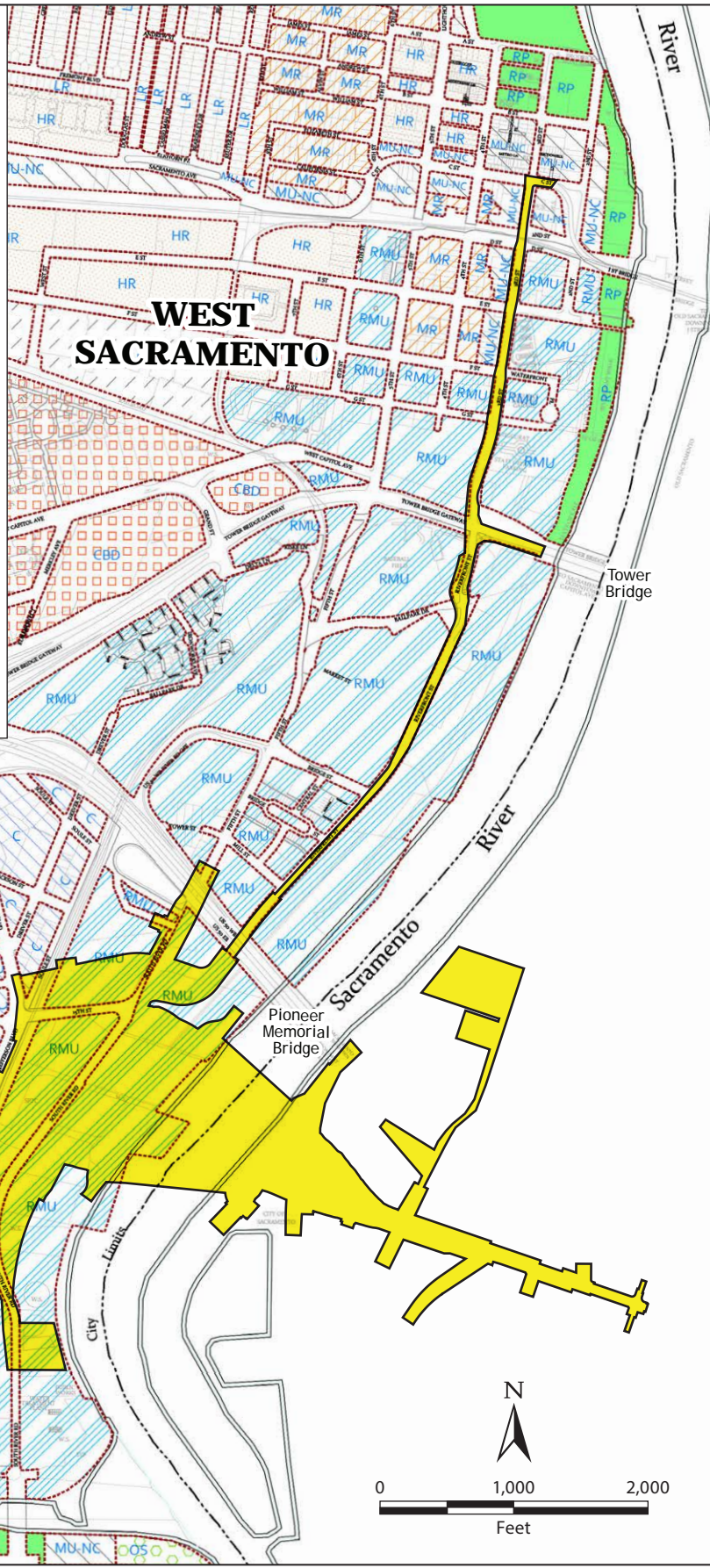
Legend

 Project Footprint

General Plan Land Use Diagram Key

RESIDENTIAL	RE		Rural Estate
	RR		Rural Residential
	LR		Low-Density Residential
	MR		Medium-Density Residential
	MHR		Medium High-Density Residential
COMMERCIAL/ EMPLOYMENT	HR		High-Density Residential
	C		Commercial
	HSC		Highway-Service Commercial
	WRC		Water-Related Commercial
	BP		Business Park
	MCI		Mixed-Commercial/Industrial
	LI		Light Industrial
MIXED-USE	HI		Heavy Industrial
	WRI		Water-Related Industrial
	RMU		Riverfront Mixed-Use
	MU-C		Corridor Mixed-Use
	MU-NC		Neighborhood Mixed-Use
OTHER	CBD		Central Business District
	POP		Public/Quasi-Public
	RP		Recreation and Parks
	OS		Open Space
	AG		Agriculture

Source: City of West Sacramento
<https://www.cityofwestsacramento.org/home/showdocument?id=4150>
 Accessed 8-13-2019.



**Figure 2.1.1-2
 West Sacramento Land Use Designations**

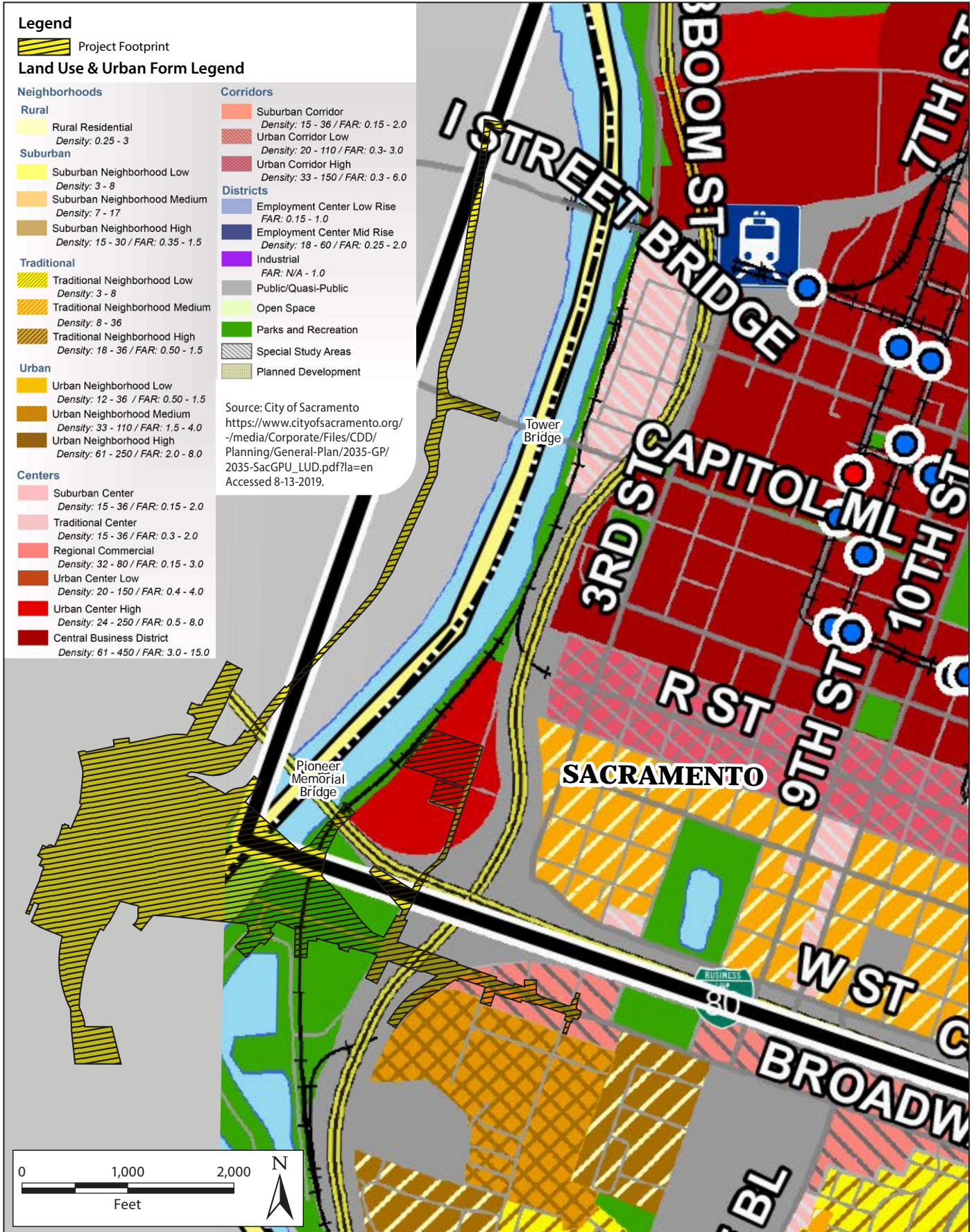


Figure 2.1.1-3
Sacramento Land Use Designations

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 project’s land use study area (Figure 2.1.1-1) 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. For detailed analysis on each plan and program, and its corresponding goals and policies, refer to the CIA (ICF 2020) in Appendix K. Consistency with policies related to traffic congestion are addressed in Section 2.1.7, *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

2.1.2.1 Sacramento Riverfront Master Plan

The *Riverfront Master Plan* (WRT, LLC/Solomon ETC 2003) was prepared for both the Cities of West Sacramento and Sacramento. The plan sets forth a vision to improve the Sacramento River waterfront between both cities. The master plan identifies a river crossing from Pioneer Bluff to Broadway and calls for the bridge to be multi-modal.

2.1.2.2 City of West Sacramento

City of West Sacramento General Plan 2035

The *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) governs land uses in West Sacramento. Recreation goals include providing a network of pedestrian and bicycle pathways connecting parks and open space areas with other destination points. The Transportation element includes goals to create and maintain a roadway network that will ensure safe and efficient movement and promote pedestrian and bicycle travel as alternatives to automobile use. The Design element goal focuses on enhancing the relationship between the city and the Sacramento River. The plan identifies a crossing of the Sacramento River between Pioneer Bluff and Broadway.

2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan

The main goal of the *2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan* (Fehr & Peers 2013) is to create a pedestrian- and bicycle-friendly community, and to increase the number of people in West Sacramento who bicycle or walk, as envisioned by the General Plan. Policies focus on an interconnected system of bikeways and walkways that provide safe and convenient travel to key destinations.

Pioneer Bluff and Stone Lock District Reuse Master Plan (Proposed)

The *Pioneer Bluff and Stone Lock Reuse Master Plan* encompasses the Pioneer Bluff and Stone Lock Districts in West Sacramento, which include the area adjacent to the riverfront, and sets forth a plan for reuse of both areas. The Master Plan will identify priority projects to de-industrialize the area and include more bicycle and pedestrian connections. The plan is not yet adopted but, as described in Chapter 1 and shown in Figures 1-2 and 1-3, a phased multi-modal transportation circulation network for the plan area was developed and approved by City of West Sacramento City Council in January 2018 (approved mobility network). The approved mobility network includes a bridge across the Sacramento River from Pioneer Bluff to Broadway.

Bridge District Specific Plan

The *Bridge District Specific Plan* (City of West Sacramento 2009), formerly the *Triangle Plan*, initially was adopted by the City of West Sacramento in 1993 and was updated in 2009. The goals of the *Bridge District Specific Plan* are to increase waterfront development in the plan area. The plan provides a framework for development of a waterfront-oriented urban district bounded by Tower Bridge Gateway, US 50, and the Sacramento River; the plan also includes a small area along the river south of US 50. As part of the implementation of the specific plan, the City of West Sacramento is proposing to extend Riverfront Street approximately 0.15 mile to the south to connect to South River Road.

2.1.2.3 City of Sacramento

2035 General Plan

The *Sacramento 2035 General Plan* vision provides the City's key values and aspirations for Sacramento's future (City of Sacramento 2015). Goals from the mobility element focus on providing a safe multi-modal transportation system, while removing barriers for accessibility. Additionally, the plan describes an integrated bicycle, pedestrian, and roadway system with complete streets to promote convenient travel for all users. While the land use diagram and the mobility element do not identify a bridge over the river at Broadway, the mobility element includes policies related to new multi-modal river crossings of the Sacramento River and planning for bicycle and pedestrian facilities on new bridges.

Broadway Complete Streets Plan

The goals for the *Broadway Complete Streets Plan* (City of Sacramento 2016) are to balance accessibility for all modes of transportation in the Broadway Corridor; enhance safety and comfort for all modes, especially pedestrians and bicyclists; and encourage economic revitalization and reinvestment along the Broadway Corridor.

West Broadway Specific Plan

The *West Broadway Specific Plan* (Ascent Environmental 2020) defines the land use regulations and policies for development of an approximately 32-acre plan area, and identifies necessary public improvements to support new urban development. The development would be consistent with the framework of the *Sacramento 2035 General Plan* (City of Sacramento 2015), which anticipates a mix of traditional and urban-scale housing with neighborhood commercial uses. The land use plan concept included in the specific plan depicts a bridge from Broadway to Pioneer Bluff. Plan objectives include enhancing the West Broadway corridor as a future gateway and bridge connection between the cities of Sacramento and West Sacramento, and enhancing bike and pedestrian travel ways through the specific plan area to schools, public facilities, and neighborhood amenities.

Central City Specific Plan

The *Central City Specific Plan* (City of Sacramento 2018a) area is bounded by the River District and Railyards Specific Plan areas to the north, the Sacramento River to the west, Broadway and parcels fronting the south side of Broadway to the south, and the elevated I-80 Business (Business 80) highway to the east. The mobility goals focus on improving transportation safety and promoting new mobility technologies.

Sacramento River Parkway Plan

The *Sacramento River Parkway Plan* (City of Sacramento 1997) is a policy guide for habitat restoration and recreational development for lands adjacent to the river. The relevant policies include close coordination among all public jurisdictions and protecting land adjacent to the Parkway from incompatible elements.

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 and making it a model pedestrian-friendly city. The relevant goal is to provide crossings that are convenient and comfortable for pedestrian use.

City of Sacramento Bicycle Master Plan

The *Sacramento Bicycle Master Plan* (City of Sacramento 2018b) describes bicycle-related investments, policies, programs, and strategies to establish a complete bicycle system. The goal of the plan is to encourage more bicycling by the citizens of Sacramento for both transportation and recreation.

2.1.2.4 Environmental Consequences

The project’s consistency with plans and programs is summarized below. Both build alternatives are inconsistent with the approved mobility network adopted for the *Pioneer Bluff and Stone Lock District Reuse Master Plan* being prepared by West Sacramento and would require modifications to the network if constructed. Alternative C would require greater modifications to the network because of the “T” intersection it would create on South River Road. The No Build Alternative would be inconsistent with the *Sacramento 2035 General Plan* due to conflicts with goals and policies related to constructing new multi-modal crossings over the Sacramento River. See Appendix K for a more detailed discussion.

Table 2.1.3-1. Summary of Project Consistency with Adopted Plans and Programs

Plan/Program	Alternative B	Alternative C	No-Build
<i>Sacramento Riverfront Master Plan</i>	Consistent. Alternative B would support the goals of this plan by providing alternative transportation modes, increasing pedestrian/bicycle linkages across the river, and helping to establish the river as an active/vibrant riverfront district.	Consistent. Alternative C would support the goals of this plan by providing alternative transportation modes, increasing pedestrian/bicycle linkages across the river, and helping to establish the river as an active/vibrant riverfront district.	Consistent. While the bridge would not be built, the No Build Alternative would not conflict with the goals and policies in the <i>Sacramento Riverfront Master Plan</i> .
City of West Sacramento			
<i>City of West Sacramento General Plan 2035 Policy Document</i>	Consistent. Alternative B involves constructing a new bridge that would improve bicycle and pedestrian facilities.	Consistent. Alternative C involves constructing a new bridge that would improve bicycle and pedestrian facilities.	Consistent. The No Build Alternative would not conflict with the City of West Sacramento General Plan 2035.

Plan/Program	Alternative B	Alternative C	No-Build
<i>2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i>	Consistent. Alternative B would improve bicycle and pedestrian access across the Sacramento River, and is consistent with the policies in the <i>2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i> .	Consistent. Alternative C would improve bicycle and pedestrian access across the Sacramento River, and is consistent with the policies in the <i>2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i> .	Consistent. The No Build Alternative would not conflict with the <i>2013 West Sacramento Bicycle, Pedestrian, and Trails Master Plan</i> .
<i>Pioneer Bluff and Stone Lock District Reuse Master Plan</i> – approved mobility network	Inconsistent. While the reuse master plan is not yet adopted, Alternative B would require minor modifications to the approved mobility network for the plan area, including construction of a northbound right-turn pocket on South River Road at 15th Street and construction of a southbound right-turn pocket on South River Road at 15th Street.	Inconsistent. While the reuse master plan is not yet adopted, Alternative C would require modifications to the approved mobility network for the plan area, including creating a “T” intersection on South River Road between 15th Street and the future Circle Street location, constructing an interim northbound right-turn pocket on the existing alignment of South River Road at Broadway, and constructing an interim southbound left-turn pocket on the existing alignment of South River Road at Broadway.	Consistent. The approved mobility network is not dependent on construction of the bridge, and no changes to the network would be needed for the No Build Alternative.
<i>Bridge District Specific Plan</i>	Consistent. Alternative B would not conflict with the goals and policies in the <i>Bridge District Specific Plan</i> or the proposed extension of Riverfront Street.	Consistent. Alternative C would not conflict with the goals and policies in the <i>Bridge District Specific Plan</i> or the proposed extension of Riverfront Street.	Consistent. The No Build Alternative would not conflict with the goals and policies in the <i>Bridge District Specific Plan</i> or the proposed extension of Riverfront Street.
City of Sacramento			
<i>Sacramento 2035 General Plan</i>	Consistent. Alternative B would improve connectivity and accessibility between the two cities. The proposed project is consistent with the 2035 General Plan.	Consistent. Alternative C would improve connectivity and accessibility between the two cities. The proposed project is consistent with the 2035 General Plan.	Inconsistent. The No Build Alternative would conflict with the 2035 General Plan, which contains goals and policies related to constructing new multi-modal crossings over the Sacramento River.
<i>Broadway Complete Streets Plan</i>	Consistent. Alternative B would not conflict with the goals and policies in the <i>Broadway Complete Streets Plan</i> .	Consistent. Alternative C would not conflict with the goals and policies in the <i>Broadway Complete Streets Plan</i> .	Consistent. The No Build Alternative would not conflict with the goals and policies in the <i>Broadway Complete Streets Plan</i> .
<i>West Broadway Specific Plan</i>	Consistent. Alternative B would not conflict with the objectives of the <i>West Broadway Specific Plan</i> or its goals and policies.	Consistent. Alternative C would not conflict with the objectives of the <i>West Broadway Specific Plan</i> or its goals and policies.	Inconsistent. The No Build Alternative would conflict with <i>West Broadway Specific Plan</i> objectives, the design guidelines for a new city gateway, and the updated roadway network that includes the river crossing.

Plan/Program	Alternative B	Alternative C	No-Build
<i>Central City Specific Plan</i>	Consistent. Alternative B would include safe pedestrian and bicycle facilities to encourage safe use. It would improve connectivity between Sacramento and West Sacramento for all modes of transportation.	Consistent. Alternative C would include safe pedestrian and bicycle facilities to encourage safe use. It would improve connectivity between Sacramento and West Sacramento for all modes of transportation.	Consistent. The No Build Alternative would not conflict with the goals and policies in the <i>Central City Specific Plan</i> .
<i>Sacramento River Parkway Plan</i>	Consistent. This project would construct an improved bridge, which would improve accessibility to the Sacramento River Parkway. Alternative B would not conflict with the <i>Sacramento River Parkway Plan</i> .	Consistent. This project would construct an improved bridge, which would improve accessibility to the Sacramento River Parkway. Alternative C would not conflict with the <i>Sacramento River Parkway Plan</i> .	Consistent. Under the No Build Alternative, there would be no conflicts because no new construction would occur.
<i>City of Sacramento Pedestrian Master Plan</i>	Consistent. Under Alternative B, a new connection over the Sacramento River would be established that would include pedestrian facilities.	Consistent. Under Alternative C, a new connection over the Sacramento River would be established that would include pedestrian facilities.	Consistent. The No Build Alternative would not conflict with the <i>City of Sacramento Pedestrian Master Plan</i> .
<i>City of Sacramento Bicycle Master Plan</i>	Consistent. Alternative B would enhance bicycle facilities, safety, and connectivity by providing a new crossing over the Sacramento River.	Consistent. Alternative C would enhance bicycle facilities, safety, and connectivity by providing a new crossing over the Sacramento River.	Consistent. The No Build Alternative would not conflict with the <i>City of Sacramento Bicycle Master Plan</i> .

2.1.2.5 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.1.3 Parks and Recreational Facilities

2.1.3.1 Regulatory Setting

Park Preservation Act

The Park Preservation Act (California Public Resources Code [PRC] Sections 5400–5409) 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.

2.1.3.2 Affected Environment

This section was prepared using information from the CIA technical report prepared for the project (ICF 2020), available as Appendix K, and information in Appendix C, *Section 4(f)*. There are no wildlife or waterfowl refuges in the study area; therefore, refuges are not discussed further.

City of West Sacramento Parks and Recreational Facilities

River Walk Park, a publicly owned park along the west bank of the Sacramento River, is protected by the provisions of Section 4(f) of the Department of Transportation Act of 1977 (Section 4[f]). By the interim year (2030), the City of West Sacramento proposes to extend the park and the paved trail within it south from Mill Street along the Sacramento River, through the project area, and west along the Barge Canal to connect to Jefferson Boulevard. Currently, there are limited opportunities for river access in the study area south of US 50. Operated by the City of West Sacramento, River Walk Park is protected by the Park Preservation Act.

There is one neighborhood park in the West Sacramento portion of the study area. Garden Park, a Section 4(f) resource, is in the Bridge District at the intersection of Garden and Central Streets. The park is surrounded by multistory buildings (residential and business) and is approximately 150 feet northwest of Riverfront Street. Operated by the City of West Sacramento, this park is protected by the Park Preservation Act.

Sutter Health Park, a privately owned minor league baseball stadium, is located north of US 50, east of 5th Street, and west of Riverfront Street. Access to Sutter Health Park is through 5th Street, the Tower Bridge Gateway, Riverfront Street, and Ballpark Drive. Parking is located between 5th Street and Riverfront Street.

City of Sacramento Parks and Recreational Facilities

Fredrick Miller Regional Park, a Section 4(f) resource, is located at 2710 Marina View Drive. The park includes a boating dock for river access and picnic areas. Operated by the City of Sacramento, this park is protected by the Park Preservation Act.

The Sacramento Marina, a Section 4(f) resource, is at the southern end of Front Street east of Frederick Miller Regional Park. With 475 boat slips, it is the largest and only off-river dockage marina in the Sacramento area. It is open to the public 24-hours a day, 365 days per year, and can accommodate boats up to 50 feet in length. Operated by the City of Sacramento, this facility is protected by the Park Preservation Act.

The Sacramento River Parkway contains a strip of land adjacent to the river and the paved Sacramento River Parkway Trail. The parkway and trail are Section 4(f) resources. In the project vicinity, the parkway is undeveloped except for the trail. The paved trail runs adjacent to the Sacramento Southern Railroad Excursion Train from Tower Bridge, south to Broadway. At Broadway, the trail crosses the roadway and transitions to a shared bike route along Miller Park Circle through the marina. South of the marina's public boat ramp and parking area, the trail is paved (Class I) and continues south on the river levee to the Pocket Area of Sacramento. Operated by the City of Sacramento, this resource is protected by the Park Preservation Act.

O'Neil Field, a publicly owned sport-focused park and a Section 4(f) resource, is located at 715 Broadway, east of the project limits. This facility contains a full-sized soccer field, two softball fields, and restroom facilities that are open during special events. Operated by the City of Sacramento, this facility is protected by the Park Preservation Act.

2.1.3.3 Environmental Consequences

Build Alternatives

Both build alternatives would have similar impacts on existing or planned recreational facilities.

Construction of the bridge would affect approximately 600 feet of the proposed River Walk Park trail extension in West Sacramento for the grade to be separated to allow the trail to both pass under the bridge and connect directly to it. A temporary alternative route would be required for cyclists and pedestrians approaching Broadway Bridge in either direction from the trail. Trail users would be temporarily rerouted west on existing roadways such as South River Road, where users would travel south past the construction zone, then east to reconnect to the existing trail. The detour would be identified in the TMP described in Chapter 1, *Proposed Project*.

There would be no change in access to Garden Park in West Sacramento during project construction. Park users could have intermittent views of trucks and equipment installing the fiber optic line; however, landscaping on the west end of the park would partially block views of the minor construction activities proposed on Riverfront Street (fiber optic communication line installation). Noise from construction of the bridge would not affect park users because of the distance from the construction site and traffic noise on Pioneer Bridge.

Temporary construction activities would be necessary just east and outside of Sutter Health Park in West Sacramento within the road right-of-way of Riverfront Street to install the fiber optic communication line in existing conduit. The stadium and other features of the park would not be affected.

In Sacramento, both build alternatives would modify the entrance to Frederick Miller Reginal Park and the Sacramento Marina and would modify the Sacramento River Parkway Trail. Fill would be placed under Broadway to raise the road, and the connection from Broadway to Marina View Drive would be moved closer to Frederick Miller Regional Park. Approximately 350 feet of Marina View Drive would be reconstructed. Because of the slight difference in bridge alignment between Alternative B and Alternative C at this location, construction of the more southern location of Alternative C would encroach approximately 150 feet further into Frederick Miller Regional Park than Alternative B.

The Sacramento River Parkway Trail would be reconstructed approximately 1,000 feet north and 300 feet south of Broadway. The trail would be grade-separated under the proposed bridge structure. Access would change to allow cyclists and pedestrians approaching Broadway in either direction to follow the trail under the new structure, avoiding the need to cross the roadway, or to cross the bridge on dedicated

bicycle/pedestrian facilities in either direction. The bike trail would parallel the Sacramento River, cross under the Broadway Bridge, and connect to Marina View Drive to access the Sacramento Marina and Miller Park.

During construction of the proposed project, Miller Park and Sacramento Marina traffic would be required to travel on westbound Broadway, turn left onto southbound Front Street, right onto Miller Park Circle, and then left onto Marina View Drive.

To reconstruct the Sacramento River Parkway Trail in the project area, about 3,400 feet of the trail would be closed north and south of Broadway. Users would be detoured to the bike lane on Front Street between the Sacramento Marina and where the Sacramento River Parkway Trail meets the R Street bicycle/pedestrian bridge. This alternative route would be identified in the TMP.

Several parks in Sacramento, particularly the Sacramento Marina, Frederick Miller Regional Park, and potentially O'Neil Field, are close enough to the project area that they could experience temporary noise and dust impacts associated with project construction. Access would not be prevented, although alternative routes may be required, especially for the Sacramento Marina and Miller Park; these routes would be identified in the TMP.

In-water work would not interfere with recreational or commercial boaters using the Sacramento Marina. The USCG would require that boating access be maintained during construction, and the proposed bridge design provides for the adequate passage of vessels.

Both Alternative B and Alternative C would have beneficial impacts on parks and recreational facilities because the new river crossing would provide the community with additional access to the riverfront and associated parks and trails in both West Sacramento and Sacramento. The bridge also would improve bicycle and pedestrian mobility and connectivity, which would enable more users to access the riverfront and associated parks and trails in both cities. These beneficial impacts align with the purpose and need of the proposed project, of increasing the number of river crossings and encouraging travel by walking and bicycle, as well as improving connectivity to and accessibility of recreational areas without affecting the use of Miller Park or the Sacramento Marina.

As indicated in Section 2.1.3.2 and in Appendix C, there are parks and recreational facilities within the project vicinity that are protected by Section 4(f). These facilities include River Walk Park, O'Neil Field, Miller Park, the Sacramento Marina, and the Sacramento River Bike Trail and Parkway. This project would result in a temporary occupancy of some of these facilities as defined by Section 4(f). Please see Appendix C, under the heading, *Resources Evaluated Relative to the Requirements of Section 4(f)* for additional details.

No Build Alternative

Under the No Build Alternative, the project would not be constructed, and there would be no impacts on parks and recreational facilities. Planned development in the project area would maintain or enhance existing park and recreation facilities.

2.1.3.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. The project includes implementation of a TMP that would provide for dissemination of information regarding temporary trail closures and detours, temporary access changes at Miller Park and the Sacramento Marina, the approximate duration of changes, and a description of the detours available during construction.

2.1.4 Community Character and Cohesion

2.1.4.1 Regulatory Setting

NEPA of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). The 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. 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.

2.1.4.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF 2020). The report is available in Appendix K.

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 West Sacramento portion of the land use study area (Figure 2.1.1-1) (CT 010201) includes a wide variety of land uses, with industrial uses concentrated east of Jefferson Boulevard and south of US 50, and residential and recreational uses located west of Jefferson Boulevard. While there are many new land use changes in West Sacramento, including redevelopment near the waterfront, this block group contains many older single-family residences. The residents share some community facilities, including the churches, schools, and health care facilities in the vicinity, and are likely to shop and recreate locally—although there are no parks in this portion of the study area. These factors indicate a cohesive community.

The Sacramento side of the land use study area comprises a mix of land uses, with the riverfront and industrial uses there divided from the neighboring communities by transportation infrastructure (mainly the I-5 and US 50 interchange). However, CT 2200 contains several established community areas within the Upper Land Park neighborhood. BG 2 consists of the Upper Land Park neighborhood, which contains two low-income housing projects, where residents are likely to live in proximity; share resources; and use the same community resources such as the nearby schools, parks, and churches. Well-established single-family residences are located east of 5th Street; these residents also are likely to share the same

community facilities, including the neighborhood parks, churches, schools, and health care facilities in the vicinity. These factors indicate a cohesive community.

Ethnicity and Race

As of 2019, the total population of the City of West Sacramento was 53,151. Of the total population, the largest group was White (approximately 66.3 percent), and persons of Hispanic or Latino origin made up the next largest group (30.1 percent). The remaining population, in descending order of proportion, was Asian, Two or More Races, Black or African American, Native Hawaiian/Pacific Islander, and American Indian/Alaskan Native (U.S. Census Bureau 2019).

The total population of the City of Sacramento was 513,624 in 2019. Of the total population, the largest group was White (approximately 46.3 percent), and persons of Hispanic or Latino origin of any race made up the next largest group (28.9 percent). The remaining population, in descending order of proportion, was Asian, Black or African American, Two or More Races, Native Hawaiian/Pacific Islander, and American Indian/Alaskan Native (U.S. Census Bureau 2019). Appendix K (Table 5-2) includes a more detailed breakdown of the ethnic distribution of the block groups in the land use study area.

Data were used from the American Community Survey Estimates from 2013 to 2017 to show recent and accurate data at the block-group level (ICF 2020). Several of the block groups in both the West Sacramento and Sacramento portions of the study area contain a higher percentage of minority populations, comparatively. In West Sacramento, CT 010201, BG 1 has a 44.6 percent Hispanic/Latino population compared to the city as a whole (29.8 percent). In Sacramento, CT 002200, BG 1 has a 43.8 percent Hispanic/Latino population and a 16.5 percent Native American population, which is significantly higher than the city (and state) averages. CT 002200, BG 2 has a notably higher percentage of Black/African American, Native American, and Asian residents compared to the city (and state) as a whole.

Community Facilities

Schools and Libraries

The closest public school in West Sacramento is Westmore Oaks Elementary School, approximately 0.3 mile west of Park Boulevard and 0.7 mile west of Jefferson Boulevard. West Sacramento Early College Prep Charter School is located one block west of Park Boulevard, approximately 0.5 mile west of Jefferson Boulevard. Both closest West Sacramento schools are outside the project's land use study area. As shown in Figure 2.1.4-1, two schools are located within the study area in Sacramento. Leataata Floyd Elementary School is located just east of I-5, south of Broadway; and Health Professions High School is just east of the elementary school.

The closest public libraries to the proposed project are the Arthur F. Turner Library in West Sacramento on West Capitol Mall, approximately 0.5 mile north of the bridge site; and the Ella K. McClatchy Library in Midtown Sacramento, approximately 1.3 miles east of the Broadway and 5th Street intersection.

Health Care Facilities

The West Sacramento Medical Center at 155 15th Street in West Sacramento, about 0.1 mile west of Jefferson Boulevard, is the closest health care facility to the proposed project. There are no health care facilities in the land use study area in Sacramento. The nearest major health care facilities to the proposed project in Sacramento include the Kaiser Permanente Downtown Commons Medical Offices at 501 J

Street, about 1.25 miles from the proposed project, and Sutter General Hospital at 2801 L Street, about 2.5 miles from the proposed project.

Economic Conditions

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

Employment and Income

Based on U.S. Census Bureau data from the 2017 American Community Survey 5-Year Estimates, the unemployment rate is 9.6 percent in West Sacramento and 9.2 percent in Sacramento (U.S. Census Bureau 2017). Top industry sectors in both cities include educational services and public administration.

According to the U.S. Census Bureau (2017), several block groups in the study area have a lower median household income and a higher percentage of individuals below the federal poverty level compared to the respective cities—especially both block groups in CT 2200, south of Broadway in Sacramento.

Appendix K (Table 5-4) includes a detailed breakdown of income and poverty statistics in the land use study area and project region.

Business Activity in the Region

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 Sacramento

Major employers in Sacramento include government agencies; 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).

2.1.4.3 Environmental Consequences

Build Alternatives

Both build alternatives involve constructing a new bridge across the Sacramento River. Because the new bridge would connect to the existing or planned roadway network on either side of the river, it would not alter any existing community divisions. Rather, the new bridge would serve to enhance connectivity and reduce divisions between West Sacramento and Sacramento. The bridge also would provide additional opportunities for all modes of transportation to access economic and recreational activities in both cities and along the riverfront. The new bridge would contain bicycle and pedestrian facilities that would improve bicycle and pedestrian connectivity between the cities. The new bridge would increase roadway network capacity by providing an additional roadway option for existing residents of West Sacramento and Sacramento.

While most of the project would be constructed outside of existing roadways, some project construction areas would require temporary detours or staged construction that would cause temporary changes in access to locations near the project. The affected roadways, including South River Road in West

Sacramento and Broadway in Sacramento, serve as primary transportation routes for residents, commuters, and patrons of the local businesses and shopping areas. Impacts on libraries, health care, and other community facilities are not anticipated. Since access to existing areas and facilities would be maintained via temporary detours, and the TMP included as part of the project (see Chapter 1, *Proposed Project*) would ensure that cut-through traffic does not disrupt existing neighborhoods or community areas, no temporary adverse effects on community cohesion or community facilities are anticipated.

Both alternatives require modifications to the approved mobility network in West Sacramento, the roadway network that is planned for the Pioneer Bluff area. By 2030, it is anticipated that a portion of that network would already be built (see Chapter 1, *Proposed Project* and Figure 1-2). Alternative C would cause greater disruptions to development and community plans for the Pioneer Bluff area than Alternative B because C proposes a “T” intersection with South River Road that is not included in the approved mobility network for the area. The “T” intersection also would create a change in vehicular travel patterns that would increase traffic volumes on the proposed Circle Street (see Figure 1-3 in Chapter 1), increasing the intensity of travel patterns originally envisioned for that street.

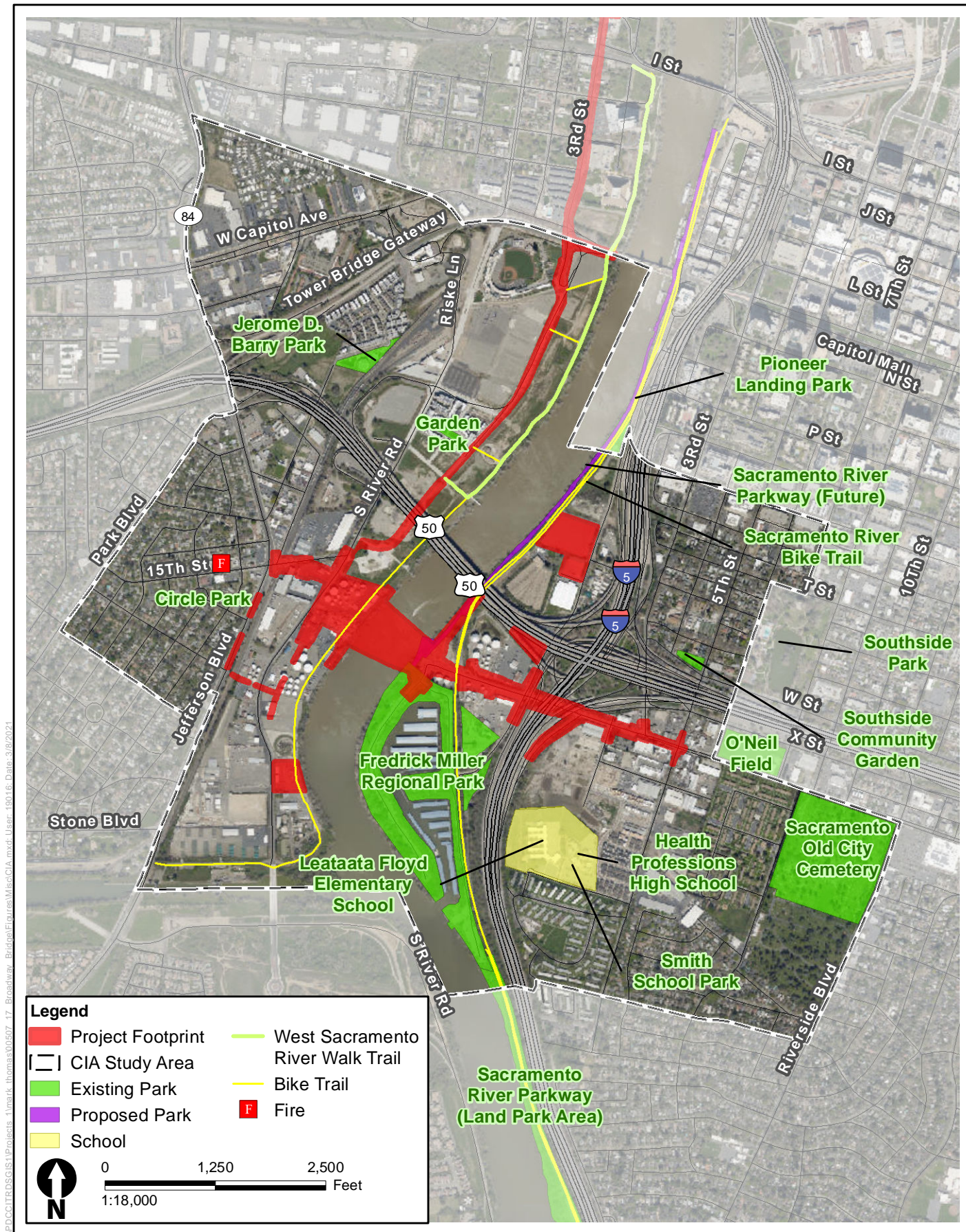
After construction of the project, growth patterns or population characteristics are not expected to be different from those already existing or anticipated in already adopted land use plans. Neither build alternative would affect the regional population or displace or relocate housing or people. No adverse effects on community character or cohesion are anticipated.

No Build Alternative

Regional population characteristics would not change under the No Build Alternative because the project would not be constructed and there would be no changes in access or growth other than what already has been planned for in adopted general plans. There would be no impacts on community facilities or services under the No Build Alternative because the project would not be constructed. There also would be no impacts on community cohesion under the No Build Alternative because the project would not be constructed.

2.1.4.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. Implementation of the TMP included as part of the project would reduce potential temporary impacts on community resources that could result from construction activities and detours during construction.



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**Figure 2.1.4-1
Community Resources**

2.1.5 Relocations and Real Property Acquisition

2.1.5.1 Regulatory Setting

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

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix D for a copy of Caltrans' Title VI Policy Statement.

2.1.5.2 Affected Environment

This section is a summary of the analysis documented in the CIA prepared for the project (ICF 2020). The report is available in Appendix K.

The project footprint and temporary and permanent disturbance limits are shown in detail in Appendix A. In West Sacramento, land uses within and immediately adjacent to the project footprint are primarily non-conforming industrial and commercial uses, with open space/recreational uses near and along the Sacramento River and residential land uses just north of US 50 and west of Jefferson Boulevard.

In Sacramento, land uses within the project footprint are primarily non-conforming industrial and commercial uses, with recreational uses located along the Sacramento River. Also adjacent to the project footprint in Sacramento are urban commercial corridors, especially along Broadway, and traditional residential neighborhoods (low- and medium-density). Sacramento contains many development, redevelopment and infill projects in the planning and approval stages.

2.1.5.3 Environmental Consequences

Build Alternatives

A list of the property acquisitions needed, including temporary and permanent acquisitions by parcel and acres, for Alternatives B and C is shown in Chapter 1, Table 1-2 and Table 1-4. Drawings with parcel locations are included in Appendix A. Implementation of the proposed project would require acquisition of private property and conversion of public property to a transportation use. Several businesses would be affected by property acquisitions and would need to be relocated if they are still in place at the time of project construction. The businesses that would be affected by the proposed project are within the limits of planned deindustrialization and redevelop areas in the Pioneer Bluff and West Broadway areas in West Sacramento and Sacramento, respectively. The number of business relocations needed in Sacramento assumes construction of the fill slopes shown in Appendix A along realigned Broadway. No residences would be displaced. A summary of the business relocations is shown in Table 2.1.5-1.

Table 2.1.5-1. Estimated Number of Full Business Displacements by Alternative

Type of Business	Alternative B	Alternative C	No Build Alternative
Commercial businesses	2 on 2 parcels in West Sacramento	1 on 1 parcel in West Sacramento	0
Industrial (petroleum) businesses	2 on 4 parcels in Sacramento	3 on 5 parcels – 1 in West Sacramento, 4 in Sacramento	0
Total number of businesses displaced	4 on 6 parcels	4 on 6 parcels	0

Alternative B

In West Sacramento, the total TCE area needed for construction of Alternative B is 0.531 acre in the interim year and 0.091 acre in the design year (1.280 acres total). The total permanent right-of-way acquisition needed under Alternative B is 4.343 acres in the interim year and 0.279 acre in the design year (4.621 acres total). Acquisition of land in West Sacramento would require relocation of two businesses.

In Sacramento, the total TCE area needed under Alternative B is 0.658 acre in the interim year. No TCEs are needed for the design year. The total permanent right-of-way acquisition needed under Alternative B is 5.409 acres (all in the interim year). Acquisition of land from four parcels in Sacramento that are used by petroleum companies would require relocation of current land uses.

Alternative C

In West Sacramento, the total TCE area needed for construction of Alternative C is 0.320 acre in the interim year and 0.154 acre in the design year (0.474 acres total). The total permanent right-of-way acquisition needed under Alternative C is 4.218 acres in the interim year and 1.05 acres in the design year (5.268 acres total). Two West Sacramento businesses would require relocation under Alternative C.

In Sacramento, the total TCE needed under Alternative C is 0.816 (all in the interim year). The total permanent right-of-way acquisition needed under Alternative C is 5.533 acres (all in the interim year). Like Alternative B, acquisitions from four parcels in Sacramento could require business relocation under Alternative C.

No Build Alternative

Property would not need to be acquired under the No Build Alternative. However, as land uses change and redevelopment occurs consistent with the plans for de-industrialization of the waterfront in both West Sacramento and Sacramento, property ownership also may change.

2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. As part of project implementation, all acquisitions would be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the California Relocation Act. Refer to Appendix E, *Summary of Relocation Benefits*. No other measures are required.

2.1.6 Utilities/Emergency Services

2.1.6.1 Affected Environment

This section is based on the CIA prepared for the project (ICF 2020) and discusses utilities and emergency services (including police, fire, and emergency medical services). The report is available in Appendix K.

Utilities

Electricity and Natural Gas

PG&E provides electric service to the city of West Sacramento, and natural gas service to both West Sacramento and the city of Sacramento. SMUD provides electric service in the City of Sacramento.

Water Supply

In 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.

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 2016).

Wastewater/Stormwater

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 (City of West Sacramento n.d).

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.

Solid Waste

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 (City of West Sacramento n.d.).

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 (City of Sacramento 2015).

Telecommunications

Telecommunications service to the city of West Sacramento is mainly provided by AT&T, Wave Broadband, and Sprint (City of West Sacramento 2017). These companies generally add improvements or relocations as the need arises to meet customer demand.

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).

Emergency Services

City of West Sacramento Police Department

The West Sacramento Police Department, headquartered at 550 Jefferson Boulevard in West Sacramento, has field operations under the command of two watch commanders and eight police sergeants. The police sergeants provide direct supervision to 65 sworn officers and 4 community services officers assigned to 5 patrol shifts and 2 specialty units. Other specialized units include the Yolo County Law Enforcement Team (ALERT), Yolo County Narcotic Enforcement Team, and the Yolo County Bomb Squad.

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 in Sacramento. One police facility (Mounted Unit Facility) is in the project area at 2700 Front Street. The full-service department had approximately 966 officers in 2016 (sworn and civilian).

California Highway Patrol

The California Highway Patrol (CHP) operates an office in Woodland that patrols more than 1,000 miles of incorporated and unincorporated interstate highways, and unincorporated roadways in Yolo County. CHP's closest office to the project site is in South Sacramento, about 11 miles away. Officers from the South Sacramento office patrol sections of I-5, State Route 99, US 50, Business 80, and 500 miles of unincorporated county roadways.

West Sacramento Fire Department

The West Sacramento Fire Department provides fire protection and emergency response services within the city limits and responds to emergencies in outlying areas when other fire departments request aid. The West Sacramento Fire Department has five fire stations throughout the city and approximately 17 personnel on duty at a given time. Fire Station 41 is located nearest the project area at 132 15th Street. Fire Stations 44 and 45 are located to the north and south, respectively, of Fire Station 41. The Fire Department has automatic aid agreements with several Yolo County fire departments, and with the City of Sacramento Fire Department.

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. Of the 24 active stations, the station nearest the project site is Station 5 at 731 Broadway in Sacramento. Department personnel respond to approximately 80,000 calls each year and provide service to approximately 480,000 residents and over

20,000 businesses within the city of Sacramento. The department participates in the State mutual aid response system, which provides Type I and Type III engine companies upon request of the California Emergency Management Agency.

2.1.6.2 Environmental Consequences

Build Alternatives

Utilities and emergency services in the project vicinity would be minimally affected during construction of roadway improvements in both cities. Impacts on utilities would be the same for either build alternative.

Poles and other support structures for several above-ground public and private utilities, including electric and communication facilities, would need to be relocated to match new roadway widths and alignments. Access points to underground utilities would be adjusted to the new ground or roadway elevation within the limits of the proposed project, including access points to existing water, sewer, gas, electric, and communication facilities within Broadway, South River Road, 15th Street, and Jefferson Boulevard. Ground disturbance for the relocations and grade adjustments would be within the limits of disturbance needed for the proposed project. Utility relocations and grade adjustments would be conducted prior to or during construction. Early notification of utility service and communications providers would help to ensure that patrons are notified prior to any temporary loss of service.

During construction, short-term lane closures would be necessary on local streets, as described in Section 1.3.1.1 of the Project Description, *Common Design Features of the Build Alternatives*. Access and circulation would change in the project area during construction and post construction. Depending on the direction of travel of emergency service providers, the route could be shorter or longer. Implementation of the TMP described in Chapter 1 would ensure that construction activities would not create major delays for emergency service providers and other roadway users. In addition, emergency service providers would be notified as early as possible to plan for lane closures and other delays related to construction activity.

No Build Alternative

There would be no direct impacts on utilities and emergency services under the No Build Alternative because the project would not be constructed.

2.1.6.3 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.1.7 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.7.1 Regulatory Setting

Federal Requirements

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

In July 1999, the 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 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). The 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.

State Requirements

I-5 Transportation Concept Report

I-5 crosses over Broadway in a north-south direction east of the proposed new bridge and has a northbound off-ramp to Broadway. I-5 would be influenced by proposed changes to the local roadway network. In 2017, Caltrans District 3 released the *Transportation Concept Report, Interstate 5* (California Department of Transportation 2017) that includes portions of I-5 within the project's transportation study area. The report shows existing operations on I-5 within the study area as being at level of service (LOS) F. The report also indicates a Concept LOS E for the segment in the proposed project's study area (California Department of Transportation 2017:25). The ultimate concept LOS represents the minimum acceptable service conditions over the next 20 years. The report indicates that the No Build and Build scenarios will not meet the LOS E ultimate concept LOS, and that targeted operational improvements, intelligent transportation systems, and integrated corridor management will be needed. LOS ratings vary from A to F, like a report card. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. While LOS F is expected, individual development or infrastructure projects are expected to avoid or minimize worsening the LOS F conditions.

US 50 Transportation Concept Report and Corridor System Management Plan

US 50 passes over the Sacramento River on Pioneer Bridge just north of the proposed project location. Because US 50 is the closest river crossing to the proposed project, it would be influenced by the proposed change to the local roadway network. In 2014, Caltrans District 3 released the *Transportation Concept Report and Corridor System Management Plan, United States Route 50* (California Department of Transportation 2014) that includes portions of US 50 within the project's transportation study area. Table 13 of the report shows existing operations on US 50 west of the Sacramento River as being at LOS E, and east of the river at LOS F. Table 13 also indicates a Concept LOS E for the corridor segment in the proposed project's study area (California Department of Transportation 2014:49).

The above-referenced Caltrans LOS results are based on daily volume-to-capacity comparisons and do not necessarily consider specific operational characteristics (e.g., length of weave sections, peak-hour factors) within the I-5 and US 50 corridors. Nevertheless, these data are valuable in understanding Caltrans' expectations of their current and projected operating performance.

Regional and Local Requirements

Metropolitan Transportation Plan/Sustainable Communities Strategy

SACOG is responsible for preparation of, and updates to, the 2020 MTP/SCS and the corresponding 2021 MTIP for the six-county Sacramento region. The 2020 MTP/SCS (Sacramento Area Council of Governments 2019) provides a 20-year transportation vision and corresponding list of projects. The 2021 MTIP (Sacramento Area Council of Governments 2021) identifies short-term projects in more detail. Only projects included in the MTP/SCS may be incorporated into the MTIP. The proposed project is included in both plans with ID YOL19328.

Regional Bicycle, Pedestrian, and Trails Master Plan

The *Regional Bicycle, Pedestrian, and Trails Master Plan* (Sacramento Area Council of Governments 2018), an update to the 2015 plan, is a comprehensive list of planned projects prepared by SACOG. This plan is shaped by the goals and strategies of the MTP/SCS. A Class I bike path and Class II on-street bike lane on the proposed Broadway Bridge is described in the plan.

City of West Sacramento

West Sacramento General Plan 2035

The *City of West Sacramento General Plan 2035 Policy Document* was adopted in 2016. The Mobility Element of the General Plan outlines goals and policies related to the City's transportation system. The following LOS and vehicle miles travelled (VMT) policies are relevant to this project.

Policy M-3.2. Automobile Level of Service: 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 Boulevard 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.

Policy M-1.3. Reduce Vehicle Miles Travelled: The City shall endeavor to reduce vehicle miles travelled (VMT) and dependence on fossil fuels by continuing to develop a comprehensive multi-modal transportation system and compact, mixed-use development that includes more transit, bicycle, and pedestrian routes.

Other policies from the *City of West Sacramento General Plan 2035 Policy Document* that relate to transportation, continuous multimodal networks, accessibility, street design standards, and transit, are relevant for the proposed project and are listed in Appendix L, starting on page 24.

West Sacramento Bicycle, Pedestrian, and Trails Master Plan

The 2018 *West Sacramento Bicycle, Pedestrian, and Trails Master Plan* (City of West Sacramento 2018), an update to the 2013 plan, identifies specific goals to provide a framework for future decisions regarding bicycle, pedestrian, trail planning and infrastructure within the City. The goals are intended to guide long-term plan implementation. The plan also identifies current and proposed bicycle facilities in the City of West Sacramento. A future Class I bike path is shown paralleling the west bank of the Sacramento River south of US 50 and crossing the river to the east from the Pioneer Bluff area (City of West Sacramento 2018:7, 41).

City of Sacramento

2035 General Plan

On March 3, 2015, the City of Sacramento City Council adopted the *Sacramento 2035 General Plan*. The Mobility Element of the *Sacramento 2035 General Plan* outlines goals and policies that coordinate the transportation and circulation system with planned land uses. The following LOS policy is relevant to this project.

Policy M 1.2.2: 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 certain exceptions mapped on Figure M-1 (and listed in the actual General Plan document).

- A. Core Area (Central City Community Plan Area) – LOS F allowed
- B. Priority Investment Areas – LOS F allowed
- C. LOS E roadways (11 distinct segments listed). LOS E is also allowed on all roadway segments and associated intersections located within ½ mile walking distance of a light rail stations.
- D. LOS F roadways (24 distinct segments listed)
- 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).

According to Figure M1 (Vehicle Level of Service Exception Areas) of the 2035 City of Sacramento General Plan, the proposed project is located within one of three Priority Investment Areas. The project site is also located within the Core Area, which is bounded by the Sacramento River, American River, Broadway, and Alhambra Boulevard. All study intersections are located

within the Core Area as well as a Priority Investment Area; therefore, LOS F is allowed at all study locations. The City’s policy was adopted to allow decreased levels of service (i.e., LOS F) in the urbanized Core Area of the City that supports more transportation alternatives and places residents proximate to employment, entertainment, retail and neighborhood centers and thus reduces overall vehicle miles traveled and results in environmental benefits (e.g., improved air quality and reduced GHG emissions). Based on this evaluation, the City determined that LOS F is considered acceptable during peak hours within the Core Area.

Other policies from the *Sacramento 2035 General Plan* that relate to transportation, multimodal access and accommodation (including pedestrian, bicycle, and transit modes), and sidewalk and street design also are relevant for the proposed project and are listed in Appendix L, starting on page 28.

Central City Specific Plan

In April 2018, the City of Sacramento adopted the *Central City Specific Plan* (City of Sacramento 2018) that establishes a future vision for the Sacramento Central City area, which includes the site of the proposed project. The Central City Mobility Project, which will implement transportation improvements consistent with the policy framework identified in the *Central City Specific Plan*, will extend the bikeway network by adding 62 blocks of protected bikeways and converting two segments of one-way streets to two-way, including 5th Street from Broadway north to I Street.

2.1.7.2 Affected Environment

This section was prepared using information from the *Broadway Bridge PA/ED Transportation Report* prepared for the project (Fehr & Peers 2020). The report is available in Appendix L.

Study Area

Figure 2.1.7-1 shows the bridge location, the 15 existing study intersections, and 10 roadway segments selected for the study area for analysis of effects on transportation. In addition to roadways, the study area for traffic and transportation includes bicycle, pedestrian, and transit facilities in the project vicinity. The expected travel characteristics of the project and primary travel routes to and from the project vicinity were considered when developing the study area.

Methodology

Traffic Modeling

As described in the *Broadway Bridge PA/ED Transportation Report* (Appendix L), the analysis was conducted for AM and PM peak-hour conditions following the prescribed methodology for each facility type contained in the *Highway Capacity Manual*. Input variables were based on field observed data, estimates, and parameters specified by the City of West Sacramento and City of Sacramento. The *Highway Capacity Manual* procedures describe traffic operating conditions from a driver’s perspective based on the concept of LOS, as described above. Perspectives from other roadway network users such as bicyclists and pedestrians are not accounted for in this methodology. These methodologies were applied using the SimTraffic microsimulation software program, which considers the effects of lane utilization, turn pocket storage lengths, upstream/downstream queue spillbacks, coordinated signal timings, pedestrian crossing activity, and other conditions on intersection and overall corridor operations. Utilization of SimTraffic microsimulation analysis is appropriate given the presence of coordinated signal timing plans, close spacing of signalized intersections, and overall levels of traffic and peak-hour

congestion within the study area. Reported results are based on an average of 10 model runs. (Fehr & Peers 2020.)

Acceptable Traffic and Transportation Operating Conditions

Roadway Facilities

The LOS is used to determine consistency with acceptable traffic operations as defined by adopted policies related to LOS expectations in the jurisdictions that govern the project area. The maximum (or worst) acceptable LOS thresholds on roadways in the study area for determining policy consistency in each jurisdiction are listed in Table 2.1.7-1.

Table 2.1.7-1. Maximum Acceptable Level of Service

Plan	Applicable Mobility Element Policy	Maximum Acceptable LOS
West Sacramento 2035 General Plan	M-3.2	E
Sacramento 2035 General Plan	M-1.2.2	F

Sources: City of West Sacramento 2016:2–55; City of Sacramento 2015:2, 166–168.

If traffic generated by a project causes the operation of a roadway to deteriorate below an acceptable LOS, the project would not be consistent with locally adopted policies.

In addition, in West Sacramento, projects are considered inconsistent with adopted policy related to the roadway intersection operations if traffic generated by the project would cause the average vehicle delay to increase by more than 5 seconds at an intersection operating at an unacceptable LOS without the project. In Sacramento, a project is inconsistent with local policy if traffic generated by a project substantially degrades operation of intersections and roadway segments, despite compliance with General Plan policies (as described above).

Freeway Facilities

Caltrans would consider queuing changes adverse if the project traffic causes off-ramp traffic to queue back to beyond the freeway gore point or worsens an existing/projected queuing problem on a freeway off-ramp.

Active Transportation and Public Transit Facilities

Impacts on bicycle facilities are considered adverse if the project would substantially worsen existing or planned bicycle or pedestrian facilities; or fail to adequately provide for access for bicyclists or pedestrians. Impacts on the transit system would be adverse if the project would substantially worsen public transit operations, or fail to adequately provide access to transit.

Vehicle Miles of Travel

Impacts related to VMT would be considered adverse if the project would substantially increase VMT per service population (total residents and employees) within the SACOG region.

Existing Conditions

Analysis of traffic and transportation impacts began in 2017, which represents the baseline condition when data collection occurred and is the year the notice of preparation of this Environmental Impact Report/Environmental Assessment was issued. This section presents existing operating conditions.

Intersection Operations

For signalized and all-way stop-controlled intersections, the LOS is based on the average control delay of all vehicles traveling through the intersection. For side-street stop-controlled intersections, the delay and LOS for the movement with the greatest average delay is reported along with the average delay for the entire intersection. Table 2.1.7-2 shows existing intersection operations. All listed intersections operate at LOS C or better, reflective of generally light levels of congestion. Key travel patterns during the AM peak hour include high demand of volume entering the US 50 eastbound on-ramp at South River Road, which creates queuing that spills back to the eastbound left-turn and northbound through movements at the Jefferson Boulevard/15th Street intersection. During the PM peak hour, there is a high demand of traffic destined for the I-5 and US 50 on-ramp at X Street/5th Street; however, traffic continues to move smoothly without a high level of delay.

Table 2.1.7-2. Intersection Operations under Existing Conditions

Intersection	Jurisdiction	Control Type	Peak Hour	Delay (seconds)	Level of Service
South River Road/US 50 eastbound on-ramp	West Sacramento	Uncontrolled	AM	21	C
			PM	11	B
Jefferson Boulevard/15th Street	West Sacramento	Signal	AM	20	B
			PM	23	C
South River Road/15th Street	West Sacramento	Signal	AM	27	C
			PM	24	C
Jefferson Boulevard/Stone Boulevard	West Sacramento	Signal	AM	10	A
			PM	15	B
Jefferson Boulevard/Locks Drive	West Sacramento	Signal	AM	6	A
			PM	11	B
W Street/3rd Street	Sacramento	Side street stop controlled	AM	1 (5)	A (A)
			PM	1 (9)	A (A)
W Street/5th Street	Sacramento	Signal	AM	10	A
			PM	20	B
X Street/3rd Street	Sacramento	Side street stop controlled	AM	3 (7)	A (A)
			PM	3 (9)	A (A)
X Street/5th Street	Sacramento	Signal	AM	16	B
			PM	25	C
Broadway/Front Street	Sacramento	Side street stop controlled	AM	1 (5)	A (A)
			PM	2 (5)	A (A)
Broadway/I-5 northbound off-ramp	Sacramento	Side street stop controlled	AM	4 (6)	A (A)
			PM	3 (5)	A (A)

Intersection	Jurisdiction	Control Type	Peak Hour	Delay (seconds)	Level of Service
Broadway/3rd Street (south)	Sacramento	Side street stop controlled	AM	1 (3)	A (A)
			PM	1 (4)	A (A)
Broadway/3rd Street (north)	Sacramento	Side street stop controlled	AM	2 (9)	A (A)
			PM	11 (28)	B (D)
Broadway/5th Street	Sacramento	Signal	AM	12	B
			PM	16	B
Broadway/Riverside Boulevard	Sacramento	Signal	AM	16	B
			PM	17	B

Note: For signalized and uncontrolled intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, the LOS and control delay for the worst movement is shown in parentheses next to the average intersection LOS and delay. Impacts on intersections are determined based on the overall LOS and average delay.

Roadway Segment Operations

The study roadway segments in West Sacramento were evaluated using the City of West Sacramento’s *Traffic Impact Analysis Guidelines* (City of West Sacramento 2006). The study area roadways were assigned a roadway type based on their characteristics. The daily volume table in the guidelines then was used to assign the roadway LOS. Similarly, the roadway segments in Sacramento were evaluated using the City of Sacramento’s General Plan Mobility Element LOS policy thresholds (Policy M-1.2.2) for Sacramento roadways to determine daily volume thresholds and assign roadway LOS.

The volume-to-capacity (V/C) ratio measures the level of congestion on a roadway by dividing the volume of traffic by the capacity of the roadway (capacity is expressed in vehicles per day). A V/C ratio closer to 1 indicates higher levels of congestion. V/C ratios lower than 0.5 indicate low or no congestion.

All roadway segments in the study area operate at LOS D or better in existing conditions, except for Jefferson Boulevard north of 15th Street in West Sacramento, which operates at LOS E. Existing condition operations are consistent with local LOS policies.

Table 2.1.7-3. Roadway Segment Operations under Existing Conditions

Roadway	Segment	Jurisdiction	Travel Lanes	Level of Service	2017 Volume to Capacity Ratio
Jefferson Boulevard	North of 15th Street	West Sacramento	4	E	0.93
15th Street	West of Jefferson Boulevard	West Sacramento	2	C	0.43
Alameda Boulevard	West of Jefferson Boulevard	West Sacramento	2	B	0.24
Jefferson Boulevard	South of Alameda Boulevard	West Sacramento	4	D	0.84
South River Road	South of 15th Street (Alameda Boulevard)	West Sacramento	2	B	0.62
Jefferson Boulevard	South of Locks Drive	West Sacramento	4	D	0.85
3rd Street	North of W Street	Sacramento	2	A	0.21
5th Street	North of W Street	Sacramento	2	A	0.18
5th Street	South of Broadway	Sacramento	2	D	0.8
Riverside Boulevard	South of Broadway	Sacramento	2	D	0.81

Roadway	Segment	Jurisdiction	Travel Lanes	Level of Service	2017 Volume to Capacity Ratio
Broadway	Between 3rd Street and 5th Street	Sacramento	2	A	0.53
Broadway	Between 9th Street and 10th Street	Sacramento	2	D	0.87
Broadway	East of Riverside Boulevard	Sacramento	4	A	0.39

Freeway Off-Ramp Queues

The freeway off-ramp queues in AM and PM peak hours are presented in Table 2.1.7-4. All off-ramp queues remain well below the available storage capacity.

Table 2.1.7-4. Freeway Off-Ramp Storage and Queue Lengths

Location	Available Storage (feet)	Peak Hour	Queue Length (feet)
I-5 southbound off-ramp at 3rd Street/X Street	1,150	AM	75
		PM	75
US 50 eastbound off-ramp at 5th Street/X Street	1,300	AM	175
		PM	250
I-5 northbound off-ramp at Broadway	1,000	AM	75
		PM	75

Note: The available storage length for off-ramp queuing is measured from the noted off-ramp terminal intersection to the freeway off-ramp gore point.

Vehicle Miles of Travel

The total daily VMT for all trips in the Sacramento region, analyzed using the SACMET regional travel demand model, is 55,823,950 miles.

Active Transportation and Public Transit Facilities

Bicycle Infrastructure

Existing bicycle infrastructure in the study area consists of the following facilities, as defined in Chapter 60 of Caltrans' *Highway Design Manual* (California Department of Transportation 2020:60-2).

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

The River Walk Trail (Class 1 multi-use path) runs along the West Sacramento side of the Sacramento River and terminates at Mill Street. Class II bicycle lanes are intermittent along South River Road as it transitions from 5th Street to the north to Village Parkway to the south. The Sacramento River Bike Trail (Class 1 multi-use path) runs along the Sacramento side of the river, transitioning as a Class III bike route

through Miller Regional Park. In addition, bicycle lanes exist on Broadway between Front Street and Muir Way. More information on the existing bicycle infrastructure is shown in Figure 5 of Appendix L.

Pedestrian Infrastructure

Sidewalk connectivity within the study area is intermittent. Although some roadways have continuous sidewalks lining both sides of the street, many have discontinuous sidewalks or lack sidewalks on one side. Notable locations where sidewalks are missing include most of South River Road and the east side of Jefferson Boulevard in West Sacramento, and the section of Broadway west of Front Street in Sacramento. Figure 6 in Appendix L shows the existing pedestrian facilities and highlights locations where sidewalks are missing.

Public Transit Facilities

Local transit service in the study area is provided by both the Yolo County Transportation District (Yolobus) and the Sacramento Regional Transit District. Currently, Yolobus route 39, a commuter bus between the Southport area of West Sacramento and Downtown Sacramento, is the only bus that provides connection across the Sacramento River within the study area. More information about the transit routes and stops in the study area for both Yolobus and Sacramento Regional Transit is shown in Figure 7 of Appendix L.

2.1.7.3 Environmental Consequences

This section describes how future conditions without and with the project were modeled and compares transportation conditions under existing (2017), opening year (2030), and design year (2040) conditions without and with the build alternatives for the proposed project. While it is not anticipated that the new bridge would be constructed and open to traffic prior to 2030, data comparing existing conditions without the project to with the project are included to provide a context for how existing traffic patterns could change in response to the new bridge.

Travel Forecasts

The SACMET regional travel demand model, developed and maintained by SACOG, was used to forecast existing-plus project and future transportation conditions, and expected changes in daily traffic and peak-hour turning movement volumes with the proposed project. The model was developed with a linear interpolation of land use growth within the Sacramento region in place by 2030 and specific land use growth assumed for the Pioneer Bluff area as identified by the City of West Sacramento planning staff. The model also assumes roadway infrastructure projects expected to be completed by 2030, as identified by SACOG in the MTP/SCS. For the design year (2040), the model includes the land use growth and roadway infrastructure projects within the Sacramento region assumed under cumulative conditions, as identified by SACOG in the MTP/SCS.

More information about the methodology used to model future-year traffic operating conditions without and with the project is included in Appendix L.

Intersection Operation Impacts

Existing (2017), opening year (2030), and design year (2040) AM and PM peak hour intersection conditions without and with the build alternatives for the proposed project are shown in Table 2.1.7-5. Exhibits showing turning movement volumes at study intersections and LOS results are included in Appendix L.

Table 2.1.7-5. Intersection Operations

Intersection	Jurisdiction	Control Type	Peak Hour	Existing (2017) Conditions						Opening Year 2030 Conditions						Design Year 2040 Conditions					
				Existing		Alternative B		Alternative C		No Build		Alternative B		Alternative C		No Build		Alternative B		Alternative C	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
South River Road/US 50 eastbound on-ramp	West Sacramento	Uncontrolled	AM	21	C	7	A	5	A	28	C	17	B	12	B	39	D	33	C	25	C
			PM	11	B	3	A	4	A	54	D	22	C	19	B	42	D	25	C	28	C
Jefferson Boulevard/15th Street	West Sacramento	Signal	AM	20	B	36	D	26	C	25	C	31	C	32	C	35	D	34	C	33	C
			PM	23	C	28	C	41	D	38	D	48	D	56	E	39	D	40	D	43	D
South River Road/15th Street	West Sacramento	Signal	AM	27	C	75	E	24	C	59	E	45	D	52	D	71	E	77	E	28	C
			PM	24	C	53	D	49	D	29	C	49	D	51	D	35	D	80	E	31	C
Jefferson Boulevard/Stone Boulevard	West Sacramento	Signal	AM	10	A	12	B	12	B	60	E	63	E	68	E	43	D	45	D	50	D
			PM	15	B	14	B	14	B	30	C	34	C	38	D	31	C	29	C	38	D
Jefferson Boulevard/Locks Drive	West Sacramento	Signal	AM	6	A	7	A	17	B	18	B	24	C	33	C	11	B	12	B	12	B
			PM	11	B	12	B	16	B	12	B	11	B	12	B	11	B	12	B	13	B
W Street/3rd Street	Sacramento	Side street stop controlled	AM	1 (5)	A (A)	1 (5)	A (A)	1 (4)	A (A)	1 (6)	A (A)	1 (6)	A (A)	1 (6)	A (A)	1 (6)	A (A)	1 (6)	A (A)	1 (6)	A (A)
			PM	1 (9)	A (A)	1 (9)	A (A)	1 (7)	A (A)	1 (9)	A (A)	1 (10)	A (B)	1 (8)	A (A)	3 (15)	A (C)	1 (11)	A (B)	1 (10)	A (A)
W Street/5th Street	Sacramento	Signal	AM	10	A	9	A	9	A	25	C	23	C	21	C	26	C	25	C	23	C
			PM	20	B	16	B	16	B	65	E	70	E	68	E	74	E	70	E	72	E
X Street/3rd Street	Sacramento	Side street stop controlled	AM	3 (7)	A (A)	2 (7)	A (A)	2 (7)	A (A)	4 (10)	A (A)	4 (9)	A (A)	3 (8)	A (A)	4 (10)	A (A)	4 (9)	A (A)	3 (9)	A (A)
			PM	3 (9)	A (A)	2 (9)	A (A)	3 (8)	A (C)	7 (33)	A (D)	7 (13)	A (B)	6 (20)	A (C)	18 (28)	C (D)	7 (17)	A (C)	4 (19)	A (C)
X Street/5th Street	Sacramento	Signal	AM	16	B	19	B	19	B	46	D	35	C	30	C	60	E	48	D	37	D
			PM	25	C	27	C	29	C	71	E	39	D	42	D	112	F	58	E	79	E
Broadway/Front Street	Sacramento	Side street stop controlled	AM	1 (5)	A (A)	19	B	20	B	5 (13)	A (B)	44	D	53	D	8 (25)	A (D)	54	D	49	D
			PM	2 (5)	A (A)	31	C	24	C	5 (13)	A (B)	33	C	30	C	7 (15)	A (C)	54	D	54	D
Broadway/I-5 northbound off-ramp	Sacramento	Side street stop controlled	AM	4 (6)	A (A)	15	B	17	B	10	B	17	B	17	B	13	B	24	C	20	B
			PM	3 (5)	A (A)	20	C	14	B	7	A	16	B	16	B	8	A	27	C	22	C

Chapter 2. Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures—Human Environment—Traffic and Transportation/
Pedestrian and Bicycle Facilities

Intersection	Jurisdiction	Control Type	Peak Hour	Existing (2017) Conditions						Opening Year 2030 Conditions						Design Year 2040 Conditions					
				Existing		Alternative B		Alternative C		No Build		Alternative B		Alternative C		No Build		Alternative B		Alternative C	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Broadway/ 3rd Street (south)	Sacramento	Side street stop controlled	AM	1 (3)	A (A)	4 (40)	A (E)	5 (71)	A (F)	2 (20)	A (C)	5 (55)	A (F)	3 (37)	A (E)	3 (36)	A (E)	9 (76)	A (F)	6 (49)	A (E)
			PM	1 (4)	A (A)	11 (88)	B (F)	8 (97)	A (F)	2 (14)	A (B)	9 (78)	A (F)	7 (60)	A (F)	5 (20)	A (C)	14 (172)	B (F)	12 (132)	B (F)
Broadway/ 3rd Street (north)	Sacramento	Side street stop controlled	AM	2 (9)	A (A)	5 (17)	A (C)	5 (17)	A (C)	5 (24)	A (C)	6 (26)	A (D)	4 (14)	A (B)	8 (34)	A (D)	11 (29)	B (D)	7 (16)	A (C)
			PM	11 (28)	B (D)	16 (33)	C (D)	18 (72)	C (F)	10 (30)	A (D)	17 (71)	C (F)	15 (57)	C (F)	27 (93)	D (F)	19 (61)	C (F)	18 (59)	C (F)
Broadway/ 5th Street	Sacramento	Signal	AM	12	B	22	C	20	C	27	C	35	C	29	C	38	D	58	E	43	D
			PM	16	B	55	E	38	D	54	D	37	D	42	D	55	E	56	E	57	E
Broadway/ Riverside Boulevard	Sacramento	Signal	AM	16	B	17	B	17	B	17	B	20	B	18	B	17	B	20	C	20	B
			PM	17	B	17	B	17	B	34	C	38	D	31	C	35	D	47	D	43	D
South River Road/ Broadway	West Sacramento	Signal	AM	-	-	-	-	43	D	-	-	-	-	103*	F*	-	-	-	-	30	C
			PM	-	-	-	-	35	D	-	-	-	-	112*	F*	-	-	-	-	36	D
Jefferson Boulevard/ Circle Street	West Sacramento	Side street stop controlled	AM	-	-	-	-	-	-	-	-	-	-	-	-	9 (141)	A (F)	9 (84)	A (F)	10 (118)	A (F)
			PM	-	-	-	-	-	-	-	-	-	-	-	-	12 (173)	B (F)	11 (160)	B (F)	12 (206)	B (F)
South River Road/ Circle Street	West Sacramento	Side street stop controlled/ signal	AM	-	-	-	-	-	-	-	-	-	-	-	-	19 (223)	C (F)	17 (198)	C (F)	33	C
			PM	-	-	-	-	-	-	-	-	-	-	-	-	13 (145)	B (F)	10 (143)	B (F)	31	C
Jefferson Boulevard/ Alameda Boulevard	West Sacramento	Signal	AM	-	-	-	-	-	-	79	E	62	E	106*	F*	82*	F*	60	E	94*	F*
			PM	-	-	-	-	-	-	-	57	E	63	E	88*	F*	56	E	50	D	66
South River Road/ Alameda Boulevard	West Sacramento	Signal	AM	-	-	-	-	-	-	29	C	27	C	103*	F*	39	D	19	B	39	D
			PM	-	-	-	-	-	-	-	29	C	27	C	84*	F*	23	C	20	C	26

Notes: For signalized and uncontrolled intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, the LOS and control delay for the worst movement is shown in parentheses next to the average intersection LOS and delay. Policy consistency is determined based on the overall LOS and average delay.

The intersection of Broadway/Front Street is analyzed as a side street stop-controlled intersection under the No Build Alternative and signalized under Build Alternatives.

The intersection of South River Road/Circle Street is analyzed as a side street stop-controlled intersection under No Build and Alternative B conditions and signalized under Alternative C.

* Asterisks indicate operating conditions that are not consistent with General Plan policy. For a Build Alternative, the asterisks also represent a change in LOS between No Build and Build Alternative from acceptable to unacceptable or a worsening of an unacceptable condition.

No Build Alternative Intersection Operations

Existing (2017) conditions are presented in Table 2.1.7-5 along with the forecasted future conditions without the proposed project. By 2030, planned growth and changes in land use in West Sacramento south of the study area will add traffic to Jefferson Boulevard and South River Road, especially northbound on both roadways during the morning commute and southbound during the afternoon/evening commute. Higher congestion will occur at the Jefferson Boulevard/Alameda Boulevard intersection with the extension of Alameda Boulevard to South River Road, planned as part of the approved mobility network. The close spacing with the intersection of South River Road/Alameda Boulevard creates minimal storage for turning vehicles to queue without blocking through movements. In Sacramento, the overall growth in traffic and addition of the 5th Street roadway conversion to two-way creates added congestion along the roadway, notably in the PM peak hour at the ramp terminal intersections.

By 2040, some of the growth in traffic is accommodated by the planned increase in capacity on South River Road as part of the realignment and widening to four travel lanes consistent with the approved mobility network in West Sacramento; however, congestion increases at intersections along Jefferson Boulevard. In Sacramento, the overall growth in the area creates an increase in traffic and congestion along 5th Street, notably in the PM peak hour at the ramp terminal intersections.

All study intersections operate within acceptable LOS under No Build conditions.

Alternative B Intersection Operations

All study intersections would continue to operate acceptably with Alternative B added to existing (2017) conditions. The addition of the bridge eases queuing leading up to the South River Road/US 50 eastbound on-ramp; however, at the South River Road/15th Street intersection, where the bridge approach is located in West Sacramento for this alternative, the added signal phases and cycle length associated with the addition of the fourth intersection leg (Broadway Bridge) would create additional delay although still within acceptable LOS E. In addition, Alternative B would result in an increase in delay along Broadway but less traffic using the freeway and passing through the ramp terminal intersections.

Under Alternative B, all study intersections operate within acceptable LOS under opening year (2030) conditions. The inclusion of the bridge eases northbound queuing along Jefferson Boulevard and South River Road in West Sacramento, shifting away some traffic that was destined for the US 50 ramps.

All study intersections operate within acceptable LOS under design year (2040) conditions under Alternative B. The bridge approach intersection of South River Road/15th Street in West Sacramento would face a high level of delay; however, would remain within acceptable LOS E conditions during both the AM and PM peak hours. The bridge also would shift some traffic from using the freeway facilities. The shift of traffic to Broadway is most notable at the Broadway/5th Street intersection compared to No Build conditions. Overall, intersection operations under design year conditions are not considered adverse.

Alternative C Intersection Operations

All intersections operate acceptably at LOS E or better under existing (2017) conditions under Alternative C. The “T” intersection at Broadway and South River Road created by Alternative C would operate at LOS D during both the AM and PM peak hours. This alternative would result in similar increases in delay along Broadway and decreases at the ramp terminal intersections compared to Alternative B.

Most study intersections operate within acceptable LOS under opening year (2030) conditions under Alternative C. However, the operation of three intersections in West Sacramento (South River Road/Broadway, Jefferson Boulevard/Alameda Boulevard, and South River Road/Alameda Boulevard) would worsen to LOS F under Alternative C, inconsistent with City of West Sacramento policy (see Table 2.1.7-1). This impact is considered adverse. Implementation of Mitigation Measure TRA-1 would construct roadway modifications that would allow for LOS to improve to acceptable levels at the three intersections and would slightly improve operations at South River Road/15th Street and Broadway/Front Street intersections.

By design year (2040), due to the lack of a direct connection to Jefferson Boulevard under Alternative C, traffic must traverse multiple turning movements using Circle Street or Alameda Boulevard. The increase in traffic also increases conflicting movements at the intersections in this area. Consequently, the intersection of Jefferson Boulevard/Alameda Boulevard would operate at LOS F during the AM peak hour, with the average delay worsening by more than 5 seconds compared to design year (2040) No Build conditions. Because LOS F is not consistent with West Sacramento policy, this impact is considered adverse. Implementation of Mitigation Measure TRA-1 would construct roadway modifications that would allow the LOS to improve to LOS E, an acceptable level. Implementation of the mitigation measure would slightly worsen design year (2040) operations at South River Road/15th Street, South River Road/Circle Street, and South River Road/Alameda Boulevard, but not to unacceptable levels.

Roadway Segment Operation Impacts

Existing (2017), opening year (2030), and design year (2040) roadway segment operations without and with the build alternatives for the proposed project are shown in Table 2.1.7-6. Roadway capacity utilization results shown in the table are for information purposes only and were not used to assess project impacts. The data in Table 2.1.7-6 reflect changes in the roadway network that will occur without the proposed project. By 2030, Broadway east of Riverside will be a two-lane roadway from construction of the Broadway Complete Street project. By 2040, South River Road will be a four-lane roadway consistent with the approved mobility network planned for the Pioneer Bluff area.

Table 2.1.7-6. Roadway Segment Operations

Roadway	Segment	Jurisdiction	Existing 2017 Conditions							Opening Year 2030						Design Year 2040							
			Lanes	Existing		Alternative B		Alternative C		Lanes	No Build		Alternative B		Alternative C		Lanes	No Build		Alternative B		Alternative C	
				LOS	V/C	LOS	V/C	LOS	V/C		LOS	V/C	LOS	V/C	LOS	V/C		LOS	V/C	LOS	V/C	LOS	V/C
Jefferson Boulevard	North of 15th Street	West Sacramento	4	E	0.93	C	0.74	C	0.73	4	F*	1.35*	F*	1.11*	F*	1.13*	4	F*	1.43*	F*	1.18*	F*	1.19*
15th Street	West of Jefferson Boulevard	West Sacramento	2	C	0.43	C	0.55	C	0.51	2	C	0.45	C	0.58	C	0.55	2	C	0.5	C	0.59	C	0.58
Alameda Boulevard	West of Jefferson Boulevard	West Sacramento	2	B	0.24	C	0.27	C	0.29	2	C	0.27	C	0.31	C	0.31	2	C	0.27	C	0.31	C	0.31
Jefferson Boulevard	South of Alameda Boulevard	West Sacramento	4	D	0.84	D	0.88	D	0.81	4	F*	1.09*	F*	1.13*	F*	1.14*	4	F*	1.12*	F*	1.16*	F*	1.17*
South River Road	South of 15th Street (Alameda Boulevard)	West Sacramento	2	B	0.62	B	0.69	D	0.86	2	F*	1.15*	F*	1.29*	F*	1.28*	4	B	0.66	C	0.75	C	0.77
Jefferson Boulevard	South of Locks Drive	West Sacramento	4	D	0.85	D	0.87	D	0.88	4	F*	1.08*	F*	1.12*	F*	1.12*	4	F*	1.1*	F*	1.15*	F*	1.16*
3rd Street	North of W Street	Sacramento	2	A	0.21	A	0.23	A	0.23	2	A	0.13	A	0.17	A	0.16	2	A	0.15	A	0.19	A	0.18
5th Street	North of W Street	Sacramento	2	A	0.18	A	0.23	A	0.23	2	C	0.79	D	0.81	D	0.81	2	D	0.88	E	0.91	E	0.9
5th Street	South of Broadway	Sacramento	2	D	0.8	C	0.77	C	0.77	2	D	0.8	D	0.81	D	0.81	2	D	0.85	D	0.85	D	0.83
Riverside Boulevard	South of Broadway	Sacramento	2	D	0.81	D	0.84	D	0.83	2	D	0.87	E	0.9	E	0.9	2	E	0.92	E	0.95	E	0.95
Broadway	Broadway Bridge	Sacramento	2	-	-	F	1.00	E	0.96	2	-	-	F	1.43	F	1.42	2	-	-	F	1.56	F	1.60
Broadway	Between 3rd and 5th Street	Sacramento	2	A	0.53	E	0.95	E	0.91	2	B	0.61	F	1.04	F	1.03	2	B	0.69	F	1.09	F	1.08
Broadway	Between 9th and 10th Street	Sacramento	2	D	0.87	F	1.05	F	1.04	2	E	0.91	F	1.11	F	1.09	2	E	0.97	F	1.15	F	1.13

Roadway	Segment	Jurisdiction	Existing 2017 Conditions							Opening Year 2030						Design Year 2040							
			Lanes	Existing		Alternative B		Alternative C		Lanes	No Build		Alternative B		Alternative C		Lanes	No Build		Alternative B		Alternative C	
				LOS	V/C	LOS	V/C	LOS	V/C		LOS	V/C	LOS	V/C	LOS	V/C		LOS	V/C	LOS	V/C	LOS	V/C
Broadway	East of Riverside Boulevard	Sacramento	4	A	0.39	A	0.43	A	0.43	2	D	0.85	E	0.95	E	0.95	2	E	0.90	E	0.97	E	0.97

LOS = level of service.

V/C = volume to capacity.

* Asterisks indicate operating conditions that are not consistent with General Plan policy.

No Build Alternative Roadway Segment Operations

Under existing (2017) conditions, all roadway segments operate at LOS D or better, except for Jefferson Boulevard north of 15th Street in West Sacramento, which operates at LOS E. By opening year (2030), the planned growth in land uses within West Sacramento south of the study area would increase traffic volume along Jefferson Boulevard and South River Road, worsening the daily roadway operations to LOS F, a level not consistent with General Plan policy. By design year (2040), the approved mobility network in West Sacramento is assumed to be fully in place in Pioneer Bluff, and traffic operations would worsen along Jefferson Boulevard. In Sacramento, although traffic operations would worsen over time, all roadways in the study area would operate within acceptable levels.

Alternative B Roadway Segment Operations

All roadway segments would operate within acceptable LOS under Alternative B added to existing (2017) conditions. The inclusion of the bridge would reduce traffic on Jefferson Boulevard north of 15th Street, thereby lowering the delay on that roadway segment daily.

By opening year (2030), the planned growth in land use within West Sacramento south of the study area would increase traffic volume along Jefferson Boulevard and South River Road, worsening the daily roadway operations to LOS F both without and with Alternative B. Inclusion of the bridge would reduce volumes on Jefferson Boulevard north of 15th Street; however, the bridge would increase volumes on Jefferson Boulevard and South River Road south of Alameda Boulevard. By design year (2040), traffic operations would worsen along Jefferson Boulevard (still LOS F). Because the unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project, they are not considered adverse. In Sacramento, the addition of the bridge and the overall worsening of traffic operations over time without the project increase volumes on Broadway. However, bridge traffic is expected to gradually disperse onto the street grid that serves the area, and all roadways in the study area would operate within acceptable levels.

Alternative C Roadway Segment Operations

As shown in Table 2.1.7-6, the changes in roadway segment operations caused by Alternative C are very similar to those of Alternative B. Because the unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project, they are not considered adverse.

Freeway off-Ramp Queue Impacts

Existing (2017), opening year (2030), and design year (2040) AM and PM peak-hour freeway off-ramp queuing lengths without and with the build alternatives for the proposed project are shown in Table 2.1.7-7. The available storage length of each ramp also is listed.

Table 2.1.7-7. Freeway Off-Ramp Queuing

Location and Available Storage (feet)		Peak Hour	Existing 2017 Conditions Queue Length (feet)			Opening Year 2030 Conditions Queue Length (feet)			Design Year 2040 Conditions Queue Length (feet)		
			Existing	Alternative B	Alternative C	No Build	Alternative B	Alternative C	No Build	Alternative B	Alternative C
I-5 southbound off-ramp at 3rd Street/ X Street	1,150	AM	75	75	75	75	75	75	75	100	75
		PM	75	75	100	100	100	75	125	75	75
US 50 eastbound off-ramp at 5th Street/ X Street	1,300	AM	175	75	75	525	325	250	850	575	350
		PM	250	125	175	800	425	450	1,775	675	1,175
I-5 northbound off-ramp at Broadway	1,000	AM	75	175	175	150	225	175	200	225	200
		PM	75	150	150	75	125	175	100	250	175

Notes: The available storage length for off-ramp queuing is measured from the noted off-ramp terminal intersection to the freeway off-ramp gore point. Maximum queue length is based on output from SimTraffic microsimulation software.

Bold text indicates a queue length greater than the available storage.

No Build Alternative Freeway Off-Ramp Queues

Off-ramp queues under No Build conditions would remain within the available storage by opening year (2030). By 2040, one off-ramp queue would exceed the available storage: the US 50 eastbound off-ramp at the 5th Street/X Street intersection during the PM peak hour.

Alternative B Freeway Off-Ramp Queues

Alternative B would not drastically change queuing at the freeway off-ramps in the study area. The bridge would shift some traffic off the freeway facility, thereby, generally decreasing off-ramp queuing. Still, all queues would remain within the available storage capacity for each off-ramp, and the effect of the project would not be adverse.

Alternative C Freeway Off-Ramp Queues

Like Alternative B, Alternative C would not drastically change queuing at the freeway off-ramps in the study area, and effects would not be adverse. All queues would remain within the available storage capacity for each off-ramp. At most study area ramp locations, equal or greater reductions in queue lengths would be achieved compared to Alternative B. By design year (2040) conditions, only modest improvements over No Build conditions would be achieved during the PM peak hour at the US 50 eastbound off-ramp at 5th Street/X Street compared to the greater reductions under Alternative B. However, at other study area ramp locations, equal or greater reductions in queue lengths would be achieved by 2040.

Changes in Vehicle Miles of Travel

Changes to the total daily VMT for all trips in the Sacramento region under existing (2017), opening year (2030), and design year (2040) conditions without and with the build alternatives for the proposed project are shown in Table 2.1.7-8.

Table 2.1.7-8. Daily Regional Vehicle Miles Travelled

	Existing 2017 Conditions			Opening Year 2030 Conditions			Design Year 2040 Conditions		
	Existing	Alternative B	Alternative C	2030 No Build	Alternative B	Alternative C	2040 No Build	Alternative B	Alternative C
Regional daily VMT total	55,823,950	55,816,069	55,820,862	69,959,845	69,946,445	69,943,850	75,314,215	75,320,445	75,357,106
Difference in VMT from existing or no build conditions	–	-7,881	-3,088	–	-13,400	-15,995	–	6,230	42,891

VMT = vehicle miles travelled.

No Build Alternative VMT

Under the No Build Alternative, the increase in VMT over time is consistent with changes in travel behavior that would coincide with the planned increase in growth and changes in land use included in local general plans and reflected in the SACMET regional travel demand model. The VMT under design year (2040) conditions reflect changes in travel behavior that may include changes in both designation locations and travel modes.

Alternative B VMT

In the short-term, the only travel pattern change with the project is the route that vehicle trips take between existing origins and destinations. Alternative B reflects the opening of a shorter route for existing trips, which is indicated by the lower daily regional VMT compared to existing (2017) conditions. By opening year (2030), the results assume that the short-term travel response to the bridge being opened is likely limited to route choices; therefore, all regional trip origins and destinations remain constant compared to the No Build Alternative. The daily regional VMT total is lower under Alternative B than under the opening year 2030 No Build Alternative condition. The VMT under design year (2040) conditions reflect changes in travel behavior that may include changes in both designation locations and travel modes. The VMT are expected to increase slightly within the Sacramento region with the inclusion of the bridge due to the added capacity across a constrained network of options between each side of the Sacramento River within the region. The change in VMT is very small and is not considered adverse.

Alternative C VMT

Alternative C also provides a shorter route for existing trips, and VMT is lower than the No Build Alternative by 2030. The increase in VMT by 2040 is highest under Build Alternative C compared to No Build conditions; however, the difference is much less than 1 percent of the overall VMT and is not considered adverse.

Active Transportation and Public Transit Facility Effects

No Build Alternative

The No Build Alternative would not interfere with the operation of existing or planned pedestrian or bicycle facilities. Facilities being planned could function without the proposed project, although the new river crossing that is identified in local and regional planning documents, would not be constructed. People traveling by bicycle or on foot would continue to cross the Sacramento River at the Tower Bridge or I Street Bridge.

Transit routes that cross the river would continue to use US 50 and Tower Bridge, and in the future, the replacement for I Street Bridge. By design year (2040), operations during the AM peak hour at the intersection of Jefferson Boulevard and Alameda Boulevard in West Sacramento would deteriorate to LOS F, potentially affecting the service times for transit.

Alternative B

Both build alternatives for Broadway Bridge include sidewalks that would connect to existing facilities on each side of the river, providing access and connectivity for pedestrians crossing the river on the bridge. The bridge would not impede sidewalks planned in West Sacramento as part of development in the Pioneer Bluff area, or in Sacramento along Broadway or other areas in the *West Broadway Specific Plan* limits. The build alternatives also would include Class II on-street bike lanes and bridge connections that

would connect to a planned Class I trail along the Sacramento River on the West Sacramento side and to the existing Class I trail on the Sacramento side.

Both build alternatives would provide an additional connection across the river for transit services. The bridge would be designed to accommodate buses, thereby providing an alternative for future bus route realignment or expansion. In addition, the bridge design would not preclude the future addition of light-rail, streetcar, or other mass transit mode as a separate stand-alone project.

Alternative B would not interfere with existing or planned pedestrian or bicycle facilities. Because all intersections would operate within acceptable LOS, Alternative B also would not adversely affect transit operation or access to transit facilities.

Alternative C

As with Alternative B, Alternative C would not interfere with existing or planned pedestrian or bicycle facilities and would provide a new river crossing option for those modes of travel.

Because all intersections would operate acceptably under Alternative C with existing-plus project conditions, the alternative would not initially adversely affect transit operation or access to transit facilities. However, the worsening of intersection operations during future years (see *Intersection Operation Impacts*, above) also would worsen operating conditions for transit services. Implementation of Mitigation Measure TRA-1 would construct roadway modifications in West Sacramento that would improve LOS at three adversely affected intersections, also improving transit operations.

ADA Compliance

No Build Alternative

Because of the varying age of transportation facilities in the study area, not all are currently compliant with ADA requirements. The No Build Alternative would not cause any facilities to worsen from ADA-compliant to non-compliant levels. Facility improvements that would occur as part of planned development and redevelopment would be constructed to ADA requirements, consistent with current law.

Build Alternatives

FHWA regulations require application of the ADA requirements to federal-aid projects such as the proposed project. The bicycle and pedestrian facilities that are proposed as part of both build alternatives for the project and the proposed connections to existing or planned adjacent facilities would be designed to meet ADA requirements for such facilities to ensure equal access and use by all persons. Proposed sidewalk and intersection improvements would meet ADA standards and would bring outdated portions of sidewalk up to current standards, including the addition of continuous sidewalk with ADA-compliant ramp facilities and roadway crossings within the project limits along Broadway in Sacramento. The proposed connections to existing and planned bike trails also would include ADA compliant facilities. There would be no adverse effect.

Construction-Related Effects

No Build Alternative

Under the No Build Alternative, construction activities related to the new bridge and bridge approach roadways would not occur. Temporary construction-related disturbances not associated with the proposed

project would occur within the project area as West Sacramento’s approved mobility network (as approved by West Sacramento City Council in 2018), planned development in Pioneer Bluff, and roadway improvements and redevelopment consistent with the *West Broadway Specific Plan* and the *Broadway Complete Streets Plan* are constructed. Temporary detours, access controls, and delays may occur during construction of the planned improvements.

Build Alternatives

While most of the proposed project would be constructed outside of existing roadways, some construction activities for both build alternatives would require temporary detours or staged construction. Detours are proposed to maintain access and network connectivity on roadways, sidewalks, bike lanes, and bike trails during construction (see Chapter 1, *Traffic Management and Detours during Construction*). Nevertheless, disruptions and delays could affect drivers, bicyclists, and pedestrians. The following construction elements of both build alternatives could cause short-term disruptions of local transportation networks.

- Roadway modifications in West Sacramento, including the intersection connection for the bridge.
- Grade separation of future West Sacramento Class I River Walk trail to pass under and connect to the new bridge.
- Reconstruction of a portion of Marina View Drive at Miller Park to create a new connection to Broadway.
- Change in grade of Broadway for a bridge connection.
- Modification of property access along Broadway west of I-5.
- Widening of I-5 northbound off-ramp to Broadway and modifications of sidewalk and intersections of Broadway and Front Street, 3rd Street (south and north), and 5th Street.
- Grade separation and change in location of Sacramento River Bike Trail to pass under and connect to the new bridge.
- Transport of materials and equipment between staging areas and the project site.
- Construction of the bridge across the Sacramento River.

The project may be constructed in two phases or in a single phase, based on the extent of redevelopment and implementation of the approved mobility network in the Pioneer Bluff area of West Sacramento at the time project construction starts. Assuming that construction occurs in two phases, most of the construction-related effects of the project would occur to build the interim (opening day) design, including construction of the new bridge, approach roadways, and other modifications listed above.

Far fewer construction-related disturbances would occur for completion of the remaining project roadway elements, consistent with full buildout of the West Sacramento approved mobility network for the design year (2040) phase.

Implementation of the TMP described in Chapter 1 (see Chapter 1, *Environmental Commitments: Transportation Management Plan*) for handling and guiding traffic through and around work zones and to communicate information about detours, temporary closures, and emergency access would ensure that construction-related effects of the project are not adverse.

2.1.7.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed project includes development of a TMP for implementation during project construction to avoid or minimize the effects of construction activities on various modes of transportation. In addition, the following mitigation measure is proposed for Alternative C to reduce the level of inconsistency with City of West Sacramento policy.

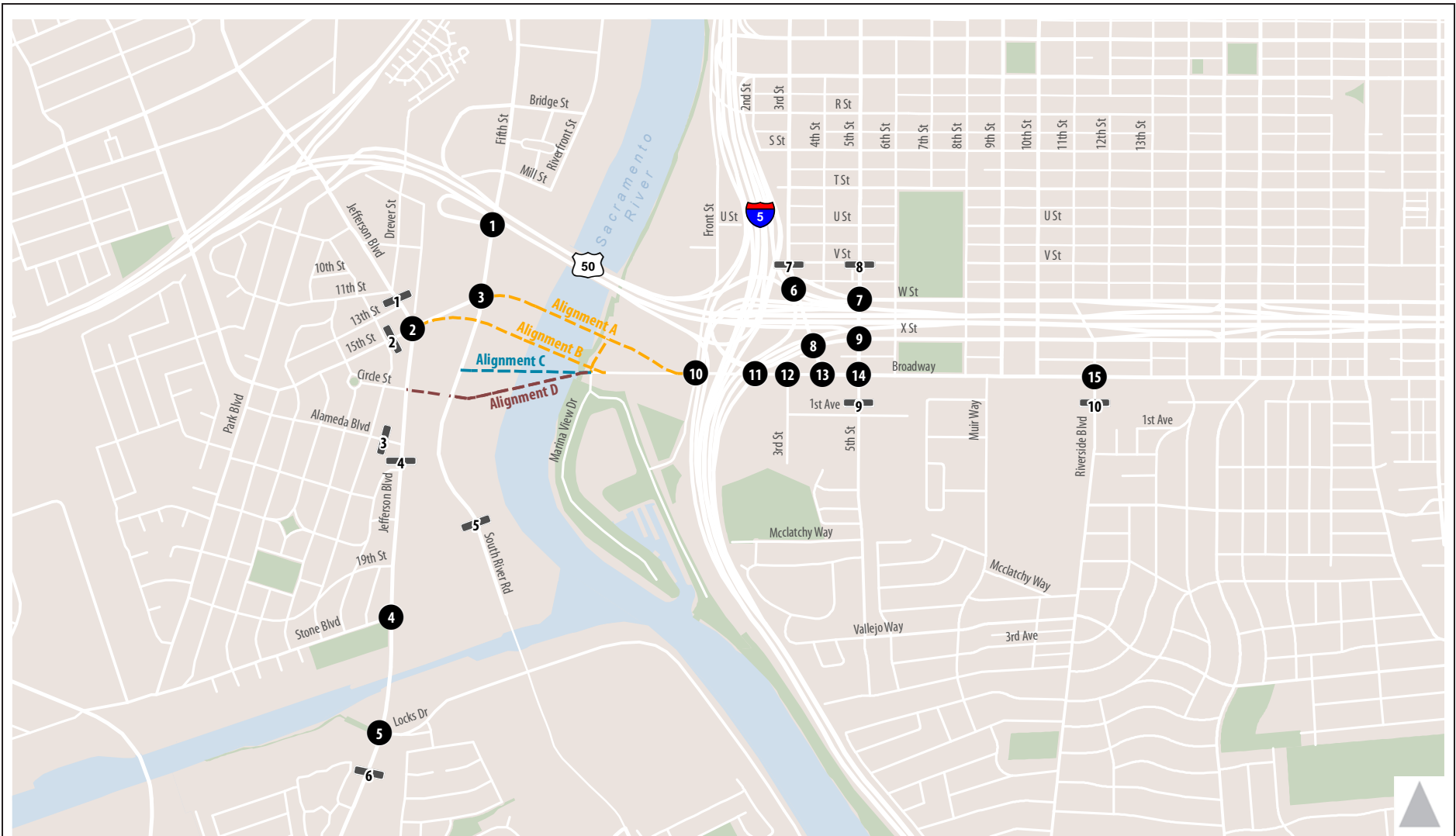
Mitigation Measure TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C)

By the open-to-traffic year of the project, the City of West Sacramento will construct the following roadway modifications.

- On South River Road at the intersection with Broadway, extend the northbound right-turn pocket to 275 feet and add a second southbound left-turn lane.
- On Alameda Boulevard at the intersection with Jefferson Boulevard, change the eastbound and westbound protected left-turns to permitted left-turn signal phasing.
- On South River Road at the intersection with Alameda Boulevard, extend the northbound left-turn pocket to a 175-foot length and extend the southbound right-turn pocket to 250 feet.

By the design year, the City of West Sacramento will construct the following.

- Install a traffic signal at the intersection of Jefferson Boulevard and Circle Street; add signal coordination with the intersection of Jefferson Boulevard and Alameda Boulevard.



- 1** Study Intersection
- 1-1** Study Roadway Segment
- Broadway Bridge (Alignment A/B)
- Broadway Bridge (Alignment C)
- Broadway Bridge (Alignment D)

Source: Fehr & Peers, 2017.

Figure 2.1.7-1
Study Area for Traffic and Transportation

2.1.8 Visual/Aesthetics

2.1.8.1 Regulatory Setting

NEPA, as amended, 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 that it is the policy of the state to take all action necessary to provide the people of the state “with...enjoyment of aesthetic, natural, scenic and historic environmental qualities” (PRC Section 21001[b]).

California Streets and Highways Code Section 92.3 directs Caltrans to use drought-resistant landscaping and recycled water, when feasible, and to incorporate native wildflowers and native and climate-appropriate vegetation into the planting design when appropriate.

The City of West Sacramento’s *Pioneer Bluff Transition Plan* and General Plan provide guidance and policies that support the transition of non-conforming industrial land uses along the Sacramento riverfront to an urban waterfront area that provides commercial, residential, and park facilities for the residents of West Sacramento (City of West Sacramento 2014, 2016). The *Pioneer Bluff Transition Plan* also identifies construction of Broadway Bridge.

The City of Sacramento’s *Central City Community Plan* (within the General Plan), *Central City Specific Plan*, and General Plan provide guidance and policies that support improvement of areas along the Sacramento riverfront, improving the visual character and quality of areas within the city, improving streetscape design, enhancing city gateways, and creating attractive bridge crossings (City of Sacramento 2015, 2018). The *West Broadway Specific Plan* defines the City of Sacramento’s intent to facilitate improvements at Miller Park and to redevelop industrial land uses to residential and commercial uses; it also identifies construction of Broadway Bridge (Ascent Environmental 2020).

2.1.8.2 Affected Environment

This section was prepared using information from the *Visual Impact Assessment* (VIA) technical report prepared for the project (ICF 2020). The report is available in Appendix M.

The VIA assesses potential visual impacts of the proposed project based on guidance outlined in the *Visual Impact Assessment for Highway Projects* published by 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; it 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 represent 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.

Scenic Viewsheds

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 2019). 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.

Visual Assessment Units

The area around the project corridor was divided into a series of “outdoor rooms” or *visual assessment units* (VAUs). Each VAU has its own visual character and visual quality, and typically is defined by the limits of a particular viewshed. The river provides a clear boundary between the industrial, commercial, and residential land uses on the western side of the river in West Sacramento; and the industrial, park, marina, transportation, and commercial land uses on the eastern side of the river in Sacramento. For this analysis, therefore, the project area was subdivided into three VAUs based on specific vantage points and differing sensitivities of those affected by the proposed project. These include the West Sacramento VAU, Sacramento VAU, and River VAU. The VAUs are shown in Figure 2.1.8-1, in addition to the location of the two key views that have been used in the analysis. Key views (shown in Figures 2.1.8-2 and 2.1.8-3) have been chosen for their representation of the VAU within which they are located and the affected viewers.

West Sacramento VAU

The West Sacramento VAU includes industrial and vacant land uses located between the river and Jefferson Boulevard. Residential and commercial land uses are located west of Jefferson Boulevard. Industrial land uses consist of warehouses and fuel storage facilities that line South River Road, between the river and Jefferson Boulevard. There are also some grassy and paved vacant lots in this VAU where industrial land uses have been removed. West of Jefferson Boulevard, older single-family residential development remains intact and is well-kept. Commercial land uses are scattered along Jefferson Boulevard, mostly located interspersed among the residences lining the west side of the road. These include S&S Realty, Whitey's Jolly Kone, Arco Gas Station, and Sail in Grotto. Access to the river is not available from the industrial areas lining the river. Access to the river is available to a small portion of the VAU north of the Pioneer Bridge, via the River Walk Trail and the Mill Street Pier, where redevelopment is occurring along the riverfront. Views of the approach roadway portions of the project are available

from South River Road, Jefferson Boulevard, 15th Street, and Soule Street. However, these views of the proposed bridge locations would be obscured by mature trees and the built environment, such as by warehouses and storage tanks. Views of the project corridor also are available, in a more limited manner, from the Mill Street Pier that allows views under Pioneer Bridge toward the project. Aboveground utilities (e.g., roadway lights and utility lines and poles) also are prominent features in this viewshed. This VAU is well-lit by lighting associated with the industrial, residential, and commercial land uses; local roadways; vehicles; and parking areas.

The vividness of this VAU is moderate-low because the assortment of well-developed areas, industrial uses, and vacant lands creates a visually segmented area that is largely blighted compared to other established areas within the region. The intactness and unity are moderate-low because the area lacks smooth transition between residential land uses along Jefferson Boulevard and industrial areas to the east. In addition, transportation corridors segment residential 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 West Sacramento VAU is moderate-low to moderate.

Sacramento VAU

Industrial, park, marina, transportation, and commercial land uses primarily are located east of the river. Much of this VAU is characterized by the open space lawn areas and riparian vegetation associated with the river, Miller Park, and the water and boat dock facilities associated with the Sacramento Marina. Industrial land uses are located west of I-5 and include fuel storage facilities, similar to those found in the West Sacramento VAU. Transportation facilities consist of I-5, Business I-80/US 50, and the I-5/Business I-80/US 50 interchange (freeways); the Sacramento River Bike Trail; State Parks railroad tracks; and Broadway, Front Street, and roadways associated with Miller Park and the Sacramento Marina. The I-5 freeway creates a physical and visual separation between the park, marina, and industrial land uses that lie west of I-5 and the commercial and residential land uses that lie east of I-5. The most prominent views of the proposed bridge locations are available from Miller Park (refer to Figure 2.1.8-2, Key View 1) and the Sacramento River Bike Trail that parallel the river. The waterfront area of Miller Park offers limited views toward the project corridor and the river for most of the year because of dense riparian vegetation along the riverbanks. However, views open up seasonally in the late fall and winter, when trees are dormant and without leaves. Views of the project site from the Sacramento River Bike Trail, south of Pioneer Bridge, are available between gaps in riparian vegetation. North of Pioneer Bridge, views of the project site are available from the trail when looking south through gaps between the Pioneer Bridge support columns. Views of the project from Business I-80/US 50, within this VAU, are not readily available except on close approach to the border of the River VAU. Views of the project are not available from I-5 due to vegetation and development along the freeway. East of I-5, views of the project along Broadway consist of the roadway and warehouse facilities and commercial land uses that line both sides of the road. Land uses along this portion of Broadway are somewhat disjointed and are slightly blighted. Aboveground utilities (e.g., roadway lights and utility lines and poles) also are prominent features in the viewshed of this VAU. The VAU is generally well-lit; lighting primarily is associated with the freeway and local roadways, vehicles, parking areas, and development along Broadway. The Sacramento River Bike Trail, Miller Park, and the Sacramento Marina and adjacent riverbanks are not well-lit.

The vividness of this VAU is moderate-low to moderate because the assortment of industrial, park, and commercial land uses creates a visually segmented area. The intactness and unity are moderate-low because the area lacks smooth transition between park uses and the nearby industrial and commercial land uses. In addition, transportation corridors segment this VAU 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 VAU is moderate-low.

River VAU

The proposed project would cross the River VAU as does the existing Pioneer Bridge (refer to Figure 2.1.8-3, Key View 2). Vegetated levee slopes line the river and limit views to the adjacent West Sacramento and Sacramento VAUs. Views from the river of the West Sacramento and Sacramento VAUs generally consist of the fuel storage tanks that can be seen above the levees and vegetation. There are no levees along Miller Park, however, and the park can be seen from the river between gaps in vegetation. Bridge structures also are common in this area of the river; these include the Pioneer Bridge and—while outside of the River VAU, the existing Tower Bridge and I Street Bridge. North of Pioneer Bridge, the Sacramento city skyline and multistory buildings along River Walk Trail can be seen rising above the canopies of trees along the riverbanks. Views of adjacent VAUs become more available in the late fall and winter after deciduous trees have lost their leaves, reducing the visual screening tree canopies provide in spring through early fall. This VAU is not well-lit because little lighting is associated with the river and adjacent riverbanks. Some lighting is associated with bridge crossings. Most of the lighting in this VAU comes from adjacent VAUs and includes lighting from the Sacramento skyline, adjacent roadways, traveling vehicles, and buildings along the river.

The vividness of this VAU is moderate-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 moderate-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 VAU is moderate-high.

Viewers and Viewer Response

Two major types of viewer groups are of primary concern for highway projects: roadway users and roadway neighbors. Each viewer group has its own 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.

Roadway Users (Views from the Road)

Roadway users are people who have views *from* a road in the project area. They can be subdivided into different viewer groups in two ways—by mode of travel (e.g., bicyclists and car drivers and passengers) or by reason for travel (e.g., commuters and haulers). For this project, the following users were considered: recreational travelers, local commuters, haulers, pedestrians, and bicyclists.

Roadway users come into direct visual contact with the proposed project but only briefly and in passing as they travel by or through the project corridor. Therefore, viewer exposure for roadway users is moderate-low. Roadway users would have low sensitivity and response to visual changes resulting from the proposed project because they would 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 toward a road in the project area. 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 roadway corridor and therefore with distinct

responses to changes in visual resources. For this project, the following roadway neighbors were considered: residents within the West Sacramento VAU; workers within the West Sacramento and Sacramento VAUs, including construction workers within the West Sacramento VAU area; patrons of local businesses in the West Sacramento and Sacramento VAUs; roadway users within the West Sacramento and Sacramento VAUs and crossing the River VAU; rail travelers within the Sacramento VAU; boaters in and fishers or recreationists on the edge of the River VAU; and recreationists (e.g., bicyclists and pedestrians) using formal and informal trails within the West Sacramento and Sacramento VAUs.

Roadway neighbors are the largest number of viewers who come into direct visual contact with the proposed project. Viewer exposure for roadway neighbors is considered to be moderate-low because most roadway neighbors do not have immediate and direct views of the bridge crossing locations unless very close to the river because vegetation, development, and transportation facilities limit their views. The exception is within the River VAU, where the river corridor allows for more direct views. However, existing bridges create some visual disruption of views, depending on viewer location. 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-low sensitivity to visual changes resulting from the proposed project. Although they are adjacent to the proposed project, roadway neighbors do not have immediate and direct views of the entire project corridor and do not have long-term, stationary views. The project corridor is not a dominant focal point of their views.

Composite Viewer Group

For analytical purposes, a composite viewer group was created for this project, which is made up of all roadway neighbors and 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.

The composite viewer group is deemed to have moderate-low to low sensitivity to visual changes resulting from the proposed project. The composite viewer group is deemed to have 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. This response is attributed to the proposed project being largely in keeping with the visual character of adjacent roadways and highway structures and upstream bridges (except for the larger Pioneer Bridge). Therefore, the composite group viewer response would be moderate-low.

2.1.8.3 Environmental Consequences

Build Alternatives

The proposed project would not substantially damage scenic resources or substantially degrade a scenic vista. There would be no effect on such scenic resources in any VAU for all build alternatives.

The project would be located entirely within an urbanized area, and no rural areas would be affected. As described in Section 2.1.8.2, *Affected Environment*, no scenic vistas or federal, state, or local scenic routes are associated with the project corridor. As such, scenic vistas and scenic routes would not be affected by the project, and these resources are not discussed further. Therefore, the analysis focuses on whether the

project would conflict with applicable zoning and other regulations governing scenic quality and changes in light and glare.

Visual Character and Quality

The following section describes and illustrates visual impacts by VAU, compares existing conditions to the project alternatives, and includes the predicted viewer response. Both build alternatives would result in similar visual impacts. Where impacts differ, they are called out.

West Sacramento Visual Assessment Unit

Short-term Effects

Construction activities for either build alternative would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of all viewer groups. Underground installation of the fiber optic communication cable would result in minor street disturbances that would be restored to existing conditions once complete. Only access lids, similar to those for other underground utilities, would be visible after installation is complete.

Temporary falsework platforms, required to construct the proposed bridge foundations and approach structures (installed on or after May 1 and removed by November 30 of each construction season), would be visible in the river.

Temporary visual changes due to construction signaling, signage, and lighting also would occur. These changes are not considered adverse due to the short intervals of time that roadway users and neighbors would be in contact with the project corridor. In-water work would be conducted only during daylight hours. If high-intensity lighting is needed for nighttime construction elsewhere within the project area it would be directed away from the river, away from oncoming traffic on adjacent roadways, and away from residential areas to avoid adverse changes in light and glare during construction.

Future land use and deindustrialization plans for the Pioneer Bluff area of West Sacramento include removal or relocation of tank farms and pipelines. This study assumes that existing features, such as fuel storage tanks and warehouse facilities associated with industrial land uses, would no longer be present when construction of Broadway Bridge begins. As seen in Figures 2.1.8-2 and 2.1.8-3, Key Views 1 and 2, *Existing Views*, 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.

Long-term Effects

The West Sacramento VAU includes industrial and vacant land uses between the river and Jefferson Boulevard, and residential and commercial land uses just west of Jefferson Boulevard. Under both alternatives, operation of the new bridge structure would be the same. The distance between the two proposed bridge alignments over the river is not great enough to result in a notable visual change in the landscape between the two alternatives.

During the interim year, regardless of build alternative, the proposed bridge and roadway changes in West Sacramento would be visible primarily from adjacent commercial and industrial areas, and from local roadways that are directly next to the bridge and proposed roadway improvements. No major changes would be seen from residential areas because industrial (or redeveloped) land uses would block views, many residences are located south of or away from project changes and the remaining residences are

located behind commercial areas that would obscure views. The new bridge may be more visible during the design year as land uses east of Jefferson Boulevard change from industrial to more mixed-use development and a new roadway grid structure is installed, including roadways closer to the Sacramento River. However, the structures introduced as part of the redevelopment planned by the design year would replace existing industrial structures and would continue to block most views from Jefferson Boulevard.

The introduction of new roadway connections for the bridge at South River Road would occur under both build alternatives. And, consistent with the approved mobility network for Pioneer Bluff, by the interim year (2030) new roadways would be constructed and 15th Street would be realigned to connect to South River Road further south than its current location (see Figure 1-2). The minor changes to local roadways that would occur for the proposed project to accommodate new turn lanes for bridge access would result in negligible visual changes under both build alternatives.

Alternative B would create a four-way intersection at 15th Street and South River Road. By the design year (2040), the alignment of South River Road south of 15th Street would be shifted to the east as part of the approved mobility network for the area. As part of the proposed project, the intersection of 15th Street and South River Road would be adjusted to accommodate the change in roadway alignment to the south. The proposed roadway changes would not greatly alter views because new and realigned roadways would be visually similar to adjacent roadways.

Alternative C would create a new “T” intersection at South River Road, south of 15th Street. In the design year (2040), the intersection would be moved to the east, consistent with the planned realignment of South River Road. The introduction of the new “T” intersection would not greatly alter views, and the new roadway connections would be visually consistent with the planned redevelopment of existing land uses and the approved mobility network proposed for Pioneer Bluff.

The proposed bridge would be visible from the Mill Street Pier, north of Pioneer Bridge, and while it would be smaller in scale and lower in elevation, the new river crossing would be visually compatible with existing river crossings.

The West Sacramento Tree Preservation Ordinance provides standards for tree permits required for actions affecting trees (City of West Sacramento 2019). Section 2.3.1, *Natural Communities*, specifies Mitigation Measure NC-4, *Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)*, which states that mitigation will include onsite compensation to the maximum extent practicable and some combination of offsite restoration or enhancement along the Sacramento River and mitigation credits purchased from an approved mitigation bank to achieve no net loss of habitat values.

Sacramento Visual Assessment Unit

Short-term Effects

Construction activities for either build alternative would include the same timing and the same equipment, and would result in similar impacts in the Sacramento VAU to those described for the West Sacramento VAU. In addition, a visual change would result from reconstruction of existing sidewalks or construction of new sidewalks along Broadway from the new bridge east to 5th Street. The width of Broadway would be modified to merge with the roadway cross-section identified in the *Broadway Complete Streets Plan* (City of Sacramento 2016).

As described for the West Sacramento VAU, temporary visual changes in the Sacramento VAU due to construction signaling, signage, and lighting also would occur but would not be considered adverse.

Visual changes resulting from vegetation removal would be isolated to the area immediately surrounding the proposed bridge.

Long-Term Effects

The Sacramento VAU includes industrial park, marina, transportation, and commercial land uses east of the river. Under both build alternatives, the proposed changes along Broadway and affected intersections would be the same. In addition, the bridge touchdowns in Sacramento would be located in approximately the same location; it is only as the bridge alternatives begin to leave the banks and cross the river that the alignments begin to diverge. Overall, the proposed alignments of the two build alternatives do not differ enough to result in different visual changes in the landscape.

All proposed changes within the Sacramento VAU would occur during the interim year, under both build alternatives. Existing industrial and commercial land uses, mature vegetation, and I-5 block views of the proposed project from existing residential areas. The proposed bridge and roadway changes in Sacramento would be visible primarily from adjacent commercial and industrial areas, from local roadways that are directly next to the bridge, and from proposed roadway improvements. Under both build alternatives, reconstructing the sidewalks along Broadway and minor intersection changes at local roadways would result in negligible visual changes and would be in keeping with the existing visual landscape. The Sacramento River Bike Trail would be realigned to skirt along the river, instead of paralleling the State Parks railroad tracks. The connections of the realigned Sacramento River Bike Trail to Broadway would not deviate sufficiently, under either build alternative, to constitute a major visual change to the landscape.

The proposed bridge would be visible from Broadway, west of I-5; the westbound US 50/Business 80 ramp connection to southbound I-5; the eastbound US 50/Business 80 ramp connection to southbound I-5; the Sacramento River Bike Trail; and the riverbanks along Miller Park, where gaps in vegetation allow views. The simulation for Key View 1 (Figure 2.1.8-2) depicts the proposed bridge from the riverbanks along Miller Park. The proposed bridge would obscure views toward Pioneer Bridge, as seen in Figure 2.1.8-2, Key View 1, *Simulated View*; and the design depicted in the simulation would appear visually similar to the existing Tower Bridge located upstream of the Pioneer Bridge. Views toward the river and its vegetated riverbanks would not be greatly altered compared to existing conditions, and the bridge would not appear to be visually intrusive.

The City of Sacramento Tree Planting, Maintenance, and Conservation Ordinance provides standards for tree permits required for actions affecting trees (City of Sacramento 2019). Section 2.3.1, *Natural Communities*, specifies Mitigation Measure NC-4, *Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)*, which states that mitigation will be in the form of onsite or offsite restoration or enhancement along the Sacramento River, or mitigation credits purchased from an approved mitigation bank.

River Visual Assessment Unit

Short-term Effects

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 May 1 and removed by November 30. 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.

Construction activities would create temporary visual impacts on views of and from the project corridor 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 corridor or fishing along the banks, and viewers' familiarity with heavy equipment in areas adjacent to the project for recent development in the project vicinity.

Temporary visual changes due to construction signaling, signage, and lighting also would occur to provide for boating safety during construction. These changes would not be considered adverse because of the short intervals of time that water-based viewers would be in contact with the project corridor.

The City of West Sacramento's West Sacramento Tree Preservation Ordinance and the City of Sacramento's Tree Planting, Maintenance, and Conservation Ordinance provide standards for tree permits required for actions affecting trees. In addition, Section 2.3.1, *Natural Communities*, Mitigation Measure NC-4, *Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)* states that mitigation will be in the form of onsite or offsite restoration or enhancement along the Sacramento River, or mitigation credits purchased from an approved mitigation bank.

Long-term Effects

The largest visual change associated with the proposed project that would be visible in the River VAU would be the introduction of a new bridge across the river. This VAU would have the most direct views toward the bridge. Views of the new bridge would be available to viewers standing at the water's edge, boaters on the river, and travelers crossing the Pioneer Bridge.

The simulation for Key View 2 (Figure 2.1.8-3) depicts representative views for road travelers on the existing Pioneer Bridge. The proposed bridge would be at a lower elevation than the Pioneer Bridge because it would be constructed with a moveable segment to allow for boat passage. Therefore, as seen in Figure 2.1.8-3, Key View 2, *Simulated View*, the proposed bridge would not obstruct views toward the river, vegetated levees, or the land uses on either side of the river. Views of the river downstream of the proposed bridge would remain present. While much of the bridge would be low profile, vertical elements of the bridge would make the bridge appear to be more visually prominent. However, the bridge design would appear visually similar to the existing Tower Bridge located upstream of the Pioneer Bridge.

Bridge Type

Selection of one of the three different bridge types being considered would not change the effects on visual resources in each VAU. As part of a new moveable bridge structure that would allow for boat passage, each of the bridge types would add a similar in scale new structure and would result in the same degree of visual change to the landscape. Although the bridge type has not yet been determined, 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 between Sacramento and West Sacramento.

Implementation of Avoidance and Minimization Measure AES-1 would ensure public engagement in the bridge design process, facilitating public acceptance of the proposed project. In addition, implementation of Avoidance and Minimization Measure AES-2 would aid in ensuring appropriate project aesthetics.

Visual Character and Quality Summary

The vividness of the West Sacramento VAU would not be greatly affected by the proposed project, and the rating would remain moderate-low. The intactness and unity also would remain moderate-low because

the proposed bridge 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 not be greatly affected and would remain moderate-low with implementation of avoidance, minimization, and mitigation measures.

The vividness of the Sacramento VAU would not be greatly affected by the proposed project, and the rating would remain moderate-low. The intactness and unity also would remain moderate-low because the proposed bridge 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 not be greatly affected and would remain moderate-low with implementation of avoidance, minimization, and mitigation measures.

The vividness of the River VAU 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 avoidance, minimization, and mitigation measures.

Neither build alternative would conflict with applicable zoning or other regulations governing scenic quality. The proposed project also would not conflict with City of West Sacramento's planned redevelopment in the Pioneer Bluff area or the City of Sacramento's planned redevelopment of the West Broadway area.

As described Section 2.6.2.3, *Viewers and Viewer Response*, 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 is 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 corridor. The composite viewer response would be moderate-low, and the resulting visual impacts on visual character and quality would be moderate-low. The proposed project would make a substantial changes to views in the project area through the addition of the bridge but would not result in adverse changes to the visual character or quality of the project area.

Implementation of Avoidance and Minimization Measure AES-1 would ensure that the proposed bridge design meets the expectations of the larger communities within West Sacramento and Sacramento. Vegetation removal would occur along the riverbanks and north of Broadway to accommodate the shifted sidewalks. However, neither build alternative includes landscaping to ensure that the roadway improvements meet the city streetscape standards. Avoidance and Minimization Measure AES-2 would ensure that landscaping is installed in a manner that is consistent with the city streetscape standards.

Light and Glare

Sacramento, West Sacramento, and River Visual Assessment Units

Permanent effects related to light and glare would be the same or very similar within all VAUs under both build alternatives. The bridge structure could be a new source of glare, depending on the color and design selection for the structure. Addition of the new structure and removal of vegetation would slightly increase glare in the project corridor, but glare associated with the river already is a prominent visual element where gaps in vegetation allow views of the river. The new bridge structure would shade the river's surfaces and could slightly reduce reflective glare from the river.

New bridge, roadway, and intersection lighting could include LED lighting for security and safety purposes. Although the City of West Sacramento (refer to City of West Sacramento General Plan Policies NCR-6.7, NCR-8.3, NCR-8.4, and NCR-8.5) and the City of Sacramento (refer to City of Sacramento General Plan Policy ER 7.1.3, Central City Specific Plan Policy LU.3.7, and Riverfront District Policy LU.9.14) encourage the use of LED lights and the reduction of light pollution, which would be enforced through design review, 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 blue-rich white light lamps (BRWL) lamps are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4000 Kelvin (K) white LED light causes approximately 2.5 times more pollution than high-pressure sodium lighting with the same lumen output, which would affect sensitive receptors and more than double the perceived brightness of the night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). This would result in a substantial source of nighttime light and glare that could adversely affect nighttime views in the area. Implementation of Avoidance and Minimization Measure AES-3 would ensure that the lighting impacts are reduced. Effects of nighttime lighting on fish are addressed in Sections 2.3.4 and 2.3.5.

No Build Alternative

Under the No Build Alternative, the project would not be constructed and there would be no visual impacts on the existing visual character, visual quality, or affected viewer groups from the proposed project. Visual changes resulting from planned development and redevelopment of industrial areas would occur according to the schedule for individual projects.

2.1.8.4 Avoidance, Minimization, and/or Mitigation Measures

Avoidance and Minimization Measure AES-1: Work with Stakeholders to Determine Bridge Aesthetics

The project proponent will conduct a focused outreach effort and will conduct a public meeting, charrette session, or similar public engagement method with public stakeholders to develop an aesthetic design approach. This measure will allow concerned viewers to assist in 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.

Avoidance and Minimization Measure AES-2: Implement Project Landscaping

The project proponent will install landscaping where space and safety considerations allow and in a manner that is consistent with the Cities of West Sacramento and Sacramento planning policies and directives to improve city streetscapes. Prior to approval of the roadway design, the City of West Sacramento and/or City of 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. Evaluate the use of pervious paving in the proposed project to improve infiltration and to reduce the amount of surface runoff from entering waterways and the storm water system. Do not use LID measures where infiltration could result in adverse environmental effects. Use LID measures, such as cobbled swales and aggregate mulching, as an aesthetic design element to create an attractive view while reducing water use.

- Require construction contractors to incorporate native grass and wildflower seed into standard seed mixes, which may be non-native, for erosion control measures that will be applied to all exposed slopes. If appropriate for the surrounding habitat, use wildflowers to provide seasonal interest to areas where trees and shrubs are removed and grasslands are disturbed. Incorporate into seed mixes only wildflower and grass species that are native, and under no circumstances use any invasive grass or wildflower plant species as any component of any erosion control measure. Choose species that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, choose upland grass and wildflower species for drier upland areas, and wetter species for areas that will receive more moisture. If not appropriate to the surrounding habitat, do not include wildflowers 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. Increase the effectiveness of roadside planting areas and reduce their susceptibility to disease by increasing plant variety—providing multiple layers, seasonality, and diverse habitat. Use evergreen groundcovers or low-growing plants, such as *Ceanothus* spp., in areas where taller vegetation could cause driving hazards by obscuring site distances. Use species native and indigenous to the project area and California. Use native plant species 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 native species to promote 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 built features, while accentuating the design treatments that will be applied to those features. Pay special attention 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.
- Do not use any invasive plant species 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 continue irrigation, as needed, to ensure plant survival. Design the landscaping plan to maximize the use of planting zones that are water efficient. Incorporate aesthetic features such as cobbling swales or shallow detention areas, as appropriate, to reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, use a smart watering system to evaluate the existing site conditions and plant material against weather conditions and 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 shut down the zone or system until it can be repaired.

Avoidance and Minimization Measure AES-3: Apply Minimum Lighting Standards

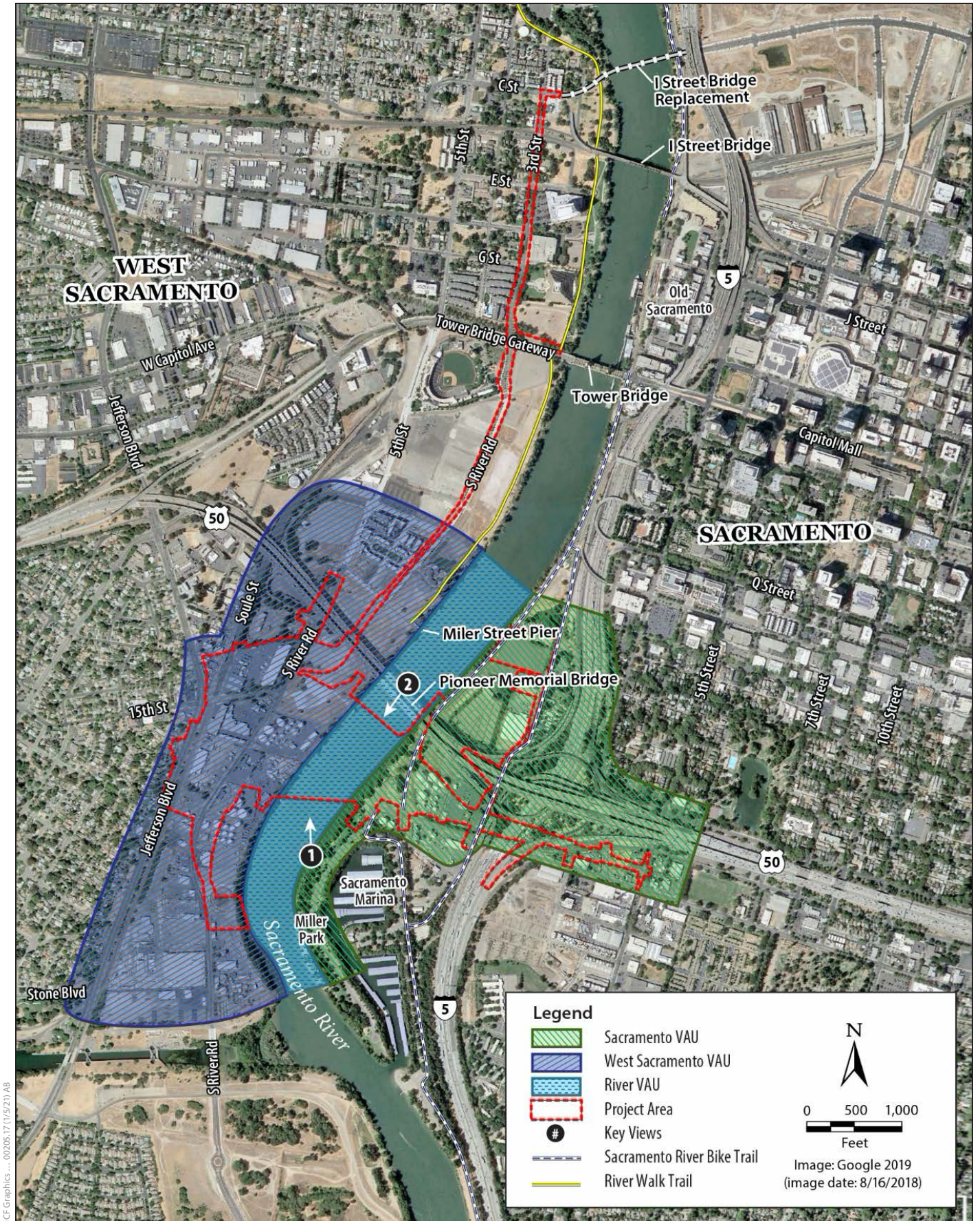
All artificial outdoor lighting and overhead street lighting will be limited to safety and security requirements and the minimum required for driver safety. Lighting will be designed using the Illuminating Engineering Society’s design guidelines. All lighting will be designed to have minimum impact on 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.

Light-emitting diode (LED) lighting will avoid the use of blue-rich white light (BRWL) lamps and use a correlated color temperature that is no higher than 3,000 Kelvin. In addition, LED lights will use shielding to ensure that nuisance glare and 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.



ICF Graphics ... 00205.17 (1/5/21) AB

Figure 2.1.8-1
Visual Assessment Units



ICF Graphics ... 00205.17 (1/5/21) AB

Figure 2.1.8-2
Key View 1. Existing View and Simulated
Conditions - from Miller Park Looking North

Existing View



Simulation



Source: Mark Thomas & Company, October 2019.

Figure 2.1.8-3
Key View 2. Existing View and Simulated
Conditions - from Pioneer Bridge Looking South

2.1.9 Cultural Resources

2.1.9.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, and water conveyance systems), 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 following.

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 CFR 800). On January 1, 2014, the First Amended Section 106 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 (Section 106 PA) went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the ACHP’s regulations (36 CFR Part 800), streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA’s responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 USC 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. 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 on 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 that has a cultural value to a California Native American tribe. Tribal cultural resources also must meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect State-owned historical resources that meet the NRHP listing criteria. It further requires Caltrans to inventory State-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing State-owned historical resources that are listed in or are eligible for inclusion in the NRHP, or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between Caltrans and SHPO, effective January 1, 2015. For most federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.1.9.2 Affected Environment

This section was prepared using information from the *Historic Property Survey Report* (HPSR), which includes the *Archaeological Survey Report* (ICF 2021a) and *Historical Resources Evaluation Report* (ICF 2021b), and the *Finding of No Adverse Effect* (FOE) for the project (ICF 2021c). These reports include the study methodologies, analysis, Native American consultation, and findings for identifying historic resources and historic properties and assessing impacts. Public versions of these reports are available in Appendix N.

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 was established as both the horizontal and vertical maximum potential extent of direct impacts resulting from the project, the area of direct impact (ADI). This area includes both the horizontal and vertical maximum extents of potential direct impacts. For this project, the ADI encompasses the project footprint and includes those areas of new construction, easements, utilities, and operations-related activities associated with the project, totaling 70.5 acres. For the vast majority of the project, the vertical APE would not exceed 2 feet deep. Both bridge alignments include areas offset from the banks of the Sacramento River, where maximum excavation depths would not exceed 10 feet below ground surface for pedestrian access below the bridge and for bank stabilization directly under the bridge.

Pile depths for column supports would extend approximately 140 feet at five locations: one near each bank of the river for bridge reinforcements and three within the river for bridge columns. Piles for the two bridge fender systems within the river would be driven to a depth of approximately 60 feet.

Architectural APE

The architectural/built environment APE consists of the project footprint and the assessor's parcels that intersect the footprint; it is the maximum potential extent of direct effects resulting from the project. In consideration of the two proposed build alternatives, the APE for potential indirect effects (such as visual, auditory, and vibratory) includes parcels adjacent to the project footprint that contain buildings, structures, or objects of sufficient age to warrant evaluation for listing in the NRHP or CRHR. In project areas where project activities have no potential to directly or indirectly affect built historical resources, assessor's parcels intersecting the project footprint are not included in the APE.

Specific project components with no potential for direct effects include the following for both Alternatives B and C: roadway striping and turn pocket additions on Jefferson Boulevard, South River Road, and Alameda Boulevard in West Sacramento, and on Broadway in Sacramento; bridge communication fiber optic line installation in existing conduit or in new conduit in existing roadway in West Sacramento; and use of existing roads to access proposed staging areas in West Sacramento and Sacramento.

The term "APE" is used generally in this section to refer to both the archaeological and architectural APE, when not specified otherwise.

Research Methodology

An investigation for the cultural resources located in the project APE was conducted beginning in 2015. The investigation included a records search and background research, Native American and historical society consultation, and archaeological and architectural field surveys.

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 historic maps (U.S. Geological Survey [USGS] and General Land Office), historic aerial photographs, and the California State Lands Commission’s Shipwreck Database, were 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 (Table 2.1.9-1). Of these resources, all are historic period—one is an archaeological resource and three are built environment resources. In addition, 13 previous cultural resources studies have been conducted within some portion of the APE.

Table 2.1.9-1. Previously Recorded Cultural Resources within the APE

Trinomial <i>Primary</i>	Age	Type	Description	CRHR/NRHP Status	Recorder
CA-YOL-0179H <i>P-57-000195</i>	Historic	BE	Sacramento Northern Railroad Tracks	Not eligible/ <i>Unevaluated</i>	Lindstrom (1993); Jones and Stokes (2000); Martin et al. (2001); Mead and Hunt (2010)
<i>P-57-000564</i>	Historic	BE	West Sacramento Wastewater Treatment Plant	<i>Not eligible/ Unevaluated</i>	Tomes (2007)
CA-SAC-1092H <i>P-34-001497</i>	Historic	BE	Southern Pacific Railroad, Walnut Grove Branch Line	Eligible/ <i>eligible for NRHP</i>	Deis (2006); Roark (2006); Melvin and Flores (2007); Havelaar (2011)
CA-SAC-505H <i>P-34-000619</i>	Historic	AR	Historic-period refuse dump	<i>Unevaluated/ unevaluated</i>	Hogan (2000); Davis (2001)

AR = archaeological
 BE = built environment (architectural)
 CRHR = California Register of Historical Resources
 NRHP = National Register of Historic Places

Consultation with Interested Parties

On February 13, 2018, ICF sent letters describing the project and requesting any information on potential cultural resources in the APE from organizations identified on the California Historical Society’s historical resources contacts lists. Follow-up phone calls were made on February 20, 2018. In December 2020, ICF renewed efforts to consult previously contacted historical societies, archives, and museums about their knowledge of local historical groups that are not included in the California Historical Society and Office of Historic Preservation contacts lists. As a result of outreach efforts, the Center for Sacramento History responded to the initial letters and informed ICF that it had information on resources

that may contribute to the study of the APE, such as photos and other historical records. Sacramento County Historical Society President Greg Voehl expressed an interest in sharing the project information with the Society and submitting any comments the Society might have.

In December 2020, ICF conducted follow-up correspondence regarding the archaeological site CA-Sac-505H and its potential for artifacts and archaeological data pertaining to the area's Chinese history. The Sacramento Historical Society and the Center for Sacramento History did not indicate interest in or knowledge of the potential interest of others in Sacramento's Chinese heritage.

Native American outreach efforts for the project was carried out for Section 106 (NHPA) compliance. Section 106 consultation originally was carried out in 2017 and 2018, with only one response: from Daniel Fonseca, Cultural Resources Director of the Shingle Springs Band of Miwok Indians (SSSBMI). Mr. Fonseca's letter stated that the SSBMI would like to initiate consultation under Section 106.

Additional consultation was carried out in 2019, including a Sacred Lands Files search and outreach to 12 Native American contacts consisting of mailed letters, update phone calls, and emails. Below is a summary of responses to the outreach efforts:

- Richard Hawkins, Tribal Historical Preservation Office Coordinator with the Buena Vista Rancheria stated the tribe does not have any objection to the project but if cultural resources are found, they would like to be notified.
- SSBMI requested consultation in 2019; however, ICF made several follow-up outreach attempts from 2019 to 2021 with no response.
- Jereme Dutschke of the Ione Band of Miwok Indians (IBMI) indicated that the tribe is interested in the project, and Stephen Pappas informed him that IBMI was listed to contact regarding the positive Sacred Lands Files Search. Mr. Dutschke was not aware of any sacred sites in the project area, and requested a copy of the survey report when Caltrans had finished their review. Consultation is ongoing.
- Mariah Mayberry with the Wilton Rancheria requested consultation under AB 52. The City of West Sacramento made attempts to reach out to Ms. Mayberry to schedule consultation meetings with the tribe. No further responses have been received. In addition, ICF did not receive any responses from Section 106 letters or calls.
- The Yocha Dehe Wintun Nation requested consultation on the project, and a virtual meeting was held to address Section 106 and AB 52 consultation. The tribe expressed concerns regarding sensitivity of levees and protocols for burial treatments, monitoring, and inadvertent discoveries. Consultation is ongoing.
- The United Auburn Indian Community of the Auburn Rancheria (UAIC) requested consultation on the project. Consultation was carried out in June, July, August, and December 2020 between UAIC and City of West Sacramento. Upon additional information regarding the project and the results of the archaeological study, representatives from the tribe stated that the APE did not sound sensitive for buried/unrecorded indigenous resources and that they did not believe the tribe needed to continue to actively consult; however, the tribe wanted to review the archaeological survey report once approved by Caltrans. The tribe requested to be notified of inadvertent discoveries during construction.
- Grayson Coney, Cultural Director of the Tsi Akim Maidu stated that the tribe did not wish to consult on the project, but if human remains are encountered, a member of his tribe would be a candidate for most likely descendant.
- Pamela Cubbler, Treasurer of the Colfax-Todds Valley Consolidated Tribe stated that the tribe did not wish to consult on the project as long as other tribes were consulting on the project.

No responses were received from the Section 106 letters or follow-up calls to:

- Charlie Wright, Chairperson, Cortina Rancheria – Kletsel Dehe Band of Wintu Indians
- Cosme Valdez, Chairperson, Nashville Enterprise Miwok-Maidu-Nishinam Tribe

Field Methods

A survey of the recorded built environment cultural resources in the architectural APE was conducted on February 6, 9, and 20, 2018. The survey was conducted according to guidelines established through consultation with Caltrans' reviewers.

On February 6 and 8, 2018, an archaeological pedestrian survey was conducted of all portions of the APE where access was permitted, including all public road rights-of-ways, State of California properties, and 14 privately owned parcels where rights to enter were granted. The intensive pedestrian survey consisted of walking parallel transects spaced at no more than 10 meters apart to identify archaeological deposits and surface-exposed features on the ground surface. The pedestrian survey also involved inspecting the local topography to identify areas that have been subject to modern anthropogenic landscape alteration. Updated site visits also were conducted in December 2020.

Cultural Resources Identified

Architectural/Built Environment Resources

A total of 13 built environment resources were identified in the APE. Four of the built environment resources are eligible or assumed eligible for listing in the NRHP for the purposes of this project and are considered CEQA historical resources for the purposes of this project. The State of California owns portions of one of these resources (Walnut Grove Branch Line); therefore, the resource is subject to PRC Sections 5024(f) and 5024.5 and is further discussed below.

Nine built environment resources were evaluated and recommended ineligible for inclusion in the NRHP and the CRHR and are not considered CEQA historical resources for the purposes of this project (ICF 2021b). These resources are 76 Broadway in Sacramento; and 1300 South River Road, 1509 South River Road, 1500 South River Road, 1515 and 1555 South River Road, 1700 South River Road, 1720 South River Road, 1701 South River Road, and 1900 South River Road in West Sacramento.

Sacramento River West Levee

The Sacramento River West Levee was constructed in the early 20th century during an era of major infrastructure improvement and development for flood control on the Sacramento River. The property is of similar design and intent to its eastern counterpart, the Sacramento River East Levee, located in Sacramento County.

The Sacramento River West Levee in its entirety has yet to be evaluated for listing in the NRHP and CRHR. The entire property has potential historical significance as an important Sacramento region flood water control structure. Because the project APE includes less than 1 mile of the property, it is beyond the scope of the project to evaluate the entire resource. Further, proposed bridge span installation and pedestrian improvements at the riverbank have limited potential to affect the qualities for which the levee would be assumed eligible.

For the purposes of this project, the Sacramento River West Levee is assumed eligible for listing in the NRHP under Criterion A for its association with important regional flood control development. Its period

of significance is 1911 to 1914, the period of its initial construction. Assumed character-defining features include its continued use as a functioning flood control structure on the Sacramento River for which it is associated historically, its setting at Yolo County's Sacramento River riverfront, and its alignment location along Yolo County's Sacramento River riverfront. The levee also is considered a historical resource for the purposes of CEQA.

Sacramento River East Levee

Similarly, the Sacramento River East Levee (P-34-000490), constructed in 1911, is a primary flood control levee along the City of Sacramento's waterfront. The levee is eligible for listing in the NRHP and CRHR under Criteria A/1 as a physical representation of the precedent set for flood control management in California between 1850 and 1911 by the State's first Reclamation District (RD 1). Its period of significance is 1911 to 1914, the period of its initial construction, and its character-defining features include its continued use as a functioning flood control structure on the Sacramento River for which it is associated historically, its setting at Sacramento County's Sacramento River riverfront, and its alignment location along Sacramento County's Sacramento River riverfront. The levee also is considered a historical resource for the purposes of CEQA.

Sacramento Northern Railway

The Sacramento Northern Railway, constructed in 1913, is a railroad grade that extended from the Bay Area to Maryville and served as the nation's largest electrified rail network. The segment of rail that crosses the built environment APE was previously evaluated and recommended as ineligible for inclusion in the NRHP and CRHR.

The property in its entirety has yet to be evaluated for listing in the NRHP and CRHR. The entire property has potential historical significance as an important rail network in northern California and in the nation. Because the project APE includes less than 1 mile of the property, it is beyond the scope of the project to evaluate the entire resource. Further, under Alternative C, proposed bridge span installation and roadway construction would not occur at the rail and thus has limited potential to affect the qualities for which the rail would be assumed eligible for listing. Under Alternative B, proposed bridge span installation and roadway construction that would occur at the rail would have potential to affect the qualities for which the rail would be assumed eligible for listing.

For the purposes of this project, the railroad is assumed eligible for listing in the NRHP and has significance under NRHP Criterion A in the area of transportation as the nation's largest electrified rail system. Its character-defining features are its alignment and its setting through one of West Sacramento's main transportation corridors, including Jefferson Boulevard. The railroad also is considered a historical resource for the purposes of CEQA.

Walnut Grove Branch Line

The Walnut Grove Branch Line, constructed between 1906 and 1912, is a railroad grade that extends from Sacramento south toward the Sacramento Delta. In 1982, the railroad was evaluated as eligible for listing in the NRHP. The railroad has significance under NRHP and CRHR Criteria A/1 for its association with the Delta's agricultural boom and subsequent development of its towns, and under Criterion C for its extensive levee and embankment works that represent a historically significant engineering feat. Its character-defining features are its alignment location, its continued use as a rail, its setting along the river levee rail corridor, and its raised grade structure. The railroad also is eligible for listing in the CRHR and is considered a historical resource for the purposes of CEQA. The portion of this property in the project

area is owned by the California Department of Parks and Recreation, and thus subject to PRC Sections 5024(f) and 5024.5.

Archaeological Resources

One archaeological resource (P-34-000619) was identified in the project area. This resource is assumed eligible for listing in the NRHP for the purposes of this project and is considered a CEQA historical resource for the purposes of this project. Within the ADI, this resource is located on private land.

Site P-34-000619

Site P-34-000619 is a late-19th to early-20th century refuse deposit located within an abandoned railroad spur adjacent to the Walnut Grove Branch Line. Archaeological investigations indicate that the railroad spur was constructed between 1906 and 1915 with fill containing the historic refuse. The deposit is partially located in a State-owned property that includes the Walnut Grove Branch Line railroad corridor; the owner is the California Department of Parks and Recreation. No previous determinations of eligibility for listing in the NRHP or CRHR have been made for the resource.

Because of restricted access, evaluation of the resource could not be completed. For the purposes of this project, site P-34-000619 is assumed eligible for listing in the NRHP pursuant to Stipulation VIII.C.4 of the Section 106 PA. The resource also is assumed to have significance under NRHP Criterion D for its ability to yield information pertinent to the ethnic lifeways of Chinese diaspora and overseas communities in California. Its character-defining attributes are the artifacts contained in the grade prism. Site P-34-000619 also is considered a historical resource for the purposes of CEQA.

Determination of Eligibility

Consultation with the SHPO is in progress for concurrence on the determinations, as stated above and summarized here:

- The Sacramento Northern Railway is assumed individually eligible for listing in the NRHP.
- The Walnut Grove Branch Line is individually eligible for listing in the NRHP.
- The Sacramento River West Levee is assumed individually eligible for listing in the NRHP.
- The Sacramento River East Levee (P-34-00490) is individually eligible for listing in the NRHP.
- Nine built-environment properties are not eligible for listing in the NRHP individually or as contributors to a potential NRHP-eligible district.
- P-34-000619, a historic-era refuse deposit is assumed individually eligible for listing in the NRHP.

Copies of the consultation correspondence are included in Appendix I.

2.1.9.3 Environmental Consequences

Build Alternatives

An FOE was prepared for consultation with the SHPO on project effects in accordance with the Section 106 PA. The FOE's findings description is a basis for the cultural resources analysis in this section. The FOE has found the project as a whole, "no adverse effect" (ICF 2021c). The FOE is included in Appendix N.

The resources discussions below apply equally to both build Alternatives B and C because both alternatives share most of the same footprint and would require similar ground disturbance and depth of excavation, with one exception: Alternative B would extend to Jefferson Boulevard, and Alternative C would extend to River Road (see Chapter 1, *Proposed Project*).

There are historic properties protected by Section 4(f) of the Department of Transportation Act of 1966 within the project vicinity. However, this project would not “use” those properties as defined by Section 4(f). Please see Appendix C under the heading *Resources Evaluated Relative to the Requirements of Section 4(f)* for additional details.

Identified Cultural Resources

Sacramento River West Levee

The historic property’s character-defining features, which are those qualities that convey its significance, are its historic setting at the Sacramento River front, its historic alignment along the Sacramento River front, and its continued use as a Sacramento River levee. Specifically, the physical components of the resource’s historic setting are the Sacramento River and its industrial eastern and western wharfs.

As stated in the project description in Chapter 1, both Alternatives B and C propose building a new bridge spanning the Sacramento River. The bridge structure would span the Sacramento River West Levee, and neither the bridge nor its pilings would be set on or in the levee. The project’s proposed bicycle undercrossing would be set on the levee and potentially cut up to 2 feet into the levee feature. Although this project element would cut into the levee, the cut would not alter, damage, or destroy the historic property’s character-defining features.

The project would affect the Sacramento River West Levee, but the effect would not be adverse. The project would not diminish the integrity of the resource and would not destroy or adversely affect any assumed qualifying characteristics of the property.

Sacramento River East Levee

The historic property’s character defining features, which are those qualities that convey its significance, are its historic setting at the Sacramento River front, its historic alignment along the Sacramento River front, and its continued use as a Sacramento River levee. Specifically, the physical components of the resource’s historic setting are the Sacramento River and its industrial eastern and western wharfs.

As stated in the project description in Chapter 1, both Alternatives B and C propose building a new bridge spanning the Sacramento River. The bridge structure would span the Sacramento River East Levee, and neither the bridge nor its pilings would be set on or in the levee. The project’s proposed bicycle undercrossing would be set on the levee, and potentially would cut up to 2 feet into the levee feature. Although this project element would cut into the levee, the cut would not alter, damage, or destroy the historic property’s character-defining features.

The project would affect the Sacramento River East Levee, but the effect would not be adverse. The project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property.

Sacramento Northern Railway

As stated in the project description in Chapter 1, all build alternatives in West Sacramento would include a new intersection for the bridge roadway at South River Road. Alternative B would realign 15th Street to connect to Jefferson Boulevard in West Sacramento, and Alternative C would connect as a “T” intersection to South River Road in West Sacramento. Neither connection would involve alterations to the railroad. The proposed bridge span installation and roadway modifications have limited potential to affect the qualities for which the rail would be assumed eligible for listing.

The project would affect the Sacramento Northern Railway, but the effect would not be adverse. The project would not diminish the integrity of the resource and would not destroy or adversely affect any assumed qualifying characteristics of the property.

Walnut Grove Branch Line

As stated in the project description in Chapter 1, under Alternatives B and C, the at-grade State Parks railroad crossing at Broadway would remain in the same location as an operating rail. The proposed new bridge span installation, existing roadway modifications, and new pedestrian pathways have limited potential to affect the qualities for which the rail is eligible for listing.

The project would affect the Walnut Grove Branch Line, but the effect would not be adverse. The project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property.

P-34-000619

Under Alternatives B and C, the railroad spur and therefore the artifact deposits within the spur matrix would remain in their present location and condition. Over the years, the site has experienced several types of disturbances which have caused extensive damage to those portions of the site within the limits of the proposed project activities. Initial disturbances of the site can be linked back to the construction of the railroad spur. The railroad spur was built to provide transportation of goods between the industrial businesses along Broadway and the Southern Pacific Railyards located north of downtown Sacramento. Although the areas west of the spur had previously been built up for flood protection and later expanded east and raised for the construction of the Walnut Grover Branch Line between 1906 and 1912, at least 6 vertical feet of fill material was added to the spur along its route to conform to the elevation of the raised Broadway road.

Exposures on the surface of the spur grade and along the spur’s eastern eroding slope reveal the spur had been constructed of a variety of fill materials such as concrete, asphalt, sandy soil, and deposits of burned and fragmented artifacts. No intact deposits were observed at the exposed areas, and due to the varied conglomeration of soils and other materials, and the overall lack of consistent observable stratigraphy, it is believed that the railroad spur was constructed of imported soils and materials from the surrounding areas or had material added due to adjacent construction activities throughout the years. If the imported artifact deposits were in fact secondary deposits, they were already disturbed by spur construction. Additional disturbances to the site occurred from the installation of underground utilities and from heavy erosion along the eastern slope causing several hundred artifacts to be exposed and accumulate at the base of the spur grade.

According to current project design plans, only the southern 60 feet of P-34-000619 is within the ADI. The remaining portions of P-34-000619 would not be affected by the project. The project description and design plans describe placement of 2 to 8 feet of fill on top of the portions of P-34-000619 within the

ADI, using soil stabilization methods that would not require re-grading or ripping the soil. The fill would raise the current surface elevation of Broadway for the bridge approach and raise the elevation of the driveway directly east of the site that provides access to the Chevron parcel. Although Section 106 studies such as identification and evaluation of this assumed-NRHP-eligible site could not be completed due to restricted access, they will occur following right-of-way acquisition. Despite restricted access, based on the observations and data currently available for the site, effects of the project on P-34-000619 would not be adverse. The project would not diminish the integrity of the resource and would not destroy or adversely affect any qualifying characteristics of the property.

2.1.9.4 No Build Alternative

The No Build Alternative would not result in project-related effects on either known or as-yet-unknown 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.

2.1.9.5 Avoidance, Minimization, and/or Mitigation Measures

Avoidance and Minimization Measure CUL-1: 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.

Avoidance and Minimization Measure CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

The project proponents will inform its contractor(s) of the possibility of subsurface archaeological deposits within the project area by including the following directive in contract documents:

“If prehistoric or historical archaeological deposits are discovered during project activities, all work within 100 feet of the discovery shall be redirected and a qualified archaeologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Project personnel shall not collect or move any archaeological materials or human remains and associated materials. Archaeological resources can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, basalt, or quartzite toolmaking debris; bone tools; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash and charcoal, shellfish remains, faunal bones, and cultural materials); and stone-milling equipment (e.g., mortars, pestles, handstones). Prehistoric archaeological sites often contain human remains. Historical materials can include wood, stone, concrete, or adobe footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, metal, and other refuse.”

If archaeological deposits are identified during project subsurface construction, all ground-disturbing activities within 100 feet will be redirected and a qualified archaeologist contacted to assess the situation and consult with agencies as appropriate. The archaeologist will first determine whether such deposits are historical resources as defined in 14 CCR Section 15064.5(a) and as required of the lead agency at 14 CCR Section 15064.5(c)(1). If these deposits do not qualify as historical resources, a determination

will be made whether they qualify as unique archaeological resources, pursuant to 14 CCR Section 15064.5(c)(3). If the deposit qualifies as a historical resource or a unique archaeological resource, it will need to be avoided by adverse effects, or such effects must be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach also may be appropriate. Upon completion of the assessment, the archaeologist will prepare a report documenting the methods and results, and provide recommendations for the treatment of the archaeological materials discovered. The report will be submitted to the project proponents and the Northwest Information Center.

Avoidance and Minimization Measure CUL-3: Stop Work if Human Remains Are Encountered during Ground-Disturbing Activities

If human remains are encountered, the remains will be treated in accordance with California Health and Safety Code Section 7050.5. The project proponents will inform their contractor(s) of the cultural sensitivity of the project area for human remains by including the following directive in contract documents:

“If human remains are encountered during project activities, work within 100 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.”

In the event that human remains are encountered during project activities, work within 100 feet of the discovery will be redirected and the County Coroner notified immediately. At the same time, an archaeologist will be contacted to assess the situation and consult with agencies as appropriate. Project personnel should not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist will prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the Most Likely Descendant. The report will be submitted to the project proponents and the Northwest Information Center.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 Regulatory Setting

Federal Requirements

Executive Order (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. The 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.”

State Requirements

The *Central Valley Flood Protection Plan* (California Department of Water Resources 2017) provides a comprehensive 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 California Code of Regulations (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

Regional and Local Requirements

West Sacramento Area Flood Control Agency

The City of West Sacramento, 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 also is 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.

Safety

Goal S-2. To prevent loss of life, injury, and property damage due to flooding.

Policy S-2.1. 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.

Public Facilities and Services

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. Diversion. The City shall require new development to be designed to prevent the diversion of floodwaters onto neighboring parcels.

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 RD 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 environmental constraints from the *Sacramento 2035 General Plan* (City of Sacramento 2015) are applicable to this project with respect to hydrology and flooding.

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.

Policy EC 2.1.14 Levee and Floodway Encroachment Permit. The City shall require applicants to secure an encroachment permit from the Central Valley Flood Protection Board for any project that falls within the jurisdiction regulated by the Board (e.g., levees, designated floodways).

2.2.1.2 Affected Environment

This section was prepared using information from the *Water Quality Assessment Report* prepared for the project (Burlison Consulting 2020). The report is available in Appendix O.

Regional Hydrology

The project is located in the Lower Sacramento Valley Watershed, within the larger Sacramento River Basin. The Sacramento River is the largest river in California, carrying 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; the river forms a delta with the San Joaquin River and ultimately flows to San Francisco Bay (The Freshwater Trust 2020). Historically, the river had a wide natural floodplain, but currently the river is heavily altered, with hydroelectric and water supply impoundments and a network of flood control levees through populated areas.

Local Hydrology

The eastern bridge landing and Sacramento River are within the Lake Greenhaven-Sacramento River watershed (Hydrologic Unit Code [HUC] 180201630701), and the western landing is within Toe Drain-Cache Slough watershed (HUC 180201630606)—both within the larger Lower Sacramento Valley Watershed (ESRI 2020). The proposed Broadway Bridge crosses the Sacramento River at approximately 2.25 miles downstream of its confluence with the American River. The Sacramento Deep Water Ship Channel is located south of the project. In the City of West Sacramento, the project area is served by the City’s separate stormwater system to the Deep Water Ship Channel; and in the City of Sacramento, the combined sewer system serves the project area. The City of Sacramento’s combined sewer system conveys domestic and commercial wastewater and stormwater runoff from downtown Sacramento and East Sacramento. Stormwater is discharged directly into local waterways within the Lower Sacramento River watershed. Stormwater south of Interstate 80 is carried through a system of surface ditches and pipes, and ultimately discharges to the Sacramento River via the Deep Water Ship Channel (City of West Sacramento 2003). Storm drain infrastructure are present along the City of West Sacramento’s Sacramento River levee south of the proposed bridge.

Floodplains

The project area is predominantly within Federal Emergency Management Agency (FEMA) Zone X unshaded. This area is subject to minimal flooding outside of the 500-year flood zone (see Figures 2.2.1-1 and 2.2.1-2).

The western side of the channel is protected by levees and outside of the 100-year floodplain. the Sacramento Weir, a State Plan of Flood Control facility, is located on the Sacramento River just upstream of the confluence of the Sacramento and American Rivers. During high flows, this structure allows excess water to be discharged into the Yolo Bypass via the Sacramento Bypass and reduces strain on downstream levees. The eastern landing and approach of the proposed project area are within the FEMA 100-year flood, within Zone AE. Zone AE is a Special Flood Hazard Area (SFHA) subject to flooding during the 100-year storm event (1 percent annual chance of flooding) (Federal Emergency Management Agency 2020). Flood Zone AE applies to the channel of a stream plus any adjacent floodplain areas that

must be kept free of encroachment such that the 1 percent annual chance flood can be carried without substantial increases in flood elevations. Both the Sacramento and American Rivers are surrounded by State Plan of Flood Control levees.

The City of West Sacramento is predominantly within flood Zone X. New construction and expansion of existing structures are allowed in flood Zone X without being subject to burdensome elevation and flood-proofing requirements. However, the WSAFCA believes that FEMA eventually will change West Sacramento's flood zone designations from Zone X to a SFHA designation (City of West Sacramento 2020). Development in an SFHA is regulated by federal, state, and local agencies.

Regional Groundwater Hydrology

The western Broadway Bridge landing is within the Yolo Subbasin, while the eastern landing is within the South American Subbasin—both within the larger Sacramento Valley Groundwater Basin. Groundwater recharge for both subbasins primarily is through applied irrigation water and direct rainfall, as well subsurface inflow from the American River. In the Yolo Subbasin, groundwater levels are in decline during periods of drought; however, long-term trends do not indicate any substantial water level declines. Areas of the subbasin are in continued overdraft, including areas northeast of Davis. These areas coincide with places with subsidence or deteriorating groundwater quality (California Department of Water Resources 2020). Generally, groundwater levels in the South American Subbasin are in decline (California Department of Water Resources 2020).

Local Groundwater Hydrology

No recent on-site groundwater data are available. However, groundwater data were collected for a site approximately 1.5 miles upstream of the proposed Broadway Bridge Project and used as a representation of groundwater for the proposed project. Groundwater was encountered at a depth of approximately 15 to 25 feet below ground surface (an elevation ranging from approximately 0 to 5.5 feet NAVD88) (GEI Consultants 2014). The groundwater beneath the site historically rises to within 5 feet of the ground surface for up to 6 months of the year. Groundwater levels are expected to vary seasonally.

2.2.1.3 Environmental Consequences

This section describes potential impacts on hydrology and flooding that could result from the proposed project. The analysis 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.

Build Alternatives

The effects of the two build alternatives would be similar and are addressed together below.

Water Surface Elevation

Bridge design was analyzed for impacts from the 200-year flood (Q200), 100-year flood (Q100), and 50-year flood (Q50). Based on studies conducted for the I Street Bridge Replacement Project, approximately 1.25 miles upstream of the proposed project and similar in scope, the bridge would result in a negligible increase in the peak water surface elevation (WSE) of 0.02 feet immediately upstream of the project and a 0.06-0.07 foot reduction in WSE immediately downstream of the project (GEI Consultants 2014). 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.

The project elements that are located within the levees on the Sacramento River would be designed according to the following principals defined in the California Department of Water Resources (DWR) *FloodSafe California Urban Levee Design Criteria* (California Department of Water Resources 2012).

- Levees protecting urban areas are assumed to have a minimum crown elevation equal to the 1-in-200 Azimuth-over-Elevation Positioning (AEP) WSE plus 3 feet.
- Non-urban state/federal project levees are assumed to meet the authorized minimum elevation.
- Levees act as weirs and do not breach if overtopped.

The effect of the proposed project on WSE and stream flow are anticipated to be 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. Alternative B and Alternative C result in a 2.0-acre and 2.2-acre net increase in impervious surfaces, respectively. Increases in impervious surfaces increase flow velocity and the peak and quantity of stormwater 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. 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, 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 stormwater 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 West Sacramento and 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 adverse impacts on water quality from runoff.

Onsite Drainage Systems

During construction, as is standard with all construction projects, the contractor would be required to install and maintain temporary BMPs to control any runoff or erosion from the project site that may discharge into the surrounding storm drain systems and waterways in order to be compliant with local, state, and federal water quality regulations. Temporary BMPs would be installed prior to any construction activities.

During operation, new impervious surface could alter surface runoff drainage patterns and river flows. However, project drainage has been considered in the design to avoid adverse effects. Stormwater and road runoff drainage for the proposed roadway would be conveyed in a new storm drain system installed approximately 5 feet below the finished road grade of South River Road, 15th Street, and Circle Street in

West Sacramento and of Broadway in Sacramento. New storm drain outfalls into the Sacramento River would be constructed near each of the bridge abutments in West Sacramento and Sacramento.

Floodplain Development

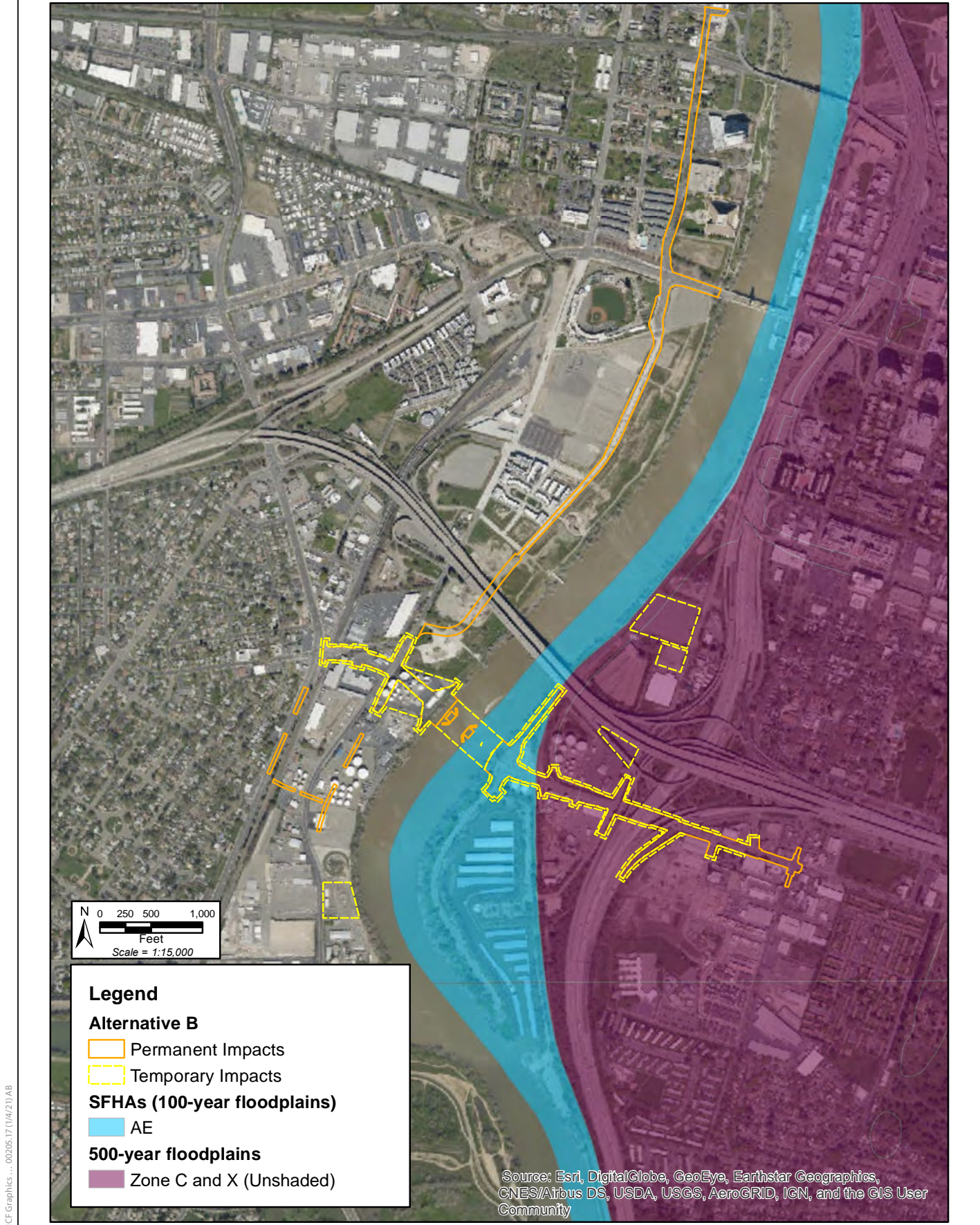
The primary function of the proposed bridge is local connectivity rather than regional travel; the bridge would increase the number of river crossings over the Sacramento River between West Sacramento and Sacramento. Generally, the area around the project site is developed with a variety of land uses. The new bridge would be designed according to hydraulic design criteria established in Chapter 11 of the Caltrans *Local Assistance Procedures Manual* (2021). 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, as proposed, is reasonable. Therefore, the project would not support incompatible floodplain development. No adverse effects related to floodplain development are anticipated.

No Build Alternative

Under the No Build Alternative, no bridge would be built across the Sacramento River from the Pioneer Bluff area of West Sacramento to Broadway in Sacramento. In West Sacramento, the redevelopment of Pioneer Bluff would continue as Riverfront Mixed-Use following the City’s General Plan and the guidance in the *Pioneer Bluff Transition Plan* (approved 2014), the *Pioneer Bluff and Stone Lock Reuse Master Plan* (pending approval), and the approved mobility network (as approved by West Sacramento City Council in 2018). Because this alternative would not alter existing conditions, the same hydrologic and hydraulic conditions would occur at the site.

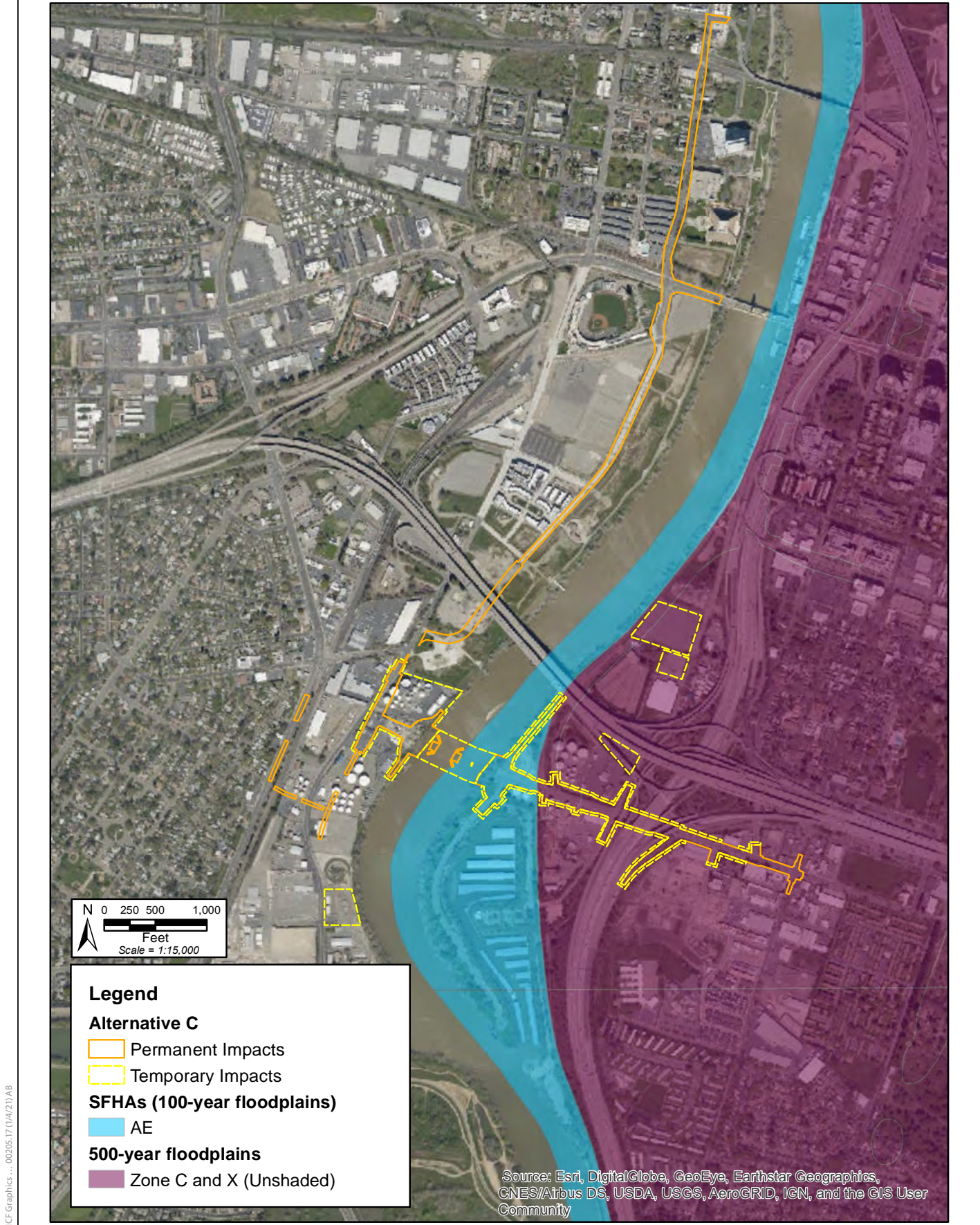
2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. As described in Chapter 1, *Proposed Project*, construction and implementation of the project would conform with federal, state, and local laws and regulations; applicable policies in the elements of the West Sacramento and Sacramento General Plans; requirements of the West Sacramento and Sacramento city codes; and Caltrans’ *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:225–240). Compliance with applicable laws and regulations for hydrology and flood control would avoid or minimize the effects of the project.



ICF Graphics ... 00205.17 (1/4/21) AB

Figure 2.2.1-1
FEMA Flood Zones, Alternative B



ICF Graphics ... 00205.17 (1/4/21) AB

Figure 2.2.1-2
FEMA Flood Zones, Alternative C

2.2.2 Water Quality and Storm Water Runoff

2.2.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source¹ unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (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 U.S. 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 U.S. 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 U.S. 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 Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE’s Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA’s Section 404 (b)(1) Guidelines (Guidelines) (40 CFR Part 230), and whether the permit approval is in the public interest. The Guidelines were developed by the U.S. EPA in conjunction with the USACE. They allow discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative 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 U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate

¹ A *point source* is any discrete conveyance such as a pipe or a man-made ditch.

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 U.S. 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 2.3.2, *Wetlands and Other Waters*.

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 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 U.S. (i.e., groundwater and surface waters not considered waters of the U.S.). Additionally, the act 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 (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and 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, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those 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 SWRCB 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 the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the 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 SWRCB 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 the 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

² The U.S. EPA defines *effluent* as “wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.”

over storm water, that is designed or used for collecting or conveying storm water.” The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans’ MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

As part of Statewide Phase II MS4 permit compliance, the City of West Sacramento developed an 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 storm water discharge. During implementation of specific projects, project applicants are required to follow the guidance contained in the SWMP. 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 storm water pollution to the maximum extent practicable and to eliminate prohibited non-stormwater discharges through an NPDES municipal storm water discharge permit.

Caltrans’ MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (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 as the SWRCB determines to be 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 the selection and implementation of BMPs. 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

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater and 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 General Construction Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity, 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 Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the 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' SWMP and *Standard Specifications*, a Water Pollution Control Program is necessary for projects with DSA 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 U.S. 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.

Local Requirements

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

Chapter 13.10 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. This chapter contains regulations and requirements to prevent, control, and reduce stormwater pollutants.

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.

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 SWRCB’s Small MS4 General 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 to 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 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.

2.2.2.2 Affected Environment

This section was prepared using information from the *Water Quality Assessment Report* prepared for this project (Burlison Consulting 2020). The report is available in Appendix O.

Topography

Topography in the region is generally downhill toward the Sacramento Valley from the Sierra foothills to the east and Coast Ranges to the west. The Sacramento Valley drains into the San Joaquin-Sacramento River Delta, approximately 35 miles southwest of the project site. Project site topography is relatively flat, except where it slopes down to the Sacramento River. Elevations are slightly higher along the banks of the Sacramento River and lower away from the river. The project elevations generally range between approximately 15 and 30 feet above mean sea level (msl). Slopes within the project area are from 0 to 2 percent (Burlison Consulting 2020). Therefore, a slope of 1 percent was assumed for the water quality analysis.

Surfaced Water Hydrology

The eastern bridge landing is within Lake Greenhaven-Sacramento River watershed (HUC 180201630701), and the western landing is within Toe Drain-Cache Slough watershed (HUC 180201630606), both within the larger Lower Sacramento Watershed (ESRI 2020). The receiving water body for project runoff is the Sacramento River. The river forms a delta with the San Joaquin River and ultimately flows to San Francisco Bay.

Local Soils and Erosion Potential

The upper 5 feet of the project site is underlain by urban land (Sacramento County) and Lang sandy loam (Yolo County) soil types. Extensive erosion has occurred from the Sacramento River and tributaries across the Central Valley toward the Sacramento-San Joaquin River Delta (Delta). The banks of the Sacramento River are particularly vulnerable to erosion during high winter flows. The Sacramento River Bank Protection Project (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 and the revised universal soil loss equation to predict the average annual rate of soil loss by sheet and rill erosion. The estimates are based primarily on the percentage of silt, sand, and organic matter and on the soil structure and saturated hydraulic conductivity. The value of K at the project site is 0.24 (Burlison Consulting 2020). Therefore, the potential for erosion at the site is moderate.

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 downstream of the I Street Bridge are designated in the Central Valley RWQCB Basin Plan (Central Valley Regional Water Quality Control Board 2018), as shown in Table 2.2.2-1.

Table 2.2.2-1. Designated Beneficial Uses for the Sacramento River

Water Body	Designated Beneficial Use
Sacramento-San Joaquin Delta (Sacramento River)	Municipal and domestic supply, agricultural (irrigation and stock watering), industry process and service supply, contact recreation, non-contact recreation, warm and cold freshwater habitat, warm and cold freshwater fish migration, warm freshwater fish spawning, wildlife habitat, navigation

Source: Central Valley Regional Water Quality Control Board 2018.

Regional Surface Water Quality

Water in the Sacramento River Basin generally is 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.

- 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 2.2.2-2 shows Section 303(d)-listed impairments for the Sacramento River based on the 2014/2016 California Integrated Report (State Water Resources Control Board 2018).

Table 2.2.2-2. 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	Unknown	Est. 2021
	DDT (dichlorodiphenyltrichloroethane)	Unknown	Est. 2017
	Dieldrin	Unknown	Est. 2022
	Mercury	Unknown	Est. 2012
	PCBs (polychlorinated biphenyls)	Unknown	Est. 2021
	Toxicity	Unknown	Est. 2027
Delta Waterways (northern portion)	Chlordane	Unknown	Est. 2029
	Chlorpyrifos	Unknown	10/10/2007
	DDT (dichlorodiphenyltrichloroethane)	Unknown	Est. 2011
	Diazinon	Unknown	10/10/2007
	Dieldrin	Unknown	Est. 2011
	Group A Pesticides	Unknown	Est. 2011
	Invasive Species	Unknown	Est. 2019
	Mercury	Agricultural Return Flows, Atmospheric Deposition, Highway/Road/Bridge Runoff, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Urban Runoff/Storm Sewers	10/20/2011
	PCBs (polychlorinated biphenyls)	Unknown	Est. 2019
Toxicity	Unknown	Est. 2027	

Source: State Water Resources Control Board 2018.

TMDL = total maximum daily load.

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 2018): municipal and domestic, agricultural, industrial process, and industrial service supply.

Groundwater Quality

The western Broadway Bridge landing is within the Yolo Subbasin, while the eastern landing is within the South American Subbasin. Groundwater quality in the Yolo Subbasin generally is 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 2004a).

Generally, groundwater quality within the South American Subbasin meets the primary and secondary drinking water standards for municipal use. The groundwater in the subbasin is described as a calcium magnesium bicarbonate with minor fractions of sodium magnesium bicarbonate (California Department of Water Resources 2004b).

Areas with major groundwater quality impairments in the subbasin include three U.S. EPA Superfund sites 7 or more miles from the project site: Aerojet, Mather Field, and the Sacramento Army Depot. Other areas with groundwater quality impairments are present in the subbasin, including an abandoned PG&E site on Jibboom Street near Old Sacramento, and the Southern Pacific and Union Pacific Rail Yards in downtown Sacramento, adjacent to the project site (California Department of Water Resources 2004b).

2.2.2.3 Environmental Consequences

Build Alternatives

Both build alternatives would result in similar impacts on water quality. Where impacts of these alternatives differ, they are 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 DSAs 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 can 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. Potential effects would not be adverse due to the requirement to comply with existing permits and regulations and the environmental commitments that are part of the project description.

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, 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, and DDT), and other toxicities (State Water Resources Control Board 2018). 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. Compliance

with existing permits and regulations and the environmental commitments included in Chapter 1, *Proposed Project*, would ensure that no adverse effects would occur.

Currents, Circulation, and Drainage Patterns

The proposed project would modify existing drainage patterns due to the proposed paving and construction of a new bridge with new outfalls at the base of the piers. The project also may modify the water volume, depth, and flow rate. The project would establish a new storm drainage system to convey road runoff. The receiving water body for project runoff is the Sacramento River. However, temporary BMPs are required to avoid adverse effects, 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. These increases 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 2020). Implementation of the SWPPP, LID measures, the Cities of Sacramento and West Sacramento storm water guidance measures, and permanent erosion control elements found in the Caltrans' MS4 program guidance documents would avoid adverse effects, minimize the potential for construction-related surface water pollution and ensure that water quality in the Sacramento River would 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 riverbed 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 removal of temporary trestles, cofferdams, and steel piles used to anchor barges required for in-water work during 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 2020).

Dewatering may be needed for (1) removal of water from within the cofferdams after they complete pile driving and prior to pouring the concrete inside the pile cage; and (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, or treating the water in a manner to ensure compliance with water quality requirements prior to discharging water back to the Sacramento River, any canal, or ditch. 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 the cofferdams as concrete is being poured. The water likely would contain uncured concrete. A Limited Threat Discharge Permit would 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. However, if dewatering involves discharging to the Sacramento River or nearby storm drains, compliance with the Limited Threat Discharge Permit such as monitoring and treatment of constituents associated with concrete, would be required prior to discharge to avoid adverse effects. If the water is discharged to land, the project would need to obtain a General Dewatering Permit for Land Discharges (Order No. 2003-0003-DWQ).

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. Alternative B would cause approximately 0.2 acre more permanent land disturbance than Alternative C. For further details on the permanent and temporary impacts on land cover types, see Section 2.3.1, *Natural Communities*.

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 that SWPPP erosion and sediment control BMPs be implemented and maintained to avoid adverse effects and 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 2020). To avoid adverse effects, 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 would address and avoid adverse effects related to non-storm water management, waste management practices, vehicle and equipment fueling and maintenance, and spill prevention.

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. Implementation of the environmental commitments included in Chapter 1, *Proposed Project*, and compliance with required permits and regulations would allow adverse effects to be avoided.

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 Construction General Permit 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 avoid adverse effects by minimizing the potential for surface water and groundwater contamination.

Water Temperature and Nutrients

Changes in water temperature, dissolved oxygen levels, or other parameters could violate water quality standards or WDRs. Removal of streamside vegetation may affect water temperatures. Remobilization of nutrients found in bed sediments during construction could release increased nutrients into the water column, causing an algal bloom. Algal blooms could result in low dissolved oxygen levels. However, remobilization of these nutrients would be temporary and would not be in sufficient quantities to cause adverse 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 to avoid adverse effects. The project would establish a new storm drainage system to convey road runoff. New storm drain outfalls into the Sacramento River would be constructed near each of the bridge abutments in West Sacramento and Sacramento. Drainage from the bridge itself would be directed to drains located on the bridge and routed to the abutment discharge points.

Turbidity/Suspended Sediment

During operation, long-term water quality impacts are attributable to changes in storm water drainage and/or loss of riparian vegetation. Alternative B would result in a permanent loss of 1.06 acres of levee slope vegetation (0.53 acre in West Sacramento and 0.53 acre in Sacramento) for RSP and permanent structures. Alternative C would result in a greater permanent loss: 1.67 acre of levee vegetation (0.54 acre in West Sacramento and 1.13 acre in Sacramento) for RSP and permanent structures. Vegetation along slopes can help reduce the potential for erosion during rain events. Installation of RSP and other permanent structures associated with the bridge would not adversely change storm water drainage or erosion because the new features would be designed to accommodate storm flows and prevent erosion.

The proposed project would result in added impervious surface with the potential to increase runoff volume in the Sacramento River. Alternative B and Alternative C would result in the addition of 2.0 acres and 2.2 acres of impervious surface, respectively. 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 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, to ensure that storm water runoff does not cause soil erosion. Implementation of these measures would reduce or avoid permanent adverse 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 typically are 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 from the majority of the impervious surfaces would be collected and diverted to the storm drain system and potential project LIDs rather than to the river itself.

Water Temperature and Nutrients

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 maintains cooler temperatures in the underlying water. 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. The project design also would include post-construction design measures, such as LID and vegetative areas to allow for infiltration and water quality treatment and avoid adverse effects.

Groundwater Recharge

As previously described, groundwater in the project area was found at a depth of approximately 15 to 25 feet below the ground surface. Roadway improvements, utility installation, and reconstruction of the riverfront bicycle trails would require excavation depths of 2 to 5 feet. Construction of the two bridge abutments would require maximum excavation depths of 10 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. No adverse effects related to groundwater recharge would occur.

No Build Alternative

Under the No Build Alternative, no bridge would be built across the Sacramento River from the Pioneer Bluff area of West Sacramento to Broadway in Sacramento. In West Sacramento, the redevelopment of Pioneer Bluff would continue as Riverfront Mixed-Use. Because this alternative does not alter existing and planned future conditions, it would not directly result in impacts on water quality.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. Three different MS4 permits apply to the project.³ These permits regulate storm water and non-storm water discharges associated with project construction activities and discharges within the jurisdiction of each permit. The permits require that controls be implemented to reduce the discharge of pollutants in storm water discharges to the maximum extent possible to avoid adverse effects, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. In addition to compliance with permits and regulations, environmental commitments related to runoff and erosion control practices and BMPs, as described in Chapter 1, *Proposed Project*, would be implemented during construction and operation to limit sediments and pollutants from affecting drainages and to diminish erosion in the project area. Implementation of water quality measures (management measures and BMPs) are required to address project-related water quality impacts during construction, operation, and maintenance of the bridge. Key management measures may include the following:

- Protect areas that provide water quality benefits or are susceptible to erosion or sediment loss.
- Minimize the potential for erosion via limiting land disturbances.
- Preserve any existing terrain providing desirable drainage courses or effective filtration.
- Prepare and implement an approved SWPPP.
- Ensure proper storage and disposal of potential hazardous material.
- Incorporate pollution prevention into operation and maintenance procedures to reduce pollutant loadings to surface runoff.

³ (1) Caltrans General NPDES MS4 permit that covers statewide Caltrans municipal storm water discharges (Order No. 2012-0011-DWQ); (2) SWRCB'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); and (3) Sacramento County's MS4 Permit for the City of Sacramento (Sacramento County MS4 Permit; NPDES No. CAS082597; Order No. R5-2015-0023).

2.2.3 Geology/Soils/Seismic/Topography

2.2.3.1 Regulatory Setting

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. Structures are designed using the Caltrans *Seismic Design Criteria* (California Department of Transportation 2019). The Seismic Design Criteria provide the minimum seismic requirements for highway bridges designed in California. A bridge’s category and classification determine its seismic performance level and which methods are used to estimate the seismic demands and structural capabilities. For more information, see the Caltrans’ Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria .

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).

Local Requirements

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 and are relevant to the proposed project.

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]).

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.

City of Sacramento General Plan

The *Sacramento 2035 General Plan* (City of Sacramento 2015) addresses seismic and geologic hazards relevant to the proposed project 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.

2.2.3.2 Affected Environment

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).

Site Geology

The surface and subsurface distributions of sandy and clayey deposits are a function of former river positions on the landscape and present-day geomorphic processes adjacent to the river channel (i.e., flooding and deposition). Specifically, the area in which the project is located is classified as Quaternary stream channel deposits associated with the Late Holocene. Soil map units of the project area, as described by the U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (U.S. Department of Agriculture 2018), are presented in Table 2.2.3-1. The characteristics of these

soils can be summarized as sandy loams, silt loams, and fill. The Yolo County portion is entirely Lang sandy loam, while the Sacramento County portion of the project area is made up of Columbian sandy loam and urban land (variable soils). Much of the area, however, is developed and has been disturbed by road construction and development of tank farms and industrial buildings on both sides of the river. Because the majority of the project area has been developed with little surface exposure, it is unknown whether the intact soils described below remain in the project area and how deep they may be below the current ground surface.

Table 2.2.3-1. Soils in the Project Area

Soil Series Name	Depth (in inches)	U.S. Department of Agriculture Texture	County
Lang sandy loam	0–13	Sandy loam and loamy fine sand	Yolo
	13–19	Loamy fine sand	
	19–60	Stratified fine sand, loamy fine sand, and silt loam	
Lang sandy loam, deep	0–13	Sandy loam and loamy fine sand	Yolo
	13–19	Loamy fine sand	
	19–40	Fine sand to loamy fine sand	
	40–60	Clay to heavy clay	
Columbian sandy loam	0–11	Sandy loam	Sacramento
	11–60	Stratified loamy sand to silt loam	
Urban land	0–6	Variable	Sacramento

No protected natural landmarks, outstanding examples of major geological features, or protected topographic and geologic features are in the project area (National Park Service 2020).

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. The risk of fault rupture in the project area is low because no faults are mapped at or near the project site. The nearest faults (approximately 15–18 miles from the project site) are the Dunnigan Hills Fault to the northwest near Woodland and the Midland Fault to the southwest near Dixon (California Department of Conservation 2020a). The site is not in an Alquist-Priolo Special Studies Zone, and it is not within 1,000 feet of any fault in the Caltrans Fault Database. The site is in a seismically active area, however, and strong shaking could be expected in the life of the facility.

Secondary Seismic Hazards

Secondary seismic hazards refers to seismically induced landsliding, liquefaction, and related types of ground failure. These hazards are addressed briefly below.

Landslides

A review of the California Department of Conservation online maps for landslide hazards reveals that no information is available for the project area (California Department of Conservation 2020b). However, the area does not appear particularly susceptible for landslides given its relatively flat topography.

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. A review of the California Department of Conservation online maps for liquefaction reveals that no information is available for the project area (California Department of Conservation 2020c). However, the nearby project, I Street Bridge Replacement Project, found a soil layer that is prone to liquefaction in a silty sandy layer, a soil series that the above table identifies within the proposed project site (GEI Consultants 2014). Therefore, it can be assumed that there is a risk of liquification at the project site.

Expansive Soil

No information was available for the project site for expansive soils. However, a review of the bore log data for another project located approximately 1.2 miles upstream indicates that the plasticity of the soils ranges from low to moderate (GEI Consultants 2014). As such, it can be assumed that this project has a similar expansive soil potential given the similar conditions and close proximity.

2.2.3.3 Environmental Consequences

Build Alternatives

The build alternatives have similar configurations and depths of construction; therefore, they are analyzed together in this section.

Seismic Hazards, Slope Instability, and Liquefaction

The risk of strong seismic ground shaking in the project area is low as there are no nearby faults, but the project area still could experience seismic ground shaking because of its location in a seismically active California. The project has no potential to cause significant seismic ground shaking as the project's size and scope would not exacerbate any existing faults. Compliance with the appropriate building regulations would ensure that the bridge foundations, bridge, roadways, and other project features are not damaged as a result of seismic activity.

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 river erosion due to soil conditions or seismic activity could cause bridge damage or failure. Site-specific field exploration and laboratory testing as part of final engineering design efforts, possibly including cone penetration tests and borings, would be conducted to develop final geotechnical engineering properties and design criteria for bridge foundations, project retaining wall, earthwork, and pavement design. This work would avoid any adverse effects related to secondary seismic hazards and would be performed as part of the final bridge design process. The project would comply with Caltrans' Seismic Design Criteria to ensure that earthquake design and construction measures are implemented.

Erosion

Ground-disturbing earthwork associated with construction at the project site may increase soil erosion rates or loss of topsoil. Compliance with the erosion-related requirements applicable to the project will ensure that construction activities avoid or do not result in adverse levels of erosion. These requirements are described in the project's environmental commitments (i.e., BMPs to control runoff and erosion);

erosion control measures from the City of West Sacramento’s *Standard Construction Specifications* (2002) and *Stormwater Management Program Planning Document* (2003); City of Sacramento’s *Grading, Erosion, and Sediment Control Ordinance*; and Caltrans’ *Construction Site Best Management Practices (BMPs) Manual* (California Department of Transportation 2017) and the *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual* (California Department of Transportation 2016).

Landslides

Construction and operation of the proposed project would not exacerbate the risk of landslides to the project as the project would conform with Caltrans’ Seismic Design Criteria to meet the minimum seismic requirements for highway bridges designed in California.

Expansive Soil

Expansive soil, as defined in Table 18-1 of the Uniform Building Code (1994), does not appear to be extensive in the project area but could occur locally. Construction on expansive soils could lead to structural damage due to the shrink-swell potential. Adverse effects of expansive soils would be avoided because the design of project structures would take into account the results of site-specific geotechnical data gathered as part of the final design effort. All construction and engineered fills would comply with Caltrans’ Standard Specifications, and all construction would compact roadway subgrades in accordance with Caltrans’ Standard Specifications and local code.

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.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. As described in Chapter 1, *Proposed Project*, construction and implementation of the project would conform with federal, state, and local laws and regulations; applicable policies in the elements of the West Sacramento and Sacramento General Plans; requirements of the West Sacramento and Sacramento city codes; and Caltrans’ *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:225–240). Compliance with applicable laws and regulations would avoid or minimize the effects of the project.

2.2.4 Paleontology

2.2.4.1 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. For example, 23 USC 1.9(a) requires that the use of federal-aid funds must be in conformity with all federal and state laws. And 23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431–433 and state law.

Under California law, paleontological resources are protected by CEQA.

2.2.4.2 Affected Environment

Regional Physiographic Setting

The project area consists of the Sacramento River, riparian forest along the Sacramento River, local roads, and commercial development. The project area has a relatively high level of historical and ongoing disturbance.

The project is located in the southern portion of the Sacramento Valley, in the California Central Valley, which is a nearly flat alluvial plain that lies between the Sierra Nevada to the east and the Coast Ranges to the west. Its south end is defined by the Tehachapi Mountains north of Los Angeles, and its north end is defined by the Klamath Mountains. Subdivided into the Sacramento Valley to the north and the San Joaquin Valley to the south, the Central Valley has an average width of about 50 miles and is about 400 miles long overall (Bartow 1991:1). The Sacramento River is the main drainage of the northern Sacramento Valley, flowing generally south from the Klamath Mountains to its discharge point into the Suisun Bay in the San Francisco Bay area.

In the West Sacramento/Sacramento area, the Sacramento and American Rivers have been confined by human-made levees since the mid-19th century. In the project area, these levees generally were constructed on Holocene-age (less than 11,000 years old) alluvial and fluvial deposits deposited by the current and historical Sacramento River and its tributaries (U.S. Army Corps of Engineers 2015:80).

Geology and Soils

The project is located on soil that is classified as Quaternary stream channel deposits associated with the Late Holocene. Geology and soils of the project area are described further in Section 2.2.3, *Geology/Soils/Seismic/Topography*.

Paleontological Sensitivity

Paleontological resources are significant if they provide new data on fossil animals, distribution, evolution, or other scientifically important information. Caltrans uses a tripartite scale to characterize the paleontological sensitivity of geologic rock units (California Department of Transportation 2014).

- High potential: Rock units that, based on previous studies, contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils. These units include sedimentary formations that contain significant nonrenewable resources anywhere within the geographic extent.

- Low potential: Rock units that are not known to have produced significant fossils in the past but possess a potential to contain fossils or those that yield common fossil invertebrates.
- No potential: Rock units with no potential to contain fossils. This includes most rocks of igneous origin or metamorphosed transformation.

A multilevel ranking system was developed by professional resource managers as a more practical tool, the Potential Fossil Yield Classification (PFYC) system (U.S. Bureau of Land Management 2016). Using the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts. This ranking is not intended to be applied to specific paleontological localities or small areas within units. Although significant fossil localities occasionally may occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC value; instead, the relative abundance of fossil localities provides the major determinant for the value assignment.

Because the project is located on soil that is classified as Quaternary stream channel deposits associated with the Late Holocene, deposits that can contain fossils, but much of the project area has been disturbed by levee and road construction and development of tank farms and industrial buildings on both sides of the river without yielding significant fossils, the project area can be considered to have a low potential for significant fossils. Since there is little surface exposure, it is unknown whether any intact soils remain in the project area and how deep they may be below the current ground surface.

2.2.4.3 Environmental Consequences

Build Alternatives

The build alternatives have similar configurations and depths of construction; therefore, they are analyzed together in this section.

For the vast majority of the project, the vertical construction limits would not exceed 2 feet deep. Both bridge alignments include areas off-set from the banks of the Sacramento River where maximum excavation depths would not exceed 10 feet below ground surface for construction of the bridge abutments. Excavation of approximately 5 feet would be needed to create bicycle and pedestrian access under the bridge. Pile depths for column supports would extend approximately 140 feet at five locations: one near each bank of the river for bridge reinforcements and three within the river for bridge columns. Piles for the two bridge fender systems within the river would be driven to a depth of approximately 60 feet.

Paleontological sensitivity, although unknown and undemonstrated, can be considered low for both sides of the project area because the anticipated ground disturbance would occur primarily in previously disturbed areas, meaning that project construction would be unlikely to encounter intact sensitive paleontological resources due to past development and ground-disturbing activities in the area. Additionally, given that the majority of project construction would be relatively shallow (less than 2 feet deep), it is unlikely that significant paleontological resources would be encountered through these construction activities as the soils/unit would be such a young age (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 encountered during construction could contain paleontological resources. As such, implementation of avoidance and minimization measures would prevent adverse effects.

No Build Alternative

The No Build Alternative would not affect surface or subsurface soils; therefore, it would not create adverse impacts on potential paleontological resources.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. Implementation of Caltrans' *Standard Specifications*, local policies, and Avoidance and Minimization Measures PAL-1–3 would prevent adverse effects on paleontological resources in the project area, should they exist.

Avoidance and Minimization Measure PAL-1: 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.

Avoidance and Minimization Measure PAL-2: Stop Work if Fossil Remains Are Encountered during Construction

If 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.

Avoidance and Minimization Measure PAL-3: Include Resource Stewardship Measures in Standard Specifications for the Project

The following measures will be added to the standard specifications for the project.

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area
3. Notify the Resident Engineer

The project proponent will investigate and modify the dimensions of the protected area if necessary.

Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized.

The project proponent will alert the construction contractor that paleontological monitoring will occur during activities that will disturb native sediments.

2.2.5 Hazardous Waste/Materials

2.2.5.1 Regulatory Setting

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; and the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976 (RCRA). The purpose of CERCLA, often referred to as “Superfund,” is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for “cradle-to-grave” regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act
- 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.

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 addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could affect ground 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 are vital if it is found, disturbed, or generated during project construction.

2.2.5.2 Affected Environment

This section was prepared using information from the Phase I Initial Site Assessment (ISA) prepared for the project (Blackburn Consulting 2020). The report is available in Appendix P.

The ISA study area, which comprises proposed acquisitions and adjacent parcels, and potential hazardous waste sites are shown in Figures 2.2.5-1 and 2.2.5-2. The methodology and identification of hazardous waste/materials potentially present in the study area, as discussed in the ISA, are presented below (Tables 2.2.5-1 and 2.2.5-2).

Site Reconnaissance and Access Limitations

The purpose of the visual survey is to collect information regarding potential hazardous material contamination, including evidence of current and/or past use; evident storage of toxic or hazardous materials; presence of onsite ponds, landfills, drywells, waste streams, or other disposal units; visible soil contamination; and aboveground or underground storage tanks, drums, barrels and other storage containers. A site visit was conducted on January 30, 2020, that included a visual survey of the project area. Due to private property access restrictions, onsite inspection of building interiors and other structures could not be completed. Observation of some acquisition parcels was limited to those areas visible from publicly accessible areas (i.e., roads).

Underground Transmission Lines

Two existing gas transmission lines, Kinder Morgan and PG&E, run adjacent to South River Road and under the Sacramento River. There is a potential for explosive hazard associated with the transmission pipelines should construction activities extend into the pipeline easements.

Railroad Tracks

Soils next to railroad tracks typically have been affected by heavy metals, total petroleum hydrocarbons as diesel, fuel oil, and polychlorinated biphenyls. Soils along railroad tracks may be affected by locomotives (total petroleum hydrocarbons as diesel), railroad ties (polynuclear aromatics), and slag ballast used to set the ties (heavy metals). Consequently, it is possible that soil and groundwater in the immediate area of the railroad lines are contaminated.

One railroad alignment runs through the project area in West Sacramento. The existing Union Pacific eastside rail line parallels Jefferson Boulevard; however, these tracks will be relocated as part of the de-industrialization of the Pioneer Bluff area. In Sacramento, railroad tracks owned by California State Parks run through the project area in the north-south direction at Broadway.

Yellow Traffic Stripes

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 chromium.

Yellow and white traffic striping and markings are located along Jefferson Boulevard, 15th Street, and South River Road in West Sacramento and along Broadway in Sacramento.

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 South River Road, Jefferson Boulevard, and 15th Street; and in Sacramento along Broadway, Front Street, 3rd Street, and 5th Street. These roadways have been present in various alignments since 1916 and therefore have the potential to be contaminated with ADL.

Recognized Environmental Conditions by Parcel

Known and potential recognized environmental conditions (RECs)¹ in the project study area are described below (Tables 2.2.5-1 and 2.2.5-2) and are shown in relation to each build alternative in Figures 2.2.5-1 and 2.2.5-2. The tables and figures identify potential parcel acquisitions as well as immediately adjacent parcels with RECs. Because there are two alternative alignments, some “acquisition parcels” under one alternative might be a full acquisition, partial acquisition, or an adjacent parcel depending on the final alignment.

West Sacramento – Sites with Known/Potential Recognized Environmental Conditions

In West Sacramento, most of the project area is bounded on the east by the Sacramento River riparian corridor, on the west by Jefferson Boulevard, and on the south by the Tesoro/Buckeye fuel terminal. The land is zoned as nonconforming industrial and heavy commercial use. The former Cemex site at the north boundary of the project is no longer operational, and all structures have been demolished. Sites east of South River Road are primarily fuel product storage; sites west of South River Road include auto shops, fuel product storage, a Kinder Morgan facility, and a truck painting shop. The area south of 15th Street is developed with active businesses, including Pegasus Pest Control, Shell Oil, and Lucky produce and trucking services. An active railroad line runs along the east side of Jefferson Boulevard. Existing roadway, curb, gutter and sidewalk areas are present along Jefferson Boulevard, South River Road, and 15th Street. Underground utilities, a pressurized gas line, and a fiber optics line also are located along Jefferson Boulevard.

Table 2.2.5-1. Sites in West Sacramento in or Adjacent to the Project Footprint with Known/Potential Recognized Environmental Conditions

APN/Address	Land Use/Name	REC: Level of Risk	Alternative	Site Summary
058-034-028 1313 Jefferson Boulevard	Current: Vehicle storage area Former: Unknown	Medium	Adjacent to Alternative B Not relevant for Alternative C	The database records search did not provide additional information regarding a UST at this location. The nature of the facility, however, indicates a higher potential for soil/groundwater contamination.

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.”

APN/Address	Land Use/Name	REC: Level of Risk	Alternative	Site Summary
058-270-008 1601 South River Road 058-270-012 1701 South River Road	This site, formerly the BP-ARCO and Tesoro Petroleum, is known today as Buckeye Terminal and Tesoro Petroleum	High	Not relevant for Alternative B Adjacent to Alternative C	The developed site contains an aboveground bulk fuel storage tank facility with a filling station. Regulatory files identify the site as part of a regional contamination issue, referred to as the Tesoro ARCO Remediation Program (TARP), a combination of Arco and Tesoro sites that are grouped together for regulatory purposes because their groundwater contamination plumes are indistinguishable. TARP sites include parcels 058-027-001, -008, and -012, all of which have contaminated soil and groundwater.
058-270-006 058-270-009 058-270-014 1515 South River Road 058-270-007 (easement to 058-270-014) 1553 South River Road	Ramos Environmental/Ramos Oil Recyclers	High	Only parcel 058-270-006 is adjacent to Alternative B Acquisition needed for Alternative C Parcels 058-270-006, 058-270-007, and 058-270-014 are "acquisition parcels" under Alternative C. Parcel 058-270-009 is adjacent to, but not within the project footprint of, Alternative C. Parcel 058-270-006 is adjacent to, but not within, the project footprint of Alternative B	The facility has been located at this site since 1979 and is a hazardous waste storage and transfer facility. Used oil, antifreeze, oily water, and oily sludge are pumped from trucks into ASTs. After accumulation, the waste is pumped out of the ASTs into trucks, to be transported to a permitted Treatment Storage and Disposal Facility (TSDF) for disposal or recycling. A container storage area was added in 1999 with a capacity of 118 55-gallon drums. Multiple violations are noted in the records review. Potential for soil and groundwater contamination.
058-270-011 Between 1509 and 1515 South River Road	Current: Easement between Ramos Oil and Shell Oil Products. Former: Rail spur	Medium	Alternatives B and C	Previously a railroad spur, this site is located between the Ramos Oil and Shell Oil Products sites. The topographic map from 1975 shows a railroad spur in this easement. There is a potential to encounter preservative-treated railroad ties and soil contaminated with oil, grease, heavy metals, or pesticides. Potential for soil contamination.

APN/Address	Land Use/Name	REC: Level of Risk	Alternative	Site Summary
058-280-003 1520 and 1540 South River Road	Current: West Sacramento Auto Plaza Former: Lucky Fruit and Produce, Lucky Drayage, Atlas, Homewood, and NorCal Mill Works	High	Alternative B	Records search identified four USTs installed onsite as early as 1965, including one 500-gallon waste oil, one 3,750-gallon diesel, one 3,500-gallon unleaded gasoline, and one 10,000-gallon diesel UST. Records indicate that two USTs were removed, but no files were located to verify the removals. Yolo County reports cases of discharge from an oil water separator, steam cleaning, and diesel spillage from fueling operations to the street. The file also reports diesel spillage onto the street from fueling operations. As a result, soil was removed, and the practices changed to prevent future problems. County records further indicate that at 1540 South River Road, KEMPs West Sacramento Station had a pipeline valve failure that resulted in 400-gallons of diesel being released onto the soil. The exact location of the failure is unknown. Potential for soil and groundwater contamination.
058-280-005 1509 South River Road	Shell Opus/Equilon Enterprises. Operational fuel storage and distribution facility at this location since the 1940s	High	Alternatives B and C	This parcel contains large aboveground fuel storage tanks associated with Shell Oil Products. A pressurized oil pipeline with aboveground connections is located onsite. This site is a significant source of contamination from petroleum products benzene, toluene, ethyl benzene and xylene (BTEX), hydrocarbons, including TPH-g (gasoline), TPH-d (diesel), and the additives tertbutyl alcohol (TBA) and methyl-tert-butyl-ether (MTBE). Subsurface remediation consisting of groundwater extraction and soil vapor extraction has been ongoing since 1996. Petroleum hydrocarbons are present in groundwater throughout a large portion of the facility and extend into adjacent properties, including RMC Lonestar (acquisition parcel APN 058-350-001) to the northeast and Ramos to the southwest. Remediation is ongoing. Potential for groundwater impacts.
058-280-006 1500 South River Road	Pegasus Pest Control	High	Alternative B and adjacent to, but not within the project footprint of, Alternative C	This site is a pesticide storage, mixing, and handling facility. No releases have been reported, but the risk of soil contamination is considered high due to the nature of work performed onsite. Possible soil contamination.

APN/Address	Land Use/Name	REC: Level of Risk	Alternative	Site Summary
058-280-007 31 15th Street	Current: Martial arts studio Former: TNT Fireworks, Royal Sleep Co.	Low	Alternative B	No reported releases. The site is below the elevation of South River Road; therefore, potential groundwater impacts from 1520 and 1540 South River Road (APN 058-280-003) may exist in shallow groundwater at the site. Adjacent to railroad. Potential soil and groundwater contamination.
058-290-004 1300 South River Road (20 15th Street 30 15th Street)	Current: Horizon Church Former: Cen-Cal Wallboard Supply, L&W Supply	Low	Alternative B	Yolo County records report that a 12,000-gallon fuel UST was registered at the site in 1978. No records of soil or groundwater contamination were found. The site was used as an orchard prior to 1961. Significant concentrations of residual pesticides are unlikely because of subsequent road improvements adjacent to the parcel.
058-350-001 058-350-008 1501 South River Road	Current: Vacant Former: RMC, Cemex Ramos Oil, Lone Star	Medium	Parcels 058-350-001 and 058-350-008 are "acquisition parcels" under Alternative B 058-350-001 is adjacent to, but not within the project footprint of, Alternative C	Parcel 058-350-001: No known sources of soil or groundwater contamination were identified on this parcel; however, there is the potential for groundwater contamination from an adjacent parcel (APN 058-280-005, Shell Oil Products) discussed above. Parcel 058-350-008: Records indicate removal of waste oil, surplus organics, polychlorinated biphenyls, and oil sludge. Data from two groundwater monitoring wells associated with known releases from the Shell facility indicate that low levels of TPH-d, TPH-g, 1, 2 dichloroethane, MTBE, TBA, and naphthalene are present in groundwater. This parcel is the east half of the Lonestar Ideal Cement facility. Potential groundwater contamination
058-990-007 058-990-011 Union Pacific Railroad right-of-way	Active railroad at the east side of Jefferson Boulevard	Medium	Alternative B	Railroad tracks have been present here since the 1920s. Soil adjacent to and beneath existing and former railroad beds have the potential for elevated levels of contaminants commonly associated with railroad activities, including TPH, lead, arsenic, and creosote.

APN = Assessor's parcel number.
AST = aboveground storage tank.
REC = recognized environmental condition.
TPH = total petroleum hydrocarbons.
UST = underground storage tank.

Sacramento – Sites with Known/Potential Recognized Environmental Conditions

In Sacramento, the project area is bounded on the west by the Sacramento River riparian corridor, on the north by the Tosco and Chevron bulk fuel storage facility and generally US 50, on the east by 5th Street, and on the south by Broadway and the Conoco bulk fuel storage facility. Interstate 5 bisects the project area in a north-south alignment. The former Tosco site at the west boundary of the project is no longer operational, and all structures have been razed. The remainder of the west one-third of the project area is developed as fuel product storage. Sites north and south of Broadway, east of I-5, are primarily commercial/light industrial businesses and a TV station. An active railroad line and the Sacramento River Bike Trail are located along the west side of the project adjacent to the Sacramento River. Existing roadway, curb, gutter, and sidewalk areas are present along Broadway, Front Street, Marina View Drive, Miller Park Circle, 3rd Street, and 5th Street.

Table 2.2.5-2. Sites in Sacramento in or Adjacent to the Project Footprint with Known/Potential Recognized Environmental Conditions

APN/Address	Land Use/Name	Risk	Alternative	Site Summary
009-0012-009 Broadway right-of-way	Active roadway since pre-1902	Medium	Alternatives B and C	This site was not listed in the records search databases; however, Sanborn and Topographic maps identify a railroad spur at the south side of Broadway at this parcel. Soil adjacent to and beneath existing and former railroad beds have the potential for elevated levels of contaminants commonly associated with railroad activities, including TPH, lead, arsenic, and creosote. Potential for soil contamination.
009-0012-064 009-0020-001 66 Broadway	Current: Vacant Former: Tosco, Tidewater Bulk Fuel Terminal	High	Alternatives B and C	This site was a bulk fuel terminal from 1916 to 1999. Several ownership changes occurred throughout the years until the Tosco Corporation took over ownership in 1978. The terminal was dismantled in 1999. Soil and groundwater impacts from petroleum hydrocarbons were identified. Active site remediation occurred until 2012. Passive remediation is ongoing, and a Land Use Restriction was placed on the property on August 31, 2018. Potential soil and groundwater impacts.
009-0020-001 66 Broadway	Current: Storage tanks associated with Tosco Tidewater Bulk Fuel Terminal Former: PGE Manufactured Gas Plant	High	Alternatives B and C	A preliminary assessment completed by PG&E in 1986 states that a manufactured gas plant was operated at the south edge of Broadway on the Sacramento River from 1914 until 1926. The gas plant also is identified on the 1915 Sanborn map. The plant was constructed by the Sacramento Gas Company, which supplied both natural and manufactured gas. PG&E purchased the plant in 1926. The plant was dismantled in 1927. This site currently is occupied by oil storage tanks associated with Tosco/Tidewater Bulk Fuel Terminal. Potential soil and groundwater impacts.

APN/Address	Land Use/Name	Risk	Alternative	Site Summary
009-0012-029 009-0020-002 Railroad alignment	Active railroad since 1800s	Medium	Alternatives B and C	The site is not listed in searched databases; however, the parcel is an active railroad. The railroad is first identified on a 1902 topographic map. Soil adjacent to and beneath existing and former railroad beds have the potential for elevated levels of contaminants commonly associated with railroad activities, including TPH, lead, arsenic, and creosote. Potential soil contamination.
009-0012-008 009-0012-071 009-0012-072 2420 Front Street	Current: Chevron Bulk Fuel Terminal Former: Standard Oil	High	Alternatives B and C	This site is a bulk fuel terminal. Subsurface soil and groundwater are contaminated by petroleum hydrocarbons. Cleanup of petroleum hydrocarbon contaminated groundwater is ongoing, and the case still open. Soil and groundwater contamination.
009-0020-003 2701 Marina View Drive	Current: Miller Park Marina	Low	Alternatives B and C	This site is operated as Miller Park Marina. A UST was reported in the boat launch dock area approximately 0.5 mile from the project limits. The nature of release or contamination is unknown. The case was listed closed in April 2001.
009-0030-054 76 Broadway	Current: Conoco Philips Bulk Fuel Terminal	High	Alternatives B and C	This site is a bulk fuel terminal. Twelve ASTs and underground piping are present at the site. Previous investigations indicated that soil and groundwater is affected by petroleum hydrocarbons. Groundwater monitoring initiated in 1988 is ongoing, and the case remains open. There are two separate plumes onsite. One plume is near the loading rack, and the other is under the aboveground tanks. Soil and groundwater contamination.
009-0223-007 009-0223-012 009-0223-016 2570 Third Street	Current: Setzer Forest Products & Sacramento Farmers Market	Medium	Alternatives B and C	There are nineteen parcels included in this site. Land use at the site has been active light industrial for 89 years, including a former gas station and wood product supply facility. USTs were removed in 1979, 1987, 1990, and 1998. Site remediation was completed with case closure in May 2018. Railroad spurs also once were located at this site. Potential for soil and groundwater contamination.
009-0231-005 009-0222-005 301 Broadway	Current: Horizon Irrigation Distribution Former: Diesel Performance	Low	Alternatives B and C	This site is an irrigation supply company developed with a large warehouse and storage yard. Horizon maintains hazardous materials on site (e.g., fertilizers). Several notices of violations from 2014 to 2017 were noted due to "Failure to complete hazardous material inventory." Identified inventory includes propane, acetone, butanol, ethyl acetate, Round Up oil, and "turf gro." Possible soil contamination.

APN/Address	Land Use/Name	Risk	Alternative	Site Summary
009-0232-005 009-0232-016 417/431 Broadway 2430 5th Street	Current: Remnants of a gas station owned by Kayo Oil Company Former: Jet Gas Station Consolidated Terminals	High	Alternatives B and C	This site is a former service station. Seven USTs, including three 10,000-gallon diesel and regular gasoline, two 6,000-gallon leaded gasoline, and one 500-gallon waste oil USTs, were removed in 1986. Several soil and groundwater investigations were completed. Subsurface soil and groundwater are contaminated by petroleum hydrocarbons and were under regulatory action since 1987. The case was closed with a “No Further Action Required” letter issued on November 29, 2001. Possible soil and groundwater contamination.
009-0232-009 502 Broadway 2400 5th Street	Current: L&N Truck Repair Former: Lee’s Oil Company, Lee’s Arco, Tony’s Phillips 66	High	Alternatives B and C	This site is an active auto repair shop. Previously, the property operated as a gasoline service station with five USTs. The USTs were removed in 1997, with soil and groundwater impacts noted. Soil assessment and groundwater monitoring were conducted. In 2008, a “No Further Action and Case Closure” determination was made. The current owner, Lee and Nakata Auto Service have had multiple violations including “Failure to properly label hazardous waste accumulations containers” and “Failure to properly dispose of hazardous waste at an authorized location.” Potential for soil and groundwater contamination.
009-0232-017 009-0232-018 401 Broadway 2415 3rd Street	Current: StorQuest Self Storage – Roy Hall Trust Former: Boat repair, auto shop, gas station	High	Alternatives B and C	Former service station. Three USTs were removed in 1986. Soil and groundwater have been contaminated by petroleum hydrocarbons. Soil excavation was completed, and the case was closed in May 2012. Potential for soil and groundwater contamination.
009-0235-007 511 Broadway	Current: Mama N Pop Former: Fairmont Cleaners	Medium	Alternatives B and C	The site is currently developed with an unmarked building east of CoMai Restaurant and west of a residence. Current site development is unknown due to “false front” of building. Formerly, a dry cleaner operated at the site. Potential for soil and groundwater contamination.
009-0237-005 524 Broadway	Current: Unknown Former: Auto station	Medium	Alternatives B and C	This site is behind a privacy fence. Aerial photographs indicate that the site is an auto storage and/or scrap yard. Potential for soil and groundwater contamination.
009-0237-010 514 Broadway	Current: Unknown Former Auto station	Medium	Alternatives B and C	The site is behind a privacy fence. Aerial photographs indicate that the site is an auto storage and/or scrap yard. Potential for soil and groundwater contamination.
009-0237-021 430 Broadway	Current: Unknown Former: Auto station	Low	Alternatives B and C	430 Broadway maps show a correlation to the current 400 Broadway, which encompasses the entire block. 430 Broadway was a separate parcel prior to parcel realignment. This site is listed on the historical auto station database. Potential for soil and groundwater contamination

APN/Address	Land Use/Name	Risk	Alternative	Site Summary
009-0237-028 500 Broadway 410 Broadway	Current: Unknown	Medium	Alternatives B and C	The site is behind a privacy fence. Aerial photographs indicate that site is an auto storage and/or scrap yard. Potential for soil and groundwater contamination

APN = Assessor's parcel number.

AST = aboveground storage tank.

REC = recognized environmental condition.

TPH = total petroleum hydrocarbons.

UST = underground storage tank.

Summary of Potentially Hazardous Waste/Materials Conditions

The ISA identified the following potentially hazardous waste/materials conditions that could be encountered during construction of the proposed project.

- Potential soil and groundwater contamination associated with railroad tracks and railroad alignments
 - Soils next to railroad tracks typically have been affected by heavy metals, total petroleum hydrocarbons as diesel, fuel oil, and polychlorinated biphenyls.
- Potential contamination associated with ground disturbance or roadway removal/maintenance.
 - There is potential for encountering ADL during construction and grading activities within the proposed project limits in West Sacramento along South River Road, Jefferson Boulevard, and 15th Street; and in Sacramento along Broadway, Front Street, 3rd Street, and 5th Street. These roadways have been present in various alignments since 1916 and therefore have the potential to be contaminated with ADL.
 - Exposure to lead or chromium may be associated with removal of existing yellow/white traffic striping.
- Contamination associated with identified potentially hazardous waste facilities/sites.
 - In West Sacramento, past soil and groundwater contamination is possible due to historical land uses such as auto storage, petroleum and oil manufacturing/storage, oil recycling, railroad easements, and agricultural pesticides. Current land uses such as pesticide storage and fuel storage and distribution indicate potential soil and groundwater contamination.
 - In Sacramento, past soil and groundwater contamination is possible due to historical land uses such as bulk fuel terminals, manufactured gasoline plant, gasoline services stations, wood products supply, auto storage, and dry cleaners. Current land uses also indicate the possibility of soil and groundwater contamination; such uses include pesticide storage, fuel storage and distribution, active railroad tracks, auto repair, auto salvage/storage, and gasoline service station.

2.2.5.3 Environmental Consequences

Build Alternatives

Both build alternatives would require similar ground disturbance and would encounter similar REC types. Therefore, both Alternatives B and C have the same potential for effects involving similar hazards and hazardous materials and, except where noted, are not discussed separately in this section.

Underground Transmission Lines

There is the potential for explosive hazard associated with Kinder Morgan and PG&E gas transmission lines that run adjacent to South River Road in West Sacramento and under the Sacramento River. Advance notification and coordination with utility service providers prior to and during construction would avoid any accidental incursions to utility lines.

Soil and Groundwater Contamination

Humans and the environment could be exposed to soil and groundwater contamination from construction activities. Acquisition of right-of-way from parcels with the potential to contain soil/groundwater contamination discussed above are identified by build alternative on Figures 2.2.5-1 and 2.2.5-2, and are listed above in Tables 2.2.5-1 and 2.2.5-2.

The risk of known RECs for 15 parcels located within the project area in West Sacramento is considered high to medium. Of the five high-risk sites, four have documented soil and/or groundwater contamination. The four medium-risk sites are located within or adjacent to the project footprint. The potential for soil and groundwater contamination under Alternative B is similar to Alternative C. Five parcels with RECs are located in the footprint of Alternative B (058-034-028, 058-280-003, 058-350-008, 058-990-007, 058-990-011). Similarly, five parcels with RECs are located in the footprint of Alternative C (058-270-007, 058-270-008, 058-270-009, 058-270-012, 058-270-014).

In Sacramento, 21 known RECs considered high to medium risk are located within the project area. Of the 12 high-risk sites, 11 have documented soil or groundwater contamination. Seven medium-risk sites are located within or adjacent to the project footprint. These 21 RECs are within the footprint of both Alternative B and Alternative C.

Although some of these cases are considered closed, testing for contaminants should be conducted prior to property acquisition and construction of the proposed project to (1) determine the extent and nature of possible contamination; and (2) 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 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. Due to previous land uses that include tank farms, 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/Sites

The project area generally has the potential for presence of hazardous materials in the form of ADL lead and chromium in yellow/white traffic striping. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading and roadbed resurfacing at any of the areas known to contain hazardous substances.

The ISA identified areas of moderate concern that would be affected by the project. These areas and topics of concern include the following.

- ADL is along South River Road, Jefferson Boulevard, and 15th Street in West Sacramento and along Broadway, Front Street, 3rd Street, and 5th Street in Sacramento.
- Yellow and white traffic striping and markings are located along Jefferson Boulevard, 15th Street, and South River Road in West Sacramento and along Broadway in Sacramento.
- Heavy metals, total petroleum hydrocarbons as diesel, fuel oil, and polychlorinated biphenyls are potentially present in parcels containing railroad tracks or former railroad alignments.
- Past and current development contains various commercial and industrial facilities that used hazardous materials such as oil, fuels, and pesticides.

Hazardous Conditions from Construction Equipment

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.

In addition to environmental protections established by state and federal law, City and Caltrans policies and standards address responsibilities for hazardous conditions. Construction and implementation of the proposed project would conform with applicable policies related to hazards and hazardous materials in the elements of the West Sacramento and Sacramento General Plans, requirements of the West Sacramento and Sacramento city codes, and Caltrans *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:225–240). Complying with all applicable laws and regulations would avoid adverse effects related to hazardous waste and materials.

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 or groundwater contamination, or hazardous materials from construction activities. The No Build Alternative would not result in right-of-way acquisition or construction disturbance related to a new bridge across the Sacramento River. Therefore, this alternative would not result in any direct effects regarding hazardous waste and materials.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. Compliance with local, state, and federal policies, standards, and laws would avoid or minimize effects related to hazardous waste and materials. The following avoidance and minimization measures provide project-specific direction and would be implemented prior to and during construction, consistent with applicable regulations.

Avoidance and Minimization Measure HAZ-1: Conduct Phase II Site Assessments prior to Construction

For sites identified as high or medium risk, a Phase II preliminary environmental screening of the subsurface soils and/or groundwater will be completed within the project boundaries at these parcels. At a minimum, the Phase II preliminary screening will investigate each parcel within the project area where construction is anticipated to disturb the subsurface soil or encounter groundwater. Should the preliminary screening indicate the presence of soil or groundwater contamination within the project area, a Phase II

assessment will be conducted to investigate the depth and lateral extent of contamination within the project. Low-risk sites will be re-evaluated (e.g., conduct owner interviews and a site survey) when site access is obtained. An additional Phase II assessment may be recommended if hazardous materials are identified.

The project proponent will conduct a Phase II assessment within the proposed acquisition area of the parcels described below.

- The following APNs in West Sacramento will be assessed for possible soil/groundwater contamination:
 - Alternative B only: 058-034-028, 058-280-003, 058-350-008, 058-990-007, 058-990-011. The estimated cost of collection and testing soil and groundwater within these parcels totals approximately \$39,000. Implementation could take up to eight weeks.
 - Alternative C only: 058-270-007, 058-270-008, 058-270-009, 058-270-012, 058-270-014. The estimated cost of collection and testing soil and groundwater within these parcels totals approximately \$28,000. Implementation could take up to eight weeks.
 - Alternatives B and C: 058-270-006, 058-270-011, 058-280-005, 058-280-006, 058-350-001. The estimated cost of collection and testing soil and groundwater within these parcels totals approximately \$30,400. Implementation could take up to eight weeks.
- The following APNs in Sacramento will be assessed for possible soil/groundwater contamination: 009-0012-008, 009-0012-009, 009-0012-064, 009-0012-029, 009-0012-071, 009-0012-072, 009-0020-001, 009-0020-002, 009-0223-007, 009-0223-012, 009-0223-016, 009-0232-005, 009-0232-009, 009-0232-016, 009-0232-017, 009-0232-018, 009-0235-007, 009-0237-005, 009-0237-010, 009-0237-028, 009-0030-054. The estimated cost of collection and testing soil and groundwater within these parcels totals approximately \$98,000 and implementation could take up to twelve weeks.
- Areas along South River Road, Jefferson Boulevard, and 15th Street in West Sacramento and along Broadway, Front Street, 3rd Street, and 5th Street in Sacramento will be assessed for potential ADL impacts. The estimated cost of collection and testing soil for ADL is approximately \$38,000 and implementation could take up to eight weeks.
- APNs 058-270-011 (Alternatives B and C), 058-280-007 (Alternative C only), 058-990-007, and 058-990-11 (Alternative B only) in West Sacramento; in Sacramento, APNs 009-0012-009, 0090012-29, 009-0020-02, 009-0223-007, 009-0223-012, and 009-0223-016 will be evaluated for the potential for metals, TPH, lead, arsenic, and creosote impacts for all construction activities that will result in soil excavation within railroad or former railroad easements at these parcels. The estimated cost of collection and testing soil for hazardous materials near railroads totals approximately \$30,000 and implementation could take up to eight weeks after right of way approval.

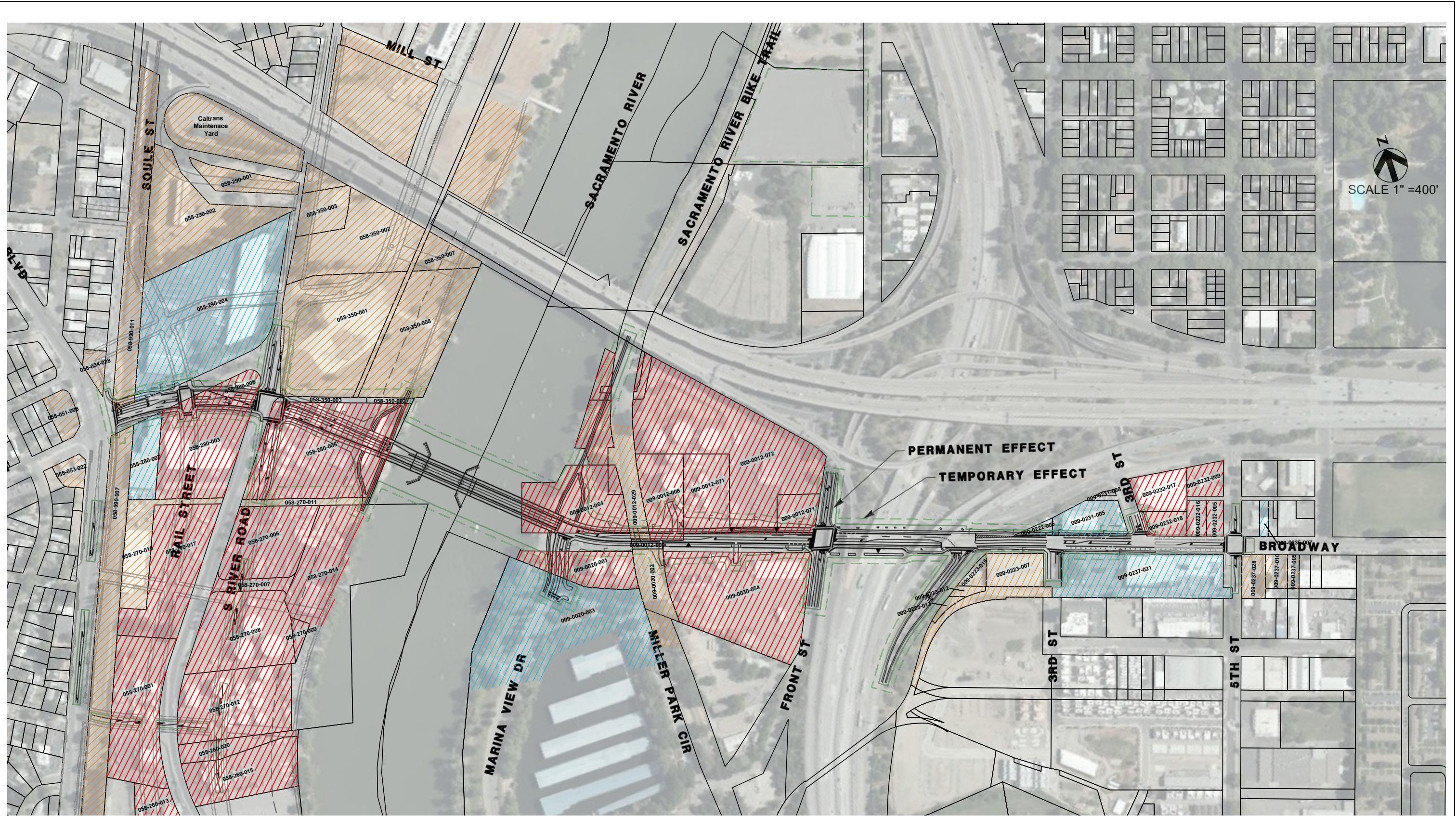
Based on the findings of the Phase II investigation, if a soils management plan and health and safety plan are necessary, they will be prepared and implemented.

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)

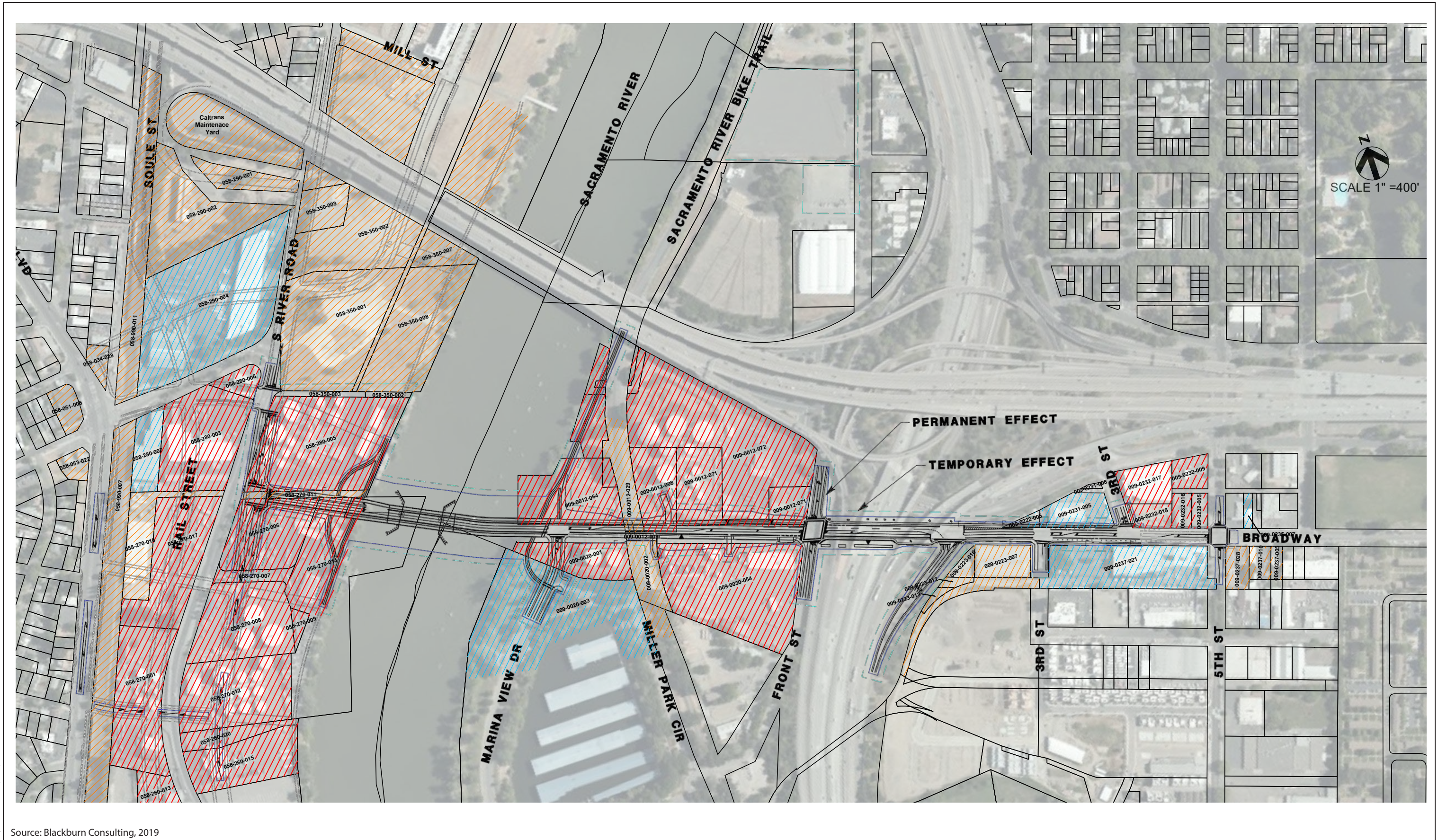
Avoidance and Minimization Measure HAZ-2: Develop and Implement Plans to Address Worker Health and Safety

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 lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity. The estimated cost for a health and safety plan is approximately \$12,000. For a Lead Compliance Plan, BMP Plan or Soil Management Plan, the cost is approximately \$5,000 per plan.



Source: Blackburn Consulting, 2019

Figure 2.2.5-1
 Recognized Environmental Conditions by Parcel – Alternative B



Source: Blackburn Consulting, 2019

Figure 2.2.5-2
Recognized Environmental Conditions by Parcel – Alternative C

2.2.6 Air Quality

2.2.6.1 Regulatory Setting

The federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality; the California Clean Air Act is its companion state law. These laws, and related regulations by the U.S. 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 state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM)—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}), Lead (Pb), and sulfur dioxide (SO₂). In addition, 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 FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to a 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. U.S. 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 nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂. California also has a nonattainment area for lead; however, lead is not currently required by the FCAA 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 uses travel demand and emission models to determine whether implementation of those projects would conform to emission budgets or other tests at various analysis years, showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization, 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 FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the “open-to-traffic”

schedule of a proposed transportation project are the same as described in the RTP and FTIP, then 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 scope¹ that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and U.S. EPA-approved emissions models; and, in PM nonattainment or maintenance 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.

2.2.6.2 Affected Environment

This section was prepared using information from the Broadway Bridge Air Quality technical report (Terry A. Hayes Associates 2020) and supplemental memorandum (Terry A. Hayes Associates 2021) prepared for the project. These documents are available in Appendix Q.

Topography and Climate

The project is in Yolo and Sacramento 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.

Hot, dry summers and mild, rainy winters characterize the Mediterranean-type climate of the air basin. The temperature may range during the year from around 20 to 115 degrees Fahrenheit, with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 15 inches, about 75 percent of which occurs during the rainy season—generally from November through March. Light and infrequent thunderstorms may occur at any time of year, typically whenever cool, moist air moves in to break a prolonged hot spell. Humidity levels vary within the region, often dropping below 10 percent in the warm season, while increasing during colder months to form shallow layers of ground fog (i.e., tule fog) in the valley. The prevailing winds are moderate in strength, and primarily from the south or southeast.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants when certain meteorological conditions exist. The highest frequency of air stagnation occurs between mid-November and mid-January when large high-pressure cells lie over the SVAB. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating, reduce the influx of outside air and allow air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with smoke or when temperature inversions trap cool air, fog, and pollutants near the ground. The ozone season (May through October) in the SVAB is characterized by stagnant morning air or light winds, with the Delta sea breeze arriving in the afternoon out of the southwest.

¹ *Design concept* means the type of facility that is proposed, such as a freeway or arterial highway. *Design scope* refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

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 are based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). Table 2.2.6-1 shows the state and federal standards, and Table 2.2.6-2 shows the effects and sources, for a variety of pollutants (California Air Resources Board 2016, 2019).

Table 2.2.6-1. State and Federal Criteria Air Pollutant Standards

Pollutant	Averaging Time	State Standard ^a	Federal Standard ^b	State Project Attainment Status	Federal Project Area Attainment Status
O ₃ ^c	1 hour	0.09 ppm ^d	NA	Nonattainment	NA
O ₃	8 hours	0.070 ppm	0.070 ppm (4th highest in 3 years)	Nonattainment	Nonattainment (Severe 15)
CO ^e	1 hour	20 ppm	35 ppm	Attainment	Attainment/ Unclassified
CO	8 hours	9.0 ppm	9 ppm	Attainment	Attainment/ Unclassified
CO	8 hours (Lake Tahoe)	6 ppm	NA	NA	NA
PM ₁₀ ^f	24 hours	50 µg/m ^{3 g}	150 µg/m ³ (expected number of days above standard < or equal to 1)	Nonattainment	Sacramento County: Maintenance (Moderate) Yolo County: Attainment/Unclassified
PM ₁₀	Annual	20 µg/m ³	NA	Nonattainment	NA
PM _{2.5} ^h	24 hours	NA	35 µg/m ^{3 f}	NA	Nonattainment (Moderate)
PM _{2.5}	Annual	12 µg/m ³	12.0 µg/m ³	Sacramento County: Attainment Yolo County: Unclassified	Attainment/ Unclassified
NO ₂	1 hour	0.18 ppm	0.100 ppm ⁱ	Attainment	Attainment/ Unclassified
NO ₂	Annual	0.030 ppm	0.053 ppm	Attainment	Attainment/ Unclassified
SO ₂ ^j	1 hour	0.25 ppm	0.075 ppm (99th percentile over 3 years)	Attainment	Attainment/ Unclassified
SO ₂	3 hours	NA	0.5 ppm ^k	NA	Attainment/ Unclassified
SO ₂	24 hours	0.04 ppm	0.14 ppm (for certain areas)	Attainment	Attainment/ Unclassified
SO ₂	Annual	NA	0.030 ppm (for certain areas)	NA	Attainment/ Unclassified

Pollutant	Averaging Time	State Standard ^a	Federal Standard ^b	State Project Attainment Status	Federal Project Area Attainment Status
Pb ^l	Monthly	1.5 µg/m ³	NA	Attainment	NA
Pb	Calendar quarter	NA	1.5 µg/m ³ (for certain areas)	NA	Attainment/ Unclassified
Pb	Rolling 3-month average	NA	0.15 µg/m ³ ^m	NA	Attainment/ Unclassified
Sulfates	24 hours	25 µg/m ³	NA	Attainment	NA
H ₂ S	1 hour	0.03 ppm	NA	Unclassified	NA
Visibility-reducing particles ⁿ	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	NA	Unclassified	NA
Vinyl chloride ^l	24 hours	0.01 ppm	NA	Unclassified	NA

NA = not applicable.

^a California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

^b Federal standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current national policies.

^c On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Transportation conformity applies in newly designated nonattainment areas for the 2015 national 8-hour ozone primary and secondary standards on and after August 4, 2019 (see [Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas](#)).

^d ppm = parts per million.

^e Transportation conformity requirements for CO no longer apply after June 1, 2018 for the following California Carbon Monoxide Maintenance Areas (see [U.S. EPA CO Maintenance Letter](#)).

^f On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 micrograms per cubic meter (µg/m³) to 12 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

^g µg/m³ = micrograms per cubic meter.

^h The 65 µg/m³ PM_{2.5} (24-hour) national ambient air quality standard (NAAQS) was not revoked when the 35 µg/m³ NAAQS was promulgated in 2006. The 15 µg/m³ annual PM_{2.5} standard was not revoked when the 12 µg/m³ standard was promulgated in 2012. Therefore, for areas designated as nonattainment or nonattainment/maintenance for the 1997 and or 2006 PM_{2.5} NAAQS, conformity requirements still apply until the NAAQS are fully revoked.

ⁱ Final 1-hour NO₂ NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

^j On June 2, 2010, a new 1-hour SO₂ standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 parts per billion. The 1971 SO₂ national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated as nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

^k Secondary standard, the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant rather than health. Conformity and environmental analyses address both primary and secondary NAAQS.

^l The California Air Resources Board (ARB) has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM₁₀ and, in larger proportion, of PM_{2.5}. Both the ARB and U.S. Environmental Protection Agency have identified lead and various organic compounds that are precursors to ozone and PM_{2.5} as toxic air contaminants. There are no exposure criteria for adverse health effects due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

^m Lead NAAQS are not considered in transportation conformity analysis.

ⁿ In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 2.2.6-2. State and Federal Criteria Air Pollutant Effects and Sources

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Ozone (O ₃)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic volatile organic compounds (VOC) may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG)/VOC and nitrogen oxides (NO _x) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.
Carbon monoxide (CO)	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable particulate matter (PM ₁₀)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM ₁₀ .	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.
Fine particulate matter (PM _{2.5})	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the PM _{2.5} size range. Many toxic and other aerosol and solid compounds are part of PM _{2.5} .	Combustion, including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants, including NO _x , sulfur oxides (SO _x), ammonia, and ROG.
Nitrogen dioxide (NO ₂)	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the “NO _x ” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.
Sulfur dioxide (SO ₂)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, and steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.
Lead (Pb)	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.
Sulfates	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Hydrogen sulfide (H ₂ S)	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Visibility-reducing particles (VRP)	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other “Class I” areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.
Vinyl chloride	Neurological effects, liver damage, and cancer. Also considered a toxic air contaminant.	Industrial processes.

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 multi-family homes and recreational land uses. Sensitive receptors near the project area are shown in Figure 2.2.6-1. Please refer to the Air Quality Report (Terry A. Hayes Associates 2020) in Appendix Q for a detailed description of sensitive receptors.

2.2.6.3 Environmental Consequences

Build Alternatives

Regional and Project-Level Conformity

The proposed project is listed in the 2020 MTP/SCS financially constrained RTP which was found to conform by SACOG on November 18, 2019; FHWA and FTA made a regional conformity determination finding on November 20, 2019. The project also is included in SACOG’s financially constrained 2019 Regional Transportation Improvement Program Amendment #18, page 108. The SACOG 2019 Regional Transportation Improvement Program was determined to conform by FHWA and FTA on November 20, 2019. The design concept and scope of the proposed project is consistent with the project description in the 2020 RTP, 2019 RTIP, and the “open to traffic” assumptions of the SACOG’s regional emissions analysis.

U.S. EPA declared that transportation conformity requirements related to CO in Sacramento ended on June 1, 2018. That date marked 20 years from redesignation of the areas to attainment and implementation of a maintenance plan. The approved maintenance plan for Sacramento did not extend the maintenance plan period beyond 20 years from redesignation. Consequently, transportation conformity requirements for CO ceased to apply after June 1, 2018.

The proposed project has undergone interagency consultation regarding project of air quality concern (POAQC) determination.

On November 19, 2020, interagency consultation participants concurred that the project is not a POAQC. The proposed project is not considered a POAQC because it does not meet the definition in U.S. EPA's Transportation Conformity Guidance. Therefore, PM hot-spot analysis is not required. Documentation of concurrence is provided in this section and in Appendix Q.

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 (2017), opening year (2030), and design year (2040) with- and without-project conditions were evaluated. Regional operational emissions associated with project implementation were calculated using CT-EMFAC2017. CT-EMFAC2017 is the most recent on-road emissions modeling tool in Caltrans that has been developed using ARB's EMFAC2017. ARB's EMFACA2017 has been approved by the U.S. EPA. CT-EMFAC2017 contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. The emission rates for the SACOG area provided by CT-EMFAC2017 in grams per mile were used in conjunction with traffic data presented in Appendix Q, Tables 1-8 through 1-10, to estimate daily air pollutant emissions under each of the analyzed scenarios. Table 2.2.6-3 shows emissions in the 2017 Baseline Year, 2030 Opening Year, and 2040 Design Year for the No Build and Build Alternatives. The 2030 and 2040 analyses incorporate off-model adjustment factors published by ARB in November 2019 and approved by U.S. EPA in March 2020 that account for federal changes to the Safer Affordable Fuel-Efficient (SAFE) Vehicle Rule Part One. The results of the emission calculations are included in Appendix Q.

Table 2.2.6-3 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.

In existing (2017) and opening year (2030) conditions, implementation of either Alternative B or Alternative C would reduce daily regional VMT compared to the No Build Alternative, resulting in an induced decrease in daily emissions of ROG/VOC, CO, PM₁₀, PM_{2.5}, and NO_x compared to existing conditions and the No Build Alternative.

By the design year of 2040, daily air pollutant emissions from regional VMT throughout the SACOG region would increase with implementation of Build Alternative B or Build Alternative C, compared to the No Build Alternative. The incremental increase in emissions would be distributed across the six-county roadway network within the SACOG region. Also presented in the bottom of Table 2.2.6-3 are the operational mass daily air quality significance thresholds for criteria pollutants propagated by the Sacramento Metropolitan Air Quality Management District (SMAQMD), the Yolo-Solano Air Quality Management District (YSAQM), the Placer County Air Pollution Control District (PCAPCD), the El Dorado County Air Pollution Control District (EDCAPCD), and the Feather River Air Quality Management District (FRAQMD). Although daily pollutant emissions from regional VMT within the SACOG region would increase in 2040 with implementation of the project, the incremental increase would be dispersed throughout the six-county region and would remain below the daily operational threshold for all pollutants in every applicable air quality management jurisdiction.

Table 2.2.6-3. Estimated Criteria Pollutant Emissions from Operation of Broadway Bridge Project

Emission Source	VOC (ppd)	NO _x (ppd)	CO (ppd)	PM _{2.5} (ppd)	PM ₁₀ (ppd)
2017 Existing Operational Emissions					
Existing Conditions	7,540	58,149	183,554	5,678	22,653
2030 Future Operational Emissions (Interim Year)					
No Build	2,711	22,420	88,877	6,278	27,476
Build Alternative B	2,709	22,406	88,840	6,277	27,471
(% Change from 2030 No Build Alternative)	(0.1%)	(0.1%)	(<0.1%)	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(64%)	(62%)	(52%)	11%	21%
Net Change from 2030 No Build Alternative	(1.7)	(14.0)	(37.4)	(1.3)	(5.3)
Net Change from 2017 Existing Conditions	(4,831)	(35,743)	(94,714)	598	4,818
Build Alternative C	2,709	22,403	88,832	6,276	27,470
(% Change from 2030 No Build Alternative)	(0.1%)	(0.1%)	(0.1%)	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(64%)	(62%)	(52%)	11%	21%
Net Change from 2030 No Build Alternative	(2.4)	(16.8)	(45.0)	(1.5)	(6.4)
Net Change from 2017 Existing Conditions	(4,831)	(35,746)	(94,721)	598	4,817
SMAQMD CEQA Significance Thresholds ^a	65	65	–	82	80
YSAQMD CEQA Significance Thresholds ^a	55	55	–	–	80
PCAPCD CEQA Significance Thresholds ^a	55	55	–	–	82
EDCAPCD CEQA Significance Thresholds ^a	82	82	–	–	–
FRAQMD CEQA Significance Thresholds ^a	25	25	–	–	80
2040 Future Operational Emissions (Design Year)					
No Build	2,290	19,269	83,091	6,701	29,701
Build Alternative B	2,889	19,270	83,100	6,701	29,703
(% Change from 2040 No Build Alternative)	(<0.1%)	<0.1%	<0.1%	<0.1%	<0.1%
(% Change from 2017 Existing Conditions)	(70%)	(67%)	(55%)	18%	31%
Net Change from 2040 No Build Alternative	(0.5)	0.8	9.1	0.5	2.4
Net Change from 2017 Existing Conditions	(5,251)	(38,879)	(100,462)	1,023	7,050
Build Alternative C	2,891	19,282	83,151	6,704	29,717
(% Change from 2040 No Build Alternative)	0.1%	0.1%	0.1%	0.1%	0.1%
(% Change from 2017 Existing Conditions)	(70%)	(67%)	(55%)	18%	31%
Net Change from 2040 No Build Alternative	1.4	13.0	59.5	3.7	16.8
Net Change from 2017 Existing Conditions	(5,249)	(38,867)	(100,403)	1,026	7,065
SMAQMD CEQA Significance Thresholds ^a	65	65	–	82	80
YSAQMD CEQA Significance Thresholds ^a	55	55	–	–	80
PCAPCD CEQA Significance Thresholds ^a	55	55	–	–	82
EDCAPCD CEQA Significance Thresholds ^a	82	82	–	–	–
FRAQMD CEQA Significance Thresholds ^a	25	25	–	–	80

Source: Emission rates from the CT-EMFAC2017 model.

EDCAPCD = El Dorado County Air Pollution Control District.

FRAQMD = Feather River Air Quality Management District.

PCAPCD = Placer County Air Pollution Control District.

ppd = pounds per day.

SMAQMD = Sacramento Metropolitan Air Quality Management District.

tpy = tons per year.

VOC = volatile organic compound.

YSAQMD = Yolo-Solano Air Quality Management District.

^a These thresholds would apply only to the portion of project emissions generated within each air district.

^b YSAQMD ROG/VOC and NO_x construction thresholds based on 10 tpy averaged over 365 days.

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, SMAQMD, YSAQMD, PCAPCD, EDCAPCD, and FRAQMD thresholds of significance are provided for reference in Table 2.2.6-3.

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, VOC, 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 VOC in the presence of sunlight and heat.

Construction emissions were estimated using the SMAQMD's Roadway Construction Emissions Model (RCEM) Version 9.0. 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 that construction would begin in 2026 and require approximately 39 months (3.25 years). Construction would occur in two phases due to the scale of the proposed project and the need to minimize traffic impacts and maintain traffic during construction.

Table 2.2.6-4 shows the estimated daily emissions associated with each construction phase, as well as the maximum daily emissions during periods when activities among multiple phases would overlap. In the project area, regulation of air quality on the east side of the Sacramento River is under the jurisdiction of the SMAQMD. 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 would be less than the maximum emissions presented in the table. SMAQMD and YSAQMD thresholds of significance are provided for reference in Table 2.2.6-4.

Construction activities are subject to requirements found in Caltrans *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:225–240). Section 14-9.02 includes specifications relating to 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 is included in the project description (Chapter 1) and would control dust during construction and help to minimize air quality impacts from construction activities.

Table 2.2.6-4. Estimated Unmitigated Criteria Pollutant Emissions from Construction of the Build Alternatives (ppd)

Emission Source	VOC (ppd)	NO _x (ppd)	CO (ppd)	PM _{2.5} (ppd)	PM ₁₀ (ppd)
Foundations	7.1	64.9	62.4	6.5	22.6
Approach span	1.4	12.7	15.9	4.7	20.7
Movable span	1.9	15.4	19.2	0.6	0.7
Grubbing/land clearing	1.9	23.4	18.9	9.1	41.0
Grading/excavation	4.7	72.0	60.8	10.5	43.1
Drainage/utilities/sub-grade	1.0	9.1	18.5	8.7	40.5
Paving	1.3	26.6	21.1	0.7	1.1
Potential overlapping emissions (both air quality districts)	8.5	77.6	78.3	11.2	43.3
Potential overlapping emissions (SMAQMD) ^a	4.3	38.8	39.2	5.6	21.7
Potential overlapping emissions (YSAQMD) ^a	4.3	38.8	39.2	5.6	21.7
SMAQMD CEQA significance threshold	–	85	–	82	80
YSAQMD CEQA Significance Threshold	55	55	–	–	80

Source: Emission rates from Roadway Construction Emissions Model (RCEM) Version 9.0.

ppd = pounds per day.

^a Total emissions for each air district were calculated assuming a 50/50 split of total project emissions between the Sacramento Metropolitan Air Quality Management District (SMAQMD) and Yolo-Solano Air Quality Management District (YSAQMD).

^b YSAQMD reactive organic gases/volatile organic compounds (VOC) and NO_x construction thresholds based on 10 tons/year averaged over 365 days.

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, a variety of project-required dust control measures, including watering, would effectively control unanticipated NOA exposure.

Regarding structural asbestos, National Emissions Standards for Hazardous Air Pollutants (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 commencement of that project. Demolition activities would be subject to YSAQMD Rule 9-9 (Asbestos) and SMAQMD Rule 902 (Asbestos). Per the NESHAP regulations and SMAQMD Rule 902 (Asbestos), the proposed project would be required to develop and implement an Asbestos Abatement Plan if asbestos is found during construction activities. Refer to Section 2.2.5, *Hazardous Waste/Materials* 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 South River Road, Jefferson Boulevard, and 15th Street; and in Sacramento along Broadway, Front Street, 3rd Street, and 5th Street. These roadways have been present in various alignments since 1916 and therefore have the potential to be contaminated with ADL.

The proposed project would be required to develop and implement a Lead Abatement Plan. Refer to Section 2.2.5, *Hazardous Waste/Materials* for a complete discussion on lead hazards and related avoidance, minimization, and/or mitigation measures.

Mobile Source Air Toxics

Regional operational emissions of mobile source air toxics (MSAT) for existing year (2017), opening year (2030), and design year (2040) with- and without-project conditions were calculated using CT-EMFAC2017. The emission rates for the SACOG area provided by CT-EMFAC2017 in grams per mile were used in conjunction with traffic data presented in Appendix Q, Tables 1-8 through 1-10, to estimate daily MSAT emissions under each of the analyzed scenarios. MSATs included in the modeling are benzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel particulate matter, and polycyclic Organic Matter. Table 2.2.6-5 shows the calculated MSAT emissions in the 2017 Baseline Year, 2030 Opening Year, and 2040 Design Year for the No Build and Build Alternatives.

Table 2.2.6-5. Estimated MSAT Emissions from Operation of Broadway Bridge Project

Emission Source	MSAT Emissions (ppd)								
	1,3-butadiene	Acetaldehyde	Acrolein	Benzene	Diesel PM	Ethylbenzene	Formaldehyde	Naphthalene	Polycyclic Organic Matter
2017 Existing Operational Emissions									
Existing Conditions	53.18	184.9	11.72	254.9	784.8	99.72	451.6	7.67	11.93
2030 Future Operational Emissions (Interim Year)									
No Build	19.88	43.27	4.38	90.32	155.3	37.51	116.9	3.26	3.4
Build Alternative B	19.87	43.25	4.38	90.27	155.3	37.49	116.8	3.26	3.4
(% Change from 2030 No Build Alternative)	(0.1%)	(<0.1%)	(<0.1%)	(0.1%)	(<0.1%)	(0.1%)	(0.1%)	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(63%)	(77%)	(63%)	(65%)	(80%)	(62%)	(74%)	(57%)	(72%)
Net Change from 2030 No Build Alternative	(<0.1)	(<0.1)	(<0.1)	(<0.1)	(<0.1)	(<0.1)	(0.1)	(<0.1)	(<0.1)
Net Change from 2017 Existing Conditions	(33)	(142)	(7)	(165)	(630)	(62)	(335)	(4)	(9)
Build Alternative C	19.86	43.23	4.38	90.25	155.2	37.48	116.8	3.26	3.4
(% Change from 2030 No Build Alternative)	(0.1%)	(0.1%)	(<0.1%)	(0.1%)	(0.1%)	(0.1%)	(0.1%)	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(63%)	(77%)	(63%)	(65%)	(80%)	(62%)	(74%)	(57%)	(72%)
Net Change from 2030 No Build Alternative	(<0.1)	(<0.1)	(<0.1)	(0.1)	(<0.1)	(<0.1)	(0.1)	(<0.1)	(<0.1)
Net Change from 2017 Existing Conditions	(33)	(142)	(7)	(165)	(630)	(62)	(335)	(4)	(9)

Emission Source	MSAT Emissions (ppd)								
	1,3-butadiene	Acetaldehyde	Acrolein	Benzene	Diesel PM	Ethylbenzene	Formaldehyde	Naphthalene	Polycyclic Organic Matter
2040 Future Operational Emissions (Interim Year)									
No Build	16.9	36.03	3.71	76.05	135.8	31.83	97.28	3.13	2.62
Build Alternative B	16.9	36.02	3.71	76.03	135.8	31.82	97.25	3.13	2.62
(% Change from 2040 No Build Alternative)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(68%)	(81%)	(68%)	(70%)	(83%)	(68%)	(78%)	(59%)	(78%)
Net Change from 2040 No Build Alternative	(<0.1)	(<0.1)	(<0.1)	(<0.1)	(0.1)	(<0.1)	(<0.1)	(<0.1)	(<0.1)
Net Change from 2017 Existing Conditions	(36)	(149)	(8)	(179)	(649)	(68)	(354)	(5)	(9)
Build Alternative C	16.91	36.05	3.71	76.09	135.8	31.84	97.34	3.13	2.62
(% Change from 2040 No Build Alternative)	0.1%	0.1%	(<0.1%)	0.1%	(<0.1%)	<0.1%	0.1%	(<0.1%)	(<0.1%)
(% Change from 2017 Existing Conditions)	(68%)	(81%)	(68%)	(70%)	(83%)	(68%)	(78%)	(59%)	(78%)
Net Change from 2040 No Build Alternative	<0.1	<0.1	(<0.1)	<0.1	(<0.1)	<0.1	0.1	(<0.1)	(<0.1)
Net Change from 2017 Existing Conditions	(36)	(149)	(8)	(179)	(649)	(68)	(354)	(5)	(9)

Source: Emission rates from the CT-EMFAC2017 model.
ppd = pounds per day.

Daily emissions of all MSATs decrease substantially in 2030 and 2040 for the No Build Alternative and the Build Alternatives compared to existing conditions in the Baseline Year 2017. In 2030, implementation of Build Alternative B and Build Alternative C would marginally decrease regional MSAT emissions compared to the No Build Alternative, with Alternative C daily emissions being the lowest based on the 15,995 daily VMT reduction from the No Build Alternative. In 2040, although both Alternative B and Alternative C would produce higher daily VMT than the No Build Alternative, only marginal increases (i.e., 0.1 pound/day or less) in some regional MSAT emissions would occur. Notably, the emissions presented in Table 2.2.6-5 would be distributed throughout the entire SACOG regional roadway network, and an increase 0.1 pound/day or less distributed across hundreds of miles of roadways would result in negligible effects to ambient concentrations of MSATs at sensitive land uses near the Project.

In sum, under all build alternatives in the design year, no appreciable difference in MSAT emissions in the study area relative to the no build alternative is expected due to the less than 1 percent difference in VMT. Although MSAT levels could increase in a few localized areas where VMT increases, U.S. EPA's vehicle and fuel regulations will bring about significantly lower MSAT levels for the area in the future than today.

Construction Conformity

Construction activities will not last for more than 5 years at one general location; therefore, construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123[c][5]).

No Build Alternative

Under the No Build Alternative, higher demand volume under opening (2030) and design year (2040) conditions would cause increased congestion and delay on the traffic network surrounding the proposed Broadway Bridge, likely resulting in worsened air quality. In addition, limited connectivity across the Sacramento River creates longer trip lengths, which leads to dependence on automobile use and discourages walking and bicycling.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. In addition to implementation of measures included in Caltrans' *Standard Specifications* Section 14, *Environmental Stewardship*, measures to avoid and minimize the effects of dust during construction will be borrowed from YSAQMD's and SMAQMD's recommended lists of dust control measures.

Avoidance and Minimization Measure AQ-1. Implement Additional Control Measures for Construction Emissions of Fugitive Dust

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).

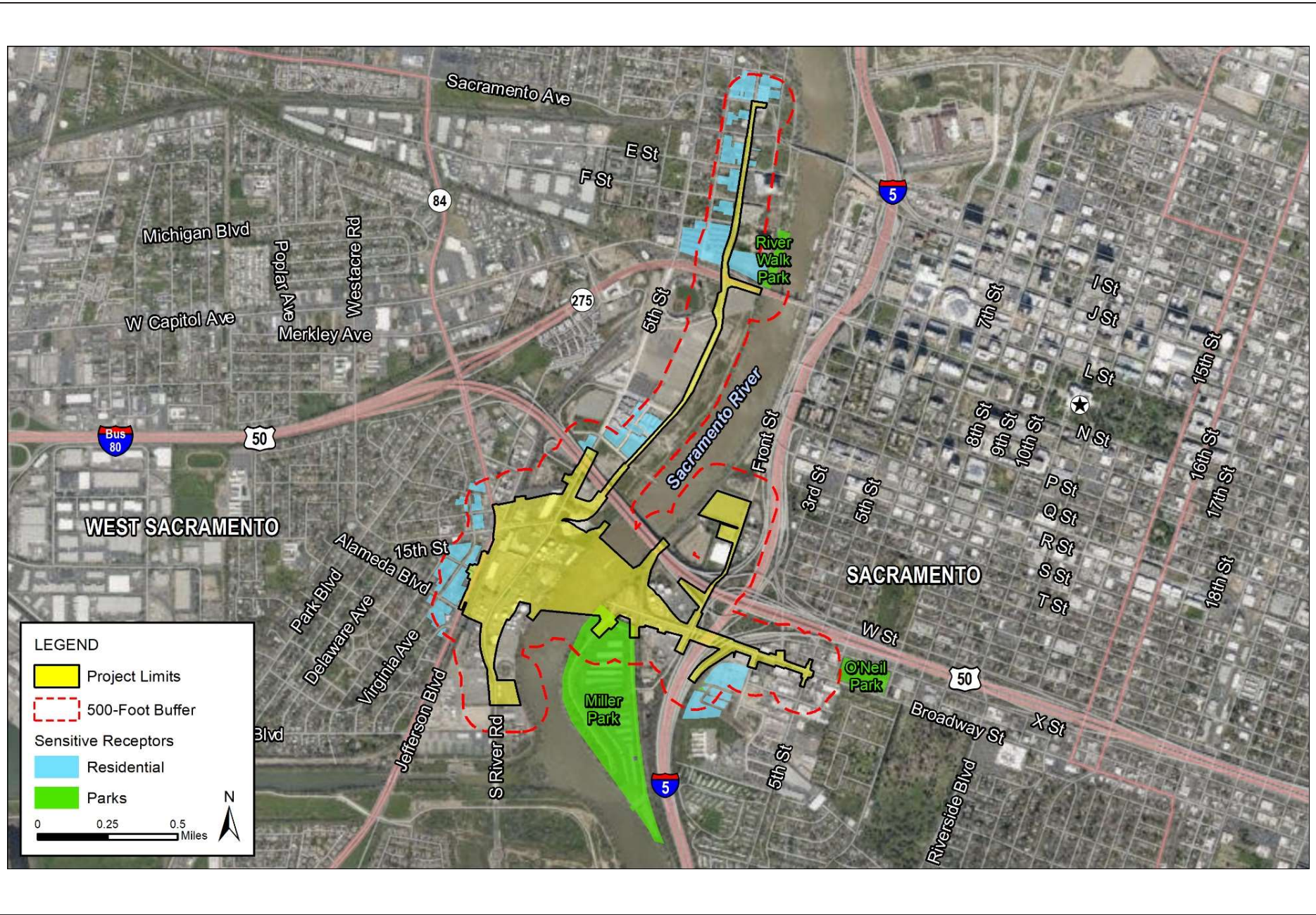
- Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
- Haul trucks shall maintain at least 2 feet of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Apply non-toxic binders (e.g., latex acrylic 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 4 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.

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 (2020) 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 2 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.

2.2.6.5 Climate Change

Neither the U.S. EPA nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because requirements have been set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the project.



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Figure 2.2.6-1
Sensitive Receptors Located Near the Proposed Project

2.2.7 Noise

2.2.7.1 Regulatory Setting

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

California Environmental Quality Act

CEQA requires a strictly baseline-versus-build analysis to assess whether a project will have a noise impact. If a proposed project is determined to have 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 focuses on the NEPA/23 CFR 772 noise analysis; Chapter 3 of this document addresses the CEQA noise analysis.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA involvement (and Caltrans, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. These 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 (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA).

Table 2.2.7-1 lists the NAC for use in the NEPA/23 CFR 772 analysis.

Table 2.2.7-1. Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level $L_{eq}(h)$	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 (water resources, water treatment, electrical, etc.), and warehousing.

Activity Category	NAC, Hourly A-Weighted Noise Level $L_{eq}(h)$	Description of Activity Category
G	No NAC—reporting only	Undeveloped lands that are not permitted.

NAC = noise abatement criteria.

^a Includes undeveloped lands permitted for this activity category.

Figure 2.2.7-1 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.

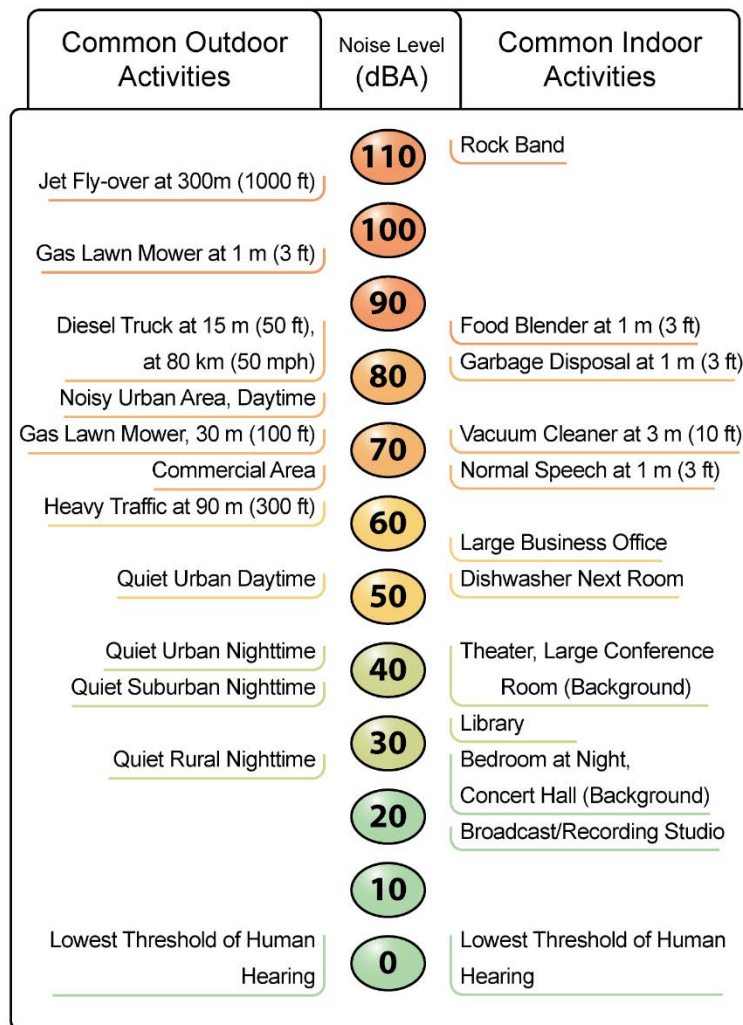


Figure 2.2.7-1. Noise Levels of Common Activities

According to the Caltrans *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (Protocol) (California Department of Transportation 2020), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as an increase of 12-dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that the project will have 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 likely would be incorporated into the project.

The Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 decibels (dB) at an affected receptor to be considered feasible from an acoustical perspective. It also must be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: (1) the noise reduction design goal of 7 dB at one or more affected receptors; (2) the cost of noise abatement; and (3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

2.2.7.2 Affected Environment

This section is a summary of the analysis documented in the Noise Study Report (NSR) (HMMH 2020) prepared for the proposed project. The report is available in Appendix R. The NSR discusses potential noise impacts and related noise abatement measures associated with construction and operation of the 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 Protocol.

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 residences and live-aboard vessels were identified as Activity Category B land uses in the project area. Outdoor parks were identified as Activity Category C land uses (see Figure 2.2.7-2, below). Several commercial properties without outdoor use were identified as Activity Category F land uses which are not subject to noise impacts, as noted in Table 2.2.7-1.

Although all land uses were evaluated in this analysis, as required by the 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 parks.

Noise Monitoring

The existing noise environment was characterized based on short-term noise monitoring that was conducted in the project area. Local traffic was observed to be the dominant source of noise at all measurement locations.

Results of short-term noise monitoring are shown in Table 2.2.7-2. Duration of measurements varied from 16 to 25 minutes. Short-term monitoring locations are shown in Figure 2.2.7-2.

Table 2.2.7-2. Summary of Short-Term Measurements

Position	Noise Sensitive Area	Land Use	Start Date/Time	Duration (minutes)	Measured Sound Level Leq (dBA)
M1	A	Park	11/18/2019, 10:52 a.m.	23	56.3
M2	B	Residential	11/18/2019, 11:43 a.m.	25	64.4
M3	D	Residential	11/18/2019, 12:29 p.m.	16	61.4

Note: Refer to Figure 2.2.7-2 for measurement locations and boundaries of each noise-sensitive area.

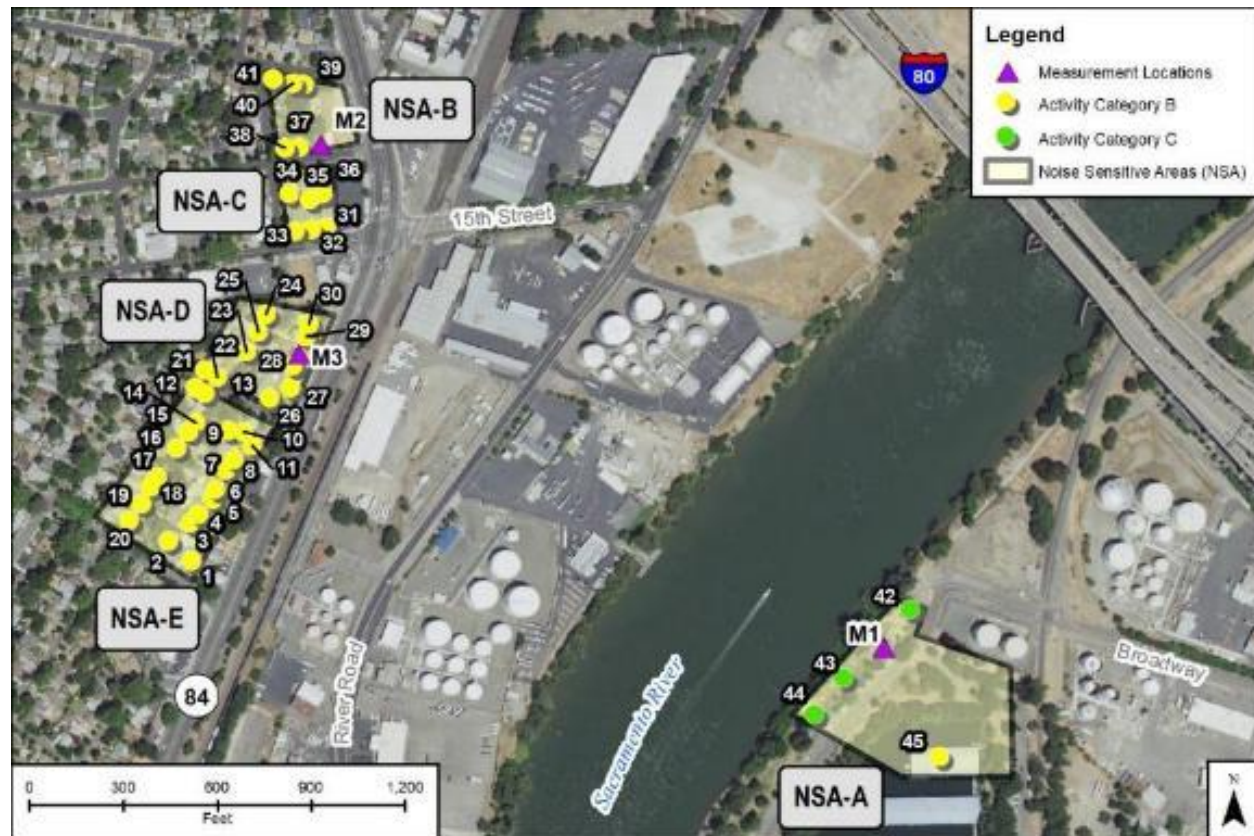


Figure 2.2.7-2. Noise Monitoring and Prediction Locations

2.2.7.3 Environmental Consequences

The proposed project is a Type I project as defined in 23 CFR 772 because it would involve construction of a new roadway. To determine whether the project would result in a noise impact that requires consideration of noise abatement, traffic noise levels under existing (2017) 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 transportation analysis report prepared for the project (Fehr & Peers 2020); this report is available in Appendix L.

Build Alternatives

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 62 to 70 dBA $L_{eq}(h)$.¹ Under design year build conditions, predicted traffic noise levels range from 59 to 71 dBA $L_{eq}(h)$ under Alternative B, and 62 to 71 dBA $L_{eq}(h)$ under Alternative C. Traffic noise levels would approach or exceed the NAC for residential uses (Activity Category B). Traffic noise levels under build conditions are predicted to increase by up to 3 dBA, which is not considered a substantial increase in noise levels. However, traffic noise impacts are predicted to occur due to exceedance of the NAC for Activity Category B land uses; therefore, noise abatement must be considered.

Construction Noise

Construction of the proposed project is expected to require the use of pile drivers, earthmovers, bulldozers, water trucks, dump trucks, concrete trucks, paving equipment, and rollers. As shown in Table 2.2.7-3, noise levels associated with the use of different types of heavy construction equipment are estimated to range between 80 and 85 dBA L_{max} ² at a distance of 50 feet from an active construction area, while impact pile drivers can produce a noise level of up to 101 dBA L_{max} .

Table 2.2.7-3. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Impact pile driver	101
Scrapers	85
Bulldozers	85
Heavy trucks	84
Backhoe	80
Roller	85
Pneumatic tools	85
Concrete pump	82

Source: Federal Transit Administration 2018.
dBA = A-weighted decibel.

During construction of the project, noise from heavy equipment may be intermittently noticeable at receiver locations in the vicinity of construction areas. Construction noise is regulated by provisions in Section 14-8.02, *Noise Control* of the Caltrans' *Standard Specifications* (California Department of Transportation 2018:225–240), which state the following.

- Control and monitor noise resulting from work activities.
- Do not exceed 86 dBA L_{max} at 50 feet from the job site from 9:00 p.m. to 6:00 a.m.

¹ Hourly equivalent sound level.

² Maximum instantaneous noise level.

Construction noise would be short term and intermittent, and would cease once construction is complete. No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with the provisions in Caltrans' *Standard Specifications* and applicable local noise standards.

Worker commutes and transport of heavy equipment and materials to the project site would potentially increase noise levels on access roads leading to the site. However, the projected construction traffic would be minimal when compared to existing traffic volumes on streets local to the work areas, and the associated short-term noise level change would not be noticeable. As such, noise levels associated with worker commutes and equipment transport would be short term and would not result in an adverse noise impact.

No Build Alternative

Under the No Build Alternative, traffic volumes associated with regional growth would increase relative to existing conditions, resulting in increased traffic noise. No project-related construction would occur. Because the project would not be built, there would be no adverse effect due to increased traffic noise from the project.

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

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 their 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 build alternatives for the project. Measurement locations of evaluated noise-sensitive receivers are shown in Figure 2.2.7-2.

Traffic noise impacts are predicted to occur at 24 residences (Activity Category B) under Alternative B and at 25 residences under Alternative C. All of these residences are located on the West Sacramento side of the project, along Route 84/Jefferson Boulevard. Noise barriers were evaluated for affected receivers in each of four noise-sensitive areas (NSAs), separated by side streets accessing Jefferson Boulevard (NSA-B, NSA-C, NSA-D, and NSA-E in Figure 2.2.7-2). The NSR determined that noise barriers would

not be considered feasible at any of these locations, because of access requirements for alleys and driveways intersecting Route 84. For a noise barrier to be acoustically effective, it would need to be continuous along the Jefferson Boulevard frontage of these receivers. Therefore, noise barriers were not considered further.

2.3 Biological Environment

2.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. *Wildlife corridors* are areas of habitat used by wildlife for seasonal or daily migration. *Habitat fragmentation* involves the potential for dividing sensitive habitat and thereby lessening its biological value.

2.3.1.1 Regulatory Setting

Yolo Habitat Conservation Plan/Natural Community Conservation Plan

The Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP) is a comprehensive, county-wide plan to provide for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend, as well as a streamlined permitting process to address the effects of a range of future anticipated activities on these 12 species. The Yolo HCP/NCCP refers to the range of future anticipated activities as *covered activities* and the 12 sensitive species covered by the HCP/NCCP as *covered species* (ICF 2018).

The City of West Sacramento is a participant in the Yolo HCP/NCCP and the West Sacramento side of the proposed project would be covered under the plan. Valley/foothill riparian is a natural community covered under the plan, which also occurs in the project area (discussed as cottonwood riparian forest below).

Lake or Streambed Alteration (Section 1602)

CDFW requires an LSAA permit for activities that would interfere with the natural flow of—or substantially alter the channel, bed, or bank of—a lake, river, or stream, including disturbance of riparian vegetation, under California Fish and Game Code (CFG) Sections 1600–1616. Requirements to protect the integrity of biological resources and water quality often are conditions of LSAs. CDFW may establish conditions that include avoiding or minimizing vegetation removal, using standard erosion control measures, limiting the use of heavy equipment, limiting work periods to avoid impacts on fisheries and wildlife resources, and restoring degraded sites or compensating for permanent habitat losses. The Sacramento River and the adjacent riparian forest are regulated by CDFW. The proposed project is expected to result in modification of the bed, bank, or channel of the river and removal of adjacent riparian vegetation; therefore, an LSAA will be required.

Central Valley Flood Protection Plan: Levee Vegetation Management Strategy

Under the Central Valley Flood Protection Act of 2008, DWR developed the 2012 Central Valley Flood Protection Plan (CVFPP) as the foundation for the statewide FloodSAFE California initiative (California Department of Water Resources 2017). Part of the CVFPP is a strategy for managing levee vegetation. Based on this strategy, existing trees on levees will be allowed to live out their normal life cycles unless they pose an unacceptable threat to levee integrity.

Urban Levee Design Criteria

The *Floodsafe California – Urban Levee Design Criteria* (ULDC) are intended to supply engineering guidance and criteria for levees required to provide an urban level of flood protection (200-year flood) (California Department of Water Resources 2012). The ULDC also correspond to the CVFPP Levee Vegetation Management Strategy. With regard to levee improvements, the ULDC state the following.

In cases of levee repair or improvement, vegetation shall be removed as required to meet objectives of the specific project. Vegetation removed as part of direct construction activities may not be replaced in the vegetation management zone. However, vegetation on other sections of the levee, not affected by the construction activity may remain in place, natural revegetation may be allowed outside of the vegetation management zone, and replanting may be allowed... Trees and other woody vegetation may be: (1) planted, and (2) allowed to naturally revegetate on a landside planting berm. Only the portion of the landside planting berm that is both 15 feet or more from the landside levee slope and 15 feet or more from the landward top of the planting berm may be planted and allowed to naturally revegetate.

City of West Sacramento General Plan

Goals and policies in the *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) apply to natural communities in the BSA that would be affected by implementation of the project. These policies include preservation, enhancement, and creation of connected open space; development setbacks from significant habitat; preservation and enhancement of riparian and wetland habitats; minimization of recreational use effects on riparian habitat; and promotion of using native plants for landscaping near the Sacramento River.

City of Sacramento General Plan

Goals and policies in the *City of Sacramento General Plan (Part 2, Environmental Resources)* (City of Sacramento 2015) apply to biological resources in the BSA that would be affected by implementation of the project. These policies include conservation of open space areas to protect creeks and the Sacramento River, preservation of natural habitats, retention of sensitive habitats and species, preservation of riparian habitats or mitigation by preservation and/or restoration at a 1:1 ratio, preservation of wildlife corridors or replacement with habitat of equivalent value, and retention of heritage trees.

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. Detailed definitions of heritage and landmark trees and what activities require a tree permit are provided in Appendix S. Tree permits require replacement of removed trees at a ratio of 1:1 (i.e., 1-inch diameter of replacement plant for every 1-inch diameter of tree removed) or payment of an in-lieu fee used to purchase and plant trees elsewhere in West Sacramento. The BSA 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.

City of Sacramento Tree Conservation

The City of Sacramento protects trees on city property and private property (Sacramento Municipal Code, Title 12, Chapter 12.56). All city street trees and trees on city property are protected. Detailed definitions of protected trees and what activities require a tree permit are provided in Appendix S. The City requires that public projects avoid removal of or damage to city trees to the extent feasible and requires a tree protection plan for retained trees. For trees that are removed, the City requires a tree permit and tree replacement at a ratio of 1:1 (1 inch diameter at standard height of tree replaced for each 1 inch removed). The BSA supports protected city trees in the City of Sacramento that would be affected by implementation of the project and would be subject to the required permitting and replacement standards.

Habitat areas that have been designated as critical habitat under the federal Endangered Species Act (FESA) are discussed below in Section 2.3.4, *Threatened and Endangered Species*. Wetlands and other waters also are discussed below in Section 2.3.2.

2.3.1.2 Affected Environment

This section was prepared using information from the *Natural Environment Study* (NES) technical report prepared for the project and the addendum (ICF 2020a, 2020b). The report and addendum are available in Appendix S. The biological study area (BSA) includes all areas of proposed permanent and temporary impacts and includes a 165-foot buffer around these areas to account for potential impacts on species related to construction. No buffer was applied to the areas of fiber optic work or to the staging areas because these activities would take place within existing developed areas already subject to ongoing pedestrian and vehicle traffic.

The natural communities in the BSA are interspersed with roadways, railroad tracks, and commercial and industrial areas. The term *land cover type* is used here to refer to vegetation communities, open water, and unvegetated developed or disturbed areas. The five land cover types mapped during field surveys (cottonwood riparian forest, ruderal, perennial stream, landscaped, and developed/graded) are shown in Figures 2.3.1-1 and 2.3.1-2. Lists of plant and wildlife species observed in the BSA are included in Appendix S.

Natural communities of special concern are habitats considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these habitats important. The CNDDB contains a current list of rare natural communities throughout the state. The USFWS considers certain habitats, such as wetlands and riparian communities, important to wildlife; and the USACE and U.S. EPA consider wetland habitats important for water quality and wildlife. The only habitat in the BSA that meets the criteria for natural communities of special concern is cottonwood riparian forest. Perennial stream, which is also important habitat, is discussed below in Section 2.3.2, *Wetlands and Other Waters*.

Cottonwood Riparian Forest

Cottonwood riparian forest in the BSA occurs along the banks of the Sacramento River (Figures 2.3.1-1 and 2.3.1-2). The overstory of riparian forest is predominantly mature Fremont's cottonwood (*Populus fremontii*) and Goodding's black willow (*Salix gooddingii*) trees associated with valley oak (*Quercus lobata*) and black locust (*Robinia pseudoacacia*). Other riparian tree species observed include boxelder (*Acer negundo* var. *californicum*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), northern California black walnut (*Juglans californica* var. *hindsii*), and western sycamore (*Platanus racemosa*). 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*) and Himalayan blackberry (*Rubus armeniacus*). The invasive red sesbania (*Sesbania punicea*) shrub was observed in the riparian forest on both sides of the river. Riparian forest associated with the Sacramento River in the BSA is depicted in Photos 1–4 in Appendix S.

Riparian habitats provide cover, provide foraging and nesting habitat, and serve as migration and dispersal corridors for several bird and mammal species in the region. Riparian habitats are sensitive natural communities that provide important habitat for wildlife and shaded riverine habitat for fish. Local, state, and federal agencies recognize riparian habitats as sensitive natural communities.

Protected Trees

Riparian and non-riparian trees with a diameter at 4.5 feet above ground of 6 inches or greater were recorded by species for the accessible parcels in the BSA (see list in Appendix S). The City of West Sacramento Tree Preservation Ordinance protects all trees with diameter of 24 inches or greater and native oaks with a diameter of 16 inches or greater. On private property, the City of Sacramento protects all trees with a diameter of 24 inches or greater on undeveloped land or commercial or industrial property; native oaks, California buckeye, and western sycamore with a diameter of 12 inches or greater; and all trees in a riparian zone with a diameter of 12 inches or greater.

Within the proposed project footprint alternatives, approximately 33 trees meet the tree ordinance criteria for the city in which they occur—approximately 13 trees in West Sacramento and 20 trees in Sacramento (Appendix S). Not all street trees in the BSA were included in the tree survey, and additional protected street trees likely are not accounted for in these estimates. The tree species included are boxelder, white alder, camphor (*Cinnamomum camphora*), Oregon ash, California black walnut, western sycamore, Fremont’s cottonwood, valley oak, black locust, Goodding’s black willow, and elm (*Ulmus americana*). All of these trees except the elm grow in the cottonwood riparian forest natural community. Black locust is an invasive species, but several black locust trees in the riparian forest on the City of Sacramento side of the river meet the protected tree size criterion.

Wildlife 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 dispersing along the Sacramento River corridor. The Yolo HCP/NCCP identifies the Sacramento River as one of the creek corridors in the plan area but the riparian and upland portions of the BSA are outside of the ecological corridors identified in Figure 6-3 of the plan (ICF 2018). Fish passage and migration within the Sacramento River are discussed in Sections 2.3.3 (*Animal Species*) and 2.3.4 (*Threatened and Endangered Species*).

2.3.1.3 Environmental Consequences

Build Alternatives

The impacts of both build alternatives are discussed in this section. All impacts on riparian forest would result from the interim year configuration, and no additional impact would result from the design year configuration. Table 2.3.1-1 lists the acreages of cottonwood riparian forest within the portions of the BSA that would be permanently or temporarily affected by the proposed interim design year configuration of the build alternatives. The ultimate design year configuration would have no effects on cottonwood riparian forest.

Table 2.3.1-1. Impacts on Cottonwood Riparian Forest in the Biological Study Area

Impacts by Alternative	Cottonwood Riparian Forest (acres)
Alternative B*	
Permanent impact	1.112
Temporary impact	0.786
Alternative C*	
Permanent impact	1.176
Temporary impact	1.149

* Impacts shown would occur by the interim year (2030) phase of construction; no additional impact would occur for construction of the design year (2040) phase.

Loss of Cottonwood Riparian Habitat

Construction of the proposed project would result in a loss of cottonwood riparian habitat. The acreage of impacts on cottonwood riparian forest in the BSA differs between the two alternatives (Table 2.3.1-1). Construction during the ultimate design year phase would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of these roads occur in riparian habitat, this phase of construction would not affect cottonwood riparian forest. Additionally, impacts on cottonwood riparian forest would be the same with any of the proposed bridge designs (bascule, vertical lift, swing). The impact discussion below, therefore, is focused on the interim design year phase of the two build alternatives.

Permanent removal of the existing cottonwood riparian forest vegetation within the proposed project footprint would result from construction activities related to the abutments for the fixed-span approach structures on both the City of West Sacramento and City of Sacramento sides, placement of RSP to stabilize the bridge abutments on each side of the river, and temporary access roads (Figures 2.3.1-1 and 2.3.1-2). Riparian vegetation would be removed between the permanent footprint of the bikeways and the river on both sides during construction of the abutment structures and overhead bridge. The area beneath the bridge approach structures on both ends of the bridge would be unlikely to revegetate after construction due to low clearance under the bridge and shading from the bridge. These effects are considered adverse.

Temporary impacts under Alternative B or C would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access for construction of the interim year design of the project.

The proposed project could result in indirect impacts on riparian habitat from shading by the new bridge approach structures on both riverbanks. 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. 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. Additional discussion of potential indirect impacts from shading and loss of shaded riverine aquatic (SRA) cover habitat is provided in Section 2.3.4.3, *Environmental Consequences –Build Alternative – Fish Species*.

Under either of the build alternatives, state and federal agencies would require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. CDFW would require an LSAA for construction within riparian habitat and compensation for the loss of riparian trees and habitat. The City

of West Sacramento and City of Sacramento would require compensation for loss of protected riparian trees.

Loss of Protected Trees

Construction during the ultimate design year phase would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of these roads occur in riparian habitat and would not affect street trees, this phase of construction would not affect protected trees. Impacts on protected trees would be the same for any proposed bridge design (bascule, vertical lift, swing). The impact discussions below, therefore, focus on the interim design year phases of the two build alternatives.

Construction of Alternative B would remove up to four protected riparian trees and potentially several street trees in the City of West Sacramento and up to eight protected riparian trees and additional street trees in the City of Sacramento. Construction of Alternative C would remove up to 6 protected riparian trees and potentially several street trees in the City of West Sacramento, and up to 13 protected riparian trees and additional street trees in the City of Sacramento. Under either alternative, trees would be removed for construction of abutments for the two fixed-span bridge approach structures and the bike trails on both the City of Sacramento and City of West Sacramento sides. These effects are considered adverse.

Under either alternative, additional temporary impacts on protected trees could occur during construction due to trimming of trees for construction access. However, the protection measures in each city's tree ordinance would be implemented to avoid impacts on protected trees outside of the permanent impact area.

State agencies would require avoidance, minimization, and compensatory mitigation for the loss of riparian trees, as described above for cottonwood riparian forest. CDFW would require an LSAA for construction within the riparian habitat and compensation for removed trees and riparian habitat. The City of West Sacramento and City of Sacramento would require compensation for loss of protected riparian and street trees.

Wildlife Corridors

The build alternatives would remove riparian habitat and contribute to existing barriers to movement along the landward sides of the Sacramento River but avian species would be able to fly over and under the bridge and common mammals acclimated to the urban environment would be able to continue to move through the BSA because the bridges would allow passage beneath the bridge on both sides of the river.

The Sacramento River is wide and deep and provides unimpeded passage for migratory and resident fish species in the BSA. 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 2.3.4, *Threatened and Endangered Species*).

No Build Alternative

Under the No Build Alternative, a new bridge with new roadway connections would not be constructed. Redevelopment would occur in both West Sacramento and Sacramento, as planned by both Cities, that could affect natural communities. However, the loss of cottonwood riparian habitat and protected trees would not occur as a result of a new river crossing.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of Avoidance and Minimization Measures NC-1–3 and Mitigation Measure NC-4 would ensure that the proposed project minimizes effects and compensates for temporary effects on and permanent loss of cottonwood riparian forest in and adjacent to the project construction area.

Implementation of Avoidance and Minimization Measures NC-1–3 would ensure that the proposed project minimizes effects on protected trees adjacent to the project construction area.

The loss of protected trees that are within cottonwood riparian forest habitat would be mitigated based on the loss of riparian habitat and implementation of Mitigation Measure NC-4. The loss of protected street trees that are in ruderal or landscaped habitat would be mitigated as described below in Mitigation Measure NC-5.

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The project proponent 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 sensitive natural communities; special-status wildlife habitats, such as nest sites of Swainson’s hawk and migratory birds; and protected trees.

Barrier fencing around sensitive biological resource 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 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.

Avoidance and Minimization Measure NC-2: 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, sensitive natural communities, 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, 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.

Avoidance and Minimization Measure NC-3: 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 the presence of a biological monitor 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 Measures AS-3, AS-5, AS-7, and AS-8 in Section 2.3.3.4, *Environmental Consequences – Build Alternative – Animal Species*.

Mitigation Measure NC-4: 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 1.112 acres of riparian forest under Alternative B or up to 1.176 acres of riparian forest under Alternative C. In addition, any unavoidable temporary loss of riparian forest 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 4.4.1.1 [*Survey Results*] in the NES), 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 ULDC (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’s cottonwood, valley oak, black willow, boxelder, Oregon ash, and black walnut. 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% 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 Liberty Island Conservation Bank, Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, Elsie Gridley Mitigation Bank, River Ranch Wetland Mitigation Bank, or other approved bank with available riparian forest credits at the time of project permitting. Replacement riparian forest habitat will include tree 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 current and accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for the project and no more than 2 years prior to project construction. 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 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). 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 permanent loss of 302 linear feet and up to 0.368 acre of affected SRA cover vegetation (see Section 4.4.1.2, *Temporary and Permanent Loss of Riparian Vegetation [Including SRA Cover]* in the NES) at a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected and 3 acres replaced for every 1 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 ordinary high-water mark and at sufficient densities to provide shade along at least 85% 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 offsite compensation for impacts on state- and federally listed fish species, designated critical habitat, and EFH for Pacific salmon.

Mitigation Measure NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat

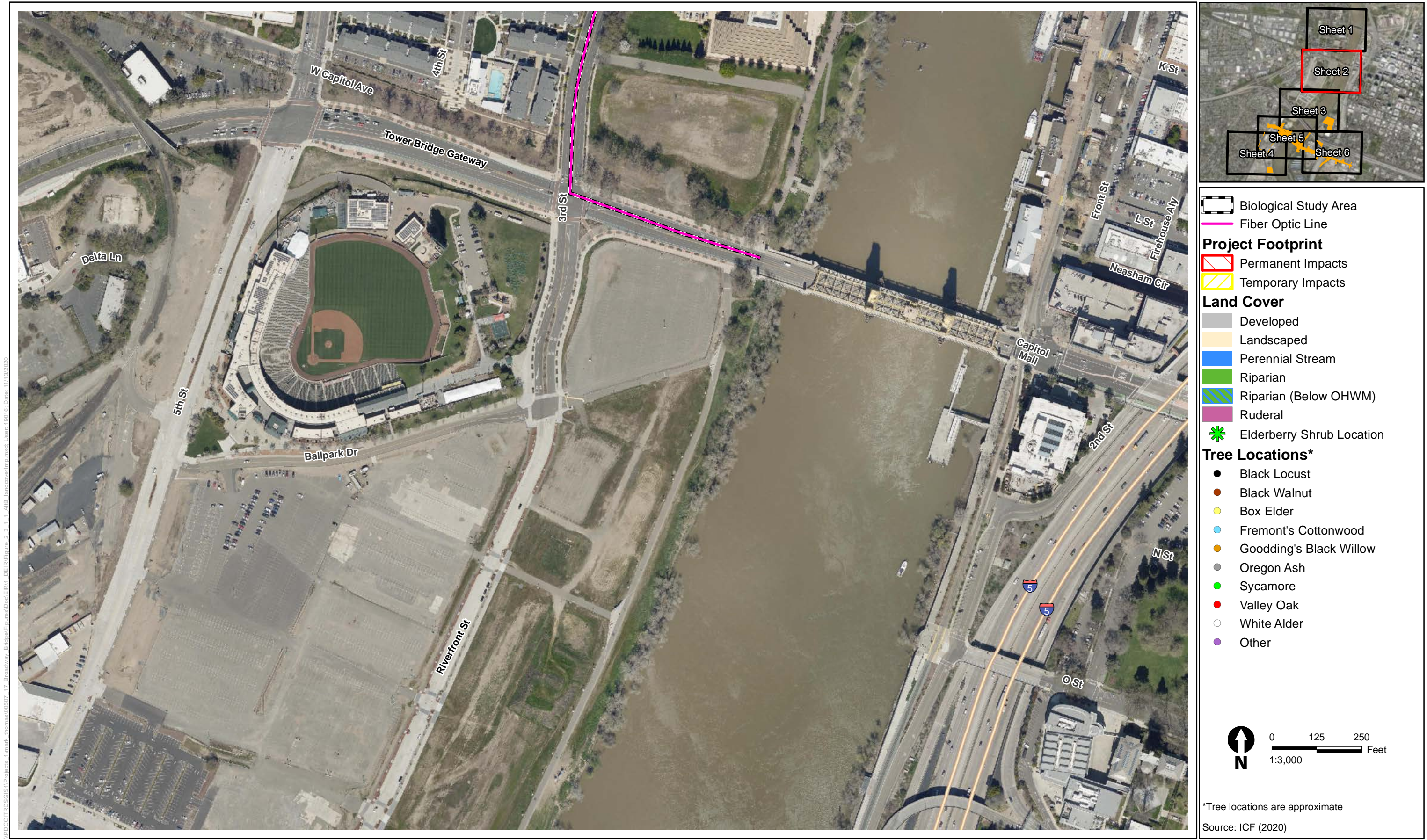
Within 1 year prior to construction, the project proponent will conduct a preconstruction inventory of all trees to be removed. The inventory will include the location, species, diameter of all trunks, approximate height and canopy diameter, and approximate age, in support of a tree permit for removal of the protected trees. All conditions of the tree permits will be implemented.

The project proponent will mitigate the loss of protected street 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 in-lieu fees to the City of West Sacramento and the City of Sacramento, based on the tree removal locations, which would be used to purchase and plant trees elsewhere in West Sacramento and 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 black locust, which is an invasive species and will be replaced with a 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 their vigor and survival. If any of the original 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.

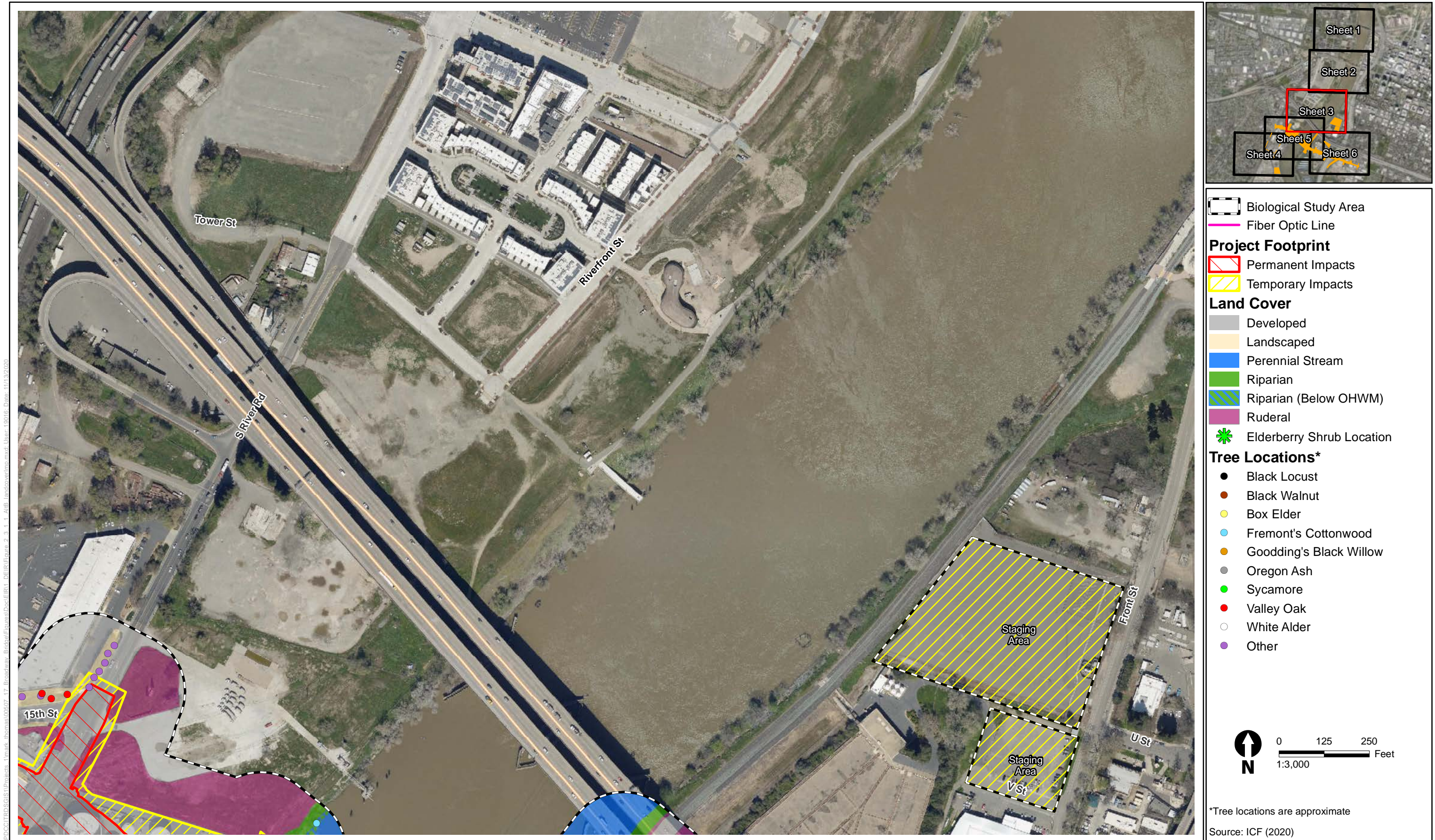


Figure 2.3.1-1
Alternative B Land Cover and Project Impacts



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Figure 2.3.1-1
Alternative B Land Cover and Project Impacts



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Figure 2.3.1-1
Alternative B Land Cover and Project Impacts



Figure 2.3.1-1
Alternative B Land Cover and Project Impacts

*Tree locations are approximate
 Source: ICF (2020)

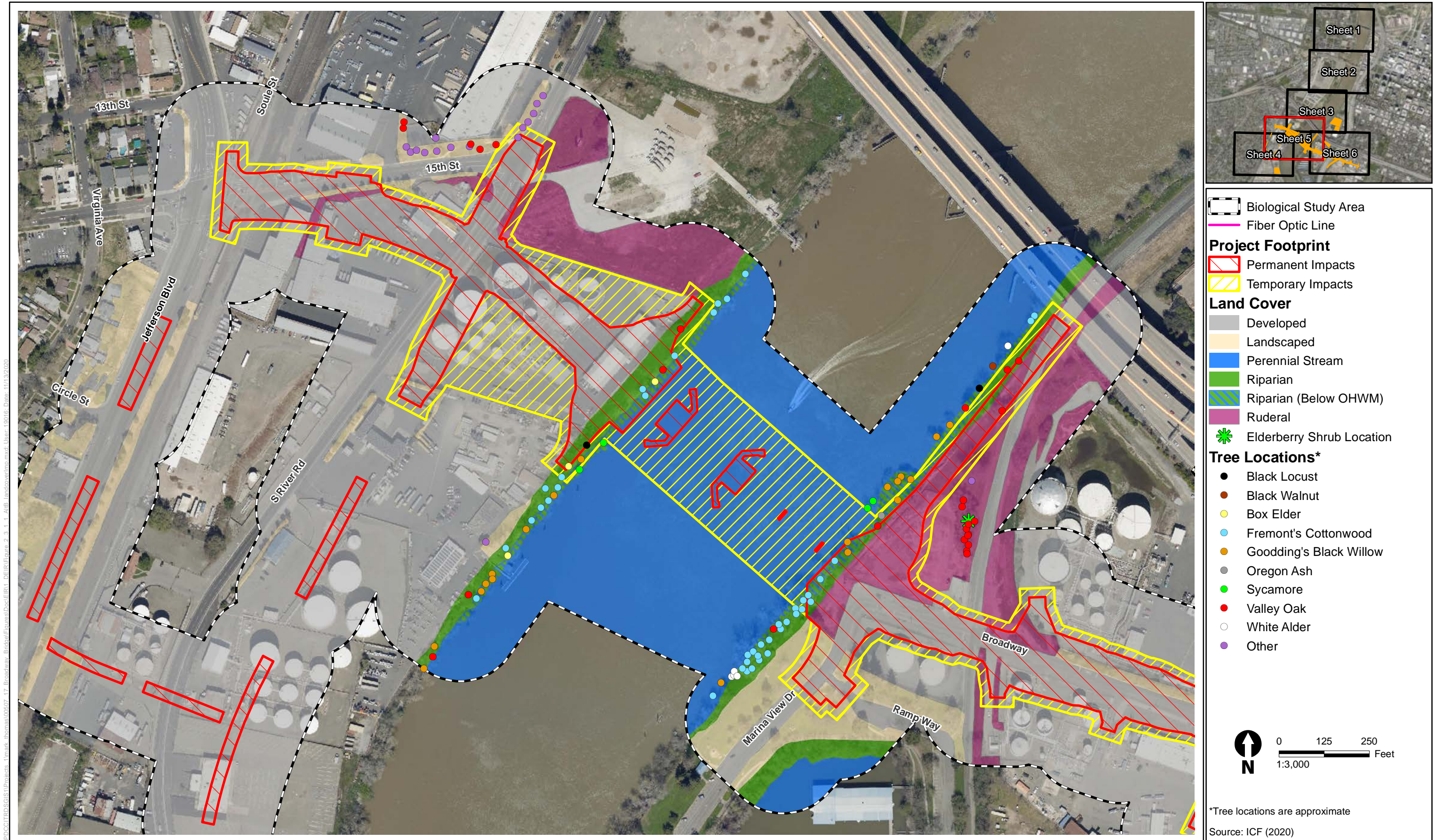


Figure 2.3.1-1
Alternative B Land Cover and Project Impacts

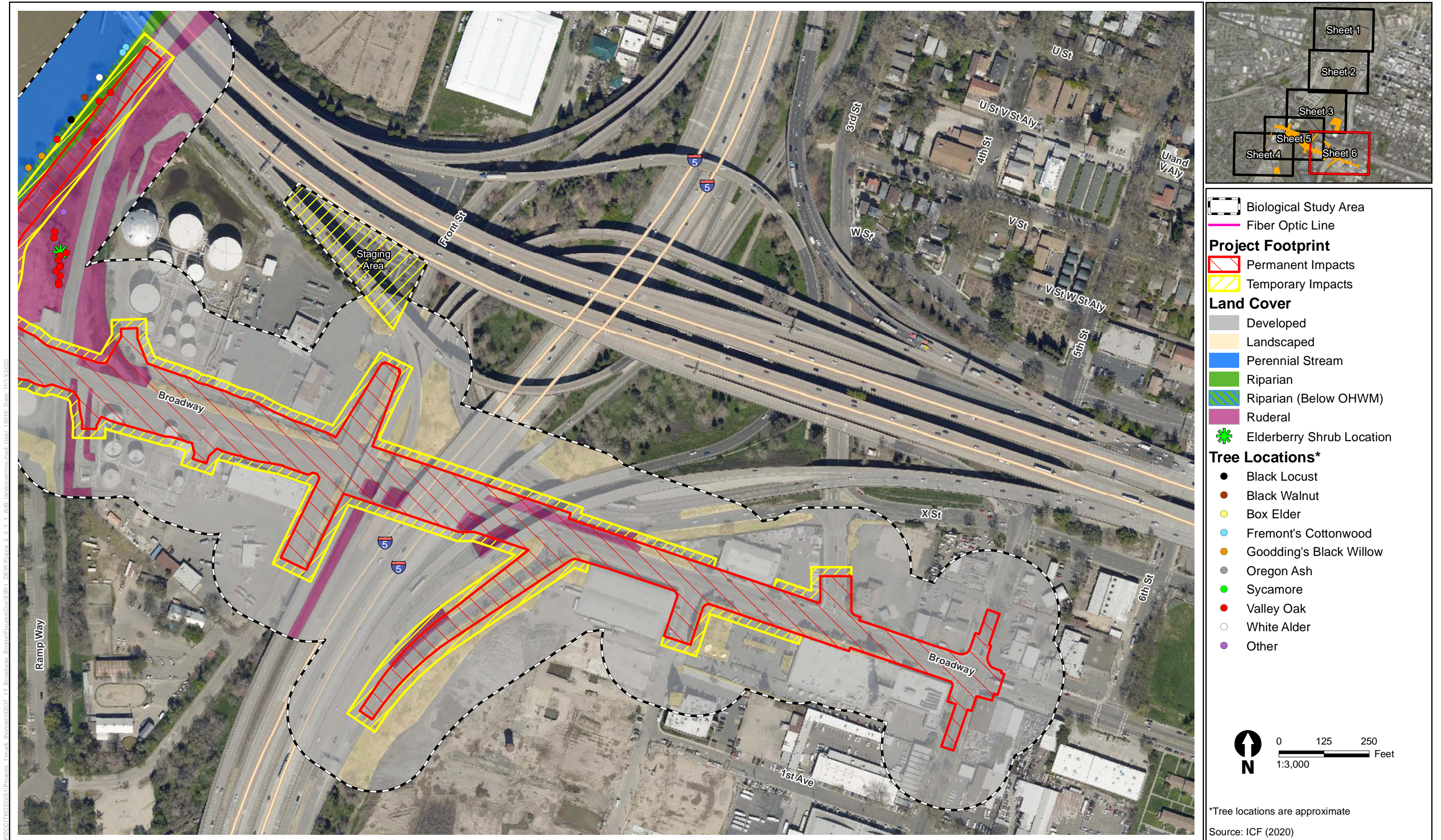
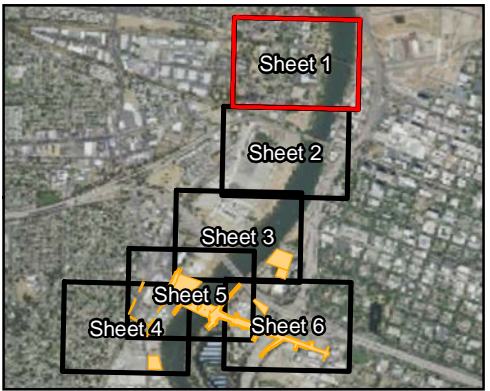
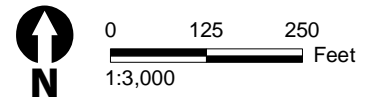


Figure 2.3.1-1
Alternative B Land Cover and Project Impacts

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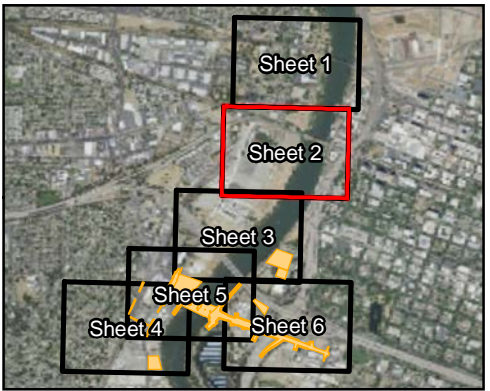
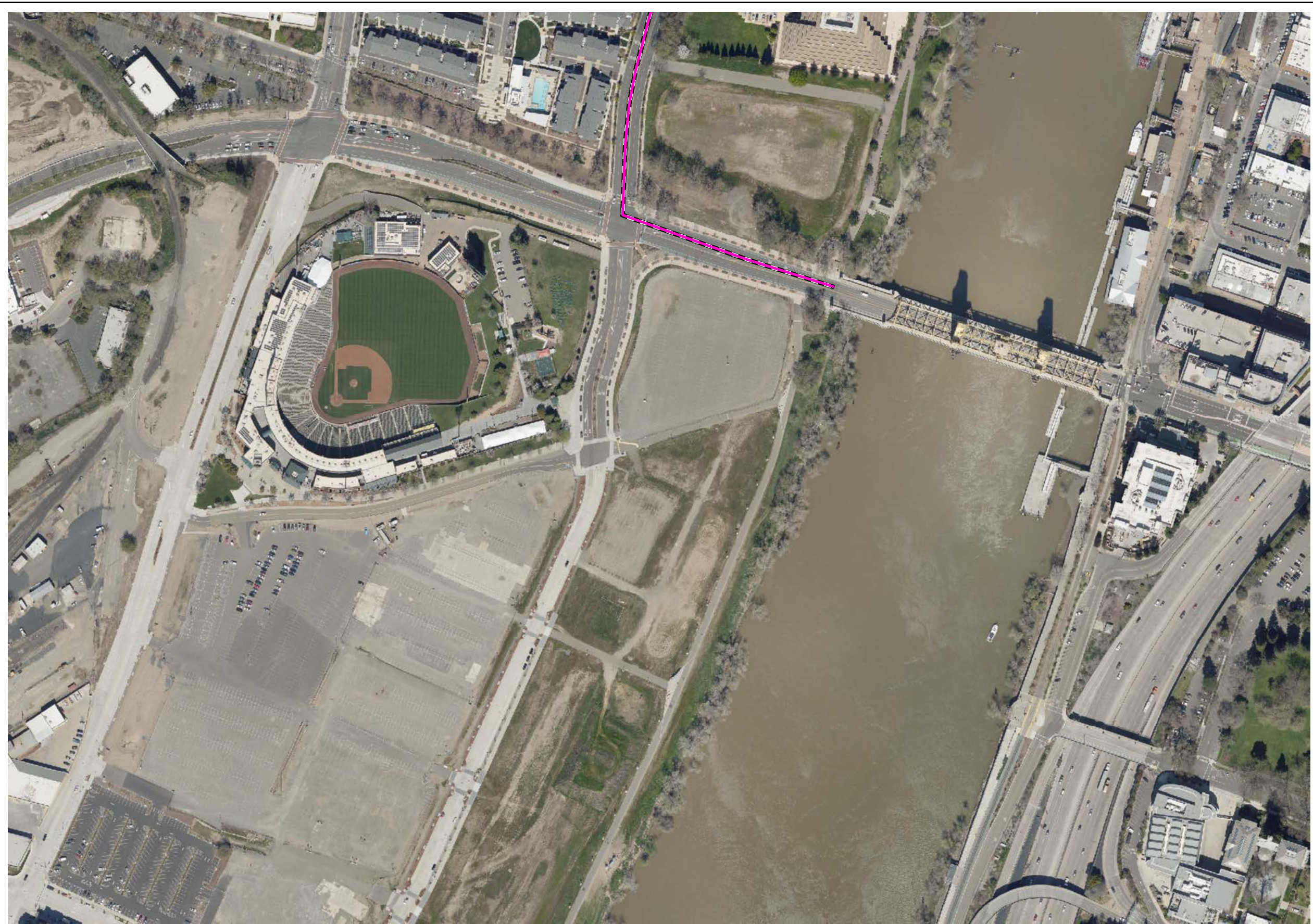
- Biological Study Area
- Fiber Optic Line
- Project Footprint**
- Permanent Impacts
- Temporary Impacts
- Land Cover**
- Developed
- Landscaped
- Perennial Stream
- Riparian
- Riparian (Below OHWM)
- Ruderal
- Elderberry Shrub Location
- Tree Locations***
- Black Locust
- Black Walnut
- Box Elder
- Fremont's Cottonwood
- Goodding's Black Willow
- Oregon Ash
- Sycamore
- Valley Oak
- White Alder
- Other



*Tree locations are approximate
Source: ICF (2020)

Figure 2.3.1-2
Alternative C Land Cover and Project Impacts

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Biological Study Area
 Fiber Optic Line

Project Footprint
 Permanent Impacts
 Temporary Impacts

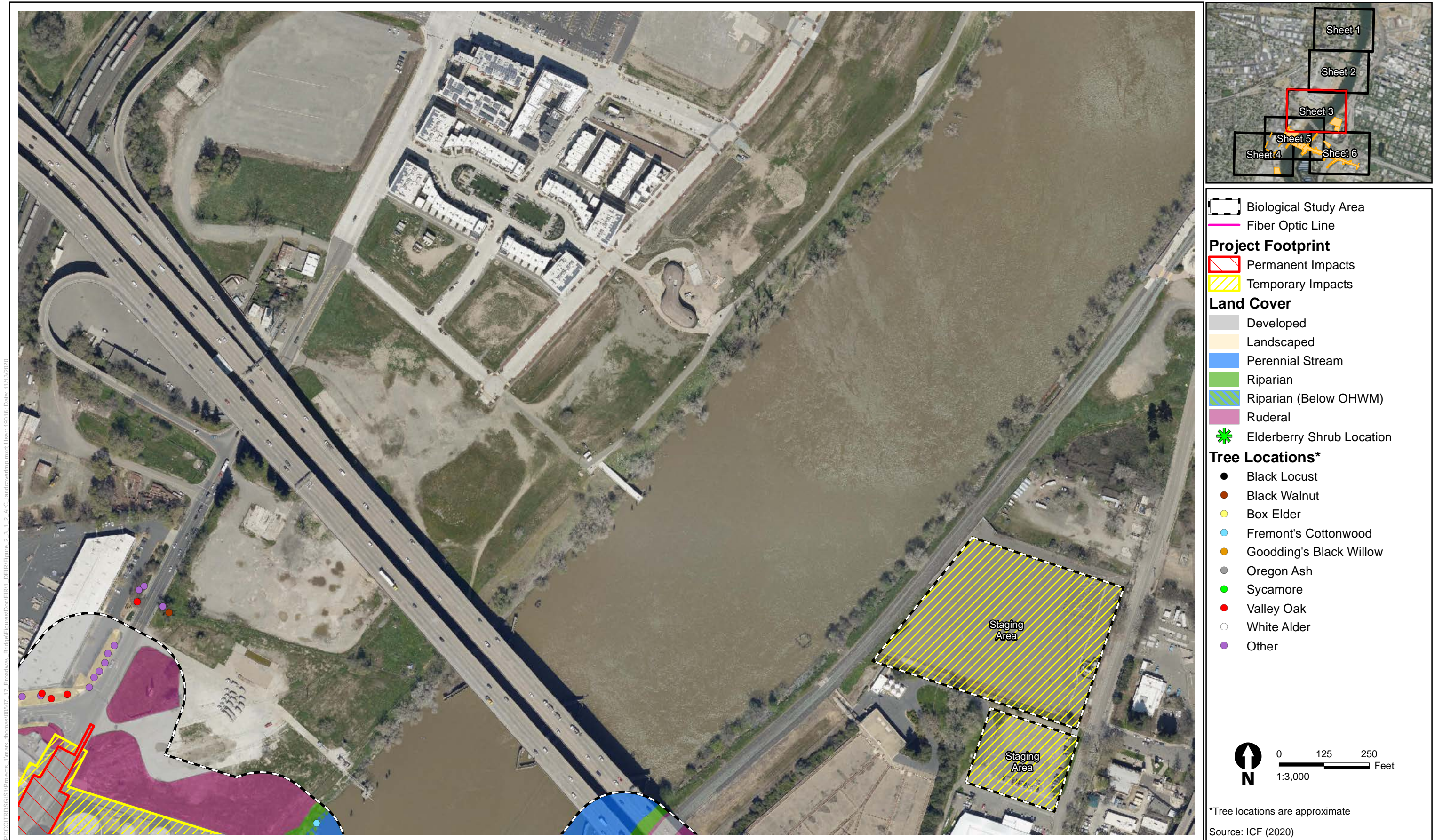
Land Cover
 Developed
 Landscaped
 Perennial Stream
 Riparian
 Riparian (Below OHWM)
 Ruderal
 Elderberry Shrub Location

Tree Locations*
● Black Locust
● Black Walnut
● Box Elder
● Fremont's Cottonwood
● Goodding's Black Willow
● Oregon Ash
● Sycamore
● Valley Oak
○ White Alder
● Other

0 125 250 Feet
1:3,000

*Tree locations are approximate
Source: ICF (2020)

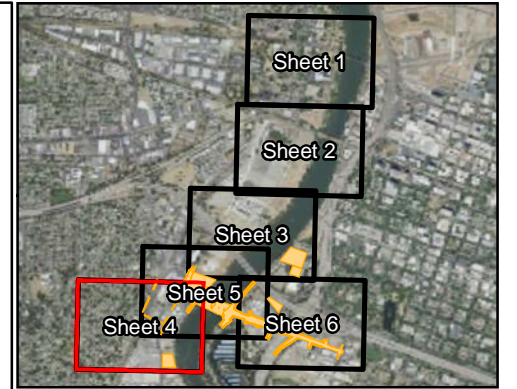
Figure 2.3.1-2
Alternative C Land Cover and Project Impacts



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Figure 2.3.1-2
Alternative C Land Cover and Project Impacts

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Biological Study Area
 Fiber Optic Line

Project Footprint
 Permanent Impacts
 Temporary Impacts

Land Cover
 Developed
 Landscaped
 Perennial Stream
 Riparian
 Riparian (Below OHWM)
 Ruderal
 Elderberry Shrub Location

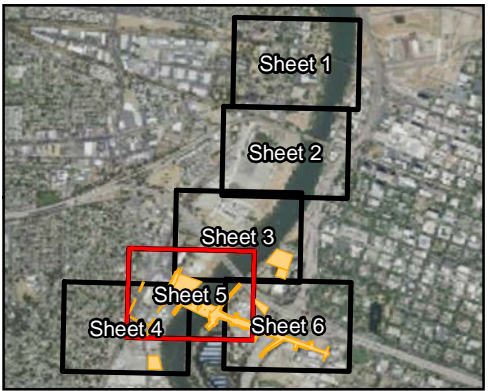
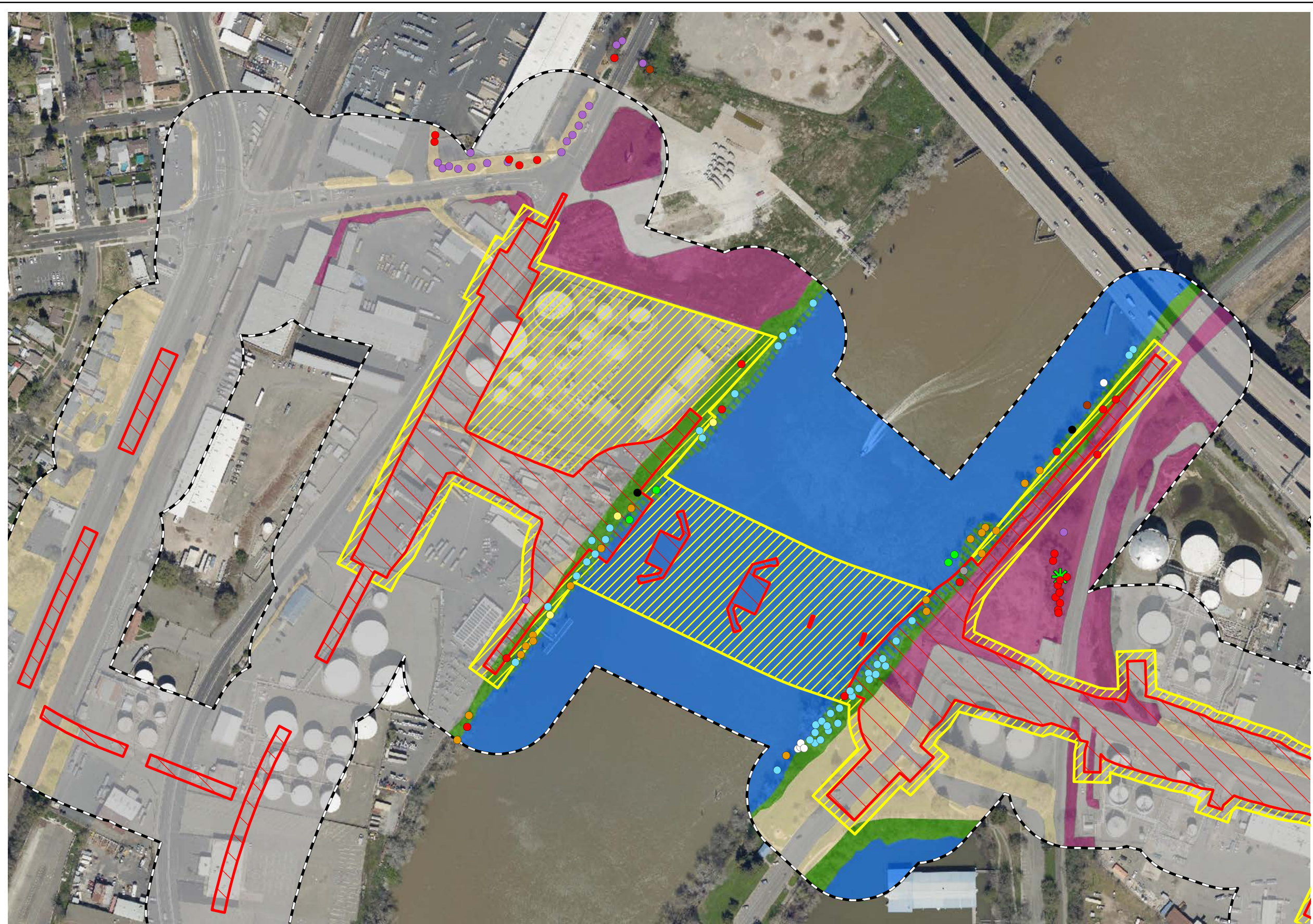
Tree Locations*
 Black Locust
 Black Walnut
 Box Elder
 Fremont's Cottonwood
 Goodding's Black Willow
 Oregon Ash
 Sycamore
 Valley Oak
 White Alder
 Other

0 125 250 Feet
1:3,000

*Tree locations are approximate
Source: ICF (2020)

Figure 2.3.1-2
Alternative C Land Cover and Project Impacts

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Biological Study Area
 - Dashed black line

Fiber Optic Line
 - Pink line

Project Footprint
 - Red hatched: Permanent Impacts
 - Yellow hatched: Temporary Impacts

Land Cover
 - Grey: Developed
 - Light orange: Landscaped
 - Blue: Perennial Stream
 - Green: Riparian
 - Blue/Green diagonal lines: Riparian (Below OHWM)
 - Purple: Ruderal

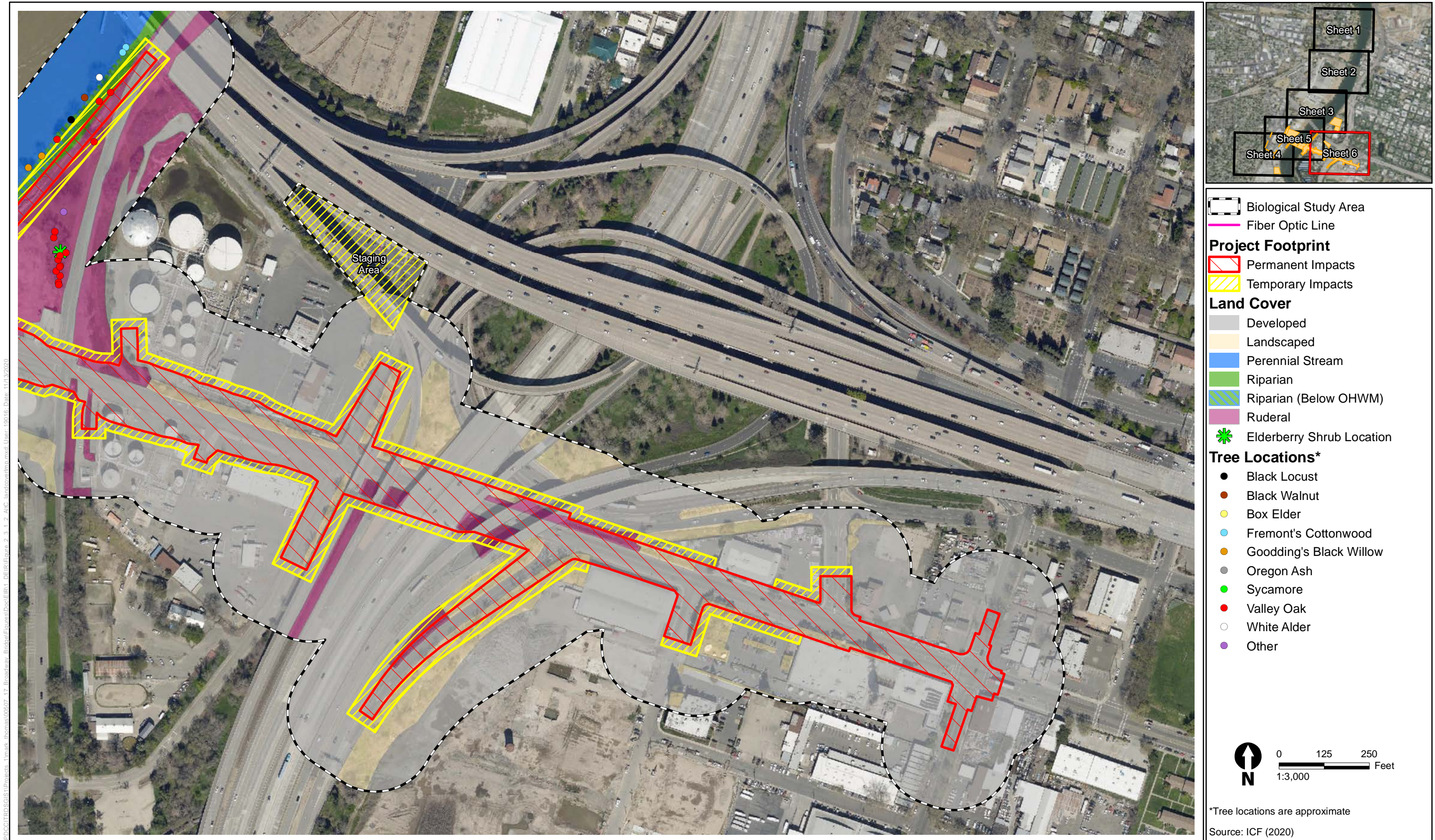
Elderberry Shrub Location
 - Green star

Tree Locations*
 - Black dot: Black Locust
 - Brown dot: Black Walnut
 - Yellow dot: Box Elder
 - Light blue dot: Fremont's Cottonwood
 - Orange dot: Goodding's Black Willow
 - Grey dot: Oregon Ash
 - Green dot: Sycamore
 - Red dot: Valley Oak
 - White dot: White Alder
 - Purple dot: Other

Scale:
 0 125 250 Feet
 1:3,000

*Tree locations are approximate
 Source: ICF (2020)

Figure 2.3.1-2
Alternative C Land Cover and Project Impacts



\PDC\TRD\GIS\Projects_1\mark_thomas\00507_17_Broadway_Bridge\Figures\Doc\ER\1_DEIR\Figure_2.3.1_2_AIC_landcoverimp.mxd, User: 19016, Date: 11/13/2020

Figure 2.3.1-2
Alternative C Land Cover and Project Impacts

2.3.2 Wetlands and Other Waters

2.3.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the 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 U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the OHWM, in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. 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 the USACE with oversight by the U.S. EPA.

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. 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 Regional or Nationwide permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 CFR Part 230) and whether permit approval is in the public interest. The Guidelines were developed by U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative that would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is an LEDPA to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/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.

At the state level, wetlands and waters are regulated primarily by the SWRCB, the RWQCBs, and CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) also may be involved. CFGC Sections 1600–1607 require any agency that proposes a project that will substantially divert or obstruct the natural flow of, or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife

resources, an LSAA will be 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 the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs, and WDRs 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 U.S. This is most frequently required in tandem with a Section 404 permit request. Please see 2.2.2, *Water Quality and Storm Water Runoff* for more details.

2.3.2.2 Affected Environment

This section was prepared using information from the NES technical report prepared for the project and the addendum (ICF 2020a, 2020b). The NES and addendum are available in Appendix S. The NES includes a discussion of the aquatic resources delineation survey methods and results, a summary of agency coordination, and a copy of the aquatic resources report. The aquatic resources report was submitted to the USACE on November 5, 2019, with additional clarification on January 6, 2020. The USACE issued a preliminary Jurisdictional Determination on June 18, 2020, confirming the mapped aquatic resource boundaries. There are no wetlands in the BSA, and the Sacramento River is the only other water in the BSA.

Perennial Stream (Sacramento River)

The Sacramento River is unvegetated open water and averages 720 feet wide at the OHWM in the BSA (Figures 2.3.1-1 and 2.3.1-2). The riverbanks are levees that are mostly steeply sloped and support riparian forest vegetation, as described above, with rip-rap near the bottom of the slope. Additional information about the perennial stream is provided in the wetland delineation report (Appendix S). Representative photographs of the Sacramento River in the BSA are provided as Photos 1–4 in Appendix S.

The Sacramento River is a traditional navigable water and a water of the U.S. subject to regulation under CWA Section 404 and Section 10 of the Rivers and Harbors Act, and under the jurisdiction of the USACE. The river is considered a sensitive natural community. The Sacramento River is also a water of the State subject to regulation under the Porter-Cologne Act.

2.3.2.3 Environmental Consequences

Build Alternatives

Loss of Perennial Stream

The project may be constructed in two phases or in a single phase. If constructed in two phases the new bridge would be constructed in just one phase (the first of two phases). Construction during the second phase, the ultimate design year phase, would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of this road work would occur in the Sacramento River, this phase of construction would not affect perennial stream. Table 2.3.2-1 shows the acres of perennial stream that would be permanently or temporarily affected by construction of each build alternative. The extent of impacts on perennial stream would vary depending on the selected bridge type. To address the possible impacts of the bridge type that ultimately is built, the largest in- and over-

water footprint and the greatest number of construction-related impacts of the three types were assumed for the analysis.

Table 2.3.2-1. Impacts on Perennial Stream in the Biological Study Area

Impacts by Alternative	Perennial Stream Area (acres)
Alternative B*	
Permanent impact	0.432
Temporary impact	4.729
Alternative C*	
Permanent impact	0.482
Temporary impact	4.969

*If the project is constructed in two phases, the impacts shown would occur in the first phase of construction; no additional impact would occur for construction of the second phase.

Implementation of the proposed project would result in permanent and temporary impacts (placement of fill) on the Sacramento River in the BSA. Permanent impacts on perennial stream in the Sacramento River would result from bridge components and RSP to be placed below the OHWM (see Table 2.3.2-1). Permanent impacts on perennial stream would vary between the proposed bridge designs (bascule, vertical lift, swing). These differences are summarized below. See Appendix S for a more detailed analysis of the impacts on the riverbed.

- The two fixed-spans for the new bridge would be constructed on piers 2 and 3, and the movable span section of the bridge would be constructed on piers 4 and 5. The difference between the bridge design types would be the number of piles needed. The footprints for piers 2 and 3 on the river bottom would total up to 13,500 square feet (0.31 acre) for the bascule bridge and less for the vertical lift and swing bridge designs. The footprints for piers 4 and 5 would total 360 square feet (0.01 acre).
- A bridge fender system supported by piles placed on the riverbed would be constructed around the movable span piers. The footprint of the bridge fender system on the river bottom would total approximately 0.006 acre.
- RSP would be installed along the City of Sacramento and City of West Sacramento shorelines, covering up to 0.55 acre of the bank below the OHWM (see Tables 1-1 and 1-3 in Section 1.3.1.)

Temporary impacts on perennial stream would be the same for all three proposed bridge designs (bascule, vertical lift, swing). Temporary impacts would occur from installation of cofferdams, temporary trestle piles, and spud piles for barges below the OHWM during construction (see Table 2.3.2-1).

State and federal agencies would require avoidance, minimization, and compensatory mitigation for the loss of perennial stream. The loss of perennial stream is considered adverse because perennial stream provides a variety of important ecological functions and values.

Additional indirect impacts from project construction on water quality, such as increased turbidity and chemical runoff, could occur in perennial drainage habitat outside the project footprint. Water quality protection measures to avoid this impact would be required by the project environmental commitments (see Section 1.3.1) and implementation of construction site BMPs specified in the final SWPPP that would be developed for the project, as well as CWA Section 401 permit conditions to minimize introduction of construction-related contaminants and mobilization of sediment in the Sacramento River. Broadly, these BMPs would address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices. The BMPs would be based on the best conventional and best available technology.

No Build Alternative

Under the No Build Alternative, a new bridge would not be constructed, and no loss of perennial stream would occur.

2.3.2.4 Avoidance, Minimization, and /or Mitigation Measures

Compliance with the SWPPP and CWA Section 401 permit conditions and implementation of Avoidance and Minimization Measures NC-1–NC-3 (see Section 2.3.1, *Natural Communities*) and Mitigation Measure WW-1 below would ensure that the proposed project minimizes effects and compensates for permanent loss of, and temporary effects on, perennial stream in and adjacent to the project construction area.

Mitigation Measure WW-1: 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 0.431 acre of non-wetland waters of the U.S. 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 0.862 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 0.431 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 Liberty Island Conservation Bank, Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, Elsie Gridley Mitigation Bank, River Ranch Wetland Mitigation Bank, or other approved bank with available riparian stream credits. 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 Measure 4. 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.

2.3.3 Animal Species

2.3.3.1 Regulatory Setting

Many state and federal laws regulate impacts on wildlife. The 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 FESA or the California Endangered Species Act (CESA). Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section 2.3-4 below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- NEPA
- Migratory Bird Treaty Act
- 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

The following local conservation plan is relevant to wildlife:

- Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP)

The Yolo HCP/NCCP is a comprehensive, county-wide plan to provide for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend, as well as a streamlined permitting process to address the effects of a range of future anticipated activities on these 12 species. The Yolo HCP/NCCP refers to the range of future anticipated activities as *covered activities* and to the 12 sensitive species covered by the HCP/NCCP as *covered species* (ICF 2018).

The City of West Sacramento is a participant in the Yolo HCP/NCCP and the West Sacramento side of the proposed project would be covered under the plan. Species considered in this analysis and that are also covered by the Plan include valley elderberry longhorn beetle (VELB), western pond turtle, white-tailed kite, and Swainson’s hawk.

2.3.3.2 Affected Environment

This section was prepared using information from the NES technical report prepared for the project and the addendum (ICF 2020a, 2020b). The report and addendum are available in Appendix S.

Wildlife Species

Information on the wildlife species considered for analysis, general habitat descriptions, and their presence in the BSA are included in in Table 2.3.3-1; more detailed discussions on these species can be

found in Appendix S. The wildlife species carried forward for an analysis of impacts include western pond turtle, white-tailed kite, migratory birds, and bats.

The Sacramento River provides suitable aquatic habitat for western pond turtle, and the banks on the Sacramento River and adjacent uplands may be used by turtles for basking and nesting. There is a high amount of disturbance within uplands in the BSA, including domestic dogs and cats that may prey on pond turtles and pond turtle eggs; nevertheless, pond turtles may attempt to nest in these areas if they are present in the adjacent aquatic habitat. Western pond turtle has been recorded within 10 miles of the BSA (California Department of Fish and Wildlife 2019).

Trees within the cottonwood riparian forest and landscaped areas represent potential nesting habitat for white-tailed kite. Suitable nesting habitat for migratory birds is present within the cottonwood riparian forest and landscaped areas, and on buildings in the BSA. Bats have the potential to nest in built structures and trees in the BSA. Several trees on both sides of the river have suitable habitat for foliage-roosting bats and cavity-roosting bats.

Fish Species

The Sacramento River in the BSA is used by a number of fish species, including non-listed species of management concern, either as habitat during one or more of their life stages or as a migration corridor to spawning and rearing habitat in the upper Sacramento River and its tributaries. These fish species include (1) anadromous species (fall- and late fall-run Chinook salmon, white sturgeon, and lamprey) that migrate from the ocean to fresh water to spawn and rear for a variable amount of time before emigrating to the ocean, where they grow and eventually mature into adults prior to returning to their natal streams to spawn; (2) semi-anadromous species (Sacramento splittail) that migrate from the upper San Francisco estuary to freshwater reaches to spawn; and (3) non-anadromous fish species (Sacramento hitch, hardhead) that complete their life cycle entirely in fresh water. With the exception of Sacramento splittail, one or more life stages of all of these fish species may be present in the BSA at any time. Table 2.3.3-1 identifies the non-listed, special-status fish species that occur in the BSA of the Sacramento River ; a description of each of these species is presented in the NES technical report prepared for the project (ICF 2020a); the report is available in Appendix S.

Table 2.3.3-1. 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 <i>Scientific Name</i>	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Invertebrates				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E/-	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 biological study area (BSA). <i>No Effect</i>
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T/-	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. <i>No Effect</i>
Vernal pool tadpole shrimp <i>Lepidurus packardi</i>	E/-	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. <i>No Effect</i>
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T/-	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	One elderberry shrub was observed in the BSA in an area of ruderal vegetation. There were no exit holes on the shrub. The shrub is within 160 feet of riparian habitat along the Sacramento River. The shrub occurs within the general location of a 1949 California Natural Diversity Database record for the species. Riparian habitat also is within the BSA. According to the <i>Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle</i> (USFWS 2017), this shrub represents potential habitat for valley elderberry longhorn beetle. <i>Not Likely to Adversely Affect</i>

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Amphibians				
California tiger salamander <i>Ambystoma californiense</i>	T/T	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. <i>No Effect</i>
California red-legged frog <i>Rana draytonii</i>	T/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. <i>No Effect</i>
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>	T/T	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. <i>No Effect</i>

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Birds				
Swainson's hawk <i>Buteo swainsoni</i>	-/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; highest nesting densities occur near Davis and Woodland in 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.
White-tailed kite <i>Elanus leucurus</i>	-/FP	Lowland areas west of the 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>	T/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. <i>No Effect</i>
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>	T/E	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. <i>No Effect</i>

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
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>	E/E	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. <i>No Effect</i>
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 absent	In the Sacramento Valley, the species is only known to use overpasses with hollow-box girders for nesting.
Bank swallow <i>Riparia riparia</i>	–/T	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.

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Tricolored blackbird <i>Agelaius tricolor</i>	-/E	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.
Yellow-headed blackbird <i>Xanthocephalus 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 in 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	Trees on both sides of the river within the BSA provide potential habitat for bats. Buildings adjacent to the BSA also provide potential roosting habitat for pallid bats.

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Townsend's big-eared bat <i>Corynorhinus townsendii townsendii</i>	-/T	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, and oak woodlands of the inner Coast Ranges and Sierra Nevada foothills, and in lower to mid-elevation mixed coniferous forests.	Habitat absent	The species is not known to occur on the floor of the Sacramento Valley.
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.

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
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>	E/E	Mainstem Sacramento River below Keswick Dam (Moyle 2002); occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 to 12.5 °Celsius (°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. <i>Likely to Adversely Affect</i>
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	T/T	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. <i>Likely to Adversely Affect</i>
Central Valley fall-/late fall–run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FSC/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. <i>Likely to Adversely Affect</i>

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
California Central Valley steelhead <i>Oncorhynchus mykiss</i>	T/-	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. <i>Likely to Adversely Affect</i>
North American green sturgeon (southern distinct population segment) <i>Acipenser medirostris</i>	T/SSC	Occurs in Sacramento, Klamath, and Trinity Rivers (Moyle 2002); spawns in large river systems with well-oxygenated water, with temperatures from 8.0 to 14 °C, including the upper Sacramento River.	Habitat present	Sacramento River within the BSA provides migration and rearing habitat, and is designated as critical habitat for the species. <i>Likely to Adversely Affect</i>
Delta smelt <i>Hypomesus transpacificus</i>	T/E	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. <i>Likely to Adversely Affect</i>
Longfin smelt <i>Spirinchus thaleichthys</i>	FC/T	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.

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
White sturgeon <i>Acipenser transmontanus</i>	-/SSC	Occurs in larger rivers from the Sacramento-San Joaquin River system northward into British Columbia; spawns in upper Sacramento River and possibly Feather and San Joaquin Rivers; spawns from late February to early June at temperatures from 8.0 to 19.0 °C. (Moyle et al. 2015.)	Habitat present	Sacramento River within the BSA provides migration and 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 and Sutter Bypasses, Suisun Marsh, Napa River, and Petaluma River (Moyle 2002); spawning takes place among submerged and flooded vegetation in sloughs and in the lower reaches of rivers and flood bypasses.	Habitat present	Sacramento River within the BSA provides migration, spawning, and seasonal rearing habitat.
Sacramento hitch <i>Lavinia exilicauda exilicauda</i>	-/SSC	Occurs in warm, low-elevation waters including clear streams, turbid sloughs, lakes, and reservoirs; found in pools or runs among aquatic vegetation; may occur in riffles; can survive temperatures as high as 38 °C and salinities up to 9 parts per thousand (Moyle 2002).	Habitat present	Sacramento River within the BSA provides migration and rearing habitat.
Hardhead <i>Mylopharodon conocephalus</i>	-/SSC	Tributary streams in the San Joaquin River drainage; large tributary streams in the Sacramento River and the mainstem; resides in low to mid-elevation streams and prefers clear, deep pools and runs with slow velocities; also occurs in reservoirs.	Habitat Present	Sacramento River within the BSA provides migration and rearing habitat.

Common Name Scientific Name	Legal Status (Federal/State)	General Habitat Description	Habitat Present/Absent	Rationale
Pacific lamprey <i>Entosphenus tridentata</i>	FSC/SSC	Occurs in streams and rivers below impassable barriers throughout coastal California and in rivers in the Central Valley, including the Sacramento River; habitat requirements are similar to those of Pacific salmonids; adults live in the ocean and migrate into fresh water to spawn in gravel streams with cold, clear water; ammocoetes (larvae) live in freshwater 5–7 years and require suitable conditions year-round for rearing, including backwater habitats with soft substrates (Moyle 2002; Moyle et al. 2015).	Habitat Present	Sacramento River within the BSA provides migration and rearing habitat.
Western river lamprey <i>Lampetra ayresi</i>	–/SSC	Sacramento, San Joaquin, and Napa Rivers; tributaries of San Francisco Bay (Moyle 2002; Moyle et al. 1995); adults live in the ocean and migrate into fresh water to spawn.	Habitat present	Sacramento River within the BSA provides migration and rearing habitat.

Sources: Moyle 2002; Moyle et al. 1995; Moyle et al. 2015; USFWS 2017.

Note: Habitat absent—no habitat present and no further work needed. Habitat present—habitat is, or may be, present. The species may be present.

^a Status explanations:

Federal

- E = Listed as endangered under the federal Endangered Species Act (FESA).
- T = Listed as threatened under FESA.
- FC = Federal candidate for listing under FESA.
- D = Delisted from FESA.
- FSC = Species of concern.
- = No listing.

State

- E = Listed as endangered under the California Endangered Species Act (CESA).
- T = Listed as threatened under CESA.
- P = 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.

2.3.3.3 Environmental Consequences

Build Alternatives

The effects of each build alternative are similar in type and intensity; but where effects are unique, they are called out in the discussions below.

Wildlife Species

The permanent and temporary impacts on land cover types in the BSA that provide habitat for wildlife species are listed in Table 2.3.3-2. The table is referenced for each wildlife species discussed below. Impacts on land cover type were calculated for both the interim year and the design year (see Figures 2.3.1-1 and 2.3.1-2). The project may be constructed in two phases or in a single phase. If constructed in two phases the new bridge and approach roadways would be constructed in the first phase. The areas of impacts for the interim phase and the ultimate design year phase shown in Table 2.3.3-2 should not be considered additive. The impact acreages are intended to provide worst-case scenarios; the amount of additional impact that would occur during a second phase of construction would be driven by the extent of redevelopment and implementation of the approved mobility network in the Pioneer Bluff area of West Sacramento at the time construction of the second phase occurs. Actual impacts are expected to be further reduced by avoidance of trees and other vegetation within temporary work areas.

Table 2.3.3-2. Permanent and Temporary Impacts on Land Cover Types in the Biological Study Area

Impacts by Alternative	Land Cover Type				
	Cottonwood Riparian Forest ^a	Perennial Stream ^a	Ruderal	Landscaped	Total
Alternative B, Interim Year					
Permanent impact (acres)	1.112	0.432	2.655	1.704	5.903
Temporary impact (acres)	0.786	4.729	1.035	1.284	7.834
Alternative B, Design Year					
Permanent impact (acres)	1.112	0.432	2.661	1.801	6.006
Temporary impact (acres)	0.786	4.729	1.030	1.279	7.824
Alternative C, Interim Year					
Permanent impact (acres)	1.176	0.482	1.838	2.160	5.656
Temporary impact (acres)	1.149	4.969	0.822	1.289	8.229
Alternative C, Design Year					
Permanent impact (acres)	1.176	0.482	1.843	2.136	5.637
Temporary impact (acres)	1.149	4.969	0.871	1.318	8.307

^a These are sensitive natural communities. If the project is constructed in two phases, impacts on sensitive natural communities would occur in the first phase of construction; no additional impact would occur for construction of the second phase.

Western Pond Turtle

Table 2.3.3-2 lists the permanent and temporary impacts on perennial stream, cottonwood riparian, and ruderal areas that could be used by western pond turtle for nesting.

Alternative B would affect potential western pond turtle aquatic habitat (Sacramento River) and nesting habitat (cottonwood riparian forest and ruderal) on both sides of the Sacramento River. Alternative B also would reduce the amount of basking habitat on the margins of the river by shading out the banks and removing natural areas (exposed banks and woody debris) that may be used for basking substrates.

The proposed project (both build alternatives) 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 riverbanks. 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.

Alternative C would similarly affect western pond turtle but would result in greater permanent and temporary impacts on habitat for the species than Alternative B.

Both project alternatives have a potential to result in adverse effects on western pond turtle.

White-Tailed Kite

Alternative B would affect potential white-tailed kite habitat on both sides of the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian habitat that could be used by white-tailed kite for nesting. The alternative also would result in removal of several individual trees within landscaped areas.

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 young mortality. 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 in proximity to an active nest are expected to exceed existing levels of noise disturbance. Bridge construction would require impact pile driving to be spread out over two summer construction seasons. These loud noises could startle white-tailed kite beyond the BSA and disrupt normal behaviors, including nesting.

Vehicle traffic on the new bridge could result in some amount of increased disturbance to white-tailed kite nesting and roosting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be substantial.

Alternative C would similarly affect white-tailed kite but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. See Table 2.3.3-2 for a list of the permanent and temporary impacts on cottonwood riparian habitat that could be used by white-tailed kite for nesting.

Both project alternatives have a potential to result in adverse effects on white tailed kite.

Migratory Birds

Alternative B 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 during both interim and ultimate design years.

Vehicle traffic on the new bridge could result in some amount of increased disturbance to birds nesting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be substantial.

Alternative C would similarly affect migratory birds but would result in greater permanent and temporary impacts on habitat for migratory birds than Alternative B. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian forest and landscaped areas that provide potential nesting habitat for migratory birds.

Both project alternatives have a potential to result in adverse effects on migratory birds.

Bats

Cottonwood riparian forest, individual trees in landscaped areas, and buildings, which represent potential roosting habitat for special-status bats in the BSA, would be removed under Alternative B. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian under Alternative B.

Project construction could result in injury or mortality to the species, including special-status species, if occupied roost sites are removed at times when bats are not awake and active (e.g., early in the day, in periods of cold weather).

Alternative C would similarly affect special-status bats but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian forest that provides suitable tree roosting habitat for special-status bat species.

Both project alternatives have a potential to result in adverse effects on bats.

Fish Species

Potential project effects on non-listed, 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, and artificial lighting). Long-term effects (addition of overwater structure, loss of aquatic habitat [substrate and water column], and 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.

It should be noted that the impacts on fish species and their habitat from project construction discussed below would be the same whether the project is constructed in two phases or a single phase) as the design and construction methods for the new bridge would be the same regardless of future conditions. However, impacts on fish and their habitat would vary according to bridge design (bascule, vertical lift, or swing) and build alternative; these differences are described below.

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, except where noted. 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

Pile driving and other sources of anthropogenic noise have the potential to adversely affect fish through a broad range of behavioral, physiological, or physical effects (McCauley et al. 2003; Popper and Hastings 2009). These effects may include behavioral responses, physiological stress, temporary and permanent hearing loss, tissue damage (auditory and non-auditory), and direct mortality depending on the intensity and duration of exposure. In salmonids, the presence of a swim bladder to maintain buoyancy increases their vulnerability to direct physical injury (i.e., tissue and organ damage) from underwater noise (Hastings and Popper 2005). Underwater noise also may damage hearing organs and temporarily affect hearing sensitivity, communication, and the ability to detect predators or prey (Popper and Hastings 2009). In addition, underwater noise may cause behavioral effects (e.g., startle or avoidance responses) that can disrupt or alter normal activities (e.g., migration, holding, or feeding) or expose individuals to increased predation (Voellmy et al. 2014; Simpson et al. 2016).

Among the construction activities likely to generate noise, the use of impact hammers for pile installation poses the greatest risk to fish because the levels of underwater noise produced by impulsive types of sounds can reach levels of sufficient intensity to injure or kill fish (Popper and Hastings 2009). Factors that may influence the potential for injury 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.

The pile driving assumptions, hydroacoustic thresholds, and methods used to evaluate the potential for injury to fish from exposure to pile driving sounds are presented in the NES technical report prepared for the project (ICF 2020a); the NES is available in Appendix S (see Section 4.4.1.2, *Project Impacts*).

The primary source of underwater noise associated with constructing either one of three alternative bridge types (i.e., bascule, vertical lift, or swing) would be driving the 238 16-inch steel pile or 16-inch steel H-piles with an impact hammer for the temporary trestles and work platforms, the 16 16-inch spud piles for the barges, the 20–40 (depending on bridge type) 16-inch steel pipe piles in water for the two in-water piers (i.e., piers 4 and 5), the 40 16-inch steel pipe piles on land for the two in-levee abutments (i.e., abutments 1 and 6), the 6–18 (depending on bridge type) 60-inch CISS piles for the two in-water piers (i.e., piers 2 and 3) for the movable span, and the 60 14-inch square concrete or 16-inch steel pipe piles for the bridge fender system. Additional sources of underwater noise associated with the project would occur during 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 4 and 5. Only driving of piles with an impact hammer is expected to produce sound levels that could result in injury to fish. Table 2.3.3-3 summarizes the pile driving activities (location, timing, and duration) associated with constructing the new bridge.

Table 2.3.3-3. Summary of Pile Driving Activities with Potential to Affect Fish

Activity	Location	Approximate Timing	Approximate Duration (days)
Vibratory and impact driving of 16-inch steel pipe or H-piles for construction trestle	On land and in water	Season 1, May 3–May 21	20
Vibratory and impact driving of 16-inch steel pipe piles for temporary barges	In water	Seasons 1 and 2, May 1–October 27	10
Vibratory driving of sheet piles for cofferdams	In water	Season 1, May 24–June 4	12
Vibratory and impact driving of 16-inch steel pipe piles for fixed span (piers 4 and 5)	In water	Season 1, June 7–June 11	5
Vibratory and impact driving of 16-inch steel pipe piles for abutments 1 and 6	On land	Season 1, June 8–June 14	5
Removal of sheet piles with vibratory driver	In water	Season 1, July 12–July 23	12
Vibratory and impact driving of 60-inch CISS piles for movable span (piers 2 and 3)	In water	Season 1, May 24–August 13	10
Vibratory and impact driving of 14-inch concrete or 16-inch steel pipe piles for bridge fender system	In water	Season 2, September 25–October 6	6
Removal of 16-inch steel pipe or H-piles for construction trestle with vibratory driver	In water	Season 2, September 25–October 17	20

The methods and assumptions used to evaluate the potential for injury to fish from exposure to pile driving sounds are described in the NES (Appendix S, see Section 4.4.1.2, *Project Impacts*).

Based on hydroacoustic measurements from similar types of pile driving operations, underwater noise produced by impact pile driving is expected periodically to reach levels in the Sacramento River that exceed the injury and behavioral thresholds for fish. For the largest piles (60-Inch CISS piles for Piers 2 and 3), cumulative SELs exceeding the 183-dB and 187-dB injury thresholds are predicted to occur within a radius of 7,067 feet from the source pile, assuming an unimpeded propagation path. The use of an attenuation device is expected to reduce this distance by more than 50 percent. Distances to injury and behavioral thresholds without and with attenuation for impact driving for the temporary construction trestles; temporary barge spud piles; the 60-Inch CISS and 16-inch steel pipe piles for a bascule, vertical lift, and swing bridge; and the 14-inch-square concrete or 16-inch-diameter steel pipe piles for the bridge fender system are in the NES (Appendix S, Tables 4-11 through 4-14).

Although underwater noise levels exceeding the injury thresholds would be limited to the proposed in-water construction season (May 1 to November 30), small proportions of adult and juvenile salmonids that may be migrating or rearing in the BSA after May 1 may be adversely affected (impacts on fall- and late fall–run Chinook salmon are described below). The potential for injury would occur over an estimated 50-day period during installation of the temporary trestle piles and permanent bridge piles (from approximately May 1 to August 15 in the first year of construction) and during an estimated 6-day period during installation of the bridge fender piles (from late September to early October in the second year of construction). In addition, the potential for injury would occur periodically during installation of the temporary barge spud piles (from May 1 to November 30 in the first and second in-water construction seasons).

The potential for behavioral effects would occur during the same periods described above for noise levels exceeding the injury thresholds in the first and second in-water construction seasons. Noise levels exceeding the behavioral threshold of 150 dB root mean square (RMS) potentially would extend much

farther from the source than would noise levels exceeding the injury thresholds, although river bends located approximately 1,900 feet downstream and approximately 6,000 feet upstream of the proposed location of pile driving activity likely would limit the extent of these noise levels and associated behavioral effects. Species-specific effects on fall- and late fall–run Chinook salmon related to pile driving noise are described below.

Fall-Run Chinook Salmon. Impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season would overlap the latter few months of the juvenile migration season and the beginning of the adult migration season, thereby potentially exposing juvenile and adult fall-run Chinook salmon migrating in the Sacramento River from May to August and from June to August, respectively, to underwater sound levels that exceed the injury and behavioral thresholds for fish (Appendix S, Tables 4-3 and 4-5). Any impact driving of spud piles for the temporary barges in October or November in either construction season and impact driving of the bridge fender piles in late September and early October in the second in-water construction season would not be expected to expose juvenile fall-run Chinook salmon to underwater sound levels that exceed the injury and behavioral thresholds for fish because pile driving would occur when juvenile fall-run Chinook salmon are not expected to be present in the BSA (Appendix S, Table 4-5). However, impact driving of spud and fender piles during this timeframe would expose adults to these underwater sound levels (Appendix S, Table 4-3).

Late Fall–Run Chinook Salmon. Impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season would overlap the beginning of the juvenile migration season, thereby avoiding exposing most juvenile late fall–run Chinook salmon in the Sacramento River to underwater sound levels that exceed the injury and behavioral thresholds for fish (Appendix S, Table 4-6). However, impact driving of any spud piles for the temporary barges in October or November in either construction season and impact driving of the bridge fender piles in late September and early October in the second in-water construction season would expose a small proportion of juvenile and adult late fall–run Chinook salmon in the Sacramento River to underwater sound levels that exceed the injury and behavioral thresholds for fish (Appendix S, Tables 4-3 and 4-6).

Fish Entrapment in Cofferdams

Cofferdams would be required in order to construct piers 4 and 5 for the new bridge. Cofferdams would be constructed of sheet piles; when installed, each cofferdam would be approximately 35 feet wide and 95 feet long. The potential exists for entrapment and mortality of fish following cofferdam closure and dewatering. The proposed timing of cofferdam installation (late May to early June) would avoid the primary period of occurrence of juvenile Chinook salmon in the Sacramento River; however, the potential would remain for some juvenile salmon to become entrapped in the cofferdams.

Direct Physical Injury

During construction of the new bridge, fish could be injured or killed by direct contact with equipment or materials that enter or operate within the open waters of the Sacramento River. Potential mechanisms include fish being crushed by falling rock (riprap), impinged by piles, or struck by propellers related to barge operations. Restriction of in-water activities to May 1 to November 30 would avoid the primary migration and rearing periods of anadromous salmonids, including fall- and late fall–run Chinook salmon, in the Sacramento River. Based on the general timing of migration of adult and juvenile salmonids in the BSA, the potential for exposure for most life stages would occur in May to mid-August, October, and November when in-water activities with the greatest potential to cause direct physical injury would occur. However, most Chinook salmon that are likely to be present in the BSA during in-water construction activities are likely to be large, migrating adults and juveniles that would be expected to avoid or move away from active construction areas.

Transporting of the four barges also would increase the frequency of wave-induced shoreline disturbances, which could adversely affect rearing juvenile salmonids that depend on shallow nearshore areas for resting, feeding, and protection from predators. The estimated total of eight barge-trips per season (four in May as the barges are brought to the work site and four in November as the barges are removed from the work site at the end of the construction season) and periodic repositioning of the barges during the in-water construction season suggests that any increases in injury, disturbance, or mortality of Chinook salmon would be expected to be small.

Water Quality Impacts

Erosion and Mobilization of Sediment

Site clearing, earthwork, driving of permanent piles, driving and removal of piles for the temporary trestles and barges, vibrating and removal of sheet piles for cofferdams, and installation of RSP would result in disturbance of soil and riverbed sediments, potentially 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 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 (described below), 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 also may 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 also can smother aquatic invertebrates (a fish food item), degrade forage habitat, and reduce cover for juvenile fish.

Increased Exposure to Contaminants

Disturbance and resuspension of river bottom sediments during in-water construction pose a risk to juvenile and adult winter-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 a 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, and 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. Restricting in-water construction to the May 1 to November 30 window would minimize or avoid exposure of most juvenile Chinook salmon to contaminants because they occur less frequently in the Sacramento River during this time of year (Appendix S, Tables 4-2 through 4-7). However, these activities would overlap most of the adult fall-run Chinook salmon migration season and the beginning of the adult late fall-run Chinook salmon migration season (Appendix S, Table 4-3).

In-water construction would be limited to pile driving, installation and removal of sheet piles for cofferdams, and placement of RSP. These activities would be limited to daylight hours each day. Thus, disturbance of channel substrate and the potential for increased contaminants would be temporary (up to 12 hours each day) and localized. 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 salmonids between May 1 and November 30, the effect of contaminants mobilized by in-water construction is not expected to significantly affect the survival or growth of adult or juvenile salmonids.

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. The operation of heavy equipment, cranes, pile drivers, drilling rigs, barges, and other construction equipment during vegetation removal, excavation, and bridge construction could 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 the 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).

Temporary Disturbance to and Permanent Loss of Aquatic Habitat

The proposed project would result in temporary disturbance to and permanent loss of aquatic habitat area and volume, including foraging and rearing habitat for juvenile Chinook salmon and steelhead.

Table 2.3.3-4 shows the temporary and permanent loss of aquatic habitat that would result from constructing the proposed project.

Table 2.3.3-4. Amount of Temporarily and Permanently Affected Aquatic Habitat in the Sacramento River

Feature/Habitat	Temporary Impact		Permanent Impact	
	Alternative B	Alternative C	Alternative B	Alternative C
Temporary Cofferdams				
Substrate area (square feet [acre])	6,650 (0.15)	9,000 (0.21)	NA	NA
Water column volume (cubic feet)	325,850	441,000	NA	NA
Temporary Trestle Piles				
Substrate area (square feet [acre])	327 (0.007)	327 (0.007)	NA	NA
Water column volume (cubic feet)	16,023	16,023	NA	NA
Temporary Barge Spud Piles				
Substrate area (square feet [acre])	22 (0.0005)	22 (0.0005)	NA	NA
Water column volume (cubic feet)	1,078	1,078	NA	NA
Piers 2 and 3				
Substrate area (square feet [acre])	NA	NA	13,500 (0.31) ^a	13,500 (0.31) ^a
Water column volume (cubic feet)	NA	NA	661,500 ^a	661,500 ^a
Piers 4 and 5				
Substrate area (square feet [acre])	NA	NA	360 (0.01)	360 (0.01)
Water column volume (cubic feet)	NA	NA	17,640	17,640
Piles for Bridge Fender System				
Substrate area (square feet [acre])	NA	NA	84 (0.002)	84 (0.002)
Water column volume (cubic feet)	NA	NA	4,106	4,106
Shoreline Rock Revetment (RSP)				
Substrate area (square feet [acre])	NA	NA	24,126 (0.55)	19,431 (0.45)
Total				
Substrate area (square feet [acre])	6,999 (0.16)	9,349 (0.21)	38,070 (0.87)	33,375
Water column volume (cubic feet)	342,951	458,101	683,246	683,246

NA = not applicable.

RSP = rock slope protection.

^a Assumes bascule bridge type (worst-case scenario).

Installation of sheet pile cofferdams to isolate the in-water construction areas for piers 4 and 5 from the water column during pier construction, installation of piles for the temporary trestles, and periodic installation of spud piles for the temporary construction barges would result in temporary disturbance to aquatic habitat equal to the cumulative area (substrate) and volume (water column) of the piles and dewatered cofferdams. The temporary cofferdams would remain in place for 2 months in the first in-water construction season, while barge spud piles would remain in place from May 1 to November 30 in the first and second in-water construction season. The temporary trestle piles would remain in place throughout the duration of construction.

Installation of the new bridge piers (piers 2 through 5) and piles for the new bridge fender system would result in 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. Placement of rock

revetment (riprap) on the waterside slope of the new bridge abutments below the OHWM also would result in permanent loss of natural substrate habitat equal to the net increase in area of rock revetment.

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 2.3.5, *Threatened and Endangered Species*, would offset the effects of permanent impacts on the substrate and water column resulting from construction of the new bridge piers and installation of RSP.

Temporary and Permanent Loss of Riparian Vegetation (Including SRA Cover)

Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in permanent loss of up to 1.273 acres and temporary disturbance to up to 0.625 acre of cottonwood riparian forest within the BSA, of which approximately 0.368 acre is below the OHWM and contributes to overhead (shade) and instream 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 and the bikeways that would pass under the east end of the bridge structure in the City of Sacramento and the west end of the bridge structure in the City of West Sacramento (see exhibits in Appendix A). The temporary disturbance to 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 temporary disturbance to up to 330 linear feet and permanent loss of up to 302 linear feet of overhead SRA cover (shade) along the summer (low-flow) shoreline of the Sacramento River (Table 2.3.3-5).

Table 2.3.3-5. Temporary and Permanent Impacts on Overhead Shaded Riverine Aquatic Cover Vegetation in the Biological Study Area

Location	Shaded Riverine Aquatic Cover			
	Temporary Disturbance (feet)		Permanent Loss (feet)	
	Alternative B	Alternative C	Alternative B	Alternative C
West riverbank	90	297	125	224
East riverbank	240	290	177	275
Total	330	587	302	499

Riparian vegetation is important in controlling stream bank erosion, contributing to instream structural diversity, and maintaining undercut banks in the absence of RSP. 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 and instream woody material (e.g., submerged branches, roots, and logs).

Without appropriate mitigation, removal of streamside vegetation is likely to adversely affect anadromous salmonids and other fish species because riparian and SRA cover habitats are essential components of salmonid rearing habitat that may limit the production and abundance of salmonids 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, as a 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 2015), for which “no net loss of in-kind habitat value” is recommended (46 FR 7644, January 23, 1981). In addition, NMFS typically recommends revegetating onsite at a 3:1 ratio (three units replaced for every one unit of affected habitat) with native riparian species to facilitate the development of SRA cover habitat.

Increases in Impervious Surface Area and Storm Water Runoff

The proposed project would result in 2 acres of added impervious surface area that could increase runoff volume to 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 then could 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 generally are 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 and roadway modifications would add impervious surface area, the proposed project would not substantially increase impervious surface area in the watershed relative to existing conditions. Furthermore, the purpose of the new bridge is to improve the connectivity across the river, thereby reducing the trip lengths currently required to cross the river via one of the other three bridges in the project vicinity (i.e., Pioneer, Tower, or I Street). Nevertheless, it is anticipated that the new bridge would result in some added vehicle trips across the river because of the increased convenience the new bridge would offer, thereby potentially increasing the pollutant load that currently is delivered to the river. Because the added vehicle trips are not anticipated to substantially increase the amount of pollutants, the proposed project is not anticipated to contribute to a cumulative water quality impact during operations.

Increase in Overwater Structure (Artificial Shade)

The proposed project would result in temporary and permanent shading of aquatic habitat in the Sacramento River, including foraging and rearing habitat for juvenile Chinook salmon. Table 2.3.3-6 shows the temporary and permanent shading of aquatic habitat that would result from constructing the proposed project.

Table 2.3.3-6. Amount of Artificial Overwater Structure (Shade) Created on the Sacramento River in the Biological Study Area

Overwater Structure	Square Feet (acre) of Shaded Area	
	Alternative B (Barge/Trestle/Bridge)	Alternative C (Barge/Trestle/Bridge)
Barges (temporary)	36,000 (0.83)	36,000 (0.83)
Trestle (temporary)	33,500 (0.77)	33,500 (0.77)
Bridge (permanent)	56,000 (1.29)	56,800 (1.30)
Total		
Net change (temporary)	69,500 (1.60)	69,500 (1.60)
Net change (permanent)	56,000 (1.29)	56,800 (1.30)

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 the primary productivity of affected habitats. Temporary shading also could increase the number of predatory fishes (e.g., striped bass, largemouth bass) holding in the BSA 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; shading created by the new bridge would be permanent.

The permanent shading created by the new bridge could permanently affect the migration of adult and juvenile Chinook salmon and steelhead, and other species in the Sacramento River. In the Sammamish River in Washington State, migrating adult salmon were observed to hold in shaded areas beneath bridges (Carrasquero 2001). Juvenile salmonids also prefer shaded areas created by bridges, which may make them more vulnerable to predatory fish (e.g., striped bass, Sacramento pikeminnow, and largemouth bass) that also prefer structural and overhead cover (e.g., artificial shade) for ambushing prey. 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.

Introduction of Aquatic Invasive Species

During construction, operation of barges and other in-water equipment originating from regions or areas outside the project region could result in the introduction and spread of aquatic invasive species, 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 adversely affect native fishes by affecting the

migratory behavior of juvenile fish; altering the behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats; or making juvenile fish more visible to predators, thereby leading to increased mortality of fish through increased predation (Tabor et al. 2001).

White Sturgeon

Project impacts on white sturgeon would be similar to those described for fall- and late fall–run Chinook salmon, although white sturgeon have the potential to be present in the BSA year-round. The proposed project has the potential to affect white sturgeon in the Sacramento River through (1) exposure to underwater noise and vibration during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment, contaminant spills, increased exposure to contaminants from disturbance, and resuspension of river bottom sediments), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles and barges); (2) temporary and permanent effects on riparian, SRA cover, and floodplain habitat (vegetation removal, bridge and bike trail construction); and (3) permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP). Because white sturgeon are not listed under FESA, no take would be associated with implementation of the project.

Sacramento Splittail, Sacramento Hitch, and Hardhead

Project impacts on Sacramento splittail, Sacramento hitch, and hardhead would be similar to those described for fall- and late fall–run Chinook salmon. In addition, because Sacramento splittail and Sacramento hitch may spawn in the BSA, the proposed project has the potential to affect splittail and hitch eggs and larvae, and spawning habitat in the Sacramento River through (1) exposure to underwater noise and vibration during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment, contaminant spills, increased exposure to contaminants from disturbance and resuspension of river bottom sediments), rearing and movement habitat (noise and shade), and channel substrates (cofferdams, and temporary trestles and barges); (2) temporary and permanent effects on riparian, SRA cover, and floodplain habitat (vegetation removal, bridge and bike trail construction); and (3) permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP). Because Sacramento splittail, Sacramento hitch, and hardhead are not listed under FESA, no take would be associated with implementation of the project.

Pacific Lamprey, Western River Lamprey

Project impacts on Pacific lamprey and western river lamprey would be similar to those described for fall- and late fall–run Chinook salmon, although lamprey are likely to be present in the BSA year-round as ammocoetes (larvae) living in the soft-bottomed substrates of the Sacramento River. The proposed project has the potential to affect Pacific lamprey and western river lamprey through (1) exposure to underwater noise and vibration during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment, contaminant spills, increased exposure to contaminants from disturbance and resuspension of river bottom sediments), rearing and movement habitat (noise and shade), and channel substrates (cofferdams, and temporary trestles and barges); (2) temporary and permanent effects on riparian, SRA cover, and floodplain habitat (vegetation removal, bridge and bike trail construction); and (3) permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP). Because Pacific lamprey and western river lamprey are not listed under FESA, no take would be associated with implementation of the project.

Alternative C would similarly affect non-listed, special-status fish species with respect to pile driving noise, water quality impacts, fish entrapment in cofferdams, and direct physical injury because the proposed bridge would be similar to the bridge proposed under Alternative B (see exhibits in

Appendix A). However, Alternative C would result in greater temporary impacts on substrate and water column habitat, fewer permanent impacts on substrate habitat from RSP placement, greater permanent and temporary impacts on riparian habitat, greater impacts on SRA cover habitat along the Sacramento River, slightly greater permanent shade impacts on the Sacramento River, and a slightly greater amount of added impervious surfaces. These impacts are discussed below.

Installation of sheet pile cofferdams to isolate the in-water construction areas for piers 4 and 5 from the water column during pier construction would result in temporary disturbance of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the in-water cofferdams (see exhibits in Appendix A). The proposed dimensions of each cofferdam are 45 feet by 10 feet, or 4,500 square feet. Together, the two cofferdams would result in temporary disturbance of 9,000 square feet (0.21 acre) of substrate habitat and up to 441,000 cubic feet of water column habitat below the OHWM (based on a water surface elevation of +19 feet) (Table 2.3.3-4).

Up to 861 linear feet of shoreline (395 linear feet on the City of Sacramento shoreline and 466 linear feet on the City of West Sacramento shoreline), covering up to 19,431 square feet (0.45 acre) of the bank below the OHWM, would be lined with RSP (Table 2.3.3-4). A total of 2,375 cubic yards of RSP would be placed below the OHWM, and a total of 3,592 cubic yards would be placed above the OHWM. The RSP above and below the OHWM would cover a total of 48,818 square feet (1.12 acre).

Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in permanent loss of up to 1.290 acres and temporary disturbance to up to 1.035 acres of cottonwood riparian forest within the BSA, of which approximately 0.352 acre is below the OHWM and contributes to overhead (shade) and instream SRA cover. Clearing of the existing cottonwood riparian forest that contributes to SRA cover would result in temporary disturbance to up to 587 linear feet and permanent loss of up to 499 linear of overhead SRA cover (shade) along the summer (low-flow) shoreline of the Sacramento River (Table 2.3.3-5).

Alternative C would result in 1.30 acre of permanent shading on the Sacramento River (0.01 acre more than would occur under Alternative B) (Table 2.3.3-6) and 2.2 acres of added impervious surface (i.e., 0.2 acre more than would occur under Alternative B).

No Build Alternative

Under the No Build Alternative, the proposed bridge and roadway connections would not be constructed. Redevelopment would occur in both West Sacramento and Sacramento, as planned by both Cities, that could affect animal species and their habitat. However, habitat loss would not occur as a result of a new river crossing.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following measures, and the environmental commitments included in Chapter 1, *Proposed Project*, related to in-water work windows and sound and shock level minimization, would avoid and minimize adverse effects. Compensatory mitigation for loss of cottonwood riparian forest and other protected trees also would mitigate for adverse effects on habitat for animal species.

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included in Section 2.3.1.4, *Avoidance, Minimization, and/or Mitigation Measures*.

Avoidance and Minimization Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included in Section 2.3.1.4, *Avoidance, Minimization, and/or Mitigation Measures*.

Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included in Section 2.3.1.4, *Avoidance, Minimization, and/or Mitigation Measures*.

Avoidance and Minimization Measure AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures

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, riverbanks, 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 (Measure NC-2) 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 verify 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) are prudent.

Avoidance and Minimization Measure AS-2: 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 Measure AS-3 (Swainson's hawk), Measure AS-4 (nesting birds), and Measure AS-5 (roosting bats).

Avoidance and Minimization Measure AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite 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 potentially could abandon the nest). The monitor will work closely with the contractor, the project proponent, and CDFW to develop plans for minimizing disturbance (e.g., 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.

Avoidance and Minimization Measure AS-4: 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 under Measure TE-2 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 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.

Avoidance and Minimization Measure AS-5: 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/or any building demolition, a qualified biologist will examine trees to be removed or trimmed and buildings planned for demolition with suitable bat roosting habitat. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, abandoned buildings, and attics) will be identified, and the area around these features will be searched for bats and bat sign (e.g., guano, culled insect parts, and staining). Riparian woodland

and stands of mature broadleaf trees will be considered potential habitat for solitary foliage-roosting bat species.

If suitable roosting habitat or bat sign is detected, biologists will conduct an evening visual emergence survey of the source habitat feature, from 1-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 will document the results in a report.

Timing of Tree Removal and Building Demolition

Exclusion devices will be installed on trees and buildings planned for removal and demolition 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 the 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 building demolition, 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 removed 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 in order 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 the 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 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.

Avoidance and Minimization Measure AS-6: 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 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.
- 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 32,000 strikes per day (i.e., 1,600 hammer strikes per pile, per day) for piles for the temporary trestles), 20,000 strikes per day (i.e., 1,000 hammer strikes per pile, per day) for the piles for the bridge fender system, 12,800 strikes per day (i.e., 1,600 hammer strikes per pile, per day) for piles for the fixed span piers, and 6,000 strikes per day (i.e., 1,500 strikes per pile, per day) for the CISS piles for the movable span piers.
- During impact driving, the project proponent will require the contractor to use a bubble curtain or dewatered cofferdam to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded (see Chapter 1, *Environmental Commitments*, and NES Section 4.4.1.2, *Project Impacts*).
- 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.

Avoidance and Minimization Measure AS-7: Develop and Implement a Hydroacoustic Monitoring Plan

The project proponent or their 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 or their contractor will monitor underwater noise levels during all impact pile driving activities on land and in water to ensure that peak and cumulative SELs do not exceed estimated values (see NES Tables 4-10 through 4-14).
- 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 sound pressure level, sound exposure level, and root mean square per strike; and the accumulated sound exposure level per day at each monitoring station.

- The project proponent or their contractor will ensure that a qualified fish biologist is onsite 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 or their contractor will reduce the number of strikes per day to ensure that fish are no longer showing signs of stress, injury, or mortality.

Avoidance and Minimization Measure AS-8: Monitor Turbidity in the Sacramento River

The project proponent will require their 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, and 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 the thresholds derived from the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region* (Central Valley Regional Water Quality Control Board 2018). If it is determined that turbidity levels exceed the Basin Plan thresholds, the project proponent or their contractor will adjust work to ensure that turbidity levels do not exceed the Basin Plan thresholds.

Avoidance and Minimization Measure AS-9: 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 pumps.
- Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure to minimize the duration that fish are trapped in the cofferdam.

Avoidance and Minimization Measure AS-10: Prepare and Implement a Fish Rescue and Relocation Plan

The project proponent or their 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 found trapped within cofferdams. Capture methods may include seining, dip netting, and 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 or their 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 a 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.

Avoidance and Minimization Measure AS-11: Develop and Implement a Barge Operations Plan

The project proponent or their contractor will develop and implement a barge operations plan. The barge operations 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 address the following.

- Bottom scour from propeller wash.
- Bank erosion or loss of submerged or emergent vegetation from propeller wash or excessive wake.
- Accidental material spillage.
- Sediment and benthic community disturbance from accidental or intentional barge grounding or deployment of barge spuds (extendable shafts for temporarily maintaining barge position) or anchors.
- Hazardous materials spills (e.g., fuel, oil, and hydraulic fluids).

The barge operations plan will serve as a guide to barge operations and to a biological monitor who will evaluate barge operations during construction with respect to stated performance measures. This plan, when approved by the resource agencies, will be read by barge operators and kept aboard all vessels operating at the construction site.

Avoidance and Minimization Measure AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species

The project proponent or their contractor will implement the following actions to prevent the potential spread or introduction of aquatic invasive species 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).

- Coordinate with the CDFW Invasive Species Program to ensure that the appropriate BMPs are implemented to prevent the spread or introduction of aquatic invasive species.
- Educate construction supervisors and managers about the importance of controlling and preventing the spread of aquatic invasive species.

- Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of aquatic invasive species.
- 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.

Avoidance and Minimization Measure AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The project proponent or their contractor will minimize or avoid the effects of permanent bridge lighting on special-status fish species by implementing the following actions.

- Minimize nighttime lighting of the bridge structure for aesthetic purposes.
- Use the minimal amount of lighting necessary to safely and effectively illuminate vehicular, bicycle, and pedestrian areas on the bridge.
- Shield and focus lights on vehicular, bicycle, and pedestrian areas away from the water surface of the Sacramento River, to the maximum extent practicable.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included in Section 2.3.1.4, *Avoidance, Minimization, and/or Mitigation Measures*.

Mitigation Measure NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat

The full text of this measure is included in Section 2.3.1.4, *Avoidance, Minimization, and/or Mitigation Measures*.

2.3.4 Threatened and Endangered Species

2.3.4.1 Regulatory Setting

FESA is the primary federal law protecting threatened and endangered species: 16 USC Section 1531 et seq. See also 50 CFR Part 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 this act, federal agencies, such as FHWA and Caltrans, as assigned, 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 to 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 or a Letter of Concurrence. Section 3 of FESA defines *take* as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, CESA, CFGC 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. Section 2080 of the CFGC prohibits take of any species determined to be an endangered species or a threatened species. *Take* is defined in Section 86 of the CFGC as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions, an Incidental Take Permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW also may authorize impacts on CESA species by issuing a Consistency Determination under Section 2080.1 of the CFGC.

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

2.3.4.2 Affected Environment

This section was prepared using information from the NES technical report and addendum prepared for the project (ICF 2020a, 2020b) and the USFWS and NMFS lists of threatened and endangered species for the project region (U.S. Fish and Wildlife Service 2021a, 2021b; National Marine Fisheries Service 2021) (included in Appendix I). The NES and addendum are available in Appendix S.

Wildlife Species

Information on the threatened and endangered wildlife species considered for analysis, general habitat descriptions, and their presence in the BSA are included in in Table 2.3.3-1; more detailed discussions on these species can be found in Appendix S. The threatened and endangered wildlife species carried forward for an analysis of impacts are VELB and Swainson’s hawk.

Fish Species

The Sacramento River in the BSA is used by a number of listed fish species and one candidate species, either as habitat during one or more of their life stages, or as a migration corridor to spawning and rearing habitat in the upper Sacramento River and its tributaries. These fish species include anadromous salmonids (winter- and spring-run Chinook salmon), green sturgeon, delta smelt, and longfin smelt (candidate species). The Sacramento River in the BSA also is federally designated critical habitat for Sacramento River winter-run Chinook salmon, Central Valley (CV) spring-run Chinook salmon, California Central Valley (CCV) steelhead, the southern DPS of green sturgeon, and delta smelt. Table 2.3.3-1 identifies the listed and candidate fish species that occur in the BSA of the Sacramento River. The life stage timing of these species in the BSA is shown in Appendix S, Table 4-3. A detailed life history description of each of these species also is presented in Appendix S.

2.3.4.3 Environmental Consequences

Build Alternative

Wildlife Species

Valley Elderberry Longhorn Beetle

Alternative B would not directly affect the elderberry shrub in the BSA but would result in the permanent loss and temporary loss of cottonwood riparian along the Sacramento River (see Table 2.3.3-2 in Section 2.3.4, *Animal Species*). This loss of riparian habitat could create permanent and temporary barriers to the dispersal of VELB along this riparian corridor and contribute to the already fragmented habitat and the isolation of existing populations.

If construction takes place during the flight season (March–July), it could disrupt VELB ability to disperse between the elderberry shrub in the BSA (if it later becomes occupied) and the nearby riparian habitat, as well as within the riparian habitat itself, and could result in injury and/or mortality from construction equipment.

Alternative C would similarly affect VELB but would result in greater permanent and temporary impacts on cottonwood riparian habitat along the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian forest that provides potential habitat for VELB.

Though both project alternatives have a potential to affect VELB, these potential effects are considered to be unlikely and in sum would not be adverse. Under the FESA, both alternatives would result in a *may affect, not likely to adversely affect* determination due to the low likelihood the species would occur in the BSA and taking into consideration the implementation of the avoidance and minimization measures provided below.

Swainson's Hawk

Alternative B (interim) would affect potential Swainson's hawk nesting habitat on both sides of the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian that could be used by Swainson's hawk for nesting. The alternative also would result in removal of several individual trees within ruderal and landscaped areas.

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. 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 in proximity to an active nest are expected to exceed existing levels of noise disturbance. Bridge construction would 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 potentially affect 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).

Vehicle traffic on the new bridge could result in some amount of increased disturbance to Swainson's hawk nesting and roosting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be substantial.

Alternative C would similarly affect Swainson's hawk but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. See Table 2.3.3-2 for a list of the permanent and temporary impacts on cottonwood riparian that could be used by Swainson's hawk for nesting.

Both alternatives have a potential to result in adverse effects on Swainson's hawk.

Fish Species

Potential project effects on listed 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, and artificial lighting). Long-term effects (e.g., addition of overwater structure, loss of aquatic habitat [substrate and water column], and 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.

It should be noted that the impacts on fish species and their habitat from project construction discussed below would be the same whether the project is constructed in two phases or a single phase) as the design and construction methods for the new bridge would be the same regardless of future conditions. However, impacts on fish and their habitat would vary according to bridge design (basculer, vertical lift, or swing) and build alternative; these differences are described below.

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 fall- and late fall-run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of

greatest concern would be the potential exposure of adult and juvenile winter-run Chinook salmon to harmful levels of underwater noise from impact pile driving.

Impact driving of any spud piles for the temporary barges in October or November in either in-water construction season and impact driving of the bridge fender piles in early October in the second in-water construction season would overlap the beginning of the juvenile and adult winter-run Chinook salmon migration season, thereby exposing a portion of the juvenile winter-run Chinook salmon migrating in the Sacramento River during these months to underwater sound levels that exceed the injury and behavioral thresholds for fish. Adults would be expected to tolerate higher sound pressures than the levels associated with the onset of injury in smaller fish, such as juveniles. 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 and other human-generated noises (Popper and Hastings 2009). Impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season is not expected to expose juvenile or adult winter-run Chinook salmon to underwater sound levels that exceed the injury and behavioral thresholds for fish because pile driving would occur when juvenile winter-run Chinook salmon are not expected to be present in the BSA.

The proposed project *is 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 trail 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 described in Section 2.3.5.4.

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 *is 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 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Impacts on designated critical habitat for winter-run Chinook salmon would be minimized or compensated for by implementing the measures described in Section 2.3.5.4.

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 fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of greatest concern would be the potential exposure of adult and juvenile CV spring-run Chinook salmon to harmful levels of underwater noise from impact pile driving.

Impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season would overlap the end of the juvenile migration season, thereby exposing a portion of the juvenile CV spring-run Chinook salmon migrating in the Sacramento River in May to underwater sound levels that exceed the injury and behavioral thresholds for fish. Similarly, impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season would overlap the latter half of the adult migration season. Any impact driving of spud piles for the temporary barges in October or November in either construction season and impact driving of the bridge fender piles in late September and early October in the second in-water construction season would not be expected to expose juvenile or adult CV spring-run Chinook salmon to underwater sound levels that exceed the injury and behavioral thresholds for fish because pile driving would occur when juvenile and adult CV spring-run Chinook salmon are not expected to be present in the BSA.

The proposed project *is likely to adversely affect* CV 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 CV spring-run Chinook salmon would be avoided, minimized, or compensated for by implementing the measures described in Section 2.3.5.4.

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 CV 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 CV spring-run Chinook salmon. Critical habitat for CV 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 *is likely to adversely affect* CV spring-run Chinook salmon designated critical habitat. Impacts on CV 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 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Impacts on designated critical habitat for CV spring-run Chinook salmon would be minimized or compensated for by implementing the measures described in Section 2.3.5.4.

California Central Valley Steelhead

Project impacts on CCV 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 fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of greatest concern would be the potential exposure of adult and juvenile CCV steelhead to harmful levels of underwater noise from impact pile driving.

Impact pile driving for the temporary trestles and the permanent bridge piles in the first in-water construction season would overlap the end of the juvenile and kelt (post-spawning adult) migration season, thereby exposing a portion of the juvenile CCV steelhead migrating in the Sacramento River in May and June and adult kelt migrating in the Sacramento River in May to underwater sound levels that exceed the injury and behavioral thresholds for fish. Any impact driving of spud piles for the temporary barges in October or November in either construction season and impact driving of the bridge fender piles in late September and early October in the second in-water construction season would be unlikely to expose a significant number of juvenile CCV steelhead to underwater sound levels that exceed the injury and behavioral thresholds for fish because pile driving would occur when juvenile CCV steelhead are expected to be least abundant in the BSA. However, these activities would occur during the peak upstream migration season for adults.

The proposed project *is likely to adversely affect* CCV 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 CCV steelhead would be avoided, minimized, or compensated for by implementing the measures described in Section 2.3.5.4.

California Central Valley Steelhead Critical Habitat

The Sacramento River within the BSA is included in the designated critical habitat for CCV 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 CCV 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 *is likely to adversely affect* CCV steelhead designated critical habitat. Impacts on CCV 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 CV fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Impacts on designated critical habitat for CCV steelhead would be minimized or compensated for by implementing the measures described in Section 2.3.5.4.

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 fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of greatest concern would be the potential exposure of adult and juvenile green sturgeon to harmful levels of underwater noise from pile driving activities for the temporary trestles and the permanent bridge piles in May–July in the first construction season, from impact driving of the spud piles for the temporary barges in November in either construction season, and from impact driving of the bridge fender piles in late September and early October in the second in-water construction season. 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 *is 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 described in Section 2.3.5.4.

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 *is 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 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Impacts on designated critical habitat for green sturgeon would be minimized or compensated for by implementing the measures described in Section 2.3.5.4.

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 fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of greatest concern would be the

potential exposure of spawning adults, eggs, and larvae, if present, to harmful levels of underwater noise from pile driving activities for the temporary trestles and the permanent bridge piles during May–July in the first construction season.

The proposed project *is 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 described in Section 2.3.5.4.

Delta Smelt Designated Critical Habitat

The Sacramento River within the BSA is 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) which is upstream of the BSA. 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 the OHWM and the entire water column, which is used by adults for migration and spawning and juveniles for rearing.

The project *is likely to adversely affect* delta smelt designated critical habitat. Impacts on delta smelt 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 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Impacts on designated critical habitat for delta smelt would be minimized or compensated for by implementing the measures described in Section 2.3.5.4.

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 fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*). Of greatest concern would be the potential exposure of spawning adults, eggs, and larvae to harmful levels of underwater noise from pile driving activities for the temporary trestles and the permanent bridge piles during May and June in the first construction season and from impact driving of the spud piles for the temporary barges in November in either construction season.

Because longfin smelt are not listed under FESA, no take would be associated with implementation of the project. However, potential effects on longfin smelt would be avoided, minimized, or compensated for by implementing the measures described in Section 2.3.5.4.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act of 1976, 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 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*).

The following environmental conditions potentially affect Pacific salmon EFH.

- Sedimentation and turbidity
- Hazardous materials and contaminants
- Pile driving noise
- Temporary and permanent loss of aquatic habitat
- Temporary and permanent loss of SRA cover habitat
- Permanent increase in overwater structure (artificial shade)

Effects on Pacific salmon EFH associated with sedimentation and turbidity, exposure to hazardous materials and contaminants, pile driving noise, and habitat loss would be temporary. Potential adverse effects on EFH of increased fine sediment and turbidity would 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. Potential adverse effects on EFH associated with pile driving noise would be limited to daylight hours only and to the time of year when Chinook salmon are least abundant in the action area.

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, and the increase in overwater structure (artificial shade); 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 2.3.5.4, also would benefit EFH for Chinook salmon.

Alternative C would similarly affect listed fish species with respect to pile driving noise, water quality impacts, fish entrapment in cofferdams, and direct physical injury because the proposed bridge would be similar to the bridge proposed under Alternative B (see exhibits in Appendix A). However, Alternative C

would result in greater temporary impacts on substrate and water column habitat, fewer permanent impacts on substrate habitat from RSP placement, greater permanent and temporary impacts on riparian habitat, greater impacts on SRA cover habitat along the Sacramento River, slightly greater permanent shade impacts on the Sacramento River, and slightly greater amount of added impervious surfaces, as discussed for fall- and late fall–run Chinook salmon (Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*).

Summary of FESA Preliminary Effect Findings

The FESA preliminary effect determinations for all federally listed species on the CNDDDB, USFWS, and NMFS species lists for the project area are shown in Table 2.3.4-1. On April 7, 2021, USFWS issued their Biological Opinion confirming the effects on VELB, delta smelt, and delta smelt critical habitat (see Appendix I).

Table 2.3.4-1. Preliminary Effect Determinations for Federally Listed Species

Common Name	Scientific Name	Status	Preliminary Effect Determination
Plants			
Palmate-bracted bird’s beak	<i>Chloropyron palmatum</i>	Endangered	No effect
Colusa grass	<i>Neostapfia colusana</i>	Threatened	No effect
Keck’s checkerbloom	<i>Sidalcea keckii</i>	Endangered	No effect
Crampton’s tuctoria	<i>Tuctoria mucronata</i>	Endangered	No effect
Invertebrates			
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Threatened	No effect
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	Endangered	No effect
Vernal pool tadpole shrimp	<i>Lepidurus packardi</i>	Endangered	No effect
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	Threatened	May affect, not likely to adversely affect
Amphibians			
California tiger salamander	<i>Ambystoma californiense</i>	Threatened	No effect
California red-legged frog	<i>Rana draytonii</i>	Threatened	No effect
Reptiles			
Giant gartersnake	<i>Thamnophis gigas</i>	Threatened	No effect
Birds			
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	No effect
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened	No effect
Least Bell’s vireo	<i>Vireo bellii pusillus</i>	Endangered	No effect
Fish			
Sacramento River winter-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Endangered	Likely to adversely affect
Sacramento River winter-run Chinook salmon designated critical habitat	NA		Likely to adversely affect
Central Valley spring-run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Threatened	Likely to adversely affect
Central Valley spring-run Chinook salmon designated critical habitat	NA		Likely to adversely affect
California Central Valley steelhead	<i>Oncorhynchus mykiss</i>	Threatened	Likely to adversely affect
California Central Valley steelhead designated critical habitat	NA		Likely to adversely affect

Common Name	Scientific Name	Status	Preliminary Effect Determination
Southern distinct population segment (DPS) of North American green sturgeon	<i>Acipenser medirostris</i>	Threatened	Likely to adversely affect
Southern DPS of North American green sturgeon designated critical habitat	NA		Likely to adversely affect
Delta smelt	<i>Hypomesus transpacificus</i>	Threatened	Likely to adversely affect
Delta smelt designated critical habitat	NA		Likely to adversely affect

No Build Alternative

The No Build Alternative would not result in construction impacts, habitat modification or increases in impervious surfaces or overwater structure (shade). Therefore, the No Build Alternative would not directly affect threatened or endangered species.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the measures below, the environmental commitments included in Chapter 1, *Proposed Project*, related to in-water work windows and sound and shock level minimization, and the measures contained in the Biological Opinions issued for the project, would reduce and compensate for the project’s adverse effects. The applicable measures below are consistent with the measures contained in the USFWS Biological Opinion (Appendix I).

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included in Section 2.3.1.4.

Avoidance and Minimization Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included in Section 2.3.1.4.

Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included in Section 2.3.1.4.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included in Section 2.3.1.4.

Avoidance and Minimization Measure AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-3: Monitor Active Swainson’s Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-7: Develop and Implement a Hydroacoustic Monitoring Plan

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-8: Monitor Turbidity in the Sacramento River

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-9: Implement Cofferdam Restrictions

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-10: Prepare and Implement a Fish Rescue and Relocation Plan

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-11: Develop and Implement a Barge Operations Plan

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The full text of this measure is included in Section 2.3.3.4.

Avoidance and Minimization Measure TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle

The following measures from the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 2017) have been slightly modified for this project.

- Fencing. The elderberry shrub will be fenced and/or flagged as close to construction limits as feasible.
- Avoidance area. Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 6 meters (20 feet) from the dripline, depending on the type of activity.

- Worker education. A qualified biologist will provide training for all contractors, work crews, and any onsite personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.
- Construction monitoring. At a minimum, a qualified biologist will monitor the work area on a weekly basis to ensure that all avoidance and minimization measures are implemented.
- Timing. As much as feasible, all activities that could occur within 50 meters (165 feet) of the elderberry shrub will be conducted outside of the flight season of the VELB (March–July).

Avoidance and Minimization Measure TE-2: 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.

Mitigation Measure TE-3: 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 1.87 acres (up to 57,600 square feet [1.32 acre] from bridge shading of aquatic habitat and new bridge piers; 24,126 square feet [0.55 acre] from RSP; and 84 square feet [0.002 acre] from bridge fender system) will be mitigated at a 3:1 ratio. The project proponent proposes to mitigate the permanent loss of critical habitat through purchase of 5.61 acres of mitigation credits at a NMFS- and USFWS-approved anadromous fish and delta smelt conservation bank.

2.3.5 Invasive Species

2.3.5.1 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 to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

2.3.5.2 Affected Environment

This section was prepared using information from the NES and addendum prepared for the project (ICF 2020a, 2020b). The report and addendum are available in Appendix S.

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, and invasive plants identified by the California Invasive Plant Council. Invasive plants displace native species, change ecosystem processes, alter plant community structure, and lower wildlife habitat quality. Road, highway, and related construction projects are potential dispersal pathways for invasive plants and their propagules (California Invasive Plant Council 2012). FHWA requires that state departments of transportation use the state’s noxious weed list to identify invasive plant species that could be spread by construction of transportation projects. See Appendix S, Table 3-3, for the list of invasive plant species identified by the California Department of Food and Agriculture and California Invasive Plant Council that occur in the BSA (Natural Resources Conservation Service 2003; California Invasive Plant Council 2018). No plant species designated as federal noxious weeds have been identified in the BSA (Natural Resources Conservation Service 2010). Invasive plant species occur in riparian forest, ruderal, and disturbed/graded areas in the BSA. Infestation of the BSA by these species is generally limited; they occur primarily as scattered individuals.

2.3.5.3 Environmental Consequences

Build Alternatives

Construction impacts due to the potential introduction and spread of invasive plant species would be the same under both Alternatives B and C. The proposed project has the potential to create additional disturbed areas for a temporary period and to introduce and spread invasive plant species to uninfected areas within and adjacent to the BSA. This would be of particular concern for sensitive natural communities, where non-native invasive plants could outcompete and replace native vegetation, and could be adverse if avoidance measures are not implemented during construction.

In compliance with EO 13112 and guidance from the FHWA, the landscaping and erosion control included in the proposed project would not use species listed as invasive. None of the species on the California list of invasive species is used by the Cities of West Sacramento or Sacramento for erosion control or landscaping in their respective jurisdictions.

No Build Alternative

Construction impacts and potential introduction or spread of invasive species directly related to a new bridge and approach roadways would not occur under this alternative.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is necessary. Implementation of Avoidance and Minimization Measures NC-1–NC-3 and Avoidance and Minimization Measure IS-1 below would help to prevent the introduction and spread of invasive plants.

Avoidance and Minimization Measure IS-1: 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 project's study area. 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 black locust trees from the riparian forest in and adjacent to the impact area on the Sacramento side of the bridge and any red sesbania trees in or adjacent to the impact area on the West Sacramento side.

2.4 Cumulative Impacts

2.4.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They also can contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is 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 CEQA Guidelines. A definition of cumulative impacts under NEPA can be found in 40 CFR Section 1508.7.

2.4.2 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 West Sacramento and Sacramento and the 2020 MTP/SCS to identify reasonably foreseeable future development.

Section 1.1.2.1, *Related Plans and Projects* of Chapter 1 summarizes relevant adopted land use and redevelopment plans in both West Sacramento and Sacramento adjacent to the Sacramento River in the vicinity of the proposed project. Individual projects such as the Riverfront Street Extension, Yolo Rail Relocation, I Street Bridge Replacement, and Broadway Complete Streets projects also are considered when pertinent.

2.4.3 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 and in the technical studies prepared for the project. 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
- Traffic and Transportation Facilities (during construction)
- Pedestrian and Bicycle Facilities
- Hydrology and Floodplain
- Water Quality
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Energy
- Biological Resources: Plant Species, Invasive Species, Wetlands

The incremental effects of the proposed project may contribute to considerable cumulative impacts in the resource areas discussed in the following sections.

2.4.3.1 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 2.1.7-1). Without the proposed project, by 2040 some of the growth in traffic is accommodated by the planned increase in capacity on South River Road as part of the realignment and widening to four travel lanes consistent with the approved mobility network in West Sacramento; however, congestion increases at intersections along Jefferson Boulevard. In Sacramento, the overall growth in the area creates an increase in traffic and congestion along 5th Street, notably in the PM peak hour at the ramp terminal intersections.

By design year (2040), the approved mobility network in West Sacramento is assumed to be fully in place in Pioneer Bluff, and traffic operations would worsen along Jefferson Boulevard. All study intersections would operate within acceptable LOS under no build conditions. In Sacramento, although traffic operations would worsen over time, all roadways in the study area would operate within acceptable levels under no build conditions.

Design year (2040) roadway segment operations without and with the build alternatives for the proposed project are shown in Table 2.1.7 6. Roadway capacity utilization results shown in the table are for information purposes only and were not used to assess project impacts. The data in Table 2.1.7-6 reflect changes in the roadway network that will occur without the proposed project. By 2030, Broadway east of Riverside will be a two-lane roadway from construction of the Broadway Complete Street project. By

2040, South River Road will be a four-lane roadway consistent with the approved mobility network planned for the Pioneer Bluff area.

Design year (2040) AM and PM peak-hour intersection conditions without and with the build alternatives for the proposed project are shown in Table 2.1.7-5.

Impact CI-1: Contribution to Cumulative Worsening of Traffic Operations (Alternative B) (Less Than Cumulatively Considerable)

The project would reduce traffic volumes on Jefferson Boulevard north of 15th Street; however, the bridge would contribute to increased volumes on Jefferson Boulevard and South River Road south of Alameda Boulevard. By opening year (2030), the planned growth in land use within West Sacramento south of the study area would increase traffic volumes along Jefferson Boulevard and South River Road, worsening the daily roadway operations to LOS F both without and with Alternative B.

By design year (2040), traffic operations would worsen along Jefferson Boulevard (still LOS F), but the unacceptable roadway segment operating conditions are not specifically caused or substantially worsened by the proposed project. In Sacramento, the addition of the bridge and the overall worsening of traffic operations over time without the project would increase traffic volumes on Broadway. However, bridge traffic is expected to gradually disperse onto the street grid that serves the area, and all roadways in the study area would operate within acceptable levels. The changes in roadway operations are considered less than cumulatively considerable.

All study intersections would operate within acceptable LOS under design year (2040) conditions under Alternative B. The bridge approach intersection of South River Road/ 15th Street in West Sacramento would face a high level of delay; however, the intersection would remain within acceptable LOS E conditions during both the AM and PM peak hours. The bridge also would shift some traffic from using the freeway facilities. The shift of traffic to Broadway is most notable at the Broadway/5th Street intersection compared to no build conditions. The changes in intersection operations are considered less than cumulatively considerable.

Projects that would contribute to potential cumulative impacts include all transportation and development projects assumed and included in the traffic modeling assumptions for the *Broadway Bridge PA/ED Transportation Report* (Appendix L) (Fehr & Peers 2020). The study considers the general plans for the Cities of West Sacramento and Sacramento, the approved mobility network in the Pioneer Bluff area of West Sacramento, the *Broadway Complete Streets Plan*, and the 2020 MTP/SCS (through the SACMET regional travel model). As discussed in Section 2.1.7, traffic forecasts are for the future horizon year of 2040.

Conclusion

The unacceptable roadway operating conditions are not specifically caused or substantially worsened by Alternative B. Therefore, the project's contribution to roadway segment operations is considered less than cumulatively considerable. All study intersections would operate within acceptable LOS under design year (2040) conditions under Alternative B. The contribution to cumulative operational impacts at intersections is considered less than cumulatively considerable. No mitigation is necessary to reduce cumulative impacts.

Impact CI-2: Contribution to Cumulative Worsening of Traffic Operations (Alternative C) (Less Than Cumulatively Considerable with Mitigation Incorporated)

The changes in roadway segment operations caused by Alternative C are very similar to those of Alternative B. Because the unacceptable roadway segment operating conditions are not specifically caused or substantially worsened by Alternative C, the contribution to cumulative impacts on roadway segment operations is considered less than cumulatively considerable.

As shown in Table 2.1.7-5, by design year (2040), due to the lack of a direct connection to Jefferson Boulevard under Alternative C, traffic must traverse multiple turning movements using Circle Street or Alameda Boulevard. The increase in traffic also increases conflicting movements at the intersections in this area. Consequently, the intersection of Jefferson Boulevard/Alameda Boulevard would operate at LOS F during the AM peak hour, with the average delay worsening by more than 5 seconds compared to design year (2040) no build conditions. Because LOS F is not consistent with West Sacramento policy, the worsening of intersection LOS caused by Alternative C is considered a significant cumulative impact. Due to the severity of this cumulative effect, the project's contribution to worsening intersection operations would be considerable.

As described above for Alternative B, other projects that would contribute to potential cumulative traffic operation impacts include all transportation and development projects assumed and included in the traffic modeling assumptions for the *Broadway Bridge PA/ED Transportation Report* (Appendix L) (Fehr & Peers 2020).

Conclusion

Because the unacceptable roadway segment operating conditions are not specifically caused or substantially worsened by Alternative C, the impact on roadway segment operations is considered less than cumulatively considerable.

The worsening of intersection operations under Alternative C is considered a significant cumulative impact. Implementation of Mitigation Measure TRA-1 would construct roadway modifications that would improve LOS to acceptable levels, thereby reducing the project's contribution to cumulative traffic operation impacts to a less than cumulatively considerable level. Implementation of the mitigation measure would slightly worsen design year (2040) operations at South River Road/15th Street, South River Road/Circle Street, and South River Road/Alameda Boulevard, but not to unacceptable levels.

Mitigation Measure TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C)

The full text of this measure is included in Section 2.1.7 and Section 3.2.17.

Visual/Aesthetics

The visual setting and viewsheds in the project area described in Section 2.1.8, *Visual/Aesthetics*, is the resource study area for cumulative effects on visual resources and aesthetics. The project's contribution to impacts on the West Sacramento and Sacramento VAUs is limited to the cumulative impact of development that would have a view of the project. The River VAU includes a longer expanse of riverfront, and the cumulative study area is from north of Pioneer Bridge (but south of Tower Bridge) to the area south of the proposed project that would have a view of that bridge (see Figure 2.1.8-1).

Impact CI-3: Cumulative Contribution to Worsening of Visual Setting (Less Than Cumulatively Considerable)

Both build alternatives would introduce a new bridge across the Sacramento River where none presently exists. This visual change would contribute to other changes along the river in the project area. The introduction of the new bridge would be a substantial visual change with the potential to contribute to significant impacts on the visual character and quality of the project area. However, as described in Chapter 2, Section 2.6.2.3, *Viewers and Viewer Response*, many roadway neighbors and users may view the project in a positive manner because of the improved connectivity it would provide.

Other contributions to visual changes would occur from general development described under the general plans of West Sacramento and Sacramento, including construction of the I Street Bridge Replacement Project upstream and out of view from the proposed project area, and planned re-development in the Pioneer Bluff area of West Sacramento and the West Broadway area in Sacramento—both of which include removal of the large petroleum facilities currently located there and the addition of multi-story structures landward of the levees. The visual changes associated with the redevelopment projects area expected to be positive instead of negative contributions to the visual setting of the areas.

Conclusion

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 West Sacramento and Sacramento. As described in Section 2.1.8, *Visual/Aesthetics*, 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. Neither build alternative would conflict with applicable zoning or other regulations governing scenic quality. The proposed project also would not conflict with the City of West Sacramento's planned redevelopment in the Pioneer Bluff area or the City of Sacramento's planned redevelopment of the West Broadway area. By designing the bridge and associated roadways consistent with the requirements of local policies, the project's contribution to significant cumulative visual changes would be less than cumulatively considerable. No mitigation is necessary to reduce cumulative impacts.

2.4.3.2 Physical Environment

Air Quality

As discussed in Section 2.2.6, *Air Quality*, the resource study area for air quality is the Sacramento Valley 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 2020 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. 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.

Impact CI-4: Cumulative Contribution to Pollutant Emissions during Project Operation (Alternatives B and C) (Less Than Cumulatively Considerable)

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 design (2040) year conditions were evaluated through modeling conducted using the CT-EMFAC2017 model. Table 2.2.6-3 in Section 2.2.6, *Air Quality* summarizes modeled emissions and compares build emissions to no build and existing conditions.

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 2020 MTP/SCS and MTIP adopted by SACOG. This effectively provides an overview of future projects within the region that will contribute emissions within the air quality basin.

Conclusion

Implementation and operation of the build alternatives would not significantly contribute to cumulative impacts from pollutant emissions compared to existing conditions. The project would result in a large decrease in pollutant emissions compared to existing conditions for most pollutants, except PM. Despite decreased exhaust emissions, PM emissions would increase in certain conditions due to re-entrained dust, break wear, and tire wear emissions. This emissions increase is due to background VMT growth throughout the region that is independent of the project. Compared to no build conditions at opening and design year conditions, implementation of the build alternatives would result in decreases or negligible changes in regional emissions rates that are all below local air district thresholds. This impact would be less than cumulatively considerable. No mitigation is necessary to reduce cumulative impacts.

Impact CI-5: Cumulative Contribution to Pollutant Emissions during Project Construction (Alternatives B and C) (Less Than Cumulatively Considerable with Mitigation Incorporated)

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 9.0) and information provided by the project engineers were used to estimate construction-related emissions. Table 2.2.6-3 in Section 2.2.6, *Air Quality* summarizes maximum daily emissions levels in the YSAQMD and SMAQMD.

Table 2.2.6-3 indicates that construction of the project would not exceed SMAQMD's or YSAQMD's numeric thresholds of significance. However, SMAQMD's (2021) *Guide to Air Quality Assessment in Sacramento County* only considers PM₁₀ and PM_{2.5} emissions below their 82- and 80-pound-per-day thresholds, respectively, to be less than significant after the application of BMPs (Sacramento Metropolitan Air Quality Management District 2021). Consequently, during construction, the proposed project would cause a cumulatively considerable contribution to emissions of PM. This is considered a potentially significant impact.

Contributions to cumulative impacts related to pollutant emissions, including PM, also would result from construction of other general development and levee projects in Sacramento and Yolo Counties, and other projects within the Sacramento Valley air basin.

Conclusion

Implementation of SMAQMD’s basic construction BMPs, as described in Section 2.2.6, would reduce the contribution to potentially significant construction-related PM emissions to less-than-cumulatively considerable levels.

Mitigation Measure AQ-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust

The full text of this measure is included in Section 2.2.6.4 and Section 3.2.3.

Noise

The resource study area for noise is the area around the project containing the sensitive receptors shown in Figure 2.14-2. The resource study area for cumulative impacts related to noise is the same.

Impact CI-6: Contribution to Cumulative Increase in Traffic Noise (Alternatives B and C) (Less Than Cumulatively Considerable)

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. Contributors to current and future traffic noise levels include traffic expected to be generated by the proposed project and reasonably foreseeable development in the project area. The traffic volumes were modeled for the *Broadway Bridge PA/ED Transportation Report* (Appendix L) (Fehr & Peers 2020) and considered the general plans for the Cities of West Sacramento and Sacramento, the approved mobility network in the Pioneer Bluff area of West Sacramento, the *Broadway Complete Streets Plan*, and the 2020 MTP/SCS (through the SACMET regional travel model). Predicted traffic noise levels were developed from the traffic data prepared for traffic operations.

Traffic noise levels for design year no build conditions would range from 62 to 70 dBA $L_{eq}(h)$.¹ Under design year build conditions, predicted traffic noise levels range from 59 to 71 dBA $L_{eq}(h)$ under Alternative B, and from 62 to 71 dBA $L_{eq}(h)$ under Alternative C. Traffic noise levels would approach or exceed the NAC for residential uses (Activity Category B). Traffic noise levels under build conditions are predicted to increase by up to 3 dBA, which is not considered a substantial increase in noise levels. Because traffic noise levels are predicted to approach or exceed the federal noise abatement criteria for some residential land uses in the project area, noise abatement was considered (see the discussion of noise abatement in Section 2.2.7, *Noise*).

Under CEQA, the cumulative increase in noise levels from project traffic was evaluated under design year 2040 conditions in terms of the project’s contribution to the noise environment compared to no project conditions. Predicted traffic noise levels for representative receivers at outdoor areas of frequent human use are shown in Table 3.2.13-3 for opening year plus project conditions, and in Table 3.2.13-4 for design year plus project conditions. Locations of noise-sensitive receivers (NSA locations in tables) are shown in Figure 2.2.7-2 in Section 2.2.7, *Noise*.

The general plans for both West Sacramento and Sacramento use the same exterior incremental noise impact standards for noise-sensitive uses (City of West Sacramento 2016:Table S-7.1; City of Sacramento

¹ Hourly equivalent sound level.

2015:Table EC 2). The standards indicate an allowable noise increment of 1 dB for residential uses in areas where day-night sound level values are in the range of 65 to 70 dBA CNEL, and 0 dB where day-night sound level values are up to 70 dBA CNEL. For all receptors, the proposed project would not result in noise increases that exceed the allowable increment under 2017, 2030, or 2040 conditions for either Alternative B or C. By the design year (2040), noise levels would increase by a maximum of 0.2 dB. An increase of these magnitudes would not be perceptible and would not exceed local thresholds.

Conclusion

Traffic noise levels under build conditions are predicted to increase by levels that are not considered substantial. Following standards established by the Cities of West Sacramento and Sacramento, the project's contribution to traffic noise is less than cumulatively considerable. No mitigation is necessary to reduce cumulative impacts.

Impact CI-6: Contribution to Cumulative Noise Levels from Non-Transportation Sources in Exceedance of Local Standards (Alternatives B and C) (Cumulatively Considerable)

Heavy equipment used for construction of the proposed project would vary by phase of construction and would involve the use of equipment such as pile drivers, excavators, bulldozers, heavy trucks, graders, and other types of heavy equipment. Temporary increases in noise are expected to occur during construction activities. The project would be required to implement noise standards in Caltrans *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:229–230) and applicable local noise standards to minimize the temporary noise effects of construction.

Noise levels produced by heavy equipment during phases of road construction potentially would exceed local standards for stationary sources (for both cities) at distances of up to 820 feet during daytime hours and 1,970 feet during nighttime hours. The nearest residences could be as close as 50 feet away from road construction areas. Even with appropriate measures in place, isolated louder construction activities could exceed applicable City standards for non-transportation sources at residences in West Sacramento and live-aboard vessels in Sacramento.

Construction of other general development, road improvement, and levee projects in Sacramento and Yolo Counties also could cause cumulative contributions to temporary increases in non-transportation noise levels. Other projects also are required to adopt noise-reduction measures either as directed by Caltrans or to comply with local noise ordinances.

Conclusion

Temporary noise levels from use of heavy equipment during construction are predicted to exceed local standards for stationary sources in West Sacramento and Sacramento, contributing to noise levels in both cities. This is a significant cumulative effect. Implementation of best noise control practices (Mitigation Measure NOI-1) would reduce the impact; however, noise control practices may not be feasible in all situations to reduce noise below the allowed limits. Therefore, this impact is considered significant and unavoidable. The proposed project's increase in noise levels would contribute to a temporary cumulative noise impact during construction activities. Implementation of Mitigation Measure NOI-1 would reduce, but not eliminate, the cumulative contribution.

Mitigation Measure NOI-1: Use Best Noise Control Practices during Construction

The full text of this measure is included in Section 3.2.13 and Section 3.2.13.

2.4.3.3 Biological Environment

The biological resources considered for the cumulative analysis include one natural community, a perennial stream, and several special-status animal species. The resource study area used for this analysis includes the Sacramento River and associated riparian corridor 2 miles up- and downstream of the biological study area described in Section 2.3.1, *Natural Communities*.

Natural Communities

Impact CI-7: Contribution to Cumulative Loss of Cottonwood Riparian Forest (Alternatives B and C) (Less Than Cumulatively Considerable with Mitigation Incorporated)

One natural community, cottonwood riparian forest, would be directly and indirectly affected by the proposed project, which could contribute to cumulative impacts on this resource. Historically, water and land development projects on the Sacramento River have resulted in 90% of the original riparian vegetation being lost (Shilling et al. 2011). As discussed in Section 2.3.1.3, the proposed project would result in the permanent and temporary loss of cottonwood riparian forest under both build alternatives and would affect the remaining cottonwood riparian forest from the shading that would be caused by the new bridge. Alternative B would remove 1.112 acres, and Alternative C would remove 1.176 acres of cottonwood riparian forest (see Table 2.3.1-1). The permanent loss of existing cottonwood forest would result from activities related to construction of the two fixed-span bridge approach structures and the bikeways that would pass under the east end of the bridge structure in the City of Sacramento and the west end of the bridge structure in the City of West Sacramento (see exhibits in Appendix A). The temporary disturbance to cottonwood riparian forest would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access. This is a significant cumulative effect.

Contributions to cumulative impacts on cottonwood riparian forest also would result from construction of other general development and levee projects in Sacramento and Yolo Counties, including the I Street Bridge Replacement Project, plans to develop the remaining undeveloped portions of the Sacramento River waterfront, and plans to improve levees and other flood protections near the proposed project. 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.

Conclusion

The project, although affecting less than 2 acres of riparian forest and subject to minimization requirements and revegetation, would contribute to the cumulative loss of cottonwood riparian forest. Due to the severity of this cumulative effect, the project's contribution would be considerable. With implementation of measures to avoid and minimize effects on sensitive biological resources and compensatory mitigation to achieve no net loss of riparian and SRA cover habitat values, the project's contribution to the loss of riparian forest is expected to be less than cumulatively considerable.

The full text of the following measures is included in Section 2.3.1.4 and Section 3.2.4.

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Avoidance and Minimization Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

Sacramento River

Impact CI-8: Contribution to Cumulative Loss of Perennial Stream (Alternatives B and C) (Less Than Cumulatively Considerable with Mitigation Incorporated)

The Sacramento River, a perennial stream, would be directly and indirectly affected by the proposed project, which could contribute to cumulative impacts on this resource. The Sacramento River, including the portion in the resource study area, has been subject to substantial modification associated with development along the banks, levee construction, dredging, dam construction, and changes in water quality. The proposed project would result in permanent and temporary impacts from the placement of fill in the channel, development on the channel banks, and temporary impacts on water quality. Additional indirect impacts from project construction on water quality, such as increased turbidity and chemical runoff, could occur in perennial drainage habitat outside the project footprint.

Implementation of the proposed project would result in permanent and temporary impacts (placement of fill) on the Sacramento River (see Table 2.3.2-1). Alternative B would fill 0.432 acre, and Alternative C would fill 0.482 acre of the river (see Table 2.3.1-1). This is a significant cumulative effect. Permanent impacts on perennial stream in the Sacramento River would result from bridge components and RSP to be placed below the OHWM. Permanent impacts on perennial stream would vary between the proposed bridge designs (basculer, vertical lift, swing). These differences are summarized in Section 2.3.2.3.

Contributions to cumulative impacts on perennial stream also would result from construction of other general development and levee projects in Sacramento and Yolo Counties, including the I Street Bridge Replacement Project, and plans to improve levees and other flood protections near the proposed project. Complying with the CWA is required by obtaining a permit from the Sacramento District of the USACE and complying 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.

Conclusion

The City would obtain an individual permit from the USACE or authorization under a Nationwide Permit to comply with Section 404 of the CWA. The City also would obtain water quality certification from the Central Valley RWQCB to comply with Section 401 of the CWA and the Porter-Cologne Act. Compliance with laws enacted to protect regulated waters, implementation of measures to avoid and minimize effects on sensitive biological resources, and compensatory mitigation measure would reduce the project's contribution to the loss of perennial stream to a less than cumulatively considerable level.

The full text of the following measures is included in Section 2.3.1.4 and Section 3.2.4.

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Avoidance and Minimization Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

Mitigation Measure WW-1: Compensate for Loss of Perennial Stream

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, 27 special-status wildlife and 13 fish species were determined to have the potential to occur in the project region (see Table 2.3.3-1). After completion of the field survey, the biologists determined that most of the wildlife species would not occur in the study area 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 study area is provided in Table 2.3.3-1. Suitable habitat is present for western pond turtle, white tailed kite, pallid bat, western red bat, and several fish species. A detailed discussion of these species is in Section 2.3.3, *Animal Species*.

Impact CI-9: Contribution to Cumulative Loss of Animal Species (Alternatives B and C) (Less Than Cumulatively Considerable with Mitigation Incorporated)

Both build alternatives could result in direct and indirect impacts on animal species. These potential impacts are discussed in detail in Section 2.3.3. The proposed project would affect potential western pond turtle aquatic habitat (Sacramento River) and nesting habitat (cottonwood riparian forest and ruderal) on both sides of the Sacramento River. The project also would reduce the amount of basking habitat on the margins of the river by shading out the banks and removing natural areas (exposed banks and woody debris) that may be used for basking substrates.

The two seasons of temporary in-channel work required for the project could result in injury and mortality to pond turtles from placement of equipment and materials into the river channel and on the riverbanks. 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, could temporarily discourage pond turtles from foraging and basking near the project site. While the effects would be similar, Alternative C would result in greater permanent and temporary impacts on habitat for the species than Alternative B.

The proposed project would affect potential white-tailed kite habitat on both sides of the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian habitat that could be used by white-tailed kite for nesting. The effects of the build alternatives would be similar, though Alternative C would result in greater permanent and temporary impacts on habitat for the species than Alternative B. The project also would result in removal of several individual trees within landscaped areas. 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 young mortality. Pile driving and the use of cranes in proximity to an active nest are expected to exceed existing levels of noise disturbance. These loud noises could startle white-tailed kite beyond the BSA and disrupt normal behaviors, including nesting. Vehicle traffic on the new bridge could result in some amount of increased disturbance to white-tailed kite nesting and roosting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be considerable.

Cottonwood riparian forest, individual trees in landscaped areas, and buildings, which represent potential roosting habitat for special-status bats in the study area, would be removed as a result of the proposed project (see Table 2.3.3-2). Project construction could result in injury or mortality to bats, including

special-status species, if occupied roost sites are removed at times when bats are not awake and active (e.g., early in the day, in periods of cold weather).

Potential project effects on non-listed, 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, and artificial lighting). Long-term effects (addition of overwater structure, loss of aquatic habitat [substrate and water column], and 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.

The proposed project has the potential to affect fish in the Sacramento River through (1) exposure to underwater noise and vibration during pile driving activities and temporary effects on water quality (increased turbidity and suspended sediment, contaminant spills, increased exposure to contaminants from disturbance, and resuspension of river bottom sediments), rearing and movement habitat (noise and shade), and channel substrates (cofferdams and temporary trestles and barges); (2) temporary and permanent effects on riparian, SRA cover, and floodplain habitat (vegetation removal, bridge and bike trail construction); and (3) permanent effects on aquatic habitat (construction of bridge piers, shade, and placement of RSP).

Pile driving and other sources of anthropogenic noise have the potential to adversely affect fish through a broad range of behavioral, physiological, or physical effects (McCauley et al. 2003; Popper and Hastings 2009). Among the construction activities likely to generate noise, the use of impact hammers for pile installation poses the greatest risk to fish because the levels of underwater noise produced by impulsive types of sounds can reach levels of sufficient intensity to injure or kill fish (Popper and Hastings 2009). Factors that may influence the potential for injury 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.

During bridge construction, the potential exists for entrapment and mortality of fish following cofferdam closure and dewatering. The proposed timing of cofferdam installation (late May to early June) would avoid the primary period of occurrence of juvenile Chinook salmon in the Sacramento River; however, the potential would remain for some juvenile salmon and other fish species to become entrapped in the cofferdams.

During bridge construction, fish could be injured or killed by direct contact with equipment or materials that enter or operate within the open waters of the Sacramento River. Potential mechanisms include fish being crushed by falling rock (riprap), impinged by piles, or struck by propellers related to barge operations. Restriction of in-water activities to May 1 to November 30 would avoid the primary migration and rearing periods of anadromous salmonids, including fall- and late fall–run Chinook salmon, in the Sacramento River. Project impacts on Sacramento splittail, river lamprey, and Pacific lamprey would be similar to those described for fall- and late fall–run Chinook salmon.

Transporting of the four barges to the project site also would increase the frequency of wave-induced shoreline disturbances, which could adversely affect fish species. The estimated total of eight barge-trips per season (four in May as the barges are brought to the work site and four in November as the barges are removed from the work site at the end of the construction season) and periodic repositioning of the barges during the in-water construction season suggests that any increases in injury, disturbance, or mortality would be expected to be small.

The proposed project would result in temporary disturbance to and permanent loss of aquatic habitat area and volume, including foraging and rearing habitat for juvenile Chinook salmon, steelhead, and other fish species. Table 2.3.3-4 shows the temporary and permanent loss of aquatic habitat that would result from constructing the proposed project, including the linear feet of shoreline that would be lined with RSP. Installation of on-bank and in-water project 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.

Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in permanent and temporary loss of that forest (described above under *Natural Communities*), of which approximately 0.368 acre is below the OHWM and contributes to overhead (shade) and instream SRA cover. Clearing of the existing cottonwood riparian forest that contributes to SRA cover would result in temporary disturbance to up to 587 linear feet and permanent loss of up to 499 linear of overhead SRA cover (shade) along the summer (low-flow) shoreline of the Sacramento River (Table 2.3.3-5).

Without appropriate mitigation, removal of streamside vegetation is likely to adversely affect anadromous salmonids and other fish species because riparian and SRA cover habitats are essential components of salmonid rearing habitat that may limit the production and abundance of salmonids 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 resource study area 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).

The proposed project would result in 2 acres of added impervious surface area that could increase runoff volume to 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 then could be transported to the Sacramento River with road runoff. Although the new bridge and roadway modifications would add impervious surface area, the proposed project would not substantially increase impervious surface area in the watershed relative to existing conditions. Furthermore, the purpose of the new bridge is to improve the connectivity across the river, thereby reducing the trip lengths currently required to cross the river via one of the other three bridges in the project vicinity (i.e., Pioneer, Tower, or I Street). Nevertheless, it is anticipated that the new bridge would result in some added vehicle trips across the river because of the increased convenience the new bridge would offer, thereby potentially increasing the pollutant load that currently is delivered to the river. Because the added vehicle trips are not anticipated to substantially increase the amount of pollutants, the proposed project is not anticipated to contribute to a cumulative water quality impact during project operation.

Overwater structures can alter underwater light conditions and provide potential holding conditions for juvenile and adult fish, including species that 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; shading created by the new bridge would be permanent. The permanent shading created by the new bridge could permanently affect the migration of adult and juvenile Chinook salmon and steelhead, and other species in the Sacramento River. 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. Table 2.3.3-6 quantifies the amount of artificial overwater structure that would be created by the project.

During project construction, operation of barges and other in-water equipment originating from regions or areas outside the project region could result in the introduction and spread of aquatic invasive species, including the Asian overbite clam, quagga mussel, zebra mussel, hydrilla, and Brazilian elodea

(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 adversely affect native fishes by affecting the migratory behavior of juvenile fish; altering the behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats; or making juvenile fish more visible to predators, thereby leading to increased mortality of fish through increased predation (Tabor et al. 2001).

Contributions to cumulative impacts on animal species also would result from construction of other general development and levee projects in Sacramento and Yolo Counties, including plans to develop the remaining undeveloped portions of the Sacramento River waterfront and to improve levees and other flood protections near the proposed project. General development is described in the general plans of West Sacramento and Sacramento. Other nearby projects include those identified in the *Bridge District Specific Plan*, *West Broadway Specific Plan*, *Broadway Complete Streets Plan*, and *Sacramento Railyards Specific Plan*, and the I Street Bridge Replacement Project.

Conclusion

The project would contribute to the loss of habitat as well as to direct and indirect impacts on animal species. This is a significant cumulative effect. Due to the severity of this cumulative effect, the project's contribution would be considerable. With implementation of the avoidance, minimization, and/or mitigation measures identified in Section 2.3.3.4 of Section 2.3.3, *Animal Species* and listed below, the project's contribution to cumulative impacts for all animal species would be reduced to less than cumulatively considerable levels.

The full text of the following measures is included in Section 2.3.3.4 and Section 3.2.4.

Avoidance and Minimization Measure AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures

Avoidance and Minimization Measure AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife

Avoidance and Minimization Measure AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife

Avoidance and Minimization Measure AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities

Avoidance and Minimization Measure AS-4: Conduct Preconstruction Surveys for Nesting Migratory Birds, Including Special-Status Birds, and Establish Protective Buffers

Avoidance and Minimization Measure AS-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

Avoidance and Minimization Measure AS-6: Implement Measures to Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving

Avoidance and Minimization Measure AS-7: Develop and Implement a Hydroacoustic Monitoring Plan

Avoidance and Minimization Measure AS-8: Monitor Turbidity in the Sacramento River

Avoidance and Minimization Measure AS-9: Implement Cofferdam Restrictions

Avoidance and Minimization Measure AS-10: Prepare and Implement a Fish Rescue and Relocation Plan

Avoidance and Minimization Measure AS-11: Develop and Implement a Barge Operations Plan

Avoidance and Minimization Measure AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species

Avoidance and Minimization Measure AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The full text of the following measures is included in Section 2.3.1.4 and Section 3.2.4.

Avoidance and Minimization Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

Avoidance and Minimization Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

Avoidance and Minimization Measure NC-3: Conduct Periodic Biological Monitoring

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

Mitigation Measure NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat

Threatened and Endangered Species

Impact CI-10: Contribution to Cumulative Loss of Threatened and Endangered Species (Alternatives B and C) (Less than Cumulatively Considerable with Mitigation Incorporated)

As discussed in Section 2.3.4, *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 five state-listed species (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.

Both build alternatives could result in direct and indirect impacts that could contribute to cumulatively considerable impacts on the long-term health or stability of these species. This is a significant cumulative effect. Potential impacts on listed wildlife and fish species are discussed in detail in Section 2.3.4.

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.

Under FESA, cumulative effects are “those effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area of the federal action subject to consultation” (50 CFR 402.2). Current, future, and reasonably foreseeable actions in the project region that also could affect threatened and endangered species and critical habitat potentially affected by the proposed project include the general development described in the general plans of West Sacramento and Sacramento, the I Street Bridge Replacement Project, plans to develop the remaining undeveloped portions of the Sacramento River waterfront, and plans to improve levees and other flood protections near the proposed project.

As described above under *Animal Species*, contributions to cumulative impacts would result from construction of other general development and levee projects in Sacramento and Yolo Counties. General development is described in the general plans of West Sacramento and Sacramento. Other nearby projects include those identified in the *Bridge District Specific Plan*, *West Broadway Specific Plan*, *Broadway Complete Streets Plan*, and the *Sacramento Railyards Specific Plan*, and the I Street Bridge Replacement Project. Other projects also are required to comply with FESA and protect threatened and endangered species or compensate for impacts to ensure the continued existence of the species. All projects would be subject to the regulations described in Section 2.3.4 and would not contribute to the cumulative impact on listed species.

Conclusion

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. In addition to following the requirements of the Biological Opinions issued by USFWS and NMFS, implementation of the measures listed above under *Animal Species* and the three measures below would reduce the project’s contribution to significant cumulative impacts on federally and state-listed threatened and endangered species to less than cumulatively considerable levels.

The full text of the following measures is included in Section 2.3.4.4 and Section 3.2.4.

Avoidance and Minimization Measure TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle

Avoidance and Minimization Measure TE-2: Conduct Focused Surveys for Nesting Swainson’s Hawk prior to Construction

Mitigation Measure TE-3: Purchase Channel Enhancement Credits for Impacts on Critical Habitat

3.1 Determining Significance under CEQA

The project is subject to federal, as well as West Sacramento, Sacramento, and State environmental review requirements because the City of West Sacramento proposes the use of federal funds from FHWA. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. The City of West Sacramento is the project proponent and the lead agency under CEQA. The City of Sacramento is a CEQA 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 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

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, requires the City of West Sacramento to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may significantly affect any environmental resource, 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 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 significance under CEQA.

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 that 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 redevelopment of the Pioneer Bluff area, was conducted for the proposed project and is presented in Section 2.1.7.2. However, using the existing 2017 conditions as the CEQA baseline for traffic and the associated air quality, noise, and greenhouse gas analyses would be misleading because existing conditions do not include the new or widened roadways planned but not yet constructed in the Pioneer Bluff approved mobility network. Analysis without these roadways requires assuming that bridge traffic would connect to South River Road and 15th Street in their current configurations, or identifying future network conditions as existing (2017) conditions. Further, because 2017 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 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 2030 baseline.

3.1.1 Significant Irreversible Environmental Changes

The primary and most substantial significant irreversible environmental change that would be caused by the proposed project is the construction and use of a new bridge across the Sacramento River. Specific impacts related to the new bridge are described in this section.

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate no impacts on a particular resource. A “No Impact” answer in the last column reflects this determination. 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 thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, environmental commitments that are applied to all or most projects, and measures included in Caltrans’ *Standard Plans and Specifications* or as Standard Special Provisions, are considered an integral part of the project and have been considered prior to any significance determinations documented below. See Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

3.2.1 Aesthetics

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, 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 within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2.1.1 CEQA Significance Determinations for Aesthetics

The area around the project corridor was divided into a series of “outdoor rooms” or VAUs. Each VAU has its own visual character and visual quality, and typically is defined by the limits of a particular viewshed. The river provides a clear boundary between the industrial, commercial, and residential land uses on the western side of the river in West Sacramento; and the industrial, park, marina, transportation, and commercial land uses on the eastern side of the river in Sacramento. For this analysis, therefore, the project area was subdivided into three VAUs based on specific vantage points and differing sensitivities of those affected by the proposed project. They are the West Sacramento VAU, Sacramento VAU, and River VAU. The VAUs are described in Section 2.1.8, *Visual/Aesthetics* and are shown in Figure 2.1.8-1. Two key views from the VAUs are used in this analysis. Key views (shown in Figures 2.1.8-2 and 2.1.8-3) were chosen for their representation of the VAU within which they are located and the affected viewers.

The potential for the project to adversely affect aesthetics was assessed in the project’s *Visual Impact Assessment* (ICF 2020, Appendix M) and in Section 2.1.8, *Visual/Aesthetics*. The following discussion is based on those analyses.

a) Have a substantial adverse effect on a scenic vista?

The project would be located entirely within an urbanized area, and no rural areas would be affected. As described in Section 2.1.8.2, *Affected Environment*, no scenic vistas or federal, state, or local scenic routes are associated with the project corridor. 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 project area is not considered to have scenic vistas. As such, scenic vistas would not be affected by the project. There would be no impact.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

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 2019). Accordingly, the proposed project would not substantially damage scenic resources within a state scenic highway. There would be no impact.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Impact AES-1: Change in Visual Character Consistent with Local Regulations (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Regulations Governing Scenic Quality

The proposed project is within the limits of the cities of West Sacramento and Sacramento, in areas on both sides of the river where there are plans for redevelopment of the existing industrial land uses to more mixed uses. The proposed project is included in many planning documents developed by both the cities of West Sacramento and Sacramento (see Chapter 1, *Proposed Project* – Section 1.1.2.1, *Related Plans and Projects*).

The scenic quality of development in each city is covered by policies in the general plans of each jurisdiction. In addition, trees contribute to scenic quality. The City of West Sacramento's West Sacramento Tree Preservation Ordinance (City of West Sacramento 2019) and the City of Sacramento's Tree Planting, Maintenance, and Conservation Ordinance (City of Sacramento 2019) provide standards for tree permits required for actions affecting trees. Section 3.2.4, *Biological Resources*, discusses compliance with each City's ordinance.

Appendix M, *Visual Impact Assessment*, includes a detailed list of policies adopted by West Sacramento and Sacramento, respectively, that relate to scenic quality, aesthetics, and design. The following policies from the Urban Structure and Design and Natural and Cultural Resources sections of the *City of West Sacramento General Plan 2035 Policy Document* (City of West Sacramento 2016) are included here as representatives of the most relevant policies that govern scenic quality in West Sacramento.

Policy UD-1.13: Design Review. The City shall require design review that focuses on achieving appropriate form and function for new development and redevelopment to promote creativity, innovation, safety and quality design.

Policy UD-1.11: Open Space Features. The City shall promote an urban structure and design that incorporates the open space features of West Sacramento's waterfront, rural landscapes, and parks, including visual access, natural surveillance and development that complements the natural environment.

Policy UD-2.5: River-Crossings and Bridges. 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.

Policy NCR-6.7: LED Street Lights. The City shall replace existing street lights with light emitting diode (LED) street lights, as financially feasible.

Policy NCR-8.3: Reducing Light Pollution. The City shall require project designs, lighting configurations, and operational practices that reduce light pollution and preserve views of the night sky.

Policy NCR-8.4: Minimize Obtrusive Lighting. The City shall minimize obtrusive light by limiting outdoor lighting that is not necessary for public safety, and/or is misdirected or excessive.

Policy NCR-8.5: Glare. The City shall require new development to incorporate design features that prevent excessive glare.

The following policies from the Land Use and Urban Design Element and Environmental Resources Element in the *Sacramento 2035 General Plan* (City of Sacramento 2015) are included here as representatives of the most relevant policies that govern scenic quality in Sacramento.

Policy LU 2.7.2: Design Review. The City shall require design review that focuses on achieving appropriate form and function for new and redevelopment projects to promote creativity, innovation, and design quality.

Policy LU 2.2.3: Improving River Development and Access. The City shall require new development along the Sacramento and American Rivers to use the natural river environment as a key feature to guide the scale, design, and intensity of development, and to maximize visual and physical access to the rivers.

Policy ER 7.1.1: Protect Scenic Views. The City shall seek to protect views from public places to the Sacramento and American Rivers and adjacent greenways, landmarks, and urban views of the downtown skyline and the State Capitol along Capitol Mall.

Policy ER 7.1.2: Visually Complementary Development. The City shall require new development be located and designed to visually complement the natural environment/setting when near the Sacramento and American Rivers, and along streams.

Policy ER 7.1.3: Lighting. The City shall minimize obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary, and requiring light for development to be directed downward to minimize spill-over onto adjacent properties and reduce vertical glare.

Policy ER 7.1.5: Scenic Resources at River Crossings. The City shall require the style, scale, massing, color, and lighting of new bridges to complement the natural and/or community setting. Design considerations for river crossings will include the degree to which bridges minimize obstruction of scenic views of the river and riparian areas from publicly accessible open space areas, including from the river, and enhance the scenic setting by incorporating design features that complement the surrounding area and/or provide high quality and visually interesting design.

Potential Changes in Visual Character and Quality

The following section describes and illustrates visual impacts. The distance between the two proposed bridge alignments over the river is not great enough to result in a notable visual change in the landscape between the two alternatives, but differences are identified where they do exist.

Short-Term Effects

Construction activities for either build alternative would introduce considerable heavy equipment and associated vehicles, including backhoes, compactors, tractors, cranes, and trucks, into the viewshed of all viewer groups. Temporary falsework platforms required to construct the proposed bridge foundations and approach structures would be visible in the river; these would be installed on or after May 1 and removed by November 30. 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.

In-water work would be conducted only during daylight hours. If high-intensity lighting is needed for nighttime construction elsewhere within the project area, it would be directed away from the river, away from oncoming traffic on adjacent roadways, and away from residential areas to avoid adverse changes in light and glare during construction.

Future land use and deindustrialization plans for the Pioneer Bluff area of West Sacramento include removal or relocation of tank farms and pipelines. This study assumes that existing features, such as fuel storage tanks and warehouse facilities associated with industrial land uses, would no longer be present when construction of Broadway Bridge begins. As seen in Figures 2.1.8-2 and 2.1.8-3, Key Views 1 and 2, *Existing Views*, 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.

Construction activities would create temporary visual impacts on views of and from the project corridor during the construction period by the visual presence of construction activities and equipment. Temporary visual changes due to construction signaling, signage, and lighting also would occur, (e.g., signage and lighting for transportation safety, including boater safety) during construction. These changes are not considered significant due to the temporary nature of construction; the short intervals of time that river users, roadway users, and neighbors would be in contact with the project corridor; and viewers' familiarity with heavy equipment in areas adjacent to the project for recent development in the project vicinity.

Long-Term Effects

The largest visual change associated with the proposed project would be the introduction of a new bridge across the Sacramento River, a potentially significant impact. The simulation for Key View 2 (Figure 2.1.8-3) depicts representative views for road travelers on the existing Pioneer Bridge. The proposed bridge would be at a lower elevation than the Pioneer Bridge because it would be constructed with a moveable segment to allow for boat passage. Therefore, as seen in Figure 2.1.8-3, Key View 2, *Simulated View*, the proposed bridge would not obstruct views toward the river, vegetated levees, or the land uses on either side of the river. Views of the river downstream of the proposed bridge would remain present. While much of the bridge would be low profile, vertical elements of the bridge would make the bridge appear to be more visually prominent. However, the bridge design would appear visually similar in scale to the existing Tower Bridge located upstream of the Pioneer Bridge.

By the interim year (2030), regardless of build alternative, the proposed bridge and roadway changes in West Sacramento would be visible primarily from adjacent commercial and industrial areas, and from local roadways that are directly next to the bridge and proposed roadway improvements. No major changes would be seen from residential areas because industrial (or redeveloped) land uses would block views, many residences are located south of or away from project changes, and the remaining residences are located behind commercial areas that would obscure views. The new bridge may be more visible

during the design year as land uses east of Jefferson Boulevard change from industrial to more mixed-use development and a new roadway grid structure is installed, including roadways closer to the Sacramento River. However, the structures introduced as part of the redevelopment planned by the design year would replace existing industrial structures and would continue to block most views from Jefferson Boulevard.

The introduction of new roadway connections for the bridge at South River Road would occur under both build alternatives. And, consistent with the approved mobility network for Pioneer Bluff, by the interim year (2030), new roadways would be constructed and 15th Street would be realigned to connect to South River Road farther south than its current location (see Figure 1-2 in Chapter 1). The minor changes to local roadways that would occur for the proposed project to accommodate new turn lanes for bridge access would result in negligible visual changes under both build alternatives.

Alternative B would create a four-way intersection at 15th Street and South River Road. By the design year (2040), the alignment of South River Road south of 15th Street would be shifted to the east as part of the approved mobility network for the area. As part of the proposed project, the intersection of 15th Street and South River Road would be adjusted to accommodate the change in roadway alignment to the south. The proposed roadway changes would not greatly alter views because new and realigned roadways would be visually similar to adjacent roadways.

Alternative C would create a new “T” intersection at South River Road, south of 15th Street. In the design year (2040), the intersection would be moved to the east, consistent with the planned realignment of South River Road. The introduction of the new “T” intersection would not greatly alter views, and the new roadway connections would be visually consistent with the planned redevelopment of existing land uses and the approved mobility network proposed for Pioneer Bluff.

In Sacramento, existing industrial and commercial land uses, mature vegetation, and I-5 block views of the proposed project from existing residential areas to the east. The proposed bridge and roadway changes in Sacramento would be visible primarily from adjacent commercial and industrial areas, from local roadways that are directly next to the bridge, and from proposed roadway improvements. In addition, the bridge touchdowns in Sacramento would be in approximately the same location; it is only as the alternative alignments begin to leave the banks and cross the river that they begin to diverge.

Under both build alternatives, reconstructing the sidewalks along Broadway and minor intersection changes at local roadways would result in negligible visual changes and would be in keeping with the existing visual landscape. The width of Broadway would be modified to merge with the roadway cross-section identified in the *Broadway Complete Streets Plan* (City of Sacramento 2016).

The bridge would be visible from Broadway, west of I-5; the westbound US 50/Business 80 ramp connection to southbound I-5; the eastbound US 50/Business 80 ramp connection to southbound I-5; the Sacramento River Bike Trail; and the riverbanks along Miller Park, where gaps in vegetation allow views. The simulation for Key View 1 (Figure 2.1.8-2) depicts the proposed bridge from the riverbanks along Miller Park. The proposed bridge would obscure views toward Pioneer Bridge and would appear visually similar in scale to the existing Tower Bridge located upstream of the Pioneer Bridge. Views toward the river and its vegetated riverbanks would not be greatly altered compared to existing conditions, and the bridge would not appear to be visually intrusive.

Bridge Type

Selection of one of the three different bridge types being considered would not change the significance of impacts on the visual character or quality of the project area. As part of a new moveable bridge structure that would allow for boat passage, each of the bridge types would add a new structure similar in scale and

would result in the same degree of visual change to the landscape. Although the bridge type has not yet been determined, 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 between Sacramento and West Sacramento.

Impact Conclusion

The introduction of a new bridge across the Sacramento River would be a substantial visual change that has the potential to cause a significant impact on the visual character and quality of the project area. As described in Chapter 2, Section 2.6.2.3, *Viewers and Viewer Response*, 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 is intended to be in keeping with the existing visual environment. By designing the bridge and associated roadways consistent with the requirements of local policies and implementing the mitigation measures below regarding bridge aesthetics and project landscaping, the impact would be reduced to a less-than-significant level.

Mitigation Measure AES-1: Work with Stakeholders to Determine Bridge Aesthetics

The project proponent will conduct a focused outreach effort and will conduct a public meeting, charrette session, or similar public engagement method with public stakeholders to develop an aesthetic design approach. This measure will allow concerned viewers to assist in 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.

Mitigation Measure AES-2: Implement Project Landscaping

The project proponent will install landscaping where space and safety considerations allow and in a manner that is consistent with the Cities of West Sacramento and Sacramento planning policies and directives to improve city streetscapes. Prior to approval of the roadway design, the City of West Sacramento and/or City of 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. Evaluate the use of pervious paving in the proposed project to improve infiltration and to reduce the amount of surface runoff from entering waterways and the storm water system. Do not use LID measures where infiltration could result in adverse environmental effects. Use LID measures, such as cobbled swales and aggregate mulching, as an aesthetic design element to create an attractive view while reducing water use.
- Require construction contractors to incorporate native grass and wildflower seed into standard seed mixes, which may be non-native, for erosion control measures that will be applied to all exposed slopes. If appropriate for the surrounding habitat, use wildflowers to provide seasonal interest to areas where trees and shrubs are removed, and grasslands are disturbed. Incorporate into seed mixes only wildflower and grass species that are native, and under no circumstances use any invasive grass or wildflower plant species as any component of any erosion control measure. Choose species that are indigenous to the area and for their appropriateness to the surrounding habitat. For example, choose upland grass and wildflower species for drier upland areas, and wetter species for areas that will receive more moisture. If not appropriate to the surrounding habitat, do not include wildflowers 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. Increase the effectiveness of roadside planting areas and reduce their susceptibility to disease by increasing plant variety—providing multiple layers, seasonality, and diverse habitat. Use evergreen groundcovers or low-growing plants, such as *Ceanothus* spp., in areas where taller vegetation could cause driving hazards by obscuring site distances. Use species native and indigenous to the project area and California. Use native plant species 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 native species to promote 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 built features, while accentuating the design treatments that will be applied to those features. Pay special attention 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.
- Do not use any invasive plant species 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 continue irrigation, as needed, to ensure plant survival. Design the landscaping plan to maximize the use of planting zones that are water efficient. Incorporate aesthetic features such as cobbling swales or shallow detention areas, as appropriate, to reduce or eliminate the need for irrigation in certain areas.
- If an irrigation system is required, use a smart watering system to evaluate the existing site conditions and plant material against weather conditions, and 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 shut down the zone or system until it can be repaired.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact AES-2: Create a New Source of Light or Glare (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Effects related to light and glare would be the same or very similar within all VAUs under both build alternatives. The bridge structure could be a new source of glare, depending on the color and design selection for the structure. Addition of the new structure and removal of vegetation would slightly increase glare in the project corridor, but glare associated with the river already is a prominent visual element where gaps in vegetation allow views of the river. The new bridge structure would shade the river's surfaces and could slightly reduce reflective glare from the river.

New bridge, roadway, and intersection lighting could include LED lighting for security and safety purposes. Although the City of West Sacramento and the City of Sacramento encourage the use of LED lights and the reduction of light pollution, which would be enforced through design review, 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 BRWL lamps are used (American Medical Association 2016; International Dark-Sky Association 2010a, 2010b, 2015). Studies have found that a 4000 K white LED light causes approximately 2.5 times more pollution than high-pressure sodium lighting with the same lumen output, which would affect

sensitive receptors and more than double the perceived brightness of the night sky (Aubé et al. 2013; Falchi et al. 2011, 2016). This would result in a substantial source of nighttime light and glare that could adversely affect nighttime views in the area and result in a significant impact. Implementation of Mitigation Measure AES-3 would ensure that the lighting impacts that could affect views are reduced to less-than-significant levels.

Mitigation Measure AES-3: Apply Minimum Lighting Standards

All artificial outdoor lighting and overhead street lighting will be limited to safety and security requirements and the minimum required for driver safety. Lighting will be designed using the Illuminating Engineering Society's design guidelines. 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.

Light-emitting diode (LED) lighting will avoid the use of blue-rich white light (BRWL) lamps and use a correlated color temperature that is no higher than 3,000 Kelvin. In addition, LED lights will use shielding to ensure that nuisance glare and 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.

3.2.2 Agriculture and Forest Resources

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g])?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.2.1 CEQA Significance Determinations for Agriculture and Forest Resources

The proposed project is in developed portions of West Sacramento and Sacramento where there are no farmlands, agriculture land uses, or forest resources. The project would have *no impact* on agricultural or forest resources.

3.2.3 Air Quality

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.3.1 CEQA Significance Determinations for Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make significance determinations.

The potential for the project to adversely affect air quality was assessed in the project’s Air Quality Report (Terry A. Hayes Associates 2020, Appendix R) and in Section 2.2.6, *Air Quality* in this document. The following discussion is based on those analyses.

a) Conflict with or obstruct implementation of the applicable air quality plan?

The proposed project is included in the regional emissions analysis conducted by SACOG for the conforming 2020 MTP/SCS (Sacramento Council of Governments 2019). Projects included in the 2020 MTP/SCS are consistent with the planning goals of the SIP adopted by local air quality management agencies. There would be no impact.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?

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.

Impact AIR-1: Construction-Related Particulate Matter Emissions in Excess of Thresholds (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

The proposed project would construct a new bridge downstream of the Pioneer Bridge (US 50). 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 9.0) and information provided by the project engineers were used to estimate construction-related emissions. Table 2.2.6-3 in Section 2.2.6, *Air Quality* summarizes maximum daily emissions levels in the SMAQMD and YSAQMD.

Table 2.2.6-4 indicates that construction of the project would not exceed SMAQMD's or YSAQMD's numeric thresholds of significance. However, SMAQMD's (2021) *Guide to Air Quality Assessment in Sacramento County* only considers PM10 and PM2.5 emissions below their 82- and 80-pound-per-day thresholds, respectively, to be less than significant with application of BMPs. This is considered a potentially significant impact.

Implementation of Mitigation Measure AIR-1 would reduce potentially significant construction-related PM emissions to less-than-significant levels.

Mitigation Measure AIR-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust

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 the Caltrans *Standard Specifications* (California Department of Transportation 2018), 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 4 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.

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 the 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 (2021) *Guide to Air Quality Assessment in Sacramento County* 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 2 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, and 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.

Impact AIR-2: Particulate Matter Emissions during Project Operation (Alternatives B and C) (Less Than Significant)

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 (2017), opening (2030), and design (2040) year conditions were evaluated through modeling conducted using the CT-EMFAC2017 model. Table 2.2.6-3 in Section 2.2.6, *Air Quality* summarizes modeled emissions and compares build emissions to no build and existing conditions.

As shown in Table 2.2.6-3, implementation of the build alternatives would result in a negligible change compared to the No Build Alternative. Pollutant emissions would decrease compared to existing conditions for most pollutants, except PM. Despite decreased exhaust emissions, PM emissions would increase in certain conditions due to re-entrained dust, break wear, and tire wear emissions. This emissions increase is due to background VMT growth throughout the region that is independent of the project. Compared to no build conditions at opening and design year conditions, implementation of the build alternatives would result in decreases or negligible changes in regional emissions rates that are all below local air district thresholds. These emissions related to VMT would be directly correlated to the regional VMT relationship between the alternatives. This impact would be less than significant and is considered a long-term air quality benefit. No mitigation is required.

c) Expose sensitive receptors to substantial pollutant concentrations?

As discussed in Chapter 2, Section 2.2.6, all criteria pollutants that would be generated by the build alternatives are associated with some form of health risk (e.g., asthma, lower respiratory problems). Criteria pollutants can be classified as regional or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a regional criteria pollutant whereas CO, NO₂, SO₂, and lead are localized pollutants. PM can be both a local and a regional pollutant, depending on its composition. As discussed above, the primary criteria pollutants of concern generated by the build alternatives are ozone precursors (ROG and NO_x), and PM (including DPM).¹ The

¹ Minor amounts of CO, NO₂, and SO₂ may be generated by construction and operational sources. But these emissions are of less concern because Sacramento County currently attains the CAAQS and NAAQS for CO, NO₂, SO₂ and neither construction nor operational activities associated with this project are likely to generate substantial quantities of these criteria pollutants (Sacramento Metropolitan Air Quality Management District 2021).

following sections discuss thresholds and analysis considerations for regional and local project-generated criteria pollutants with respect to their human health implications. In addition, although asbestos and lead would not be generated directly by construction activities associated with the build alternatives, construction activities could cause asbestos and lead to be resuspended if present in the soil and structures. Accordingly, these pollutants also are discussed under the impact headers below.

There are no thresholds to assess the significance of health effects from emissions of regional criteria pollutants; however, consistent with the California Supreme Court's decision in *Sierra Club v. County of Fresno* (6 Cal. 5th 502, Case No. S219783) (known as the "Friant Ranch decision"), Table 3.2.3-1 provides a conservative estimate of potential health effects associated with regional criteria pollutants generated by construction and operation of the proposed project. The estimates were developed using SMAQMD's draft Project Health Effects Tool (Version 2). The Minor Project Health Screening Tool was developed by SMAQMD, on behalf of regional air districts in the Sacramento Federal Nonattainment Area (SFNA), including YSAQMD (Ramboll 2020). SMAQMD conducted photochemical and health effects modeling of hypothetical projects throughout the SFNA with NO_x, ROG, and PM_{2.5} emissions at 82 pounds per day (ppd), which corresponds to the highest daily emissions threshold of all SFNA air districts.² The tool outputs the estimated health effects at the 82-ppd emissions rate by spatially interpolating the health effects from the hypothetical projects based on user inputs for the latitude and longitude coordinates of a project. Because the proposed project is linear, three points along the alignment were selected for analysis, as shown in Table 3.2.3-1.

Note that the results presented in Table 3.2.3-1 are conservative for two reasons. First, they are based on a source generating 82 ppd of ROG, NO_x, and PM_{2.5}. As shown in Table 2.2.6-3, construction would generate a maximum daily emissions rate of 8.5 pounds of ROG, 11.2 pounds of PM_{2.5}, and 77.6 pounds of NO_x. Also shown in Table 2.2.6-2, operations would generate a maximum daily emissions rate of 1.4 pounds of ROG, 3.7 pounds of PM_{2.5}, and 13.0 pounds of NO_x. Second, the results assume that the source would generate emissions 365 days per year. Construction of the proposed project would occur on only 260 days per year. For these reasons, any increase in regional health risks associated with construction- and operations-generated emissions would be less than those presented in Table 3.2.3-1, which are already very small increases over the background incident health effect.

Impact AIR-3: Exposure of Sensitive Receptors to Regional Criteria Pollutants during Project Construction (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

SMAQMD and YSAQMD have developed region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under the NAAQS and CAAQS, which are informed by a wide range of scientific evidence which demonstrates that there are known safe concentrations of criteria pollutants. While recognizing that air quality is a cumulative problem, SMAQMD and YSAQMD consider that the impacts of projects that generate criteria pollutant and ozone precursor emissions below the thresholds to be minor. Such projects would not adversely affect air quality or cause the NAAQS or CAAQS to be exceeded. Moreover, photochemical and health risk modeling conducted by SMAQMD demonstrates that projects generating emissions below SMAQMD thresholds "do not on [their] own lead to sizeable health effects" (Ramboll 2020).

² YSAQMD's threshold of 10 tons per year is equivalent to 55 ppd.

Table 3.2.3-1. Conservative Estimate of Increased Health Effect Incidence Associated with Build Alternatives Construction and Operation (cases per year)

Health Endpoint	Age Range ^a	Mean Incidences (per year) ^b			Percent of Background Health Incidence ^c		
		1	2	3	1	2	3
Emergency room visits, asthma	0–99	1.2	1.2	1.2	<0.01%	<0.01%	<0.01%
Mortality, all cause	30–99	2.3	2.3	2.3	<0.01%	<0.01%	<0.01%
Hospital admissions, asthma	0–64	0.081	0.081	0.081	<0.01%	<0.01%	<0.01%
Hospital admissions, all cardiovascular ^d	65–99	0.33	0.33	0.33	<0.01%	<0.01%	<0.01%
Hospital admissions, all respiratory	65–99	0.18	0.18	0.18	<0.01%	<0.01%	<0.01%
Acute myocardial infarction, nonfatal	18–24	0.00012	0.00012	0.00012	<0.01%	<0.01%	<0.01%
Acute myocardial infarction, nonfatal	25–44	0.0098	0.0098	0.0098	<0.01%	<0.01%	<0.01%
Acute myocardial infarction, nonfatal	45–54	0.021	0.021	0.021	<0.01%	<0.01%	<0.01%
Acute myocardial infarction, nonfatal	55–64	0.034	0.034	0.034	<0.01%	<0.01%	<0.01%
Acute myocardial infarction, nonfatal	65–99	0.11	0.11	0.11	<0.01%	<0.01%	<0.01%
Hospital admissions, all respiratory	65–99	0.084	0.084	0.084	<0.01%	<0.01%	<0.01%
Mortality, non-accidental	0–99	0.053	0.053	0.053	<0.01%	<0.01%	<0.01%
Emergency room visits, asthma	0–17	0.46	0.46	0.46	<0.01%	<0.01%	<0.01%
Emergency room visits, asthma	18–99	0.72	0.72	0.72	<0.01%	<0.01%	<0.01%

Source: SMAQMD Minor Project Health Screening Tool, Version 2, published June 2020.

Note: The three analysis points are located at the (1) eastern project edge (38.568392, -121.517658); (2) center of the project alignment (38.568857, -121.518773); and (3) western project edge (38.569284, -121.519786).

^a Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the U.S. EPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

^b Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences or “background health incidence”) values. Health effects and background health incidences are across the northern California model domain.

^c The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the modeled domain. Health incidence rates and other health data typically are collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP, as reported in SMAQMD’s Minor Project Health Screening Tool, Version 2.

^d Less myocardial infarctions.

As shown in Table 2.2.6-4, construction of the build alternatives would not generate regional criteria pollutants that would exceed SMAQMD and YSAQMD thresholds. As such, construction of the build alternatives would not be expected to contribute a significant level of air pollution that would degrade air quality within the SVAB. However, SMAQMD’s (2021) *Guide to Air Quality Assessment in Sacramento County* only considers PM10 and PM2.5 emissions below their 82- and 80-ppd thresholds, respectively, to be less than significant after application of BMPs. Therefore, this is considered a potentially significant impact. Implementation of Mitigation Measure AIR-1 would reduce potentially significant construction-related PM emissions to less-than-significant levels. Consequently, the impact from construction-generated criteria pollutant emissions and risk of exposure of receptors to substantial criteria pollutant concentrations would be less than significant with mitigation incorporated.

Mitigation Measure AIR-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust

The full text of this measure is included above.

Impact AQ-4: Exposure of Sensitive Receptors to Regional Criteria Pollutants during Project Operation (Alternatives B and C) (Less Than Significant)

As shown in Table 2.2.6-3, vehicular emissions from operation of the build alternatives, when compared to the No Build Alternative, would not result in the generation of operational criteria pollutants or precursors that would exceed SMAQMD and YSAQMD thresholds of significance. Emissions of all pollutants except PM would decrease relative to existing conditions.³ As such, operation of the build alternatives would not be expected to contribute a significant level of air pollution that would degrade air quality within the SVAB. Consequently, the impact from operational criteria pollutant emissions is considered less than significant. The build alternatives would not expose receptors to substantial criteria pollutant concentrations or risks. This impact is considered less than significant. No mitigation is necessary.

Impact AIR-5: Exposure of Sensitive Receptors to Localized Particulate Matter (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Construction equipment and vehicles would generate PM during roadway-widening activities. Table 2.2.6-3 indicates that construction of the project would not exceed SMAQMD's or YSAQMD's numeric thresholds of significance. However, SMAQMD's (2021) *Guide to Air Quality Assessment in Sacramento County* only considers PM10 and PM2.5 emissions below their 82- and 80-ppd thresholds, respectively, to be less than significant with application of BMPs. This is considered a potentially significant impact. Implementation of Mitigation Measure AIR-1 would reduce potentially significant construction-related PM emissions such that construction of the proposed project would not expose sensitive populations to substantial pollutant concentrations. This impact is considered less than significant with mitigation incorporated.

Mitigation Measure AIR-1: Implement Additional Control Measures for Construction Emissions of Fugitive Dust

The full text of this measure is included above.

Impact AIR-6: Localized Diesel Particulate Matter (Alternatives B and C) (Less Than Significant)

Heavy-duty diesel-fueled equipment used during construction of the proposed project would generate DPM. As shown in Table 2.2.6-3, DPM emissions would be minor and occur only over a period of 3.25 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.

Implementation of the build alternatives and use of the new bridge would result in a less than 1 percent increase in truck percentage on the roadway network in the study area compared to the No Build Alternative under opening (2030) and design (2040) conditions. In addition, total ADT under build

³ The increase in PM is due to background VMT growth throughout the region that is independent of the project.

alternative conditions is 40,900 and 42,000, respectively, under opening (2030) and design (2040) conditions while truck ADT under build alternative conditions is 1,227 and 1,260, respectively, under 2030 and 2040 conditions. CARB (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, Broadway 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 along the new/expanded roadway sections that would be built at the bridge touchdown locations, the project does not meet any of the project types considered to be a project of air quality concern by U.S. EPA’s Final Rule. (Terry A. Hayes Associates 2020.)

Also, as shown in Table 3.2.3-2, 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* (Sacramento Municipal Air Quality Management District 2011).

Table 3.2.3-2. 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: Sacramento Municipal Air Quality Management District 2011.

Neither construction nor 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.

Impact AIR-7: Exposure of Sensitive Receptors to Asbestos and Lead (Alternatives B and C) (Less Than Significant)

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, per SMAQMD Rule 902, the project proponent would be required to develop an Asbestos Abatement Plan (*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.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Impact AIR-8: Short-Term Construction-Related Release of Odors (Alternatives B and C) (Less Than Significant)

Some phases of construction, particularly asphalt paving, would result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site increases. Therefore, the impact is considered less than significant. No mitigation is required.

3.2.4 Biological Resources

	Significant and Unavoidable 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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	<input type="checkbox"/>	<input checked="" 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, regulations or by the California Department of Fish and Wildlife 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 state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, 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 type="checkbox"/>	<input checked="" 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"/>

3.2.4.1 CEQA Significance Determinations for Biological Resources

Information on the baseline conditions in the BSA to support the CEQA analysis for project impacts on biological resources can be found in Chapter 2, Section 2.3, *Biological Resources* and in Appendix S, *Natural Environment Study* of this document. The sensitive biological resources identified in Section 2.3 include special-status species, sensitive communities, protected wetlands, and protected trees.

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

The special-status species known to or potentially occurring in the BSA include VELB, western pond turtle, Swainson’s hawk, white-tailed kite, pallid bat, western red bat, Chinook salmon (fall-run, late fall–run, winter-run, and spring-run), steelhead, green and white sturgeon, delta and longfin smelt, Sacramento splittail, Sacramento hitch, hardhead, and Pacific and Western river lamprey. A discussion of these species can be found in Sections 2.3.3.2 and 2.3.4.2 and in Appendix S.

Impact BIO-1: Impacts on Valley Elderberry Longhorn Beetle (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Alternative B would not directly affect the elderberry shrub in the BSA but would result in the permanent loss and temporary loss of cottonwood riparian along the Sacramento River (see Table 2.3.34-24 in Section 2.3.3, *Animal Species*). This loss of riparian habitat could create permanent and temporary barriers to the dispersal of VELB along this riparian corridor and contribute to the already fragmented habitat and the isolation of existing populations.

If construction takes place during the flight season (March–July), it could disrupt VELB ability to disperse between the elderberry shrub in the BSA (if it later becomes occupied) and the nearby riparian habitat, as well as within the riparian habitat itself, and could result in the potential for injury or mortality from construction equipment.

Alternative C would similarly affect VELB but would result in greater permanent and temporary impacts on cottonwood riparian habitat along the Sacramento River. Table 2.3.34-12 lists the permanent and temporary impacts on cottonwood riparian forest that provides potential habitat for VELB.

Both project alternatives have a potential to result in significant impacts on VELB. Implementation of mitigation measures NC-1, NC-2, NC-3, NC-4, and TE-1 would reduce these impacts to less-than-significant levels.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The project proponent 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 sensitive natural communities; special-status wildlife habitats, such as nest sites of Swainson's hawk and migratory birds; and protected trees.

Barrier fencing around sensitive biological resource 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 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.

Mitigation Measure NC-2: 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, sensitive natural communities, 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, 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.

Mitigation Measure NC-3: 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 the presence of a biological monitor 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 Measures AS-3, AS-5, AS-7, and AS-8 in Section 2.3.3.3, *Animal Species – Environmental Consequences – Build Alternative*.

Mitigation Measure NC-4: 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 1.112 acres of riparian forest under Alternative B or up to 1.176 acres of riparian forest under Alternative C. In addition, any unavoidable temporary loss of riparian forest will be mitigated. The project proponent will implement onsite and, if necessary, offsite compensation measures 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 4.4.1.1 [*Survey Results*] in the NES, 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 ULDC (California Department of Water Resources 2012), or other engineering constraints may limit the ability to achieve full onsite compensation. Therefore, offsite compensation 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.

Onsite or Offsite Restoration or Enhancement along the Sacramento River. Riparian habitat restoration 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's cottonwood, valley oak, black willow, boxelder, Oregon ash, and black walnut. 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% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

Mitigation 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 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 Liberty Island Conservation Bank, Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, Elsie Gridley Mitigation Bank, River Ranch Wetland Mitigation Bank, or other approved bank with available riparian forest credits at the time of project permitting. Replacement riparian forest habitat will include tree 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 current and accurate estimate of tree loss, an arborist survey will be conducted upon completion of 90% design plans for the project and no more than 2 years prior to project construction. 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 the loss of riparian forest habitat, specific measures will be included to satisfy NMFS requirements and compensate for the loss of SRA cover (area and linear feet). 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 permanent loss of 302 linear feet and up to 0.368 acre of affected SRA cover vegetation (see Section 4.4.1.2, *Temporary and Permanent Loss of Riparian Vegetation [Including SRA Cover]* in the NES) at a 3:1 replacement ratio (i.e., 3 linear feet replaced for every 1 foot affected and 3 acres replaced for every 1 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 ordinary high-water mark and at sufficient densities to provide shade along at least 85% 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 offsite compensation for impacts on state- and federally listed fish species, designated critical habitat, and EFH for Pacific salmon.

Mitigation Measure TE-1: Avoid and Minimize Effects on Valley Elderberry Longhorn Beetle

The following measures from the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service 2017) have been slightly modified for this project.

- Fencing. The elderberry shrub will be fenced or flagged as close to construction limits as feasible.
- Avoidance area. Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 6 meters (20 feet) from the dripline, depending on the type of activity.
- Worker education. A qualified biologist will provide training for all contractors, work crews, and any onsite personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.
- Construction monitoring. At a minimum, a qualified biologist will monitor the work area on a weekly basis to ensure that all avoidance and minimization measures are implemented.
- Timing. As much as feasible, all activities that could occur within 50 meters (165 feet) of the elderberry shrub will be conducted outside of the flight season of the VELB (March–July).

Impact BIO-2: Impacts on Western Pond Turtle (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Table 2.3.3-2 lists the permanent and temporary impacts on perennial stream, cottonwood riparian, and ruderal areas that could be used by western pond turtle for nesting.

Alternative B would affect potential western pond turtle aquatic habitat (Sacramento River) and nesting habitat (cottonwood riparian forest and ruderal) on both sides of the Sacramento River. Alternative B also would reduce the amount of basking habitat on the margins of the river by shading out the banks and removing natural areas (exposed banks and woody debris) that may be used for basking substrates.

The proposed project (both build alternatives) 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 riverbanks. 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.

Alternative C would similarly affect western pond turtle but would result in greater permanent and temporary impacts on habitat for the species than Alternative B.

These impacts are considered significant. Both impacts would be less than significant with implementation of mitigation measures NC-1, NC-2, NC-3, and AS-1.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure AS-1: Conduct Preconstruction Surveys for Western Pond Turtle and Implement Protective Measures

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, riverbanks, 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 (Measure NC-2) 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 verify 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) are prudent.

Impact BIO-3: Impacts on White-Tailed Kite (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Alternative B would affect potential white-tailed kite habitat on both sides of the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian habitat that could be used by white-tailed kite for nesting. The alternative also would result in removal of several individual trees within landscaped areas.

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 young mortality. 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 in proximity to an active nest are expected to exceed existing levels of noise disturbance. Bridge construction would require impact pile driving to be spread out over two summer construction seasons. These loud noises could startle white-tailed kite beyond the BSA and disrupt normal behaviors, including nesting.

Vehicle traffic on the new bridge could result in some amount of increased disturbance to white-tailed kite nesting and roosting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be substantial.

Alternative C would similarly affect white-tailed kite but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. See Table 2.3.3-2 for a list of the permanent and temporary impacts on cottonwood riparian habitat that could be used by white-tailed kite for nesting.

Impacts on white-tailed kite from both alternatives would be significant. The implementation of mitigation measures NC-1, NC-2, NC-3, NC-4, AS-2, AS-3, and AS-4 would reduce these impacts to less than significant.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included above.

Mitigation Measure AS-2: 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 Measure AS-3 (Swainson's hawk), Measure AS-4 (nesting birds), and Measure AS-5 (roosting bats).

Mitigation Measure AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite 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 potentially could abandon the nest). The monitor will work closely with the contractor, the project proponent, and CDFW to develop plans for minimizing disturbance (e.g., 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.

Mitigation Measure AS-4: 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 under Measure TE-2 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 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.

Impact BIO-4: Impacts on Swainson's Hawk (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Alternative B (interim) would affect potential Swainson's hawk nesting habitat on both sides of the Sacramento River. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian that could be used by Swainson's hawk for nesting. The alternative also would result in removal of several individual trees within ruderal and landscaped areas.

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. 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 in proximity to an active nest are expected to exceed existing levels of noise disturbance. Bridge construction would 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 potentially affect 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).

Vehicle traffic on the new bridge could result in some amount of increased disturbance to Swainson's hawk nesting and roosting along the Sacramento River; however, considering the existing conditions along both sides of the river, this increase would not be substantial.

Alternative C would similarly affect Swainson's hawk but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. See Table 2.3.3-2 for a list of the permanent and temporary impacts on cottonwood riparian that could be used by Swainson's hawk for nesting.

Impacts from both build alternatives would be significant. The implementation of mitigation measures NC-1, NC-2, NC-3, NC-4, AS-2, AS-3, and TE-2 would reduce these impacts to less than significant.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included above.

Mitigation Measure AS-2: Conduct Tree Removal during Non-Sensitive Periods for Wildlife

The full text of this measure is included above.

Mitigation Measure AS-3: Monitor Active Swainson's Hawk and White-Tailed Kite Nests during Pile Driving and Other Construction Activities

The full text of this measure is included above.

Mitigation Measure TE-2: 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.

Impact BIO-5: Impacts on Roosting Bats (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Cottonwood riparian forest, individual trees in landscaped areas, and buildings, which represent potential roosting habitat for special-status bats in the BSA, would be removed under Alternative B. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian under Alternative B. Project construction could result in injury or mortality to the species, including special-status species, if occupied roost sites are removed at times when bats are not awake and active (e.g., early in the day, in periods of cold weather).

Alternative C would similarly affect special-status bats but would result in greater permanent and temporary impacts on habitat for the species than Alternative B. Table 2.3.3-2 lists the permanent and temporary impacts on cottonwood riparian forest that provides suitable tree roosting habitat for special-status bat species.

Impacts from both alternatives could result in significant impacts on roosting bats. Implementation of mitigation measures NC-1, NC-2, NC-3, NC-4, and AS-5 would reduce these impacts to less than significant.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included above.

Mitigation Measure AS-5: 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 or any building demolition, a qualified biologist will examine trees to be removed or trimmed and buildings planned for demolition with suitable bat roosting habitat. High-quality habitat features (e.g., large tree cavities, basal hollows, loose or peeling bark, larger snags, abandoned buildings, and attics) will be identified, and the area around these features will be searched for bats and bat sign (e.g., guano, culled insect parts, and staining). Riparian woodland and stands of mature broadleaf trees will be considered potential habitat for solitary foliage-roosting bat species.

If suitable roosting habitat or bat sign is detected, biologists will conduct an evening visual emergence survey of the source habitat feature, from 0.5 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 will document the results in a report.

Timing of Tree Removal and Building Demolition. Exclusion devices will be installed on trees and buildings planned for removal and demolition 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 the 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.

1. Exclusion from buildings or bridge structures will not take place until temporary or permanent replacement roosting habitat is available.
2. 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.
3. Biologists experienced with bats and bat evictions will carry out or oversee the exclusion tasks and will monitor tree trimming and removal and building demolition, if they are determined to be occupied.
4. Trees that provide suitable roost habitat will be removed in pieces, rather than felling the entire tree, should be removed 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.
5. Structural changes may be made to a known roost proposed for removal in order 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 the 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.
6. 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.
7. One-way door devices will be used where appropriate to allow bats to leave the roost but not to return.
8. Prior to building demolition and 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.

Impact BIO-6: Impacts on Special-Status Fish Species, Designated Critical Habitat, and Essential Fish Habitat (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

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, and artificial lighting). Long-term effects (addition of overwater structure, loss of aquatic habitat [substrate and water column], and 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 quantitatively (when possible) and qualitatively based on general knowledge of the impact mechanisms

and species' responses to construction actions. Of greatest concern would be the potential short-term exposure of special-status fish to harmful levels of underwater noise from impact pile driving; these were measured in terms of the distance from the piles where interim criteria for injury to fish from underwater noise would be exceeded. Long-term effects were measured in terms of the area or linear feet of artificial shade, aquatic habitat, and SRA cover habitat affected by the proposed project.

It should be noted that the impacts on special-status fish species and their habitat from project construction discussed below would be the same whether the project is constructed in two phases or a single phase, as the design and construction methods for the new bridge would be the same regardless of future conditions. However, impacts on fish and their habitat would vary according to bridge design (bascule, vertical lift, or swing) and build alternative; these differences are described below.

Alternative B would directly affect special-status fish by exposing individuals periodically to sound levels that could result in injury to fish. Table 2.3.3-3 (in Section 2.3.3, *Animal Species*) summarizes the pile driving activities (location, timing, and duration) associated with constructing the new bridge; most activities generating sound levels potentially injurious to fish would occur during the first construction season (May to October). Based on hydroacoustic measurements from similar types of pile driving operations, underwater noise produced by impact pile driving is expected periodically to reach levels in the Sacramento River that exceed the injury and behavioral thresholds for fish. Distances to injury and behavioral thresholds without and with attenuation for impact driving for the temporary construction trestles; temporary barge spud piles; the 60-inch CISS and 16-inch steel pipe piles for a bascule, vertical lift, and swing bridge; and the 14-inch-square concrete or 16-inch-diameter steel pipe piles for the bridge fender system are reported in the NES (Appendix S, Tables 4-11 through 4-14). The proposed project would require two seasons of temporary in-channel work that could result in injury and mortality to special-status fish. Injury or mortality could result from installation and subsequent dewatering of cofferdams, placement of equipment and materials into the river channel and on the riverbanks, and propeller strikes related to barge operations. In addition, project activities could increase erosion and mobilization of sediment, increase exposure to contaminants in river bottom sediments and expose fish to contaminants inadvertently during operation of heavy equipment and pouring of wet concrete. Alternative B also would result in temporary disturbance to and permanent loss of substrate (area) and water column habitat (volume) associated with the new bridge piers and bridge fender piles (see Table 2.3.3-4 in Section 2.3.3, *Animal Species*). Clearing of the existing cottonwood riparian forest vegetation within the proposed project footprint would result in permanent loss of and temporary disturbance to SRA cover, a component of riparian vegetation (see Table 2.3.3-5 in Section 2.3.3, *Animal Species*). Added impervious surface area and increased traffic loads on the new bridge could transport common pollutants in road runoff to the river, resulting in lethal and sublethal consequences for fish. Temporary and permanent shading of aquatic habitat in the Sacramento River from constructing the proposed project could affect foraging and rearing habitat for fish in the river (see Table 2.3.3-6 in Section 2.3.3, *Animal Species*), while temporary construction and permanent bridge lighting could affect the migratory behavior of special-status fish or the vulnerability of species to predators. Project construction could result in the introduction and spread of aquatic invasive species that prey on, compete with, or change the health or habitat of special-status fish species.

Alternative C would similarly affect special-status fish species with respect to pile driving noise, water quality impacts, fish entrapment in cofferdams, and direct physical injury because the proposed bridge would be similar to the bridge proposed under Alternative B. However, Alternative C would result in greater temporary impacts on substrate and water column habitat, fewer permanent impacts on substrate habitat from RSP placement, greater permanent and temporary impacts on riparian habitat, greater impacts on SRA cover habitat along the Sacramento River, slightly greater permanent shade impacts on the Sacramento River, and a slightly greater amount of added impervious surfaces (see Tables 2.3.3-4, 2.3.3-5, and 2.3.3-6 in Section 2.3.3, *Animal Species*).

Both project alternatives have the potential to result in significant impacts on special-status fish. Implementation of mitigation measures NC-1 through NC-4, AS-6 through AS-13, and TE-3 would reduce these impacts to less than significant. In addition, as part of consultation under Section 7 of FESA, a Biological Assessment (BA) was prepared to address project impacts on delta smelt and VELB (USFWS species) and Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, CCV steelhead, and the Southern DPS of North American green sturgeon (NMFS species). An EFH assessment was included with the BA to address project impacts on EFH for Chinook salmon. Implementation of measures incorporated into the project and measures required in the BA and EFH assessment will further reduce or mitigate potentially significant project impacts to less-than-significant levels.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included above.

Mitigation Measure AS-6: 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 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.
- 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 32,000 strikes per day (i.e., 1,600 hammer strikes per pile, per day) for piles for the temporary trestles), 20,000 strikes per day (i.e., 1,000 hammer strikes per pile, per day) for the piles for the bridge fender system, 12,800 strikes per day (i.e., 1,600 hammer strikes per pile, per day) for piles for the fixed span piers, and 6,000 strikes per day (i.e., 1,500 strikes per pile, per day) for the CISS piles for the movable span piers.
- During impact driving, the project proponent will require the contractor to use a bubble curtain or dewatered cofferdam to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded (see Chapter 1, *Environmental Commitments* and NES Section 4.4.1.2, *Project Impacts*).

- 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.

Mitigation Measure AS-7: Develop and Implement a Hydroacoustic Monitoring Plan

The project proponent or their 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 or their contractor will monitor underwater noise levels during all impact pile driving activities on land and in water to ensure that peak and cumulative SELs do not exceed estimated values (see NES Tables 4-10 through 4-14).
- 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 sound pressure level, sound exposure level, and root mean square per strike; and the accumulated sound exposure level per day at each monitoring station.
- The project proponent or their contractor will ensure that a qualified fish biologist is onsite 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 or their contractor will reduce the number of strikes per day to ensure that fish are no longer showing signs of stress, injury, or mortality.

Mitigation Measure AS-8: Monitor Turbidity in the Sacramento River

The project proponent will require their 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, and 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 the thresholds derived from the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region* (Central Valley Regional Water Quality Control Board 2018). If it is determined that turbidity levels exceed the Basin Plan thresholds, the project proponent or their contractor will adjust work to ensure that turbidity levels do not exceed the Basin Plan thresholds.

Mitigation Measure AS-9: 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 pumps.
- Cofferdam dewatering and fish rescue/relocation from within cofferdams will commence immediately following cofferdam closure to minimize the duration that fish are trapped in the cofferdam.

Mitigation Measure AS-10: Prepare and Implement a Fish Rescue and Relocation Plan

The project proponent or their 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 found trapped within cofferdams. Capture methods may include seining, dip netting, and 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 or their 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 a 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 possible cause of mortality if it can be determined.

Mitigation Measure AS-11: Develop and Implement a Barge Operations Plan

The project proponent or their contractor will develop and implement a barge operations plan. The barge operations 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 address the following.

- Bottom scour from propeller wash.

- Bank erosion or loss of submerged or emergent vegetation from propeller wash or excessive wake.
- Accidental material spillage.
- Sediment and benthic community disturbance from accidental or intentional barge grounding or deployment of barge spuds (extendable shafts for temporarily maintaining barge position) or anchors.
- Hazardous materials spills (e.g., fuel, oil, and hydraulic fluids).

The barge operations plan will serve as a guide to barge operations and to a biological monitor, who will evaluate barge operations during construction with respect to stated performance measures. This plan, when approved by the resource agencies, will be read by barge operators and kept aboard all vessels operating at the construction site.

Mitigation Measure AS-12: Prevent the Spread or Introduction of Aquatic Invasive Species

The project proponent or their contractor will implement the following actions to prevent the potential spread or introduction of aquatic invasive species associated with 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).

- Coordinate with the CDFW Invasive Species Program to ensure that the appropriate BMPs are implemented to prevent the spread or introduction of aquatic invasive species.
- Educate construction supervisors and managers about the importance of controlling and preventing the spread of aquatic invasive species.
- Train vessel and equipment operators and maintenance personnel in the recognition and proper prevention, treatment, and disposal of aquatic invasive species.
- 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.

Mitigation Measure AS-13: Minimize or Avoid Permanent Bridge Lighting from Directly Radiating on Water Surfaces of the Sacramento River

The project proponent or their contractor will minimize or avoid the effects of permanent bridge lighting on special-status fish species by implementing the following actions.

- Minimize nighttime lighting of the bridge structure for aesthetic purposes.
- Use the minimal amount of lighting necessary to safely and effectively illuminate vehicular, bicycle, and pedestrian areas on the bridge.
- Shield and focus lights on vehicular, bicycle, and pedestrian areas away from the water surface of the Sacramento River, to the maximum extent practicable.

Mitigation Measure TE-3: 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 1.87 acres (up to 57,600 square feet [1.32 acre] from bridge shading of aquatic habitat and new bridge piers; 24,126 square feet [0.55 acre] from RSP; and 84 square feet [0.002 acre] from bridge fender system) will be mitigated at a 3:1 ratio. The project proponent proposes to mitigate the permanent loss of critical habitat through purchase of 5.61 acres of mitigation credits at a NMFS- and USFWS-approved anadromous fish and delta smelt conservation bank.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact BIO-7: Impacts on, and Loss of, Cottonwood Riparian Forest (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

One sensitive community, cottonwood riparian forest, occurs in the BSA along the Sacramento River. A description of this community can be found in Section 2.3.1.2.

Construction of the proposed project would result in a loss of cottonwood riparian habitat. The acreage of impacts on cottonwood riparian forest in the BSA differs between the two alternatives (Table 2.3.1-1). Construction during the ultimate design year phase would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of these roads occur in riparian habitat, this phase of construction would not affect cottonwood riparian forest. Additionally, impacts on cottonwood riparian forest would be the same with any of the proposed bridge designs (bascule, vertical lift, swing). The impact discussion below, therefore, is focused on the interim design year phase of the two build alternatives.

Permanent removal of the existing cottonwood riparian forest vegetation within the proposed project footprint would result from construction activities related to the abutments for the fixed-span approach structures on both the City of West Sacramento and City of Sacramento sides, placement of RSP to stabilize the bridge abutments on each side of the river, and temporary access roads (Figures 2.3.1-1 and 2.3.1-2). Riparian vegetation would be removed between the permanent footprint of the bikeways and the river on both sides during construction of the abutment structures and overhead bridge. The area beneath the bridge approach structures on both ends of the bridge would be unlikely to revegetate after construction due to low clearance under the bridge and shading from the bridge. These effects are considered significant.

Temporary impacts under Alternative B or C would occur from trimming riparian vegetation and removing additional trees and understory vegetation to provide equipment access for construction of the interim year design of the project.

The proposed project could result in indirect impacts on riparian habitat from shading by the new bridge approach structures on both riverbanks. 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. 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. Additional discussion of potential indirect impacts from shading and loss of SRA cover habitat is provided in Section 2.3.4.3, *Environmental Consequences – Build Alternative – Fish Species*.

Under either of the build alternatives, state and federal agencies would require avoidance, minimization, and compensatory mitigation for the loss of riparian habitat. CDFW would require an LSAA for construction within riparian habitat and compensation for the loss of riparian trees and habitat. The City of West Sacramento and City of Sacramento would require compensation for loss of protected riparian trees.

Impacts on cottonwood riparian forest under both alternatives would be significant. Implementation of mitigation measures NC-1, NC-2, NC-3, and NC-4 would reduce these impacts to less-than-significant levels.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-4: Compensate for Temporary Effects on and Permanent Loss of Cottonwood Riparian Forest (Including SRA Cover)

The full text of this measure is included above.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact BIO-8: Impacts on State and Federally Protected Waters (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Protected wetlands are limited to the Sacramento River (perennial stream). A description of the river can be found in Section 2.3.2.2.

The project may be constructed in two phases or in a single phase. If constructed in two phases, the new bridge would be constructed in just one phase (the first of two phases). Construction during the second phase, the ultimate design year phase, would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of this road work would occur in the Sacramento River, this phase of construction would not affect perennial stream. Table 2.3.2-1 shows the acres of perennial stream that would be permanently or temporarily affected by construction of each build alternative. The extent of impacts on perennial stream would vary depending on the selected bridge type. To address the possible impacts of the bridge type that ultimately is built, the largest in- and over-

water footprint and the greatest number of construction-related impacts of the three types were assumed for the analysis.

Implementation of the proposed project would result in permanent and temporary impacts (placement of fill) on the Sacramento River in the BSA. Permanent impacts on perennial stream in the Sacramento River would result from bridge components and RSP to be placed below the OHWM (see Table 2.3.2-1). Permanent impacts on perennial stream would vary between the proposed bridge designs (bascule, vertical lift, swing). These differences are summarized below. See Appendix S for a more detailed analysis of the impacts on the riverbed.

The two fixed-spans for the new bridge would be constructed on piers 2 and 3, and the moveable span section of the bridge would be constructed on piers 4 and 5. The difference between the bridge design types would be the number of piles needed. The footprints for piers 2 and 3 on the river bottom would total up to 13,500 square feet (0.31 acre) for the bascule bridge and less for the vertical lift and swing bridge designs. The footprints for piers 4 and 5 would total 360 square feet (0.01 acre).

A bridge fender system supported by piles placed on the riverbed would be constructed around the moveable span piers. The footprint of the bridge fender system on the river bottom would total approximately 0.006 acre.

RSP would be installed along the City of Sacramento and City of West Sacramento shorelines, covering up to 0.55 acre of the bank below the OHWM (see Tables 1-1 and 1-3 in Section 1.3.1.)

Temporary impacts on perennial stream would be the same for all three proposed bridge designs (bascule, vertical lift, swing). Temporary impacts would occur from installation of cofferdams, temporary trestle piles, and spud piles for barges below the OHWM during construction (see Table 2.3.2-1).

State and federal agencies would require avoidance, minimization, and compensatory mitigation for the loss of perennial stream. The loss of perennial stream is considered adverse because perennial stream provides a variety of important ecological functions and values.

Additional indirect impacts from project construction on water quality, such as increased turbidity and chemical runoff, could occur in perennial drainage habitat outside the project footprint. Water quality protection measures to avoid this impact would be required by the project environmental commitments (see Section 1.3.1. *Build Alternatives – Environmental Commitments*) and implementation of construction site BMPs specified in the final SWPPP that would be developed for the project, as well as CWA Section 401 permit conditions to minimize introduction of construction-related contaminants and mobilization of sediment in the Sacramento River. Broadly, these BMPs would address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices. The BMPs would be based on the best conventional and best available technology.

Both alternatives would result in significant impacts on state- and federally protected waters. Implementation of mitigation measures NC-1, NC-2, NC-3, and WW-1 would reduce these impacts to less-than-significant levels.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure WW-1: 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 permanent fill of up to 0.431 acre of non-wetland waters of the U.S. in the Sacramento River by purchasing mitigation bank credits, which can be in the form of preservation 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 0.862 acre, 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 0.431 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 Liberty Island Conservation Bank, Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, Elsie Gridley Mitigation Bank, River Ranch Wetland Mitigation Bank, or other approved bank with available riparian stream credits. 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 Mitigation Measure NC-4. 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.

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?

Impact BIO-9: Impacts on Fish Movement and Migratory Corridors (Alternatives B and C) (Less Than Significant)

Construction of the project would result in temporary impacts on the migration and movement of fish in the Sacramento River. Project construction has been staged and designed to accommodate fish movement, leaving an open channel at all times. When the bridge construction is complete, there would be no impact

on fish movement. The project alternatives are not anticipated to have a significant impact on migratory corridors. This impact is considered less than significant. No mitigation is necessary.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Impact BIO-10: Impacts on Protected Trees (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Section 2.3.1.2 includes descriptions of protected tree ordinance criteria for both the City of West Sacramento and the City of Sacramento. Within the proposed project footprint alternatives, approximately 33 trees meet the tree ordinance criteria for the city in which they occur—approximately 13 trees in West Sacramento and 20 trees in Sacramento (Appendix S). Not all street trees in the BSA were included in the tree survey, and additional protected street trees likely are not accounted for in these estimates. The tree species included are boxelder, white alder, camphor, Oregon ash, California black walnut, western sycamore, Fremont’s cottonwood, valley oak, black locust, Goodding’s black willow, and elm. All of these trees except the elm grow in the cottonwood riparian forest natural community. Black locust is an invasive species, but several black locust trees in the riparian forest on the City of Sacramento side of the river meet the protected tree size criterion.

Construction during the ultimate design year phase would include completion of roads for the full buildout of the approved mobility network (Figures 2.3.1-1 and 2.3.1-2). Because none of these roads occur in riparian habitat and would not affect street trees, this phase of construction would not affect protected trees. Impacts on protected trees would be the same for any proposed bridge design (basculer, vertical lift, swing). The impact discussions below, therefore, focus on the interim design year phases of the two build alternatives.

Construction of Alternative B would remove up to four protected riparian trees and potentially several street trees in the City of West Sacramento and up to eight protected riparian trees and additional street trees in the City of Sacramento. Construction of Alternative C would remove up to 6 protected riparian trees and potentially several street trees in the City of West Sacramento, and up to 13 protected riparian trees and additional street trees in the City of Sacramento. Under either alternative, trees would be removed for construction of abutments for the two fixed-span bridge approach structures and the bike trails on both the City of Sacramento and City of West Sacramento sides. These effects are considered significant.

Under either build alternative, additional temporary impacts on protected trees could occur during construction due to trimming of trees for construction access. However, the protection measures in each city’s tree ordinance would be implemented to avoid impacts on protected trees outside of the permanent impact area.

State agencies would require avoidance, minimization, and compensatory mitigation for the loss of riparian trees, as described above for cottonwood riparian forest. CDFW would require an LSAA for construction within the riparian habitat and compensation for removed trees and riparian habitat. The City of West Sacramento and City of Sacramento would require compensation for loss of protected riparian and street trees.

Both alternatives would result in significant impacts on protected trees. Implementation of mitigation measures NC-1, NC-2, NC-3, and NC-5 would reduce these impacts to less-than-significant levels.

Mitigation Measure NC-1: Install Orange Construction Fencing between the Construction Area and Adjacent Sensitive Biological Resources

The full text of this measure is included above.

Mitigation Measure NC-2: Conduct Environmental Awareness Training for Construction Employees

The full text of this measure is included above.

Mitigation Measure NC-3: Conduct Periodic Biological Monitoring

The full text of this measure is included above.

Mitigation Measure NC-5: Compensate for Loss of Protected Trees in Landscaping or Ruderal Habitat

Within 1 year prior to construction, the project proponent will conduct a preconstruction inventory of all trees to be removed. The inventory will include the location, species, diameter of all trunks, approximate height and canopy diameter, and approximate age—in support of a tree permit for removal of the protected trees. All conditions of the tree permits will be implemented.

The project proponent will mitigate the loss of protected street 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 in-lieu fees to the City of West Sacramento and the City of Sacramento, based on the tree removal locations, which would be used to purchase and plant trees elsewhere in West Sacramento and 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 replacement of black locust, which is an invasive species and will be replaced with a 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 their vigor and survival. If any of the original 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.

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?

The West Sacramento portions of both alternatives are within the Yolo HCP/NCCP plan area, and the City of West Sacramento is a participant in the plan. Neither alternative would be in conflict with the

plan's conservation strategy. The BSA is outside of ecological corridors and conservation areas identified as part of the plan's conservation strategy (ICF 2018). Although the Sacramento River is an identified creek corridor, there are no specific conservation objectives and goals targeting the portion of the Sacramento River in the BSA. Considering this information, the project would not conflict with the provisions of the plan. There would be no impact.

3.2.5 Cultural Resources

	Significant and Unavoidable 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 pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §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 dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2.5.1 CEQA Significance Determinations for Cultural Resources

The potential for the project to adversely affect cultural resources was assessed in the project’s Historic Property Survey Report (ICF 2021) and in Section 2.1.9, *Cultural Resources* of this document. The following discussion is based on those analyses.

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Impact CUL-1: Potential for Change in Significance of Historical Resources (Alternatives B and C) (Less Than Significant)

As discussed in Section 2.1.9, *Cultural Resources*, four historic era built-environment resources within the project area are considered historical resources for the purposes of CEQA: a segment of the Sacramento River West Levee, a segment of the Sacramento River East Levee, a segment of the Sacramento Northern Railway, and a segment of the Walnut Grove Branch Line.

Sacramento River West Levee. A segment of the Sacramento River West Levee is assumed eligible for listing in the NRHP and therefore is considered a historical resource under CEQA. The historical resource’s character-defining features, those qualities that convey its significance, are its historic setting at the Sacramento River front, its historic alignment along the Sacramento River front, and its continued use as a Sacramento River levee. Specifically, the physical components of the resource’s historic setting are the Sacramento River and its industrial eastern and western wharfs.

As stated in the project description in Chapter 1, both Alternatives B and C propose building a new bridge spanning the Sacramento River. The bridge structure would span the Sacramento River West Levee, and neither the bridge nor its pilings would be set on or in the levee. The project’s proposed bicycle undercrossing would be set on the levee and potentially would cut up to 2 feet into the levee feature. Although this project element would cut into the levee, the cut would not alter, damage, or destroy the historical resource’s character-defining features and therefore would not cause a substantial adverse change in the significance of the resource.

Sacramento River East Levee. A segment of the Sacramento River East Levee is considered a historical resource under CEQA. The historical resource’s character-defining features are its historic setting at the Sacramento River front, its historic alignment along the Sacramento River front, and its continued use as

a Sacramento River levee. Specifically, the physical components of the resource's historic setting are the Sacramento River and its industrial eastern and western wharfs.

As stated in the project description in Chapter 1, both Alternatives B and C propose building a new bridge spanning the Sacramento River. The bridge structure would span the Sacramento River East Levee, and neither the bridge nor its pilings would be set on or in the levee. The project's proposed bicycle undercrossing would be set on the levee and potentially would cut up to 2 feet into the levee feature. Although this project element would cut into the levee, the cut would not alter, damage, or destroy the resource's character-defining features and therefore would not cause a substantial adverse change in the significance of the resource.

Sacramento Northern Railway. A segment of the Sacramento Northern Railway is assumed eligible for listing in the NRHP and therefore is considered a historical resource under CEQA. The historical resource's character defining features are its historic setting at the Sacramento River front, its historic alignment along the Sacramento River front, and its continued use as a Sacramento River levee. Specifically, the physical components of the resource's historic setting are the Sacramento River and its industrial eastern and western wharfs.

As stated in the project description in Chapter 1, all build alternatives in West Sacramento would include a new intersection for the bridge roadway at South River Road. Alternative B would realign 15th Street to connect to Jefferson Boulevard in West Sacramento, and Alternative C would connect as a "T" intersection to South River Road in West Sacramento. The proposed bridge span installation and roadway modifications have limited potential to affect the qualities for which the rail would be assumed eligible for listing and therefore would not cause a substantial adverse change in the significance of the resource.

Walnut Grove Branch Line. A segment of the Walnut Grove Branch Line is considered a historical resource under CEQA. The historical resource's character defining features are its function as a rail, its historic setting, and its historical alignment.

As stated in the project description in Chapter 1, under Alternatives B and C, the at-grade State Parks railroad crossing at Broadway would remain in the same location as an operating rail. The proposed new bridge span installation, existing roadway modifications, and new pedestrian pathways have limited potential to affect the qualities for which the rail is eligible for listing and therefore would not cause a substantial adverse change in the significance of the resource.

Under either build alternative, impacts on the above resources are considered less than significant. No mitigation is necessary.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Impact CUL-2: Potential for Adverse Change in Significance of an Archaeological Resource (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

As discussed in Section 2.1.9, *Cultural Resources*, one historic era archaeological resource (P-34-000619) is assumed eligible for listing in the NRHP and therefore is considered a historical resource under CEQA. The historical resource's character-defining features are intact archaeological deposits deeply buried within the railroad spur matrix.

Under Alternatives B and C, the railroad spur and therefore the artifact deposits within the spur matrix would remain in their present location and condition. The project description and design plans describe

placement of from 2 to 8 feet of fill on top of the portions of P-34-000619 within the ADI, using soil stabilization methods that would not require re-grading or ripping the soil. The fill would raise the current surface elevation of Broadway for the bridge approach and raise the elevation of the driveway directly east of the site that provides access to the Chevron parcel. The fill placed on top of the railroad spur and project activities in the area have limited potential to affect the qualities for which the resource is eligible for listing and therefore would not cause a substantial adverse change in the significance of the resource.

It is possible that previously unknown archaeological resources could be uncovered during ground-disturbing construction activities for any of the build alternatives. This impact is considered potentially significant. With implementation of the measures below, the potential impact would be reduced to a less-than-significant level. This impact would be less than significant with mitigation incorporated.

Mitigation Measure CUL-1: 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.

Mitigation Measure CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

The project proponents shall inform its contractor(s) of the possibility of subsurface archaeological deposits within the project area by including the following directive in contract documents:

“If prehistoric or historical archaeological deposits are discovered during project activities, all work within 100 feet of the discovery shall be redirected and a qualified archaeologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Project personnel shall not collect or move any archaeological materials or human remains and associated materials. Archaeological resources can include flaked-stone tools (e.g., projectile points, knives, choppers) or obsidian, chert, basalt, or quartzite toolmaking debris; bone tools; culturally darkened soil (i.e., midden soil often containing heat-affected rock, ash and charcoal, shellfish remains, faunal bones, and cultural materials); and stone-milling equipment (e.g., mortars, pestles, handstones). Prehistoric archaeological sites often contain human remains. Historical materials can include wood, stone, concrete, or adobe footings, walls, and other structural remains; debris-filled wells or privies; and deposits of wood, glass, ceramics, metal, and other refuse.”

If archaeological deposits are identified during project subsurface construction, all ground-disturbing activities within 100 feet shall be redirected and a qualified archaeologist contacted to assess the situation and consult with agencies as appropriate. The archaeologist shall first determine whether such deposits are historical resources as defined in 14 CCR §15064.5(a) and as required of the lead agency at 14 CCR §15064.5(c)(1). If these deposits do not qualify as historical resources, a determination will be made whether they qualify as unique archaeological resources, pursuant to 14 CCR §15064.5(c)(3). If the deposit qualifies as a historical resource or a unique archaeological resource, it will need to be avoided by adverse effects or such effects must be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and

analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach also may be appropriate. Upon completion of the assessment, the archaeologist will prepare a report documenting the methods and results, and provide recommendations for the treatment of the archaeological materials discovered. The report will be submitted to the project proponents and the Northwest Information Center.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Impact CUL-3: Potential Disturbance of Human Remains (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

The project area generally has a low sensitivity for archaeological deposits, including human remains. Earth-disturbing 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 will cease in any area or nearby area suspected to overlie remains, and the County Coroner will 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 Descendant. The project proponent will work with the Most Likely Descendant 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.

This impact is considered potentially significant. With implementation of the measures below, the impact would be reduced to a less-than-significant level. This impact would be less than significant with mitigation incorporated.

Mitigation Measure CUL-1: Conduct Mandatory Cultural Resources Awareness Training for Construction Personnel

Refer to the full text of this measure under Impact CUL-1.

Mitigation Measure CUL-2: Implement Avoidance and Notification Procedures for Cultural Resources Discovered during Construction

Refer to the full text of this measure under Impact CUL-1.

Mitigation Measure CUL-3: Stop Work if Human Remains are Encountered during Ground-Disturbing Activities

If human remains are encountered, these remains shall be treated in accordance with California Health and Safety Code Section 7050.5. The project proponents shall inform its contractor(s) of the cultural sensitivity of the project area for human remains by including the following directive in contract documents:

“If human remains are encountered during project activities, work within 100 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage

Commission will identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.”

In the event that human remains are encountered during project activities, work within 100 feet of the discovery will be redirected and the County Coroner notified immediately. At the same time, an archaeologist will be contacted to assess the situation and consult with agencies as appropriate. Project personnel should not collect or move any human remains and associated materials. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist will prepare a report documenting the methods and results, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the Most Likely Descendant. The report will be submitted to the project proponents and the Northwest Information Center.

3.2.6 Energy

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.6.1 CEQA Significance Determinations for Energy

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact ENG-1: Energy Consumption during Construction and Operation (Alternatives B and C) (Less Than Significant)

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. The project’s use of energy during construction and operations would be necessary to provide for improved transportation and would not be wasteful or inefficient.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The project does not obstruct state or local plans for renewable energy or energy efficiency. There would be no impact.

3.2.7 Geology and Soils

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<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"/>

3.2.7.1 CEQA Significance Determinations for Geology and Soils

Because the build alternatives have similar configurations and depths of construction, they are analyzed together in this section. A detailed discussion of the regulatory and geologic setting is included in Section 2.2.3, *Geology/Soils/Seismic/Topography*.

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?; ii) Strong seismic ground shaking?; iii) Seismic-related ground failure, including liquefaction?; iv) Landslides?

Impact GEO-1: Potential for Impacts Related to Seismicity, Liquefaction, or Landslides (Alternatives B and C) (Less Than Significant)

Although the project is in tectonically active California, the risk of fault rupture in the project area is low because no faults are mapped at or near the project site. The nearest faults (approximately 15–18 miles from the project site) are the Dunnigan Hills Fault to the northwest near Woodland, and the Midland Fault to the southwest near Dixon (California Department of Conservation 2020a). The project site is in a seismically active area, and strong shaking could be expected in the life of the facility; however, there are no known active faults capable of fault rupture that pass through the site. The site is not in an Alquist-Priolo Special Studies Zone, and it is not within 1,000 feet of any fault in the Caltrans Fault Database. Additionally, the project itself, either through construction or operation, does not have the ability to cause ground shaking to the point of fault rupture.

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. A review of the California Department of Conservation online maps for liquefaction reveals that there is no information available for the project area (California Department of Conservation 2020c). However, the nearby project, I Street Bridge Replacement Project, found a soil layer that is prone to liquefaction in a silty sandy layer (GEI Consultants 2014). Table 2.2.3-1 identifies this soil series within this project site. Therefore, it can be assumed that there is a risk of liquification at the project site.

A review of the California Department of Conservation online maps for landslide hazards reveals that there is no information available for the project area (California Department of Conservation 2020b). However, the area does not appear particularly susceptible for landslides given its relatively flat topography.

All project components would be designed in accordance with standard engineering practices, The Caltrans *Standard Specifications* (California Department of Transportation 2018), and the Caltrans Seismic Design Criteria (California Department of Transportation 2019). This impact is considered less than significant. No mitigation is necessary.

b) Result in substantial soil erosion or the loss of topsoil?

Impact GEO-2: Increase in Soil Erosion during Construction (Alternatives B and C) (Less Than Significant)

Ground-disturbing earthwork associated with construction at the project site may increase soil erosion rates and loss of topsoil. Compliance with the erosion-related requirements applicable to the project would ensure that construction activities do not result in significant erosion. These requirements are described in the Caltrans *Construction Site Best Management Practices (BMPs) Manual* (California Department of Transportation 2017) and the *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual* (California Department of Transportation 2016). This impact is considered less than significant. No mitigation is necessary.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

There is a risk of secondary seismic hazards related to slope instability and liquefaction because of the slope of the riverbanks, the potential for river erosion, and the potential for liquefaction. Liquefaction or excessive erosion could cause bridge damage or failure. 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 would be performed as part of the final bridge design process in compliance with state and local design and construction standards. All structures would be designed using the Caltrans SDC (California Department of Transportation 2019) to meet the minimum seismic requirements for highway bridges designed in California. There would be no impact.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

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; project structures would be designed to account for expansive soils if determined necessary during final design. All construction and engineered fills would comply with the Caltrans *Standard Specifications* (California Department of Transportation 2018), and all construction would compact the roadway subgrade in accordance with the specifications. As such, the project design would not create direct or indirect risks related to expansive soil. There would be no impact.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The proposed project would not implement the use of septic tanks or wastewater disposal systems. There would be no impact.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact GEO-5: Potential to Destroy a Unique Paleontological Resource (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

For construction of most elements of the project, the vertical construction limits would not exceed 2 feet deep. Both bridge alignments include areas off-set from the banks of the Sacramento River, where maximum excavation depths would not exceed 10 feet below ground surface for pedestrian access below the bridge and for bank stabilization directly under the bridge. Pile depths for column supports would extend approximately 140 feet at five locations: one near each bank of the river for bridge reinforcements and three within the river for bridge columns. Piles for the two bridge fender systems within the river would be driven to a depth of approximately 60 feet.

Paleontological sensitivity, although unknown and undemonstrated, can be considered low for both sides of the project area because the anticipated ground disturbance would occur primarily in previously disturbed areas; consequently, project construction would be unlikely to encounter intact sensitive paleontological resources due to prior development and ground-disturbing activities in the area. In addition, given that the majority of project construction would be relatively shallow (less than 2 feet

deep), it is unlikely that significant paleontological resources would be encountered through these construction activities as the soils/unit would be such a young age (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. If project construction should reach these depths and should any significant paleontological resources exist, significant impacts on those resources could occur.

To minimize effects on paleontological resources, the project proponent will implement Caltrans Standard Specification 14-7.03, *Discovery of Unanticipated Paleontological Resources* (California Department of Transportation 2018:229), if needed during construction. The standard specification describes the following procedures.

If paleontological resources are discovered at the job site, do not disturb the material 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 and modify the dimensions of the secured area if needed. Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized.

Compliance with the standard specification and implementation of the mitigation measures below would reduce this potentially significant impact to a less-than-significant level.

Mitigation Measure PAL-1: 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.

Mitigation Measure PAL-2: Stop Work if Fossil Remains Are Encountered during Construction

If 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.

3.2.8 Greenhouse Gas Emissions

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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"/>

3.2.8.1 CEQA Significance Determinations for Greenhouse Gas Emissions

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

Impact GHG-1: Greenhouse Gas Emissions (Alternatives B and C) (Less Than Significant)

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, 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 remain uncertain. 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 no current federal law specifically relates to climate change or the reduction of GHGs, the U.S. EPA is developing proposed regulations under the FCAA. 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 AB 32, which establishes a statewide goal to reduce GHG emissions back to 1990 levels by 2020. SB 375 supports AB 32 through coordinated transportation and land use planning with the goal of more sustainable communities. SB 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 B-55-18 identifies a longer-term goal for 2045.⁴

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 9.0). Construction of the proposed project would occur for 39 months, and a total of 3,098 metric tons of carbon dioxide equivalent (CO₂e) would be generated, equal to an average of 953 metric tons of CO₂e per year.

Operational emissions for existing (2017), opening (2030), and design (2040) year conditions were modeled using the CT-EMFAC model and are presented in Tables 3.2.8-1 and 3.2.8-2. Compared to the

⁴ EO B-55-18 has set forth a reduction target to achieve carbon neutrality by 2045. This target has not been legislatively adopted.

No Build Alternative, the build alternatives would result in negligible changes in GHG emissions (i.e., a 0.1-percent or less increase or even a decrease under some analysis conditions). Relative to existing conditions, however, the build alternatives would result in substantial emissions reductions, predominately due to improvements in exhaust emissions.

Table 3.2.8-1. Estimated 2030 Annual GHG Emissions

Source	Metric Tons per Year
Existing conditions	7,859,764
No Build Alternative 2030	7,270,306
Build Alternative B 2030	7,267,739
Net change from 2030 No Build to Alternative	(2,567) (<0.1%)
Net change from existing conditions	(592,025) (7.5%)
Build Alternative C 2030	7,267,175
Net change from 2030 No Build to Alternative	(3,131) (<0.1%)
Net change from existing conditions	(592,589) (7.5%)

Source: Emission rates from the CT-EMFAC2017 model.

Table 3.2.8-2. Estimated 2040 Annual GHG Emissions

Source	Metric Tons Per Year
Existing conditions	7,859,764
No Build Alternative 2040	7,215,678
Build Alternative B 2040	7,215,327
Net change from 2040 No Build to Alternative	(351) (<0.1%)
Net change from existing conditions	(644,437) (8.2%)
Build Alternative C 2040	7,219,309
Net change from 2040 No Build to Alternative	3,631 0.1%
Net change from existing conditions	(640,455) (8.1%)

Source: Emission rates from the CT-EMFAC2017 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 decision⁵ in the *Centers for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) 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 model,⁶ tiering from a qualified climate action plan (CAP), use of numeric thresholds, and compliance with regulatory programs. Use of a business-as-usual threshold is most applicable to land use development projects with emission sources covered by the AB 32 scoping plan.

The City of West Sacramento is currently preparing a comprehensive update to its original draft CAP that was prepared in 2009 but was never adopted. The CAP will demonstrate the City's commitment to reducing GHG emissions in a manner that is consistent with the State of California's ambitious GHG reduction goals and reflective of the local community context.

The City of Sacramento adopted the *Sacramento Climate Action Plan* in 2012 to reduce community-wide GHG emissions, then incorporated the CAP into the 2035 General Plan adopted on March 3, 2015 (City of Sacramento 2015:Appendix B). However, the individual measures outlined in the CAP primarily apply to land use development projects, as opposed to new roadway projects. Accordingly, this analysis evaluates GHG emissions using a combination of numeric thresholds and compliance with regulatory programs. Numeric thresholds considered include those adopted by SMAQMD (as applicable to transportation projects) and net zero above existing conditions. 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 CARB. These levels are 7 percent below 2005 emissions levels by 2020 and 19 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,⁷ and recommendations made by the Association of Environmental Professionals Climate Change Committee.⁸ As applicable, this analysis also considers project consistency with the larger goals and objectives of the City of Sacramento's CAP.

SMAQMD has adopted a construction threshold of 1,100 metric tons of CO₂e for construction projects (Sacramento Metropolitan Air Quality Management District 2021). As discussed above, construction of the project would generate an average of 953 metric tons of CO₂e per year, which is below SMAQMD's construction threshold. Accordingly, construction-generated GHG emissions are considered less than significant. No mitigation is required.

Long-term operational impacts were assessed by comparing with-project emissions to those generated under existing conditions. Opening year (2030) GHG emissions for both alternatives are less than existing

⁵ 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.

⁶ 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."

⁷ See the California Appellate Court, 4th District 2014 rulings in the *Cleveland National Forest Foundation et al. vs. SANDAG* and *Sierra Club vs. County of San Diego* cases.

⁸ 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."

and no build conditions. Because there is an emissions reduction in 2030, implementation of the build alternatives would help the State achieve the SB 32 GHG reduction target; this would result in a less-than-significant impact. Design year (2040) GHG emissions for Alternative B are less than existing and no build conditions and would result in a less-than-significant impact. Design year (2040) emissions for Alternative C are less than existing conditions but are slightly higher than no build conditions. Because an emissions reduction is associated with design year (2040) Alternative C compared to existing conditions, this would result in a less-than-significant impact.

The project also is consistent with state (SB 375) and local (e.g., City of Sacramento's CAP) plans to reduce GHG emissions from mobile sources. The proposed project would improve connectivity to, and accessibility of, businesses, recreational areas, and new development opportunity sites in the urban core of West Sacramento and Sacramento. The new bridge also would provide pedestrian and bicycle facilities. This is consistent with the City of Sacramento's CAP to support connected neighborhoods and alternative transportation.

The proposed project is listed in the 2020 MTP/SCS (Sacramento Area Council of Governments 2019a). The Final EIR for the 2020 MTP/SCS demonstrates that projects identified in the 2020 MTP/SCS meet the CARB's issued SB 375 GHG targets for the SACOG region in 2020 and 2035 (Sacramento Area Council of Governments 2019b). GHG emissions associated with the 2020 MTP/SCS, including those projects identified in the 2020 MTP/SCS, therefore would be considered less than significant. The design concept and scope of the proposed project are consistent with the project description in both documents. Because the proposed project is identified and consistent with SACOG's 2020 MTP/SCS, which was found to have a less-than-significant GHG impact, project-level GHG emissions would be consistent with SB 375 and would be considered less than significant.

Based on the above analysis, the project would reduce long-term operational GHG emissions, relative to existing conditions. This impact is considered less than significant. No mitigation is required.

While not required to achieve a less-than-significant impact conclusion, implementation of SMAQMD's recommended BMPs (Minimization Measure GHG-1) as outlined below would further reduce short-term construction emissions, consistent with the City of Sacramento's commitment to GHG mitigation.

Minimization Measure GHG-1: 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 onsite 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 a CARB-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.

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

Based on the analysis shown above, the proposed project is consistent with SB 375, SACOG's 2020 MTP/SCS, and the goals and objectives of the City of Sacramento's CAP to reduce GHG emissions from mobile sources. There would be no impact.

3.2.9 Hazards and Hazardous Materials

	Significant and Unavoidable 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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle 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 checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) 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"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.9.1 CEQA Significance Determinations for Hazards and Hazardous Materials

Both build alternatives would require similar ground disturbance and would encounter similar hazards and hazardous materials. Therefore, both build alternatives have the same potential for impacts involving hazards and hazardous materials and are not discussed separately in this section.

The potential for the project to create significant hazards or impacts related to hazardous materials was assessed in the Phase I ISA prepared for the project (Blackburn Consulting 2020). The report is available in Appendix P. The ISA study area, which comprises proposed acquisitions and adjacent parcels, and potential hazardous waste sites are shown in Figures 2.2.5-1 and 2.2.5-2. The methods and identification of hazardous waste/materials potentially present in the study area, as discussed in the ISA, are presented in Section 2.2.5, *Hazardous Waste/Materials*.

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact HAZ-1: Risk of Hazardous Material Exposure from Transport and Use during Construction (Alternatives B and C) (Less Than Significant)

Construction of the proposed project would involve the transportation, storage, and use of small quantities of common hazardous materials, such as fuels and oils used to operate construction equipment. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater; or they could be released into the air, resulting in a potential public safety hazard. Consistent with applicable laws and regulations, the transportation, handling, and disposal of these materials would comply with regulations enforced by the California Unified Program – a consolidation of six environmental programs at the local level – and Cal-OSHA. In addition, implementation of standard BMPs under the SWPPP would further reduce the potential of accidental release or exposure. This impact is considered less than significant. No mitigation is required.

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?

Impact HAZ-2: Risk of Public or Environmental Exposure to Released Hazardous Materials (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. The use of heavy equipment involves 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.

As described in Section 2.2.5, *Hazardous Waste/Materials*, the ISA identified 36 parcels with potentially hazardous material conditions within or immediately adjacent to the project area. Disturbance of these areas during construction activities could create a significant hazard and expose humans and the environment to contaminated soil.

The project area also has the potential for presence of hazardous materials in the form of ADL, and lead and chromium in yellow/white traffic striping. Construction workers could be exposed to hazardous materials during ground-disturbing activities such as grading and roadbed resurfacing at any of the areas known to contain hazardous substances. The ISA identified areas of moderate concern that would be affected by the project. These areas are listed in Section 2.2.5, *Hazardous Waste/Materials* and include local roadways, parcels containing railroad tracks or former rail alignments, and parcels with past and current commercial and industrial facilities that used hazardous materials (e.g., oil, fuels, and pesticides).

Poles and other support structures for several above-ground public and private utilities, including electric and communication facilities, would need to be relocated to match new roadway widths and alignments. Access points to underground utilities would be adjusted to the new ground or roadway elevation within the limits of the proposed project, including access points to existing water, sewer, gas, electric, and communication facilities within Broadway, South River Road, 15th Street, and Jefferson Boulevard. Ground disturbance for the relocations and grade adjustments would be within the limits of disturbance of the proposed project. Relocations and grade adjustments would occur prior to or during construction and could result in the release of hazardous materials.

Though no direct conflict is present, there is the potential for explosive hazard if the Kinder Morgan and PG&E gas transmission lines that run adjacent to South River Road in West Sacramento and under the Sacramento River if the lines are damaged during project construction. Advance notification and coordination with utility service providers prior to and during construction would ensure that the lines are avoided.

Conditions that lead to the release of hazardous materials could cause a significant impact. In addition to environmental protections established by state and federal law, City and Caltrans policies and standards address responsibilities for hazardous conditions. Construction and implementation of the proposed project would conform with applicable policies related to hazards and hazardous materials in the elements of the West Sacramento and Sacramento General Plans, requirements of the West Sacramento and Sacramento city codes, and Caltrans *Standard Specifications* Section 14, *Environmental Stewardship* (California Department of Transportation 2018:231–240).

Measures to help protect workers, such as site assessment, soil testing, safe handling practices, proper disposal methods, and a worker health and safety plan, also will help keep the public safe from inadvertent exposure to hazards and hazardous materials.

Complying with all applicable laws and regulations would help reduce the potential for significant impacts related to hazardous waste and materials. Implementation of the mitigation measures below would reduce this potentially significant impact to a less-than-significant level.

Mitigation Measure HAZ-1: Conduct Phase II Site Assessments prior to Construction

For sites identified as high or medium risk, a Phase II preliminary environmental screening of the subsurface soils or groundwater will be completed within the project boundaries at these parcels. At a minimum, the Phase II preliminary screening will investigate each parcel within the project area where construction is anticipated to disturb the subsurface soil or encounter groundwater. Should the preliminary screening indicate the presence of soil or groundwater contamination within the project area, a Phase II assessment will be conducted to investigate the depth and lateral extent of contamination within the project area. Low-risk sites will be re-evaluated (e.g., conduct owner interviews and a site survey) when site access is obtained. An additional Phase II assessment may be recommended if hazardous materials are identified.

The project proponent will conduct a Phase II assessment within the proposed acquisition area of the parcels described below.

- The following APNs in West Sacramento will be assessed for possible soil/groundwater contamination:
 - Alternative B only: 058-034-028, 058-280-003, 058-350-008, 058-990-007, 058-990-011.
 - Alternative C only: 058-270-007, 058-270-008, 058-270-009, 058-270-012, 058-270-014.
 - Alternatives B and C: 058-270-006, 058-270-011, 058-280-005, 058-280-006, 058-350-001.
- The following APNs in Sacramento will be assessed for possible soil/groundwater contamination: 009-0012-008, 009-0012-009, 009-0012-064, 009-0012-029, 009-0012-071, 009-0012-072, 009-0020-001, 009-0020-002, 009-0223-007, 009-0223-012, 009-0223-016, 009-0232-005, 009-0232-009, 009-0232-016, 009-0232-017, 009-0232-018, 009-0235-007, 009-0237-005, 009-0237-010, 009-0237-028, 009-0030-054.

- Areas along South River Road, Jefferson Boulevard, and 15th Street in West Sacramento and along Broadway, Front Street, 3rd Street, and 5th Street in Sacramento will be assessed for potential ADL impacts
- In West Sacramento, APNs 058-270-011 (Alternatives B and C), 058-280-007 (Alternative C only), 058-990-007, and 058-990-11 (Alternative B only); in Sacramento, APNs 009-0012-009, 0090012-29, 009-0020-02, 009-0223-007, 009-0223-012, and 009-0223-016 will be evaluated for the potential for metals, TPH, lead, arsenic, and creosote impacts for all construction activities that will result in soil excavation within railroad or former railroad easements at these parcels.

Based on the findings of the Phase II investigation, if a soils management plan and health and safety plan are necessary, they will be prepared and implemented.

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)

Mitigation Measure HAZ-2: 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 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 lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact HAZ-3: Risk of Hazardous Emissions in Proximity to an Existing School (Alternatives B and C) (Less Than Significant)

The nearest school (Leataata Floyd Elementary School located at 407 McClatchy Way in Sacramento) is located approximately 0.15 mile south of Broadway, east of I-5. Accidental release of hazardous materials during construction near a school would be a significant impact. However, as disclosed above, there is a low potential for construction or operation of the project to cause a significant hazard through transport, use, or disposal of hazardous materials because these activities would be required to comply with the regulations, standards, requirements, and guidelines established by federal and state law and overseen by the regulatory agencies. In addition, Leataata Floyd Elementary School is not located along a route used to access the project site. Accordingly, the potential for release of hazardous materials near an existing or proposed school are low. This impact is considered less than significant. No mitigation is necessary.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Impact HAZ-4: Risk from Ground Disturbance at Known Hazardous Materials Sites (Alternatives B and C) (Less Than Significant with Mitigation Incorporated)

Table 2.2.5-1 in Section 2.2.5, *Hazardous Waste/Materials* lists the known recognized environmental conditions and parcels with potentially hazardous material conditions within or immediately adjacent to the project area. The proposed project would be located on or next to these sites. Disturbance of these areas during construction activities could expose humans and the environment to contaminated soil. Construction on a known hazardous materials site that creates a hazard to the public or the environment would be considered a significant impact. Implementation of the mitigation measure described below would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-1: Conduct Phase II Site Assessments prior to Construction

The full text of this measure is included above.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The nearest airport to the project area is the Sacramento Executive Airport, which is located more than 3 miles away. Therefore, there is no potential for the project to result in impacts related to airports. There would be no impact.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact HAZ 5: Temporary Effects on Emergency Response or Emergency Evacuation Plans (Alternatives B and C) (Less Than Significant)

Construction of the project could result in some temporary disruptions to traffic flow, where temporary lane shifts or closures are required. During project construction, emergency vehicles may need to stop temporarily or slow in order to ensure that they can safely pass through the project area. Prior to construction, the project proponent will prepare a Transportation Management Plan (TMP). Implementation of the TMP described in Chapter 1 (see *Environmental Commitments – Transportation Management Plan*), including notifying all emergency services prior to construction so they can plan alternative routes; handling and guiding traffic through and around work zones; and communicating information about detours, temporary closures, and emergency access will ensure that construction-related effects of the project on emergency response or evacuation plans are less than significant.

The following emergency service providers will 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

Limited connectivity across the river currently reduces options for emergency response teams, thereby increasing response times and limiting alternatives for evacuations. The proposed project would increase options for emergency response teams to cross the river and would add an option for evacuations. These are beneficial effects.

No mitigation is necessary.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The project site is located adjacent to urbanized areas at low risk for wildland fires. Construction and operation of the proposed project would not create a greater wildland fire risk. There would be no impact.

3.2.10 Hydrology and Water Quality

	Significant and Unavoidable 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 or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<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 or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.10.1 CEQA Significance Determinations for Hydrology and Water Quality

Regulations and policies related to hydrology and flooding are described in Section 2.2.1, *Hydrology and Floodplain*. Regulations related to water quality are discussed in Section 2.2.2, *Water Quality*. This section also uses information from the *Water Quality Assessment Report* prepared for this project (Burlson Consulting 2020). The report is available in Appendix O. Both build alternatives would result in similar impacts on hydrology and water quality as presented below.

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Impact HYD-1: Potential for Violations of Water Quality Standards (Alternatives B and C) (Less Than Significant)

Construction-related activities would result in surface disturbances with 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. Compliance with WDRs that apply to the SWRCB’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) and Sacramento County's MS4 Permit for the City of Sacramento (Sacramento County MS4 Permit; NPDES No. CAS082597; Order No. R5-2015-0023) would ensure that temporary construction-related impacts are avoided or are kept to less-than-significant levels. This impact is considered less than significant. No mitigation is necessary.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Groundwater in the project area was found at a depth of approximately 15 to 25 feet below the ground surface. Roadway improvements, utility installation, and reconstruction of the riverfront bicycle trails would require excavation depths of 2 to 5 feet. Construction of the two bridge abutments would require maximum excavation depths of 10 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. There would be no impact.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) result in substantial erosion or siltation on- or off-site?

Impact HYD-2: Potential for Changed Drainage Patterns That Result in Substantial Erosion (Alternatives B and C) (Less Than Significant)

During construction, as is standard with all construction projects, the contractor would be required to install and maintain temporary BMPs to control any runoff or erosion from the project site that may discharge into the surrounding storm drain systems and waterways in order to comply with local, state, and federal water quality regulations. Temporary BMPs would be installed prior to any construction activities. Implementation of the SWPPP, LID measures, the West Sacramento's and Sacramento's storm water guidance measures, and permanent erosion control elements found in the Caltrans MS4 program guidance documents would avoid adverse effects, minimize the potential for construction-related surface water pollution, and ensure that water quality in the Sacramento River would not be compromised by erosion and sedimentation during construction.

During operation, new impervious surface could alter surface runoff drainage patterns and river flows. However, project drainage has been considered in the design to avoid significant impacts. Stormwater and road runoff drainage for the proposed roadway would be conveyed in a new storm drain system installed approximately 5 feet below the finished road grade of South River Road, 15th Street, and Circle Street in West Sacramento and of Broadway in Sacramento. New storm drain outfalls into the Sacramento River would be constructed near each of the bridge abutments in West Sacramento and Sacramento. This impact is considered less than significant. No mitigation is necessary.

(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Impact HYD-3: Potential to Change Drainage Patterns and Result in Substantial Increased Surface Runoff and Stormwater Runoff to Drainage Systems (Alternatives B and C) (Less Than Significant)

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. Flows from the project site would not result in on- or off-site flooding or create an additional source of polluted runoff. 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 City of West Sacramento's SWMP, and the Sacramento Stormwater Quality Partnership's SQIP would ensure that impacts related to storm water runoff are less than significant. Because the project involves more than 1 acre of newly created or replaced impervious area, permanent treatment BMPs need to be considered in the design. 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 West Sacramento and Sacramento perform a variety of maintenance activities for storm water pollution prevention, including implementing BMPs during bridge repair and measures that are required for maintenance activities in water bodies. Implementation of these requirements would reduce or avoid potentially significant impacts on water quality from runoff. This impact is considered less than significant. No mitigation is necessary.

(iv) impede or redirect flood flows?

Impact HYD-5: Potential for Changed Drainage Patterns That Result in Impedance of Flood Flows (Alternatives B and C) (Less Than Significant)

Bridge design was analyzed for impacts from the 200-year flood (Q200), 100-year flood (Q100), and 50-year flood (Q50). Based on studies conducted for the I Street Bridge Replacement Project, approximately 1.25 miles upstream of the proposed project and similar in scope, the new Broadway Bridge would result in a negligible increase in the peak water surface elevation (WSE) of 0.02 foot immediately upstream of the project and a 0.06- to 0.07-foot reduction in WSE immediately downstream of the project (GEI Consultants 2014). 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.

The project elements that are located within the levees on the Sacramento River would be designed according to the following principals defined in DWR's *FloodSafe California – Urban Levee Design Criteria* (California Department of Water Resources 2012).

- Levees protecting urban areas are assumed to have a minimum crown elevation equal to the 1-in-200 AEP WSE plus 3 feet.
- Non-urban state/federal project levees are assumed to meet the authorized minimum elevation.
- Levees act as weirs and do not breach if overtopped.

The effect of the proposed project on WSE and stream flow are anticipated to be negligible. Because changes in the water surface profile (water depth) would be negligible, there would be no significant floodplain encroachment. The impact is less than significant. No mitigation is necessary.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Impact HYD-6: Risk of Release of Pollutants due to Inundation (Alternatives B and C) (Less Than Significant)

The project site is not near the coast; therefore, there is no threat of a tsunami. The project site also is not near a large body of water capable of producing a seiche. The new bridge would be designed according to hydraulic design criteria established in Chapter 11 of the Caltrans *Local Assistance Procedures Manual* (2021). The criteria dictate that the facility be capable of conveying the base or Q100 and passing the Q50 flood “without causing objectionable backwater, excessive flow velocities, or encroaching on through traffic lanes.” The same criteria also recommend a minimum freeboard⁹ 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 the Sacramento River, the proposed project design includes a freeboard clearance of 3 feet above the WSE50. The chance of inundation of the bridge and the release of pollutants as a result is considered less than significant. No mitigation is necessary.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and 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, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those 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.

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 2018): municipal and domestic, agricultural, industrial process, and industrial service supply. No aspect of the project would conflict with or obstruct implementation of the Basin Plan. There would be no impact.

⁹ *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.

3.2.11 Land Use and Planning

	Significant and Unavoidable 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 type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.11.1 CEQA Significance Determinations for Land Use and Planning

The build alternatives have similar configurations and are in the same land use planning jurisdictions. The adopted plans that apply to the project area are discussed in Section 2.1.2, *Consistency with State, Regional, and Local Plans and Programs*, and in the CIA prepared for the project (ICF 2020). The report is available in Appendix K.

a) Physically divide an established community?

The project would not construct any new structures or roadways that alter the division that already exists between the Cities of West Sacramento and Sacramento because of the Sacramento River. The new bridge would increase connectivity between the two cities by providing another option for getting across the river. In addition, the new bridge would provide bicycle and pedestrian facilities that would improve bicycle and pedestrian connectivity between West Sacramento and Sacramento. These are project benefits. There would be no impact.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Impact LUP-1: Conflict with Adopted Land Use Plans (Alternatives B and C) (Less Than Significant)

The project is a collaboration between the Cities of West Sacramento and Sacramento, and Caltrans, to construct a new bridge and improve accessibility between the two communities. The relevant adopted local planning documents (presented in Section 2.1.2) contain goals and policies that define future development and infrastructure. The project is consistent with, and supports the goals and policies of, the adopted documents, which include the following.

- *Sacramento 2035 General Plan*
- *Sacramento Riverfront Master Plan*
- *City of West Sacramento General Plan 2035*
- *Bridge District Specific Plan*
- *Broadway Complete Streets Plan*
- *West Broadway Specific Plan*

- *City of Sacramento Pedestrian Master Plan*
- *City of Sacramento Bicycle Master Plan*
- *West Sacramento Bicycle, Pedestrian, and Trails Master Plan*

The City of West Sacramento is preparing a master plan for the reuse of both the Pioneer Bluff and Stone Lock Districts. Since the plan is not yet complete and adopted, consistency with policies it will contain are not addressed here. In preparation of the plan, a phased multi-modal network was approved by the City of West Sacramento City Council in January 2018. Both build alternatives for the project would require modifications to the approved mobility network to connect bridge traffic.

Alternative B would require construction of a northbound right-turn pocket on South River Road at 15th Street and construction of a southbound right-turn pocket on South River Road at 15th Street.

Alternative C would require creating a “T” intersection on South River Road between 15th Street and the future Circle Street location (see Figure 1-3), constructing an interim northbound right-turn pocket on the existing alignment of South River Road at Broadway, and constructing an interim southbound left-turn pocket on the existing alignment of South River Road at Broadway.

Alternative C would have a greater effect on the network in the Pioneer Bluff area than Alternative B. Because the master plan for the Pioneer Bluff area is not yet adopted policy, the proposed project is not in conflict with the plan. The effects on the operation of the transportation network in relation to adopted performance thresholds are addressed in Section 3.2.17, *Transportation*. This impact is considered less than significant. No mitigation is necessary.

3.2.12 Mineral Resources

	Significant and Unavoidable 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"/>

3.2.12.1 CEQA Significance Determinations for Mineral Resources

According to the general plans of West Sacramento (City of West Sacramento 2016) and Sacramento (City of Sacramento 2015), no mineral resources or mineral resource recovery sites are located in the vicinity of the proposed 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?

No known mineral resources are in the project vicinity. There would be no impact.

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?

No locally important mineral resource recovery sites are in the project vicinity. There would be no impact.

3.2.13 Noise

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the 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) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.13.1 CEQA Significance Determinations for Noise

The potential for the project to result in noise impacts was assessed in the project’s NSR (HMMH 2020, Appendix R) and in Section 2.2.7, *Noise* in this document. The following discussion is based on those analyses.

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact NOI-1: Construction Noise in Exceedance of Local Standards (Alternatives B and C) (Significant and Unavoidable)

The assessment of potential noise levels during construction of the project was based on methodology developed by the Federal Transit Administration (2018) and standards from applicable local guidance, specifically the municipal codes and general plan guidance for the West Sacramento (City of West Sacramento 2016) and Sacramento (City of Sacramento 2015). Typical noise levels produced by heavy construction equipment are shown in Table 3.2.13-1. As shown in the table, individual types of heavy construction equipment are expected to generate maximum noise levels from 80 to 101 dBA at a reference distance of 50 feet. The construction noise level at a given receiver location depends on the type of construction activity, the distance from the source, and intervening features between noise-generating activity and the receiver.

Heavy equipment used for the project would vary by phase of construction and would involve the use of equipment such as pile drivers, excavators, bulldozers, heavy trucks, graders, and other types of heavy equipment.

For stationary sources, the exterior noise standard is 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) for both cities. For West Sacramento, the exterior noise standard is 45 dBA during nighttime

hours (10:00 p.m. to 7:00 a.m.). For Sacramento, the exterior noise standard is 50 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.).

Table 3.2.13-1. Typical Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 Feet from Source
Impact pile driver	101
Vibratory pile driver	95
Hoe ram	90
Heavy truck	84
Excavator	85
Bulldozer	85
Mixer	80
Grader	85
Scraper	85
Backhoe	85
Roller	85
Loader	84

Source: Federal Transit Administration 2018.
dBA = A-weighted decibel.

To characterize the potential worst-case noise condition during a given phase of construction, the two loudest pieces of equipment were assumed to operate simultaneously along a construction site perimeter location relative to the nearest receivers. All types of heavy equipment were assumed to operate up to 50 percent of a given hour. The loudest piece of equipment likely to be used during construction would be an impact pile driver with a maximum level of up to 101 dBA, which would exceed the local standards of 55 dBA for stationary sources (applicable to both cities) at a distance of up to 2,240 feet. The nearest residences are about 1,100 feet away from pile driving locations of the western bridge supports in West Sacramento, and the nearest live-aboard vessels (also considered as residences for the purpose of this analysis) are about 600 feet away from locations of the eastern bridge supports. Therefore, noise levels during pile driving are predicted to exceed local standards at residences in these areas.

Noise levels produced by heavy equipment during phases of road construction potentially would exceed local standards for stationary sources (for both cities) at distances of up to 820 feet during daytime hours and 1,970 feet during nighttime hours. The nearest residences could be as close as 50 feet away from road construction areas. This would exceed local standards at residences in West Sacramento and live-aboard vessels in Sacramento.

Noise levels from use of heavy equipment during construction are predicted to exceed local standards for stationary sources in West Sacramento and Sacramento. This impact is considered significant. Implementation of best noise control practices (Mitigation Measure NOI-1) would reduce the impact; however, measures may not be feasible in all situations to reduce noise below the allowed limits. Therefore, this impact is considered significant and unavoidable.

Mitigation Measure NOI-1: Use Best Noise Control Practices during Construction

The contractor(s) will implement noise control methods such that noise does not exceed applicable noise ordinance standards specified by the City of West Sacramento or the City of Sacramento, as applicable. Measures that can be implemented to control noise include the following.

- Limiting heavy equipment use to daytime hours between 7:00 a.m. and 6:00 p.m.

- Limiting pile driving to times of day that would be least disruptive to residences.
- Locating noise-generating equipment as far away as practical from residences.
- Equipping all construction equipment with standard noise attenuation devices such as mufflers to reduce noise, and equipping all internal combustion engines with intake and exhaust silencers in accordance with manufacturer's standard specifications.
- Establishing equipment and material haul routes that avoid residential uses to the extent practical, limiting hauling to the hours between 7:00 a.m. and 10:00 p.m., and specifying maximum acceptable speeds for each route.
- Using electrically powered equipment in place of equipment with internal combustion engines where practical.
- Restricting the use of audible warning devices such as bells, whistles, and horns to those situations that are required by law for safety purposes.
- Providing noise-reducing enclosures around stationary noise-generating equipment.
- Providing temporary construction noise barriers between active construction sites that are near residences.

The construction contractor will develop a noise control plan that identifies specific feasible control measures that will be implemented. The noise control plan will be submitted to and approved by the project sponsor before construction begins.

Prior to construction, the project sponsor will make a construction schedule available to residents living in the vicinity of construction areas and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise and ensure that reasonable measures are implemented to correct the source of disturbance, where feasible. A sign containing the contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site boundary fencing, and this information also will be included in the notification of the construction schedule.

Impact NOI-2: Traffic Noise Levels in Exceedance of Local Standards (Alternatives B and C) (Less Than Significant)

Section 2.2.7, *Noise* and the NSR prepared for this project (HMMH 2020) present noise impacts and abatement evaluation in compliance with NEPA and 23 CFR 772. To evaluate noise levels relative to city noise limits, supplemental modeling locations were selected at outdoor locations of frequent human use. Traffic noise levels were predicted using the FHWA TNM Version 2.5. The NSR prepared for this project evaluates traffic noise impacts based on the worst noise hour equivalent sound level (L_{eq}). The Cities of West Sacramento and Sacramento use a day-night community noise exposure level metric (CNEL), which is a 24-hour weighted average. Project traffic noise levels were predicted with the SoundPLAN noise model, using algorithms from the TNM. Data files prepared for the NSR were imported into SoundPLAN, with traffic volumes updated to represent conditions over the course of an average day for each year of analysis.

Receptors on the West Sacramento side of the project area along Jefferson Boulevard are located just south of the bridge and Liberty Specific Plan areas. Because no specific plan is applicable to these receptors, the West Sacramento General Plan noise compatibility standards apply. For the residential units in this location, the noise compatibility standard is 60 dBA CNEL.

Receptors on the Sacramento side of the project area are located within the marina, inside the West Broadway Specific Plan area. The West Broadway Specific Plan (Ascent Environmental 2020) does not include noise standards; therefore, City of Sacramento General Plan noise standards are applicable in this location. The receptors consist of neighborhood park and urban corridor residential uses, including live-aboard vessels, which both use a land use compatibility standard of 70 dBA CNEL. The West Broadway Specific Plan Neighborhood Services & Amenities Goals and Policies section includes Strategy C-E-1 and actions to expand entertainment facilities and promote “a culture, entertainment and recreation district” (Ascent Environmental 2020:6–26), which would include uses consistent with recreational use and also would also use a compatibility standard of 70 dBA CNEL.

Predicted traffic noise levels for representative receivers at outdoor areas of frequent human use are shown in Table 3.2.13-2 for existing plus project conditions, in Table 3.2.13-3 for opening year plus project conditions, and in Table 3.2.13-4 for design year plus project conditions. Locations of noise-sensitive receivers (NSA locations in tables) are shown in Figure 2.2.7-2, in Section 2.2.7, *Noise*.

Table 3.2.13-2. Predicted Traffic Noise Levels under Build Alternatives, Existing (2017) Conditions Plus Project

Location, City	Land Use	No Project	Alternative B			Alternative C		
			Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?	Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?
NSA-A, Sacramento	Park, live-aboard vessels	64.5	63.7	70	No	62.7	70	No
NSA-B, West Sacramento	Residential, 6 units	66.3	65.9	60	Yes	65.7	60	Yes
NSA-C, West Sacramento	Residential, 6 units	68.0	68.6	60	Yes	68.4	60	Yes
NSA-D, West Sacramento	Residential, 10 units	70.5	70.5	60	Yes	70.2	60	Yes
NSA-E, West Sacramento	Residential, 20 units	68.3	68.3	60	Yes	68.0	60	Yes

CNEL = community noise equivalent level
NSA = noise-sensitive area

Table 3.2.13-3. Predicted Traffic Noise Levels under Build Alternatives, Opening Year (2030) Conditions Plus Project

Location, City	Land Use	No Project	Alternative B			Alternative C		
			Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?	Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?
NSA-A, Sacramento	Park, live-aboard vessels	65.5	64.3	70	No	63.9	70	No
NSA-B, West Sacramento	Residential, 6 units	67.7	67.1	60	Yes	67.1	60	Yes
NSA-C, West Sacramento	Residential, 6 units	68.7	69.1	60	Yes	69.1	60	Yes
NSA-D, West Sacramento	Residential, 10 units	71.6	71.5	60	Yes	71.6	60	Yes
NSA-E, West Sacramento	Residential, 20 units	69.4	69.3	60	Yes	69.4	60	Yes

CNEL = community noise equivalent level
NSA = noise-sensitive area

Table 3.2.13-4. Predicted Traffic Noise Levels under Build Alternatives, Design Year (2040) Conditions Plus Project

Location, City	Land Use	No Project	Alternative B			Alternative C		
			Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?	Noise Level (CNEL)	Land Use Compatibility Standard (CNEL)	Exceed Compatibility Standard?
NSA-A, Sacramento	Park, live-aboard vessels	66.5	65.3	70	No	64.8	70	No
NSA-B, West Sacramento	Residential, 6 units	68.2	67.7	60	Yes	67.7	60	Yes
NSA-C, West Sacramento	Residential, 6 units	69.2	69.4	60	Yes	69.4	60	Yes
NSA-D, West Sacramento	Residential, 10 units	71.8	71.7	60	Yes	71.8	60	Yes
NSA-E, West Sacramento	Residential, 20 units	69.7	69.5	60	Yes	69.7	60	Yes

CNEL = community noise equivalent level
 NSA = noise-sensitive area

As shown in the tables above, noise levels under existing, existing plus project conditions, and design year plus project conditions are predicted to exceed land use compatibility standards for residential uses at all four receivers in West Sacramento located along Jefferson Boulevard, representing a total of 42 residences. These receivers would be affected under both Alternatives B and C.

The increase in noise levels from project traffic was evaluated under existing 2017 conditions, opening year 2030 conditions, and design year 2040 conditions in terms of the project’s contribution to the noise environment compared to no-project conditions. Under Alternative B, traffic noise levels would increase by a maximum of 0.6 dB at one receptor (NSA-C), representing a residence on Jefferson Boulevard in West Sacramento. For all other receptors, noise levels would increase by less than 1 dB or decrease by up to 1 dB. Under Alternative C, traffic noise levels would increase by less than 1 dB or decrease by up to 2 dB at all receptors. Under both Alternatives B and C, the receptors with the highest noise level are located within NSA-D, with a predicted noise level of 71.8 dBA CNEL under future 2040 conditions. These receptors would have a maximum increase of 0 dB relative to no-project conditions.

The general plans for both West Sacramento and Sacramento use the same exterior incremental noise impact standards for noise-sensitive uses (City of West Sacramento 2016:Table S-7.1; City of Sacramento 2015:Table EC 2). The standards indicate an allowable noise increment of 1 dB for residential uses in areas where day-night sound level values are in the range of 65 to 70 dBA CNEL, and 0 dB where day-night sound level values are up to 70 dBA CNEL. For all receptors, the proposed project would not result in noise increases that exceed the allowable increment under 2017, 2030, or 2040 conditions for either Alternative B or C. Increases in traffic noise levels at sensitive receptors under both alternatives are shown in Tables 3.2.13-5, 3.2.13-6, and 3.2.13-7. Locations of noise-sensitive receivers (NSA locations in tables) are shown in Figure 2.2.7-2.

Table 3.2.13-5. Predicted Increase in Traffic Noise Levels under Build Alternatives, Existing 2017 Conditions Plus Project

Location, City	Land Use	Alternative B			Alternative C		
		Noise Level (CNEL)	Increase over No-Project (dB)	Significant?	Noise Level (CNEL)	Increase over No-Project (dB)	Significant?
NSA-A, Sacramento	Park, live-aboard vessels	63.7	- 0.8	No	62.7	- 1.8	No
NSA-B, West Sacramento	Residential, 6 units	65.9	- 0.4	No	65.7	- 0.6	No
NSA-C, West Sacramento	Residential, 6 units	68.6	+ 0.6	No	68.4	+ 0.4	No
NSA-D, West Sacramento	Residential, 10 units	70.5	0.0	No	70.2	- 0.3	No
NSA-E, West Sacramento	Residential, 20 units	68.3	0.0	No	68.0	- 0.3	No

CNEL = community noise equivalent level

dB = decibel

NSA = noise-sensitive area

Table 3.2.13-6. Predicted Increase in Traffic Noise Levels under Build Alternatives, Opening Year (2030) Conditions plus Project

Location, City	Land Use	Alternative B			Alternative C		
		Noise Level (CNEL)	Increase over No-Project (dB)	Significant ?	Noise Level (CNEL)	Increase over No-Project (dB)	Significant?
NSA-A, Sacramento	Park, live-aboard vessels	64.3	- 1.2	No	63.9	- 1.6	No
NSA-B, West Sacramento	Residential, 6 units	67.1	- 0.6	No	67.1	- 0.6	No
NSA-C, West Sacramento	Residential, 6 units	69.1	+ 0.4	No	69.1	+ 0.4	No
NSA-D, West Sacramento	Residential, 10 units	71.5	- 0.1	No	71.6	0.0	No
NSA-E, West Sacramento	Residential, 20 units	69.3	- 0.1	No	69.4	0.0	No

CNEL = community noise equivalent level
 dB = decibel
 NSA = noise-sensitive area

Table 3.2.13-7. Predicted Increase in Traffic Noise Levels under Build Alternatives, Design Year (2040) Conditions plus Project

Location, City	Land Use	Alternative B			Alternative C		
		Noise Level (CNEL)	Increase over No-Project (dB)	Significant?	Noise Level (CNEL)	Increase over No-Project (dB)	Significant?
NSA-A, Sacramento	Park, live-aboard vessels	65.3	- 1.2	No	64.8	- 1.7	No
NSA-B, West Sacramento	Residential, 6 units	67.7	- 0.5	No	67.7	- 0.5	No
NSA-C, West Sacramento	Residential, 6 units	69.4	+ 0.2	No	69.4	+ 0.2	No
NSA-D, West Sacramento	Residential, 10 units	71.7	- 0.1	No	71.8	0.0	No
NSA-E, West Sacramento	Residential, 20 units	69.5	- 0.2	No	69.7	0.0	No

CNEL = community noise equivalent level
 dB = decibel
 NSA = noise-sensitive area

Noise barriers to reduce noise levels above noise abatement criteria specified in the Caltrans Protocol (California Department of Transportation 2020) are evaluated in the NSR and described in Section 2.2.7. However, under local standards, the allowable increment above no-project conditions would not be exceeded at any receptor. By opening year (2030) conditions, the proposed project would cause noise levels to increase by a maximum of 0.4 dB; by the design year (2040), noise levels would increase by a maximum of 0.2 dB. An increase of these magnitudes would not be perceptible and would not exceed local thresholds. Therefore, this impact is considered less than significant. No mitigation is required.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Impact NOI-3: Construction- and Operations-Related Groundborne Vibration (Alternatives B and C) (Less Than Significant)

Construction

Construction of Alternative B or C would involve the use of heavy equipment that could generate perceptible levels of groundborne vibration immediately adjacent to the source. Typical vibration levels associated with heavy equipment at reference distances of 25 feet to 100 feet are listed in Table 3.2.13-8.

Table 3.2.13-8. Typical Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet
Impact pile driver	0.644	0.228	0.124	0.081
Vibratory pile driver	0.170	0.060	0.033	0.021
Auger drill	0.089	0.032	0.017	0.011
Hoe ram	0.089	0.032	0.017	0.011
Large bulldozer	0.089	0.032	0.017	0.011
Loaded trucks	0.076	0.027	0.015	0.010
Jackhammer	0.035	0.012	0.007	0.004
Small bulldozer	0.003	0.001	0.001	< 0.001

Source: Federal Transit Administration 2018.

PPV = peak particle velocity in inches per second (in/sec).

The piece of construction equipment with the potential to produce the highest level of vibration is an impact pile driver, which would be used for construction of the new bridge supports along the Sacramento River. Locations within 100 feet of pile driving activity could be exposed to vibration levels of 0.081 inches per second PPV or greater, which potentially would be perceptible inside building structures. The residences nearest to pile driving locations under the build alternatives are more than 1,000 feet away, and vibration would not be noticeable at this distance. Other types of heavy equipment (e.g., hoe rams, bulldozers) would be nearer to residences during road construction and demolition phases of the project, producing a vibration level of approximately 0.032 inches per second PPV at a distance of 50 feet. This level of vibration generally would not be noticeable inside the structures of the nearest residences. Therefore, vibration from the build alternatives during construction is not expected to exceed thresholds related to structural damage for any of the buildings nearest to construction areas or result in impacts on sensitive receptors from vibration. This impact is considered less than significant. No mitigation is necessary.

Operation

Rubber-tired vehicles are not a significant source of vibration. There are no other components of the project that would be a source of ongoing vibration. Vibration from project operation would be similar to existing conditions and is not expected to exceed vibration thresholds. This impact is considered less than significant. No mitigation is necessary.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The nearest airport is Sacramento Executive, located approximately 4 miles southwest of the project and adjacent sensitive receivers. The project would not involve development of land use that would require consideration of noise compatibility issues. There would be no impact.

3.2.14 Population and Housing

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.14.1 CEQA Significance Determinations for Population and Housing

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Neither build alternative includes changes that could affect the regional population. Roadway modifications would occur under both alternatives. The affected roadways in the study area serve as primary transportation routes for residents, commuters, and patrons of the local businesses and shopping areas. The new crossing would increase roadway capacity; however, the bridge would serve as an additional option for existing residents of West Sacramento and Sacramento, and is not anticipated to increase growth or result in population changes in a manner different from already adopted land use plans. There would be no impact.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No people or housing would be displaced by the proposed project. There would be no impact.

3.2.15 Public Services

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<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"/>

3.2.15.1 CEQA Significance Determinations for Public Services

Because the build alternatives have similar configurations and are served by the same government services, they are analyzed together in this section. Both Alternatives B and C would result in the same potential impacts regarding public services. Therefore, the impacts of these alternatives on public services are not discussed separately.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?

It is expected that most public and government services and facilities, including emergency service centers in the project vicinity, would be unaffected during construction because the existing bridges to the north would remain open and functional during construction. 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 on area roadways.

The project would not require or cause the construction of new or altered governmental facilities. The project would redesign the entrance to Frederick Miller Regional Park so that it matches the new elevation of Broadway as it connects to the new bridge. But the project would not alter the use of the park or require the need for additional physical alternations.

Once built, access and circulation would change in the project area, including access to specific properties and routes for emergency responders. The proposed project would increase options for emergency response teams to cross the river and would add an option for evacuations. These are beneficial effects. There would be no impact.

3.2.16 Recreation

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.16.1 CEQA Significance Determinations for Recreation

Because the build alternatives have similar configurations and include the same jurisdictions, they are analyzed together in this section. Both Alternatives B and C would result in the same potential impacts regarding recreation. Therefore, the impacts of these alternatives on recreation are not discussed separately.

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The project would provide a new connection between West Sacramento and Sacramento that will facilitate access to parks and recreational facilities from the opposite side of the Sacramento River. Use of existing facilities is not expected to substantially increase or change in a manner that would cause physical deterioration. There would be no impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact REC-1: Changes to Recreational Facilities (Alternatives B and C) (Less Than Significant)

As discussed in Section 2.1.3.3, *Parks and Recreational Facilities – Environmental Consequences*, both build alternatives would have temporary impacts on existing or planned recreational facilities. In West Sacramento, both build alternatives would require modification to the planned mobility network for South River Road in Pioneer Bluff. Temporary construction activities would be necessary just east and outside of Sutter Health Park within the road right-of-way of Riverfront Street to install the fiber optic communication line in existing conduit. The stadium and other features of the park would not be affected. Construction of the bridge would require separation of the grade of the proposed River Walk Park trail extension in West Sacramento to allow it to pass under the proposed bridge. A temporary alternative route may be required for cyclists and pedestrians approaching Broadway Bridge in either direction from the trail; an alternative route would be identified in the TMP.

In Sacramento, both build alternatives would affect the entrance to Miller Park and the Sacramento Marina and would modify the Sacramento River Bike Trail. Construction of the project would require Miller Park and Sacramento Marina traffic to travel on westbound Broadway, turn left onto southbound

Front Street, right onto Miller Park Circle, and then left onto Marina View Drive. The Sacramento River Bike Trail would be reconstructed approximately 1,000 feet north and 300 feet south of Broadway as part of the project. About 3,400 feet of the trail would be closed north and south of Broadway and detoured to the bike lane on Front Street between the Sacramento Marina and where the Sacramento River Bike Trail meets the R Street bicycle/pedestrian bridge. This alternative route would be identified in the TMP.

Several parks in Sacramento, particularly the Sacramento Marina, Miller Park, Smith School Park, and O'Neil Field, are close enough to the project area that they could experience temporary noise and dust impacts associated with project construction. Access would not be prevented, although alternative routes may be required, especially for the Sacramento Marina and Miller Park. Alternative routes would be identified in the TMP.

The TMP prepared for the project (see Chapter 1, *Proposed Project – Transportation Management Plan*) would disseminate information regarding temporary closure of the Sacramento River Bike Trail and temporary access changes at Miller Park and the Sacramento Marina, the approximate duration of the changes, and a description of the detours available during construction.

This impact is considered less than significant. No mitigation is necessary.

3.2.17 Transportation

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric 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"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.17.1 CEQA Significance Determinations for Transportation

Acceptable traffic and transportation operating conditions for roadways, freeways, active transportation, and transit are described in Chapter 2, Section 2.1.7, *Traffic and Transportation/Pedestrian and Bicycle Facilities* and are used here as thresholds for significant impacts. If traffic generated by a project causes the operation of a roadway to deteriorate below an acceptable LOS, as defined by policies in adopted general plans, the project would not be consistent with those policies. Caltrans would consider queuing changes significant if the project traffic causes off-ramp traffic to queue back to beyond the freeway gore point or worsens an existing or projected queuing problem on a freeway off-ramp. Impacts on bicycle facilities are considered significant if the project would substantially worsen existing or planned bicycle or pedestrian facilities; or fail to adequately provide access for bicyclists or pedestrians. Impacts on the transit system would be significant if the project would substantially worsen public transit operations or fail to adequately provide access to transit.

The *Broadway Bridge PA/ED Transportation Report* prepared for the project (Fehr & Peers 2020) is in Appendix L.

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Analysis of traffic and transportation impacts began in 2017, which represents the baseline condition when data collection occurred and is the year the notice of preparation of this EIR/EA was issued. Existing operating conditions are described in detail in Chapter 2, Section 2.1.7.2, *Traffic and Transportation/Pedestrian and Bicycle Facilities – Affected Environment – Existing Conditions*. As described in the *Broadway Bridge PA/ED Transportation Report* prepared for the project (Fehr & Peers 2020), the analysis was conducted for AM and PM peak-hour conditions following the prescribed methodology for each facility type contained in the *Highway Capacity Manual*. The transportation report is in Appendix L.

Future conditions without and with the project were modeled; the modeling compares transportation conditions under existing (2017), opening year (2030), and design year (2040) conditions without and with the build alternatives for the proposed project. The SACMET regional travel demand model, developed and maintained by SACOG, was used to forecast existing plus project and future transportation

conditions, and expected changes in daily traffic and peak-hour turning movement volumes with the proposed project. The model was developed with a linear interpolation of land use growth within the Sacramento region in place by 2030 and specific land use growth assumed for the Pioneer Bluff area as identified by the City of West Sacramento planning staff. The model also assumes roadway infrastructure projects expected to be completed by 2030, as identified by SACOG in the 2020 MTP/SCS. For the design year (2040), the model includes the land use growth and roadway infrastructure projects within the Sacramento region assumed under cumulative conditions, as identified by SACOG in the 2020 MTP/SCS.

While it is not anticipated that the new bridge would be constructed and open to traffic prior to 2030, data comparing existing conditions without the project to with the project are included in Chapter 2, Section 2.1.7, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, to provide a context for how existing traffic patterns could change in response to the new bridge.

Neither build alternative would interfere with existing or planned pedestrian or bicycle facilities, and each would provide a new river crossing option for those modes of travel.

Both build alternatives include sidewalks that would connect to existing facilities on each side of the river, providing access and connectivity for pedestrians crossing the river on the bridge. The bridge would not impede sidewalks planned in West Sacramento as part of development in the Pioneer Bluff area, or in Sacramento along Broadway or other areas in the *West Broadway Specific Plan* limits. The build alternatives also would include Class II on-street bike lanes and bridge connections that would connect to a planned Class I trail along the Sacramento River on the West Sacramento side and to the existing Class I trail on the Sacramento side.

The new bridge would provide an additional connection across the river for transit services. The bridge would be designed to accommodate buses, thereby providing an alternative for future bus route realignment or expansion. In addition, the bridge design would not preclude the future addition of light-rail, streetcar, or other mass transit mode as a separate stand-alone project.

Impact TRA-1: Changes in Intersection Operations (Alternative B) (Less Than Significant)

Existing (2017), opening year (2030), and design year (2040) AM and PM peak-hour intersection conditions without and with the build alternatives for the proposed project are shown in Table 2.1.7-5. Exhibits showing turning movement volumes at study intersections, and LOS results are included in Appendix L.

All study intersections would continue to operate acceptably with Alternative B added to existing (2017) conditions. The addition of the bridge eases queuing leading up to the South River Road/US 50 eastbound on-ramp. At the South River Road/15th Street intersection, where the bridge approach is located in West Sacramento for this alternative, the added signal phases and cycle length associated with the addition of the fourth intersection leg (Broadway Bridge) would create additional delay—although still within acceptable LOS E. In addition, Alternative B would result in an increase in delay along Broadway but less traffic using the freeway and passing through the ramp terminal intersections.

Under Alternative B, all study intersections operate within acceptable LOS under opening year (2030) conditions. The inclusion of the bridge eases northbound queuing along Jefferson Boulevard and South River Road in West Sacramento, shifting away some traffic that was destined for the US 50 ramps.

All study intersections operate within acceptable LOS under design year (2040) conditions under Alternative B. The bridge approach intersection of South River Road/15th Street in West Sacramento would face a high level of delay; however, the intersection would remain within acceptable LOS E

conditions during both the AM and PM peak hours. The bridge also would shift some traffic from using the freeway facilities. The shift of traffic to Broadway is most notable at the Broadway/5th Street intersection compared to No Build conditions.

This impact is considered less than significant. No mitigation is necessary.

Impact TRA-2: Changes in Intersection Operations (Alternative C) (Less Than Significant with Mitigation Incorporated)

As shown in Table 2.1.7-5, all intersections would operate acceptably at LOS E or better under existing (2017) conditions under Alternative C. The “T” intersection at Broadway and South River Road created by Alternative C would operate at LOS D during both the AM and PM peak hours. This alternative would result in similar increases in delay along Broadway and decreases at the ramp terminal intersections compared to Alternative B.

Most study intersections would operate within acceptable LOS under opening year (2030) conditions under Alternative C. However, operation of three intersections in West Sacramento (South River Road/Broadway, Jefferson Boulevard/Alameda Boulevard, and South River Road/Alameda Boulevard) would worsen to LOS F under Alternative C, inconsistent with City of West Sacramento policy (see Table 2.1.7-1). This impact is considered significant. Implementation of Mitigation Measure TRA-1 would construct roadway modifications that would allow LOS to improve to acceptable levels at the three intersections and would slightly improve operations at the South River Road/15th Street and Broadway/Front Street intersections.

By design year (2040), due to the lack of a direct connection to Jefferson Boulevard under Alternative C, traffic must traverse multiple turning movements using Circle Street or Alameda Boulevard. The increase in traffic also increases conflicting movements at the intersections in this area. Consequently, the intersection of Jefferson Boulevard/Alameda Boulevard would operate at LOS F during the AM peak hour, with the average delay worsening by more than 5 seconds compared to design year (2040) No Build conditions. Because LOS F is not consistent with West Sacramento policy, the worsening of LOS caused by Alternative C is considered a significant impact. Implementation of Mitigation Measure TRA-1 would construct roadway modifications that would improve the LOS to LOS E, an acceptable level, thereby reducing the impact to a less-than-significant level. Implementation of the mitigation measure would slightly worsen design year (2040) operations at South River Road/15th Street, South River Road/Circle Street, and South River Road/Alameda Boulevard, but not to unacceptable levels.

Mitigation Measure TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (Alternative C)

By the open-to-traffic year of the project, the City of West Sacramento will construct the following roadway modifications.

- On South River Road at the intersection with Broadway, extend the northbound right-turn pocket to 275 feet, and add a second southbound left-turn lane.
- On Alameda Boulevard at the intersection with Jefferson Boulevard, change the eastbound and westbound protected left turns to permitted left-turn signal phasing.
- On South River Road at the intersection with Alameda Boulevard, extend the northbound left-turn pocket to a 175-foot length, and extend the southbound right-turn pocket to 250 feet.

By the design year, the City of West Sacramento will construct the following.

- Install a traffic signal at the intersection of Jefferson Boulevard and Circle Street, add signal coordination with the intersection of Jefferson Boulevard and Alameda Boulevard.

Impact TRA-3: Changes in Roadway Segment Operations (Alternatives B and C) (Less Than Significant)

Existing (2017), opening year (2030), and design year (2040) roadway segment operations without and with the build alternatives for the proposed project are shown in Table 2.1.7 6. Roadway capacity utilization results shown in the table are for information purposes only and were not used to assess project impacts. The data in Table 2.1.7-6 reflect changes in the roadway network that will occur without the proposed project. By 2030, Broadway east of Riverside will be a two-lane roadway from construction of the Broadway Complete Street project. By 2040, South River Road will be a four-lane roadway consistent with the approved mobility network planned for the Pioneer Bluff area.

All roadway segments would operate within acceptable LOS under Alternative B added to existing (2017) conditions. The inclusion of the bridge would reduce traffic on Jefferson Boulevard north of 15th Street, thereby lowering the delay on that roadway segment daily.

By opening year (2030), the planned growth in land use within West Sacramento south of the study area would increase traffic volume along Jefferson Boulevard and South River Road, worsening the daily roadway operations to LOS F both without and with Alternative B. Inclusion of the bridge would reduce volumes on Jefferson Boulevard north of 15th Street; however, the bridge would increase volumes on Jefferson Boulevard and South River Road south of Alameda Boulevard. By design year (2040), traffic operations would worsen along Jefferson Boulevard (still LOS F).

Because the unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project, this impact is considered less than significant. In Sacramento, the addition of the bridge and the overall worsening of traffic operations over time without the project would increase volumes on Broadway. However, bridge traffic is expected to gradually disperse onto the street grid that serves the area, and all roadways in the study area would operate within acceptable levels.

As shown in Table 2.1.7-6, the changes in roadway segment operations caused by Alternative C are very similar to those of Alternative B. Because the unacceptable roadway operating conditions are not specifically caused or substantially worsened by the proposed project, they are considered less than significant.

This impact is considered less than significant. No mitigation is necessary.

Impact TRA-4: Reduction in Freeway Off-Ramp Queue Capacity (Alternatives B and C) (Less Than Significant)

Existing (2017), opening year (2030), and design year (2040) AM and PM peak-hour freeway off-ramp queuing lengths without and with the build alternatives for the proposed project are shown in Table 2.1.7-7. The available storage length of each ramp also is listed.

Neither build alternative would significantly change queuing at the freeway off-ramps in the study area. The bridge would shift some traffic off the freeway facility, thereby generally decreasing off-ramp queuing. Nevertheless, all queues would remain within the available storage capacity for each off-ramp, and the effect of the project would be less than significant.

At most study area ramp locations, equal or greater reductions in queue lengths would be achieved by Alternative C compared to Alternative B. But by design year (2040) conditions, only modest improvements over No Build conditions would be achieved by Alternative C during the PM peak hour at the US 50 eastbound off-ramp at 5th Street/X Street compared to the greater reductions under Alternative B. At other study area ramp locations, equal or greater reductions in queue lengths under Alternative C compared to Alternative B would be achieved by 2040.

This impact is considered less than significant. No mitigation is necessary.

Impact TRA-5: Effects on Transit Operations in West Sacramento (Alternative B) (Less Than Significant)

The new bridge would provide an additional connection across the river for transit services. The bridge would be designed to accommodate buses, thereby providing an alternative for future bus route realignment or expansion. In addition, the bridge design would not preclude the future addition of light-rail, streetcar, or other mass transit mode as a separate stand-alone project. Because all intersections would operate within acceptable LOS, Alternative B also would not adversely affect transit operation or access to transit facilities. This impact is considered less than significant. No mitigation is necessary.

Impact TRA-6: Effects on Transit Operations in West Sacramento (Alternative C) (Less Than Significant with Mitigation Incorporated)

The new bridge would provide an additional connection across the river for transit services. The bridge would be designed to accommodate buses, thereby providing an alternative for future bus route realignment or expansion. In addition, the bridge design would not preclude the future addition of light-rail, streetcar, or other mass transit mode as a separate stand-alone project.

Because all intersections would operate acceptably under Alternative C with existing-plus project conditions, the alternative initially would not adversely affect transit operation or access to transit facilities. However, the worsening of intersection operations during future years (see *Intersection Operation Impacts*, above) also would worsen operating conditions for transit services. This is considered a significant impact. Implementation of Mitigation Measure TRA-1 would construct roadway modifications in West Sacramento that would improve LOS at three adversely affected intersections, also improving transit operations to less-than-significant levels. Implementation of the mitigation measure would slightly worsen design year (2040) operations at South River Road/15th Street, South River Road/Circle Street, and South River Road/Alameda Boulevard, but not to unacceptable levels.

Mitigation Measure TRA-1: Construct Roadway and Intersection Modifications in West Sacramento (for Alternative C)

The full text of this measure is included above.

Impact TRA-7: Temporary Construction-Related Effects on Circulation (Alternatives B and C) (Less Than Significant)

While most of the proposed project would be constructed outside of existing roadways, some construction activities for both build alternatives would require temporary detours or staged construction. Detours are proposed to maintain access and network connectivity on roadways, sidewalks, bike lanes, and bike trails during construction (see Chapter 1, *Proposed Project – Traffic Management and Detours during Construction*). Nevertheless, disruptions and delays could affect drivers, bicyclists, and pedestrians. The

following construction elements of both build alternatives could cause short-term disruptions of local transportation networks.

- Roadway modifications in West Sacramento, including the intersection connection for the bridge.
- Grade separation of future West Sacramento Class I River Walk trail to pass under and connect to the new bridge.
- Reconstruction of a portion of Marina View Drive at Miller Park to create a new connection to Broadway.
- Change in grade of Broadway for a bridge connection.
- Modification of property access along Broadway west of I-5.
- Widening of I-5 northbound off-ramp to Broadway and modifications of sidewalk and intersections of Broadway and Front Street, 3rd Street (south and north), and 5th Street.
- Grade separation and change in location of Sacramento River Bike Trail to pass under and connect to the new bridge.
- Transport of materials and equipment between staging areas and the project site.
- Construction of the bridge across the Sacramento River.

The project may be constructed in two phases or in a single phase, based on the extent of redevelopment and implementation of the approved mobility network in the Pioneer Bluff area of West Sacramento at the time project construction starts. Assuming that construction occurs in two phases, most of the construction-related effects of the project would occur to build the interim (opening day) design, including construction of the new bridge, approach roadways, and other modifications listed above.

Far fewer construction-related disturbances would occur for completion of the remaining project roadway elements, consistent with full buildout of the West Sacramento approved mobility network for the design year (2040) phase.

Implementation of the TMP described in Chapter 1 (see Chapter 1, *Proposed Project – Environmental Commitments – Transportation Management Plan*) for handling and guiding traffic through and around work zones and to communicate information about detours, temporary closures, and emergency access would minimize construction-related effects of the project. This impact is considered less than significant. No mitigation is necessary.

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Impact TRA-8: Effects on Vehicle Miles of Travel (Alternatives B and C) (Less Than Significant)

Acceptable traffic and transportation operating conditions are described in Chapter 2, Section 2.1.7.2. Impacts related to VMT would be considered significant if the project would substantially increase VMT per service population (total residents and employees) within the SACOG region.

The total daily VMT for all trips in the Sacramento region, analyzed using the SACMET regional travel demand model, is 55,823,950 miles. Table 2.1.7-8 shows daily regional VMT without and with the proposed project. Under the No Build Alternative, the increase in VMT over time is consistent with changes in travel behavior that would coincide with the planned increase in growth and changes in land use included in local general plans and reflected in the SACMET regional travel demand model. The

VMT under design year (2040) conditions reflect changes in travel behavior that may include changes in both designation locations and travel modes.

In the short term, the only travel pattern change with the project is the route that vehicle trips take between existing origins and destinations. Alternative B reflects the opening of a shorter route for existing trips, which is indicated by the lower daily regional VMT compared to existing (2017) conditions. By opening year (2030), the results assume that the short-term travel response to the bridge being opened is likely limited to route choices; therefore, all regional trip origins and destinations remain constant compared to the No Build Alternative. The daily regional VMT total is lower under Alternative B than under the opening year 2030 No Build Alternative condition. The VMT under design year (2040) conditions reflects changes in travel behavior that may include changes in both designation locations and travel modes. The VMT is expected to increase slightly within the Sacramento region with the inclusion of the bridge due to the added capacity across a constrained network of options between each side of the Sacramento River within the region. The change in VMT is very small and is not considered significant.

Alternative C also provides a shorter route for existing trips, and VMT is lower than the No Build Alternative by 2030. The increase in VMT by 2040 is highest under Build Alternative C compared to No Build conditions; however, the difference is much less than 1 percent of the overall VMT and is not considered significant.

This impact is considered less than significant. No mitigation is necessary.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The geometric design of the both build alternatives must and would meet the standards of the City of West Sacramento, City of Sacramento, State of California, USCG, USACE, and FHWA—within each agency’s jurisdiction. Compliance with each respective standard would prevent geometric design-related hazards and incompatible uses. There would be no impact.

d) Result in inadequate emergency access?

Impact TRA-9: Temporary Effects on Emergency Access (Alternatives B and C) (Less Than Significant)

The location of construction equipment and construction activities within the project limits have the potential to affect access and response by emergency response providers by road or by water. The proposed project includes preparation and implementation of a TMP for use during project construction (see Chapter 1, *Proposed Project – Environmental Commitments – Transportation Management Plan*). The TMP would provide guidance for implementation of incident management; describe construction strategies for traffic handling and guiding traffic through work zones; and describe and direct the implementation of alternate routes or detours, including for emergency access and response in the project area. Access to the development adjacent to the proposed project would continue during construction, which also would maintain emergency access. This impact is considered less than significant. No mitigation is necessary.

3.2.18 Tribal Cultural Resources

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.18.1 CEQA Significance Determinations for Tribal Cultural Resources

The City of West Sacramento mailed AB 52 consultation letters to Gene Whitehouse, Chairperson of the United Auburn Indian Community of the Auburn Rancheria (UAIC) and Leland Kinter, Chairperson of the Yocha Dehe Wintu Nation (YDWN) on July 11, 2017; and to Raymond Hitchcock, Chairperson of the Wilton Rancheria on April 20, 2018. The City received a response letter from the UAIC on July 27, 2017, stating that the tribe would like to consult under AB 52. No other responses were received to the initial consultation outreach letters.

Because of changes and delays in the project, the City of West Sacramento mailed out updated AB 52 letters to UAIC and Wilton Rancheria on February 3, 2020. The City of West Sacramento received a response requesting AB 52 consultation from Gene Whitehouse of the UAIC on February 20, 2020; and from Mariah Mayberry of the Wilton Rancheria on February 10, 2020. The City of West Sacramento made attempts to contact Ms. Mayberry by email and voicemail on February 10, June 4, July 14, and August 3, 2020. To date, no responses from the outreach efforts to Ms. Mayberry have been received.

The City of West Sacramento continued consultation with Anna Starkey on behalf of the UAIC in 2020 and 2021. On January 19, 2021, Ms. Starkey notified the City of West Sacramento that, based on the information received, the project area did not appear to be sensitive for buried or indigenous resources and the tribe did not need to actively consult on the project. Ms. Starkey requested copies of the cultural reports and to be notified if any tribal cultural resources are found during construction.

Although no formal consultation letter was received by the YDWN, the City of West Sacramento agreed to consult under AB 52 after the tribe had requested consultation under Section 106. Consultation meetings between the tribe, the City of West Sacramento, project engineers, Caltrans, and the environmental consultants occurred on October 5, 2020. Consultation with the tribes did not result in identification of any tribal cultural resources located within the project area.

a) Cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k).

Based on the consultation completed for AB 52, the City of West Sacramento determined that the project would not cause a substantial adverse change in the significance of a tribal cultural resource listed in the CRHR or a local listing. Because no tribal cultural resources were identified through AB 52 consultation efforts, there would be no impact.

b) Cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Based on the consultation completed for AB 52, the City of West Sacramento determined that the project would not cause a substantial adverse change in the significance of a tribal cultural resource listed in the CRHR or in a local listing; or a resource determined by the lead agency, at its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of PRC Section 5024.1. Because no tribal cultural resources were identified through AB 52 consultation efforts, there would be no impact.

3.2.19 Utilities and Service Systems

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.19.1 CEQA Significance Determinations for Utilities and Service Systems

Because the build alternatives have similar configurations and include the same jurisdictions and utility service providers, they are analyzed together in this section. Both Alternatives B and C would result in the same potential impacts regarding utilities and service systems. Therefore, the impacts of these alternatives on utilities and service system are not discussed separately.

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Impact UTL-1: Utility Relocations (Alternatives B and C) (Less Than Significant)

Poles and other support structures for several above-ground public and private utilities, including electric and communication facilities, would need to be relocated to match new roadway widths and alignments. Access points to underground utilities would be adjusted to the new ground or roadway elevation within the limits of the proposed project, including access points to existing water, sewer, gas, electric, and communication facilities within Broadway, South River Road, 15th Street, and Jefferson Boulevard. Ground disturbance for the relocations and grade adjustments would be within the limits of disturbance of the proposed project. Utility relocations and grade adjustments would be conducted prior to or during construction by, or in coordination with, the utility owners or providers. Early notification of utility service and communications providers would help to ensure that patrons are notified prior to any temporary loss of service. Utility relocations and adjustments would comply with the requirements of the

West Sacramento and Sacramento city codes, and environmental protections established by state and federal law. The impact is considered less than significant. No mitigation is required.

- b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? and**
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Other than water used for dust suppression and consumption by workers during construction, the project would not require water or wastewater service. There would be no impact.

- d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? and**
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Impact UTL-2: Generation and Management of Solid Waste during Construction (Alternatives B and C) (Less Than Significant)

Waste Management, Inc. provides trash collection services in the city of West Sacramento; waste is taken to the Yolo County Central Landfill. 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 in Sacramento. The project would generate waste during construction such as concrete debris and other materials. These materials most likely would be taken to the Yolo County Central Landfill or the Sacramento Recycling and Transfer Station. The project would not generate solid waste in excess of state or local standards. The Yolo County Central Landfill has adequate capacity for this project in addition to other projects in Yolo County and general waste from residential, commercial, industrial, and other activities (County of Yolo Planning and Public Works Department 2012). The Sacramento Recycling and Transfer Station in Sacramento handles the recycling and disposal needs for the City of Sacramento and surrounding region. The facility includes a transfer station, recycling center, household hazardous waste, and e-waste collection site. According to their website, the Sacramento County Department of Waste Management & Recycling has attained a 71-percent diversion rate (Sacramento County Department of Waste Management & Recycling 2012). The impact is less than significant. No mitigation is required.

3.2.20 Wildfire

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.2.20.1 CEQA Significance Determinations for Wildfire

The proposed project is not located in or near a state responsibility area or lands classified as very high fire hazard severity zones. The project would not change risks associated with wildfires. There would be no impact.

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 West Sacramento's and Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Scoping Process for EIR/EA

4.1.1 Notice of Preparation

On July 12, 2017, a Notice of Preparation (NOP) of an EIR/EA was distributed to the following agencies. A copy of the NOP is included in Appendix H.

- California Governor's Office of Planning and Research – State Clearinghouse
- California Department of Boating and Waterways
- California Department of Fish and Wildlife-R2
- California Department of Water Resources
- California Environmental Protection Agency – Transportation
- California Highway Patrol
- California State Lands Commission
- California Department of Transportation, District 3
- Central Valley Flood Protection Board
- Delta Protection Commission
- Delta Stewardship Council
- Regional Water Quality Control Board – Central Valley Region

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 July 27, 2017.

The 30-day comment period closed on August 10, 2017. Eight letters and e-mails were received in response to the NOP. Brief summaries of these response are below. The letters and emails in their entirety are included in Appendix H.

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; visual simulation illustrating the architectural style of the bridge; consideration of special-status biological resources, invasive species, 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; and analysis of submerged cultural resources, hydrology and flood protection, sediment quality testing for mercury and other toxins in the water, navigation impediments, recreation, and cumulative impacts of the project.

Governor’s Office of Planning and Research

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; Department of Parks and Recreation; California Department of Water Resources, CDFW, Region 2; Delta Protection Commission; NAHC; CPUC; CSLC; California Highway Patrol; Caltrans, District 3; CARB, Transportation Projects; and Central Valley RWQCB, Region 5 (Sacramento).

Sacramento County Department of Airports

The email from the Sacramento County Department of Airports asks for an update to their contact information to ensure that project information is correctly routed.

Sacramento Regional County Sanitation District

The letter from the Sacramento Regional County Sanitation District states that the proposed project would have no significant impacts on the district’s facilities.

Sacramento Metropolitan Air Quality Management District

The letter from SMAQMD requests that the proposed project follow the metrics of SMAQMD’s *Guide to Air Quality Assessment in Sacramento County* (SMAQMD 2021) document for impacts related to air quality and greenhouse gasses, and impacts associated with haul trips during construction. The letter also requests an analysis of the impacts of alternative designs for bicycle lanes, as well as impacts relating to effects on existing bicycle pathways, alignment alternatives, and consistency with other plans. SMAQMD also attaches their Rules & Regulations Statement for general construction activities.

Sacramento Municipal Utility District

The letter from SMUD 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.

Upper Land Park Neighbors

The letter from the Upper Land Park Neighbors (a residential community) describes recommendations to the proposed EIR. It recommends an evaluation of a more neighborhood-friendly bridge, additional project alternatives, bridge lane options, additional traffic studies, road materials to reduce noise impacts, and potential aesthetic impacts.

Craig Chaffee

The letter from Craig Chaffee (an individual) describes concerns with increased traffic and pollution within the project area, and provides suggestions for traffic studies and minimization of the effects of traffic on residential streets.

4.1.2 Public Engagement and Scoping Meetings

Since 2015, when the Cities of West Sacramento and Sacramento prepared and completed the *Feasibility Study, Broadway Bridge, West Sacramento, California* (CH2M 2015) for the Broadway Bridge project, public engagement notices, events, and meetings were held to gather input on alternatives and provide an opportunity for the public to share comments and considerations related to the project. Table 4.1.2-1 summarizes the notifications, newsletters, and meetings. A description of each event follows the table.

Table 4.1.2-1. Summary of Public Engagement Activities

Date	Notification and Event
July 15, 2015	Notification for Community Open House
July 22, 2015	Reminder for Community Open House
July 23, 2015	Community Open House
August 31, 2015	Project Newsletter
May 30, 2017	Save-the-Date Notification for Riverfront Renaissance event
June 12, 2017	Notification for Riverfront Renaissance event
June 14, 2017	Reminder for Riverfront Renaissance event
June 14, 2017	Riverfront Renaissance
July 26, 2017	Notification for Environmental Scoping Meeting
July 14, 2017	Reminder for Environmental Scoping Meeting
July 27, 2017	Community Open House and Scoping Meeting
August 17, 2017	Project Newsletter

4.1.2.1 July 23, 2015 – Community Open House

The Cities of West Sacramento and Sacramento hosted a community open house on Thursday, July 23, 2015, from 5:30 – 7:30 p.m. at the Leataata Floyd Elementary School in Sacramento. The open house provided an opportunity for the community to learn more about the project and provide feedback on several elements of the feasibility study. More than 80 community members attended, and 24 community members submitted feedback via comment cards about the need or desire for the crossing, connections or traffic, bike and pedestrian access, bridge design, environmental concerns, community outreach, other relevant projects, or alternate bridge locations.

4.1.2.2 June 14, 2017 – Riverfront Renaissance

The Cities of West Sacramento and Sacramento hosted a community outreach event to discuss projects happening along the Downtown Riverfront on Wednesday, June 14, 2017, at the West Sacramento Corporation Yard. More than 235 community members attended to learn about the Broadway Bridge Project, Stone Lock, Pioneer Bluff, the I Street Bridge, Miller Park, Broadway Complete Streets, and other plans for the riverfront area. A summary of comments from the public received during the event is available on the project website at <https://www.cityofwestsacramento.org/government/departments/capital-projects-and-transportation/projects/broadway-bridge-projects>.

Comments received included bridge design preferences, alternative suggestions for off-ramps, questions regarding plans for the West Sacramento southern riverfront (e.g., the fate of “tank farms”) and the Broadway Complete Streets project (e.g., more bicycle lanes). Some expressed concern for continued or improved bicycle and pedestrian access to the river, as well as suggestions for better designed bicycle lanes.

4.1.2.3 July 27, 2017 – Community Open House and Scoping Meeting

The Cities of West Sacramento and Sacramento hosted a joint open house to kick off the environmental assessment of the Broadway Bridge project. The open house also served as a public scoping meeting to provide an opportunity for the public to share comments and considerations related to the project’s potential environmental effects. More than 70 community members attended the community open house at Health Professions High School on July 27, 2017, from 5:00 to 6:30 p.m. A summary of feedback and other comments received is available on the project website at <https://www.cityofwestsacramento.org/government/departments/capital-projects-and-transportation/projects/broadway-bridge-projects>.

Comments received included environmental concerns for construction traffic, traffic impacts on local streets, hazardous conditions from historical refinery use, impacts on salmon (e.g., nighttime lighting increasing predation), and that the bridge remain “neighborhood friendly.” Some suggested bridge alignment alternatives such as using X Street in addition to Broadway for bridge traffic, avoidance of oil refineries, and to consider Linden to Sutterville Road.

Others expressed support for the project to alleviate local traffic, and many voiced their opinions regarding specific elements of the proposed bridge: increase pedestrian, bicycle, and disabled access; limit lighting; provide benches and lookouts; keep it “neighborhood friendly.”

4.2 Consultation and Coordination with Public Agencies

During preparation of the technical studies for the proposed project and this environmental document, formal and informal coordination was conducted with federal, state, and local agencies and the entities listed below.

4.2.1 U.S. Army Corps of Engineers

An aquatic resources report was submitted to the USACE on November 5, 2019, with additional clarification on January 6, 2020. The USACE responded on June 18, 2020, with a preliminary Jurisdictional Determination that concurred with the delineation of aquatic resources. 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 I. 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 January 13, 2021 (ICF 2020, Appendix T), to initiate FESA consultation and request a determination on the effects of the project. On April 2, 2021, USFWS issued a Biological Opinion for the proposed project, concluding formal consultation. The Biological Opinion is in Appendix I.

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, CCV steelhead, and the Southern DPS of North American green sturgeon (including designated critical habitat). A Biological Assessment was submitted by Caltrans to NMFS on January 13, 2021 (ICF 2020, Appendix T), to initiate FESA consultation and request a determination on the effects of the project on these species. A species list is included in Appendix I.

Federal fisheries and EFH consultation (informal or formal) with NMFS is required for potential effects of the project on Chinook salmon. An EFH assessment addressing Chinook salmon was included in the documentation submitted to NMFS.

4.2.4 Native American Heritage Commission and Coordination with Local Native American Tribes

The NAHC was contacted in May 2017 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 May 30, 2017, the NAHC provided both sacred lands search results, indicating the presence of sacred sites and a list of nine Native American representatives. The NAHC referred to the Ione Band of Miwok Indians (IBMI) and the United Auburn Indian Community (UAIC) for more information regarding sacred sites. All nine representatives were contacted by letter on April 20, 2018. Of those contacted, one representative (Daniel Fonseca, Shingle Springs Band of Miwok Indians) responded with a letter requesting consultation under Section 106. The letters are included in Appendix I.

The NAHC was contacted again on November 12, 2019, to request another sacred lands database search and provide an updated list of Native American representatives who might have any information or concerns regarding the project. On November 22, 2019, the NAHC provided both sacred lands search results (positive) and a list of 12 Native American representatives. As before, the IBMI and the UAIC were listed as contacts in regard to the positive sacred lands search results. Each representative was contacted by letter on January 30, 2020, and follow-up telephone calls were made on March 24, 2020. Of those contacted, seven representatives responded (see below for a brief summary). Letters, emails, and correspondence logs are included in Appendix I.

In a February 27, 2020 email, Richard Hawkins, Tribal Historical Preservation Office Coordinator with the Buena Vista Rancheria, stated that the tribe does not have any objection to the project but if cultural resources are found, they would like to be notified.

In a February 26, 2020 email, Daniel Fonseca of the Shingle Springs Band of Miwok Indians (SSBMI) stated that the tribe would like to initiate consultation under AB 52 and Section 106, and to contact Kara Perry, Site Protection Manager, for additional consultation. Descriptions of subsequent archaeological surveys and results were shared with the SSBMI on March 4 and December 18, 2020, and on January 19, 2021. No responses have been received from Ms. Perry; however, consultation is ongoing.

On April 16, 2020, Jereme Dutschke, Ione Cultural Committee, indicated that the tribe was interested in the project. On December 21, 2020, Mr. Dutschke said that he was not aware of any sacred sites in the project area. Descriptions of subsequent archaeological surveys and results were shared with Mr. Dutschke on January 19, and 25, 2021. Consultation is ongoing.

On February 10, 2020, an email was received from Mariah Mayberry with the Wilton Rancheria requesting consultation under AB 52. Attempts were made to contact Ms. Mayberry on June 4, July 14, and August 3, 2020 with no response. No further responses have been received.

On February 18, 2020, the Yocha Dehe Wintun Nation requested formal consultation on the project. A virtual meeting was held on October 5, 2020, to address Section 106 and AB 52 consultation. Project details and timelines were discussed. Some of the tribe's concerns regarded the cultural sensitivity of levees and protocols for burial treatments, monitoring, and inadvertent discoveries. The tribe preferred as little levee disturbance as possible. Consultation is ongoing, and descriptions of subsequent archaeological surveys and results were shared with the tribe on January 19, 2021.

UAIC Chairman Gene Whitehouse responded on February 20, 2020, requesting consultation on the project and naming Ms. Starkey as the point of contact. Subsequently, the UAIC was invited to participate in a web-based video conference for formal consultation. UAIC (Ms. Starkey) responded that she is not aware of any known tribal cultural resources in the project area, but the area is very culturally sensitive with the potential for deeply buried deposits. Descriptions of subsequent archaeological surveys and results were shared with Ms. Starkey on December 22, 2020 and January 19, 2021. On January 19, 2021, Ms. Starkey replied stating that based on the information, the APE did not appear to be sensitive for buried or unrecorded indigenous resources. She did not believe that the tribe would need to actively consult anymore but would like a copy of the archaeological survey report and to be notified if any cultural resources are found during construction.

In a March 24, 2020 phone call, Grayson Coney, Cultural Director of the Tsi Akim Maidu, indicated that the tribe did not wish to consult on the project but if excavation uncovers human remains, a member of his tribe would be a candidate for Most Likely Descendant.

On March 24, 2020, Pamela Cubbler, Treasurer of the Colfax-Todds Valley Consolidated Tribe, indicated that the tribe did not wish to consult on the project as long as other tribes were already consulting on the project.

No responses to outreach were received from the Cortina Rancheria – Kletsel Dehe Band of Wintu Indians or the Nashville Enterprise Miwok-Maidu-Nishinam Tribe.

4.2.5 North Central Information Center

Two different CHRIS repositories cover the portion of California in which the APE is located. The NWIC contains records for the Yolo County portion of the APE and the NCIC has those associated with the Sacramento County portion.

A records search was conducted at the NWIC, Sonoma State University, Rohnert Park on November 19, 2015, and on October 31, 2017, for those portions of the APE in Yolo County. A records search was conducted at the NCIC, California State University, Sacramento, on November 23, 2015, and on October 2, 2017, for those portions of the APE in Sacramento County.

4.2.6 State Historic Preservation Officer

On May 17, 2021, Caltrans submitted the HPSR, HRER and ASR to SHPO requesting their concurrence on the determinations of eligibility.

Chapter 5 List of Preparers

The following agency staff and consultants contributed to the preparation of this EIR/EA.

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Katrina Sukola, Contribution: Hydrology Floodplain, Water Quality, Stormwater

Monica Corpuz, Contribution: Geology/Soils; Paleontology

Darrin Trageser, Contribution: Air Quality, Climate Change

Jason Volk, Contribution: Noise, Vibration

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James Alcorn. Contribution: Chapter 3. CEQA Aesthetics, Energy, Hydrology and Water Quality, Land Use, Population, Public Services, Recreation, Utilities

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Patricia Cubanski, Watershed Scientist, Hydrology

5.9 Egret, Inc.

Joan Lynn, Lead Technical Editor

5.10 HMMH

Scott Noel, AICP, INCE, Principal, Noise

5.11 Terry A Hayes Associates, Inc.

Anders Sutherland, Environmental Scientist, Air Quality

Chapter 6 Distribution List

The following agencies, organizations, and individuals will be sent notification of availability of this Draft EIR/EA.

Federal Agencies and Tribal Representatives

Federal Emergency Management Agency
Federal Highway Administration
Federal Emergency Management District
National Marine Fisheries Service, California Central Valley 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
U.S. Coast Guard
Buena Vista Rancheria
Ione Cultural Committee
Shingle Springs Band of Miwok Indians
United Auburn Indian Community of the Auburn Rancheria
Wilton 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

Local Agencies

City of West Sacramento
City of Sacramento
County of Yolo
County of Sacramento
West Sacramento Fire Department
Sacramento Fire Department
West Sacramento Police Department
Sacramento Police Department
Yolo County Sheriff Department
Sacramento County Sheriff Department
Yolo-Solano Air Quality Management District
Sacramento Metropolitan Air Quality Management District
West Sacramento Area Flood Control District
Sacramento Area Flood Control District
Yolo County Transportation District
Yolo County Transit Authority
Sacramento Regional Transit
Sacramento County Department of Airports
Sacramento Area Council of Governments
Reclamation District 811
Reclamation District 1000

Schools and School Districts

Washington Unified School District in West Sacramento

Sacramento City Unified School District in Sacramento

Federal Elected Officials

United States Senate, Diane Feinstein

United States Senate, Alex Padilla

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

West Sacramento Mayor Martha Guerrero

Sacramento Mayor Darrell Steinberg

All members of the West Sacramento City Council

All members of the 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 this Draft EIR/EA.

Sacramento Municipal Utility District

Upper Land Park Neighbors

Craig Chaffee

Jackson Hurst