Water Quality Assessment Report

Hickman Road over Tuolumne River Bridge Replacement Project

Hickman Road Bridge (Br. No. 38C0004a)
Stanislaus County, California
Federal Project No. BRLS-5938 (199)
10-STA-0-CR

December 2016

Caltrans

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STATE OF CALIFORNIA
Department of Transportation

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The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 USC 326.

Executive Summary

This Water Quality Assessment Report (WQAR) evaluates potential effects the proposed Hickman Road over Tuolumne River Replacement Project (proposed Project) may have on the water quality and beneficial uses of nearby surface and ground water resources. The proposed Project includes removal of the existing Hickman Road Bridge over the Tuolumne River and installation of a new bridge in place.

This report evaluates the proposed Project, the physical setting of the Project site, and the regulatory framework with respect to water quality. This report also provides data on surface water and groundwater resources within the Project site and their water quality health, describes water quality impairments and beneficial uses, identifies potential water quality impacts/benefits associated with the proposed Project, and recommends avoidance and or minimization measures for potentially adverse impacts.

The proposed Project is located on Tuolumne River approximately 21 miles downstream from Don Pedro Reservoir. The reach of the Tuolumne River below Don Pedro Reservoir is listed as Section 303(d) for impaired water bodies for pesticides and unknown toxicity.

The proposed Project would disturb 1 acre or more of land during construction and, therefore, the Project proponent would be required to prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the Clean Water Act and associated federal regulations (Title 40 of the Code of Federal Regulations [CFR] 123.25(a)(9), 122.6 (b)(14)(x) and 122.26(b)(15) to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges.

A Notice of Termination (NOT) with the Regional Water Board must be filed when construction is complete and final stabilization has been reached or ownership has been transferred. The discharger must certify that all State and local requirements have been met in accordance with this General Permit. In order for construction to be found complete, the discharger must install post-construction storm water management measures and establish a long-term maintenance plan. This requirement is intended to ensure that the post-construction conditions at the project site do not cause or contribute to direct or indirect water quality impacts (i.e., pollution and/or Hydromodification) upstream and downstream. Specifically, the discharger must demonstrate compliance with the post-construction standards set forth in the Construction General Permit (CGP) (Section XIII). The discharger is responsible for all compliance issues including all annual fees until the NOT has been filed and approved by the local Regional Board.

TABLE OF CONTENTS

FIGURES AND TABLES

FIGURES

TABLES

Chapter 1 Introduction

Stanislaus County (County) Department of Public Works proposes to replace the existing bridge on Hickman Road over the Tuolumne River (Bridge No. 38C-0004) in northern Stanislaus County.

The Hickman Road over Tuolumne River Bridge Replacement (Project) is funded primarily by the federal-aid Highway Bridge Program administered by the Federal Highway Administration (FHWA) through the California Department of Transportation (Caltrans) Local Assistance. The replacement bridge will meet current applicable County, American Association of State Highway and Transportation Officials (AASHTO), and Caltrans design criteria and standards.

1.1 Project Description

The Project is located 0.15 miles south of State Route 132 near the town of Waterford, California. Figure 1: Regional Location shows the location of the proposed Project on a regional scale. Figure 2: Project Vicinity shows the location of the proposed Project. The bridge currently carries vehicular traffic over the Tuolumne River, an estimated 3,110 Average Daily Traffic (ADT) with a projected future ADT of 8,000. Surrounding land uses include urban with recreational, commercial retail, and public facility uses.

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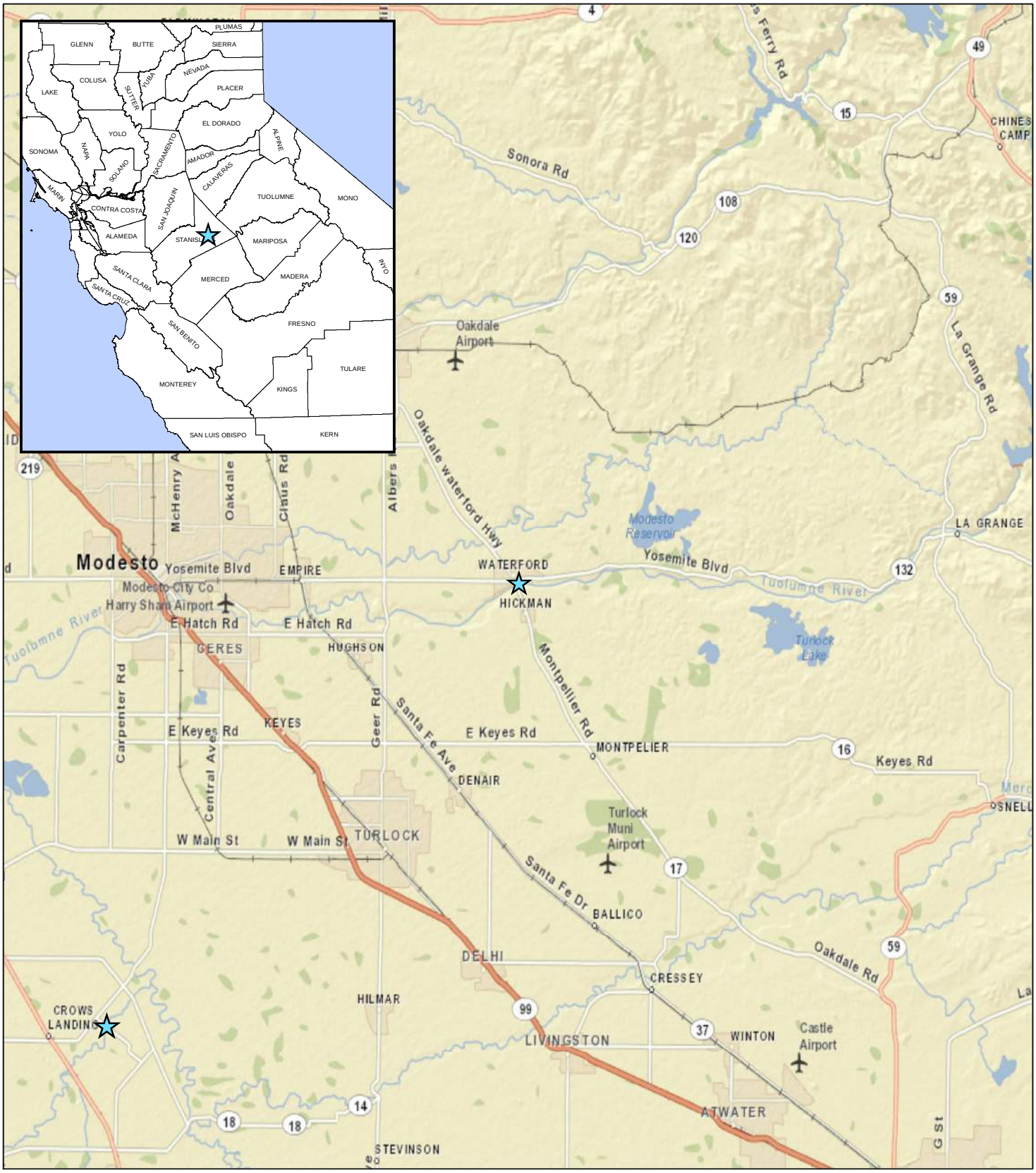
The existing Hickman Road bridge was last inspected by Caltrans in 2013 and has a sufficiency rating of 64.7 out of a possible score of 100, and is classified as Structurally Deficient (SD). In addition, the existing bridge is deemed “Scour Critical” with a scour rating of 3, meaning that the local scour and predicted future degradation will continue to undermine the bridge supports.

The purpose of this Project is to remove the existing structurally deficient structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts to the Tuolumne River and the surrounding riparian area.



LSA

FIGURE 1

LEGEND

Project Location

N

0 2.5 5

MILES

SOURCE: ESRI Imagery (4/2008)

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Hickman Road over Tuolumne River Bridge Replacement Project, Stanislaus County, California, BRLO-5938 (199)

Regional Location

LEGEND

Project Site

FIGURE 2

Hickman Road Bridge (38C0004) Replacement Project
Stanislaus County, California
10-STA-0-CR
Federal Project No. BRLO-5938 (199)

Project Vicinity

0 500 1000
FEET

SOURCE: NAIP Aerial Imagery (7/2014)

I:\DHG1401\GIS\Reports\NES\NES_fig3_prj_vicinity_a.mxd (4/27/2016)

1.1.1 No Project Alternative

Constructed in 1946, the existing Hickman Road over Tuolumne River Bridge is a reinforced concrete (RC) box girder on RC solid pier walls and RC wing abutments supported by steel piles. The bridge is 652.9 feet long, 33.5 feet wide, and within the existing 175 to 200 feet public right-of-way. The curb-to-curb width is 27.9 feet, with two 12-foot-wide travel lanes and two 2-foot-wide shoulders. The bridge is classified as SD and Scour Critical. The Caltrans bridge inspection report identifies major deficiencies:

- The bridge deck has 12 to 16 inch long transverse and pattern cracks throughout.
- There are several edge spalls or up to 3 feet long by 4 inch wide by 1 inch deep along the right curb in Span 4.
- There is an erosion gulley of approximately 3 feet wide by 5 feet deep along the right slope embankment at Abutment 8 due to roadway runoff.
- The scour protection at Piers 4 and 5 has deteriorated in front and at the upstream right side of the footing with up to 6-foot-wide sections missing.
- Settlement and displacement has been observed at Piers 4 and 5.

Under the No Project Alternative, the existing Hickman Road bridge would remain in place. Without implementation of the Project, future degradation will continue to undermine the bridge supports, leading to potential structural collapse.

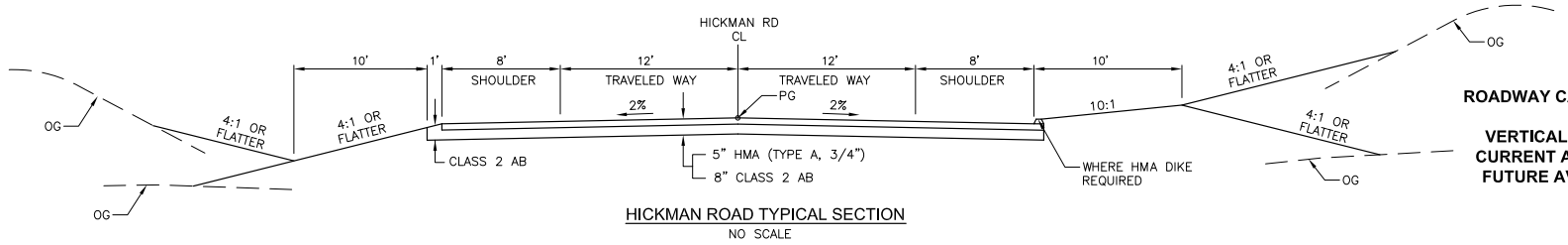
1.1.2 Proposed Project

The proposed Project would include bridge replacement due to its identified deficiencies.

1.1.2.1 Replacement Bridge

The replacement bridge will consist of a 750-foot long cast-in-place (CIP) post-tensioned box girder with two 12-foot-wide travel lanes and two 8-foot-wide shoulders and one 5-foot wide sidewalk placed along the upstream edge.

The replacement bridge will be constructed immediately upstream of the existing structure, as shown in Figure 3, in order to keep the existing road and bridge open to public traffic during construction. The new upstream road alignment will transition and connect back to the existing Hickman Road alignment using a design speed of 45 mph.



HICKMAN ROAD TYPICAL SECTION
NO SCALE

DESIGN CRITERIA

ROADWAY CATEGORY - RURAL MAJOR COLLECTOR
DESIGN SPEED - 55 MPH
VERTICAL ALIGNMENT DESIGN SPEED - 60 MPH
CURRENT AVERAGE DAILY TRAFFIC (ADT) - 3110
FUTURE AVERAGE DAILY TRAFFIC (ADT) - 8000
TRUCK TRAFFIC - 3%
TRAFFIC INDEX - 8

LSA

FIGURE 3

Hickman Road over Tuolumne River Bridge Replacement Project, Stanislaus County, California, BRLO-5938 (199)
Project Design

SOURCE: Drake Haglan and Associates (04/2014).

I:\DHG1401\AI\Figure_3_design.ai (12/28/2015)

1.1.2.2 Utility Relocation

Several utilities run through the Project site, including a PG&E gas pipe and AT&T telecommunication lines which are mounted to the bridge on the upstream and downstream face, respectively. There are no overhead utilities located within the Project area. All existing utilities will be relocated onto the new bridge without the need of a temporary relocation.

1.1.2.3 Right-of-Way

Construction of the new bridge on the proposed upstream alignment will require additional permanent right-of-way takes. In addition, temporary construction easements will be required to construct the project.

1.1.2.4 Detour Route

The new bridge will be constructed on a new alignment adjacent to the existing bridge. Traffic will be able to use the existing bridge to cross the Tuolumne River during construction of the replacement bridge. The existing bridge will be demolished upon completion of the new bridge construction.

1.1.2.5 Demolition and Construction Staging

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. All concrete and other debris resulting from the demolition of the existing bridge will be removed from the Project site and disposed of by the contractor. The construction contractor will prepare a bridge demolition plan. The construction staging area will comply with the SWPPP requirements.

1.1.2.6 Construction Activities

Construction will consist of the following activities:

- Removing trees, clearing, and grubbing to accommodate the new bridge structure and road approach work
- Excavating for the new bridge foundations (maximum of 80 to 100 feet deep).
- Constructing the new bridge and road approaches, including excavating for and placing asphalt concrete.
- Removing the existing bridge.
- Placing erosion control, native grass seeds, and mulch.

Table 1 provides a description of the type of equipment likely to be used during the construction of the proposed Project.

Table 1: Construction Equipment

Equipment	Construction Purpose
Drill Rig	Construction of drilled or driven pile foundations
Backhoe	Soil manipulation and drainage work
Bobcat	Fill distribution
Bulldozer / Loader	Earthwork construction and clearing and grubbing
Crane	Placement of precast concrete girders or false work beams
Dump Truck	Fill material delivery
Excavator	Soil manipulation
Front-End Loader	Dirt or gravel manipulation
Grader	Ground grading and leveling
Haul Truck	Earthwork construction and clearing and grubbing
Roller / Compactor	Earthwork and asphalt concrete construction
Paver	Asphalt concrete construction
Truck with seed sprayer	Erosion control landscaping
Water	Earthwork construction and dust control

Construction Sequence/Schedule and Timing

Construction is currently scheduled to start in 2018 and will take approximately 8 months to complete.

As is standard with all roadway projects, the contractor will be required to install temporary Best Management Practices (BMP) identified in Section 3.2.1 to control any runoff or erosion from the Project site into the Tuolumne River. These temporary BMPs will be installed prior to any construction operations and will be in place for the duration of the contract. The removal of these BMPs along with Project site cleanup will be the final operation.

1.2 Approach to Water Quality Assessment

The purpose of the WQAR is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to provide information, to the extent possible, for NPDES permitting. The document includes a discussion of the proposed Project , the physical setting of the project area, and the regulatory framework with respect to water quality; it also provides data on surface water and groundwater resources within the project area and the water quality of these waters, describes water quality impairments and beneficial uses, and identifies potential

water quality impacts/benefits associated with the proposed Project , and recommends avoidance and/or minimization measures for potentially adverse impacts.

Chapter 2 Regulatory Setting

2.1 Federal Laws and Requirements

2.1.1 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 source unlawful unless the discharge is in compliance with a NPDES permit. Known today as the Clean Water Act (CWA), Congress has amended it 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. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which 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. (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 (RWQCB) 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 objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

USACE issues two types of 404 permits: Standard and General permits. For General permits there are two types: Regional permits and Nationwide permits. 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 authorize a variety of minor project activities with no more than minimal effects.

There are also two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may

be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (EPA) Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with 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 which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have less effects on waters of the U.S., and not have any other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures have been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent 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 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

2.2 State Laws and Requirements

2.2.1 Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the State. It predates the CWA and regulates discharges to waters of the State. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant". Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDR) 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 regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these

uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which 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-source point controls (NPDES permits or Waste Discharge Requirements), 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.

2.2.2 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, and 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. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollution Discharge Elimination System Program**
    - **Municipal Separate Storm Sewer Systems (MS4)**
      Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water dischargers, including MS4s. The U.S. EPA defines an MS4 as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that are designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 pursuant to federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted. The Department's MS4 Permit, currently under revision, contains three basic requirements:
      1. The Department must comply with the requirements of the CGP (see below);
      2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (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, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department 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 the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed Project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

2.2.3 Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG), adopted on November 16, 2010, became effective on February 14, 2011. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the CGP, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the CGP. Construction activity that results in soil disturbances of less than one acre is subject to this CGP 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 storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the CGP.

The CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows.

2.2.4 Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with State water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit, issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before 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.

2.3 Regional and Local Requirements

2.3.1 Local Agency Construction Activity Permitting

For County-sponsored “off” State Highway System transportation projects, the County (as owner of the land where the construction activity is occurring) may follow their local design standards, provided they meet AASHTO standards. The County is also responsible for obtaining all necessary permits, agreements, and approvals from resource and regulatory agencies (e.g., Encroachment, U.S. Coast Guard Bridge Permit, etc.) prior to advertisement for construction. Local agencies contact the appropriate RWQCB to determine what permits are required for their construction activity.

The County is responsible for ensuring that all permit conditions are included in the construction contract and fully implemented in the field. The County requires the Contractor to submit their SWPPP prior to the beginning of construction. The SWPPP must be consistent with the County’s current specifications. Permits are typically applied for following National Environmental Policy Act approval and when the design is far

enough along to determine and calculate specific impacts. The County must provide a copy of each permit to the Caltrans District Local Assistance office for recording in LP2000.

Conformance with the SWMP requirements, including future requirements imposed by this ongoing regulatory program, achieves compliance with the NPDES program and the state general permit, and reduces potential water quality impacts of development.

According to the Stanislaus County Department of Public Works Standards & Specifications 2007 Edition, all bridge designs shall be in accordance with the Caltrans design specifications.

All fill below two feet above the 100-year flood elevation shall be protected from erosion by slope protection as approved by an engineer.

2.3.2 Stanislaus County Storm Water Management Program

Stanislaus County has prepared a SWMP that has been developed to meet the terms of the General Permit. The SWMP consists of six minimum control measures established by the SWRCB for Phase II storm water discharges. The six control measures contained in the County's SWMP include: Section One – Public Education and Outreach on Storm Water Impacts Program; Section Two – Public Involvement/Participation Program; Section Three – Illicit Discharge Detection and Elimination Program; Section Four – Construction Site Storm Water Runoff Control Program; Section Five – Post-Construction Storm Water Management in New Development and Redevelopment Program; and, Section Six – Pollution Prevention/Good Housekeeping for Municipal Operations Program. Each control measure contains BMPs necessary for proper storm water management. The BMPs contain specific tasks to meet the objective of that control measure.[1]

[1] Stanislaus County Website, http://www.stancounty.com/publicworks/storm/management-program.shtm; Public Works, accessed May 13, 2016.

Chapter 3 Affected Environment

3.1 Introduction

The quality of water in an area depends upon several factors, including land use, topography, geology, soils, surface and groundwater hydrology, and climate. Following is a brief description of these general characteristics in the Project area and surroundings. Locations referred to in this section are shown where possible on Figure 4.

3.2 General Setting

3.2.1 Population and Land Use

The proposed Project is covered by the City of Waterford General Plan and the Stanislaus County General Plan. North of the Tuolumne River is under the jurisdiction of the City of Waterford. South of the Tuolumne River is under the jurisdiction of Stanislaus County.

The City of Waterford adopted the current General Plan in 2006. The City's General Plan provides a land use blueprint for long-term growth with a planning horizon of 20 years. Land uses in the Project area consist of public government and open space to the east, open space to the west, and commercial to the north of the Project area.

Stanislaus County adopted their General Plan in 1994. It is long term in perspective ranging from 15 to 30 years. Land uses to the south of the Project area are agricultural.

3.2.2 Topography

The Project site is at an elevation ranging between 75 and 160 feet above mean sea level. The topography of the Project site has been strongly influenced by the Tuolumne River and its historic flows. The surrounding terrain is at an elevation of about 160 feet (compared to the Tuolumne River at an elevation of approximately 75 feet). However, historical high flows and the channel of the Tuolumne River carved a steep, approximately 80-foot bluff.

3.2.3 Hydrology

This section addresses the surface water and groundwater present in the Project vicinity, and discusses surface and groundwater quality from both regional and Project-level perspectives.

LSA

LEGEND

Project Location

FIGURE 4

Hickman Road over Tuolumne River Bridge Replacement Project, Stanislaus County, California, BRLO-5938 (199)

Project Setting

0 5 10

Miles

SOURCE: Basemap - ESRI (2005) and USGS (2002); Mapping - LSA Associates, Inc. (2015)

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3.2.3.1 Regional Hydrology

The headwaters of the Tuolumne River originate in Yosemite National Park and flow approximately 130 miles west to the confluence with the San Joaquin River 10 miles west of the City of Modesto. The river itself is highly regulated by upstream impoundment and diversion structures, including dams at Hetch Hetchy Reservoir, Cherry Lake, and Lake Don Pedro, and diversion structures for the Modesto and Turlock Irrigation Districts.

3.2.3.2 Local Hydrology

Precipitation and Climate

Average January temperatures in the County are a maximum of 53.7°F and a minimum of 37.6°F. Average July temperatures are a maximum of 94.2°F and a minimum of 59.9°F. There are an average of 80.0 days with highs of 90°F (32°C) or higher and an average of 20.3 days with lows of 32°F (0°C) or lower. The record high temperature of 113°F was on July 23, 2006. The record low temperature of 18°F occurred on December 13, 1932, and January 11, 1949.

Average annual rainfall in the County is 12.22 inches, falling on an average of 51 days annually. The summer months are usually very dry except for occasional thunderstorms. The wettest year was 1983 with 27.39 inches of rain and the driest year was 1929 with 5.70 inches of rain. Snow is very rare in the County.

Surface Streams

Monthly average flows in the Tuolumne River reported at the La Grange gage station, about 16 miles east of the Project site, range from 243 to 1,884 cubic feet per second (cfs). Monthly average flows reported at the Modesto gage station, about 13 miles east of the Project site range from 431 to 2,236 cfs (USGS 2005c, 2005d). Monthly average flows peak in the late winter and early spring as a result of rainfall runoff and releases from Don Pedro Reservoir.

The reach of the Tuolumne River within the Project area is a low-gradient river with steep banks consisting of a series of riffles, glides, and small pools approximately 12-24 inches deep.

Flood Plains

The Tuolumne River watershed is approximately 1,538 square miles.

Municipal Supply

Groundwater wells provide approximately 60 percent Modesto's municipal water supply; the remainder is provided by treated surface water from the Tuolumne River.

3.2.3.3 Groundwater Hydrology

The Project site is underlain by the Modesto and Turlock Groundwater Sub-Basins in the San Joaquin Valley Groundwater Basin. Groundwater depths in the Waterford area are reported to range from 76-100 feet below the ground surface (bgs). Groundwater depths are shallower within the river corridor, varying from an estimated 51-75 feet bgs to less than 10 feet bgs. The Project site would be considered to have high natural recharge potential due to its proximity to the river and porosity of the alluvial soils deposited in the area.

The Sub-Basins are described as a complex sequence of overlapping sediments largely deposited and shaped by the Stanislaus and Tuolumne Rivers. The groundwater system consists of a shallower unconfined aquifer and a deeper confined aquifer. Many clay lenses in the basin restrict the downward flow of groundwater and result in semi-confined conditions.

Specific information on groundwater for the Project site was not investigated because the proposed Project is not expected to substantially affect groundwater resources. No wells would be constructed, and construction activities would not intercept or alter groundwater recharge, discharge, or flow condition.

3.2.4 Geology/Soils

Geological materials underlying the Waterford area, and the higher elevations of the Project site are the relatively recent (Quaternary) sedimentary deposits of the Modesto Formation. The river floodplains are classified as recent unsorted alluvium.

According to the Natural Resources Conservation Service Soil Survey of Stanislaus County, the Project site contains several types of soils; however, the majority of the Project site is made up of water, Riverwash, or Terrace Escarpment as shown in Table 2: Soils within the Study Area.

Table 2: Soils within the Study Area

Percentage in Study Area	Soil Series	Texture	Prime Soil	Drainage
28.3	Terrace Escarpment	Varies	No	Excessively drained
16.6	N/A (Water)	N/A (Water)	N/A (Water)	N/A (Water)
14.6	Riverwash	Gravelly sand	No	Excessively drained
12.6	Madera	Sandy loam, moderately-coarse textured	No	Moderately well drained
8.3	Grangeville	Very fine sandy loam, slightly saline-alkali	This unit is Prime Farmland only if reclaimed such that the electrical conductivity is less than 4 millimhos per centimeter (mmhos/cm).	Somewhat poorly drained
8.3	Gravel Pits	Gravel	No	N/A
6.4	Hanford	Sandy loam	Yes, if irrigated	Well drained
Remainder	Grangeville fine sandy loam, 0 to 1 percent slopes; Hanford sandy loam, 3 to 8 percent slopes; Hanford sandy loam, moderately deep over sand, 0 to 3 percent slopes; San Joaquin sandy loams, 0 to 3 percent slopes			

Source: U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

3.2.4.1 Soil Erosion Potential

Riverwash has rapid permeability, medium to very-high runoff potential, and no shrink-swell capacity. Terrace escarpment has a rapid runoff potential and a high erosion hazard.[2]

3.2.5 Biological Communities

3.2.5.1 Aquatic Habitat

Special Status Species

No federally listed or proposed plant species occur in the BSA; therefore, none will be affected by the proposed Project .

Central Valley Steelhead

The Central Valley steelhead (*Oncorhynchus mykiss irideus*) Distinct Population Segment (DPS) can occur in the reach of the Tuolumne River within the project area during all life stages (e.g., spawning, migration, rearing). However, no suitable spawning habitat for steelhead was observed in the BSA. Although the reach of the Tuolumne

[2] U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

River is not suitable spawning habitat for Central Valley steelhead, this reach does provide suitable migration habitat for adults spawning upstream of the project and out-migrating smolts. This reach also provides suitable rearing habitat for juveniles and fry.

The reach of the Tuolumne River within the project area is within designated Critical Habitat for Central Valley steelhead. Primary Constituents Elements (PCEs) for this species in the subject reach of the Tuolumne River include the water column for movement, protection, foraging, the river bottom for spawning and incubation, and the adjacent riparian zone which provides shade (i.e., thermoregulation) and is used by fry and juveniles for rearing.

Pacific Salmon

Pacific salmon Essential Fish Habitat (EFH) includes the Tuolumne River within the project area. Although the reach of the Tuolumne River in the BSA is not suitable spawning habitat for Central Valley fall-run Chinook salmon, this reach does provide suitable migration habitat for adults spawning upstream of the project and out-migrating smolts. It also provides suitable rearing habitat for juveniles and fry.

The Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) is federally listed as threatened. The beetle is dependent on its host plant, blue elderberry, which is a common component of Central Valley riparian forests. VELB larvae feed and mature within elderberry stems 1 inch or larger in diameter, and exit prior to metamorphosing to the pupal stage. The life cycle takes 1 to 2 years to complete. The beetle spends most of its life in the larval stage, living within the stems of an elderberry plant. Adults emerge from late March through June, about the same time the elderberry produces flowers. The larval beetles cannot be detected within the stems, and the adult stage is short-lived; generally the only evidence of beetle use is the exit holes in the stems created by the emerging larvae. Consequently, VELB are assumed to be present within stems of sufficient size anywhere within the beetle's known range.

A total of 82 elderberry shrubs with at least one stem that measured 1 inch in diameter at ground level (DGL) were identified in the survey area. For each shrub, data was collected for stem size, height, and dripline diameter; it was also determined if the shrub was located in a riparian area and if exit holes were present.

Stream/Riparian Habitats

Three natural communities were identified in the BSA: Valley oak woodland, red willow thicket, and riverine. Natural communities comprise approximately 9.37 ac of the BSA. Other vegetation communities in the BSA included ruderal grassland and pasture, totaling 13.54 ac.

Wetlands

Waters of the U.S. within the project area consist of the Tuolumne River and two ephemeral roadside drainages, totaling 5.63 acres. Potential wetlands total 1.28 acres and nonwetland waters total 4.35 acres.

Fish Passage

The reach of the Tuolumne River within the project area is within designated critical habitat for Central Valley steelhead and is designated EFH for Central Valley fall-run Chinook salmon, and provides migration habitat for both species.

3.3 Water Quality Objectives/Standards and Beneficial Uses

Under the guidance of the Porter-Cologne Water Quality Control Act, the Central Valley RWQCB has established water quality objectives for surface and ground water in the region. These water quality objectives are listed in Basin Plans designated for respective regions. Water quality objectives consist of both narrative and numerical goals and are established to preserve existing and potential future designated beneficial uses of regional water bodies. The water quality objectives must comply with the State Anti-Degradation Policy (State Board Resolution No. 668-16).

3.3.1 Surface Water Quality Objectives/Standards and Beneficial Uses

Beneficial uses of the Tuolumne River between Don Pedro Dam and the San Joaquin River, as designated in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins, include the following:

- Municipal and Domestic Supply (Potential);
- Agricultural Supply;
- Water Contact Recreation;
- Non-water Contact Recreation;
- Warm Freshwater Habitat;
- Cold Freshwater Habitat;
- Migration of Aquatic Organisms;
- Spawning, Reproduction, and/or Early Development; and

- Wild Habitat

The only numerical water quality objective for the Tuolumne River is the objective for dissolved oxygen, which applies to most of the river below La Grange Dam between October 15 and June 15. The objective is intended to protect spawning salmonids and their eggs. The Project would not affect dissolved oxygen.

The reach of the Tuolumne River below Don Pedro Reservoir is listed as Section 303(d) for impaired water bodies for pesticides and unknown toxicity.

3.3.2 Groundwater Quality Objectives/Standards and Beneficial Uses

The Sacramento River/San Joaquin River Basin Plan provides groundwater quality objectives and beneficial uses for the entirety of its jurisdictional boundary. Unless otherwise designated by the RWQCB, all ground waters in the Sacramento/San Joaquin River Basin Plan's jurisdictional boundary are considered suitable or potentially suitable, at a minimum for municipal and domestic water supply (MUN); agricultural supply; industrial service supply; and, industrial process supply.

The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as they are relevant to the protection of designated beneficial uses:

Bacteria: In groundwater with an MUN beneficial use the most probably number of coliform organisms over any seven-day period shall be less than 2.2/100 milliliters (ml).

Chemical Constituents: Groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, ground water designated with beneficial use MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCL) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into the Sacramento River Basin Plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431; Table 64444-A (Organic Chemical) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated as beneficial use MUN shall not contain lead in excess of 0.015 milligrams/liter (mg/l). To protect all beneficial uses, the RWQCB may apply limits more stringent than MCLs.

Radioactivity: At a minimum, groundwater designated as beneficial use MUN shall not contain concentrations of radionuclides in excess of the MCLs specified in Table 4 (MCL Radioactivity) of Section 6443 of Title 22 of the California Code of Regulations, which are incorporated by reference into the Sacramento River Basin Plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

Taste and Odors: Groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Toxicity: Groundwater shall be maintained free of toxic substances in concentrations that produce detrimental physiological response in human, plant, animal, or aquatic life associated with designated beneficial uses. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

3.4 Existing Water Quality

Water quality data sources for both surface and groundwater resources in Stanislaus County are widely dispersed. Data is available for rivers, some reservoirs, and streams near proposed major county or commercial development. Groundwater data from domestic or monitoring wells is also available mainly from these same sources. The U.S. Forest Service also has qualitative and some quantitative data on surface and groundwater quality for the 11 percent of the county that lies within the Stanislaus National Forest. However, since the Stanislaus National Forest is approximately 35 miles from the Project site, this data is not applicable. The U.S. Geological Survey, in coordination with numerous state and federal agencies, is currently conducting an extensive investigation of groundwater quality in the local area through the Groundwater Ambient Monitoring and Assessment Program.

3.4.1 Regional Water Quality

3.4.1.1 Surface Water

Surface water quality is generally satisfactory, improving in quality (relative to drinking standards) at higher elevations. Available data indicate that the major rivers and reservoirs are significantly higher in quality than the small streams. However, this may partially be the due to the fact that the available stream data is from the southwestern area of the county that contains soil and rock formations high in mineral content.

Although the water quality in the Hetch Hetchy Reservoir is excellent, below Don Pedro Reservoir (upstream from the Project site), Tuolumne River water quality deteriorates somewhat as a result of agricultural irrigation return flow, urban and agricultural runoff, and recreation. In the warmer months, water temperature increases in a downstream direction as the river leaves the foothills of the Sierra Nevada and flows on to the floor of the San Joaquin Valley. Total dissolved solids content and turbidity also increase in a downstream direction.

Water temperature at several stations on the Tuolumne River downstream of La Grange Dam has been recorded for many years, but most intensively and reliably in the last decade in the course of a 2005 TID/MID study. La Grange Dam is approximately 50 miles upstream of the Tuolumne River's confluence with the San Joaquin River. The Project site is located approximately 25 miles downstream of La Grange Dam. Daily average wintertime water temperature is similar for the entire river reach from La Grange Dam to the confluence with the San Joaquin River: in the range of 9 to 29 °C.

3.4.1.2 Groundwater

Groundwater quality is generally within most drinking water standards, although some areas of the lower foothills have very high iron content as well as certain other minerals in specific locations. This is due to the slow movement of groundwater through mineralized rock formations as expected in a mineral-rich region such as Stanislaus County. Total dissolved solids levels typically range from 200 to 500 milligrams per liter, with substantially higher levels along the east side of the subbasin (DWR 2003). Other water quality impairment results from elevated levels of radionuclides, pesticides (especially dibromochloropropane), volatile organic compounds, hardness, chlorides, boron, nitrate, iron, and manganese. Localized areas of contamination from gasoline and solvents are also present (Stanislaus and Tuolumne Rivers Groundwater Basin Association, 2005).

3.4.2 List of Impaired Waters

The 2012 303(d) impaired water list shows the lower Tuolumne River (downstream of La Grange Dam) as impaired for: Group A pesticides, chlorpyrifos, water temperature, and mercury.[3]

[3] 2012 State Water Resources Control Board. *Final 2012 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report*. www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml. Accessed November 11, 2016.

3.4.3 Areas of Special Biological Significance (ASBS)

Areas of Special Biological Significance (ASBS) are a subset of State water quality protection areas and require special protection as determined by the SWRCB pursuant to the California Ocean Plan. There are no ASBS in the Project Area.

Chapter 4 Environmental Consequences

4.1 Potential Impacts to Water Quality

Potential water quality effects from Project-related construction activities can be minimized and reduced through implementation of BMPs and compliance with existing regulatory requirements. Based on this analysis and the implementation of mitigation measures and BMPs specified below, the proposed Project would not adversely impact water quality within the Project vicinity.

4.1.1 Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment

Construction activities associated with the proposed Project may have an impact on the water quality of waterways. Minimization measures for construction and long-term impacts would focus on the control of sediment and suspended solids from entering waterways. Commonly used construction activity BMPs would be required to minimize any potential impacts to the maximum extent practicable.

4.1.1.1 Substrate

Construction activities disturb soil and increase the potential for soil erosion. During the removal of the existing bridge and construction of the new bridge, there is a potential for soil to be disturbed and an increase in the potential for erosion and downstream transport of sediment to occur. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs including, but not limited to, Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site. Therefore, there is a low potential for the proposed Project to adversely affect downstream receiving waters.

4.1.1.2 Currents, Circulation, or Drainage Patterns

Construction activities may be allowed during low flows of the Tuolumne River. Therefore, flow diversion may be required to divert flows around the construction zone; however, water would not need to be diverted outside the channel. In addition, construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion, and existing drainage patterns would be maintained. Therefore, there is a low potential for the proposed Project to adversely affect currents, circulation, and drainage patterns.

4.1.1.3 Suspended Particulates (Turbidity)

Construction activities disturb soil and increase the potential for soil erosion. During grading, excavation, removal of the existing bridge, and construction of the new bridge, land and vegetation would be cleared, thereby exposing soil to the potential for erosion. When soil erodes, the sediments/suspended particles can enter surface waters, increasing turbidity (water cloudiness). In addition, suspended particles can also be generated from vehicles operating on a roadway during construction activities. In compliance with the CGP, preparation of a SWPPP and implementation of Construction BMPs would be incorporated. Construction BMPs would include, but not be limited to, Erosion Control and Sediment Control BMPs that are designed to minimize erosion and retain sediment on site. Therefore, there is a low potential for the proposed Project to result in adverse water quality effects related to suspended particles.

4.1.1.4 Oil, Grease, and Chemical Pollutants

Construction activities for the proposed Project involve grading and earthmoving activities. Grading and earthmoving equipment are a source of chemicals, liquid products, and petroleum products if the equipment leaks. Chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may be spilled or leaked and then potentially transported via storm runoff into receiving waters. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs (including, but not limited to, Good Housekeeping BMPs) to prevent spills, leaks, and discharges of construction debris and waste into receiving waters. Therefore, there is a low potential for the proposed Project to contribute to adverse water quality effects related to oil, grease, and chemical pollutants.

4.1.1.5 Temperature, Oxygen, Depletion, and Other Parameters

Construction activities for the proposed Project could adversely affect temperature, oxygen, and other parameters. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would include, but not be limited to, Good Housekeeping BMPs to prevent spills, leaks, and discharges of construction debris and waste into receiving waters. In addition, sanitary waste generated from temporary or portable sanitary facilities would be disposed of in compliance with the applicable regulations. Therefore, there is a low potential for the proposed Project to contribute to adverse water quality effects related to temperature, oxygen depletion, and other parameters.

4.1.1.6 Flood Control Functions

The proposed Project is located within a FEMA-designated 100-year floodplain. The proposed Project would construct the new bridge that would not adversely affect flow capacity. Therefore, there is a low potential for the proposed Project to contribute to adverse flood control functions.

4.1.1.7 Storm, Wave, and Erosion Buffers

Wetlands serve as buffer zones that shield upland areas from wave actions, storm damage, and erosion. The proposed Project would have minimal effects to wetlands; therefore, there is a low potential for the proposed Project to change existing storm, wave, and erosion buffers in the project area, and there would be no adverse impacts to storm, wave, and erosion buffers.

4.1.1.8 Erosion and Accretion Patterns

Construction activities for the proposed Project would be a potential for soil to be disturbed, thereby exposing soil to the potential for erosion. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs, including, but not limited to, Erosion Control and Sediment Control BMPs that are designed to minimize erosion and retain sediment on site. Therefore, there is a low potential for the proposed Project to adversely affect erosion and accretion patterns.

4.1.1.9 Aquifer Recharge/Groundwater

Groundwater may be encountered during construction, and groundwater dewatering may be required during construction activities within the streambed. However, any groundwater dewatering activities during construction would be short term, and the volume removed would be minimal. Therefore, there is a low potential for the proposed Project to adversely affect groundwater recharge.

4.1.1.10 Baseflow

Baseflow is the streamflow resulting from precipitation that infiltrates the soil and eventually moves through the soil to the stream channel. The proposed Project would result in a minimal increase in impervious area and the soils in the area have a high capacity for infiltration. Therefore, the proposed Project would not substantially decrease infiltration and would not affect baseflow.

4.1.2 Anticipated Changes to the Biological Characteristics of the Aquatic Environment

4.1.2.1 Special Aquatic Sites

The proposed Project will result in minor permanent impacts to wetlands (0.001 ac) and nonwetland waters (0.004 ac) during installation of the new bridge piers; however, removal of the concrete pile caps for the existing bridge piers will result in an 0.027 ac of additional waters of the U.S., and an overall net increase of 0.022 ac of waters of the U.S., when considering the 0.005 ac of permanent impact.

Temporary impacts to wetlands (0.344 ac) and nonwetland waters (1.115 ac) will occur as a result of installation of the temporary access ramp, temporary work trestle, removal of the existing bridge and temporary access. Construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion, and existing drainage patterns would be maintained. Therefore, there is a low potential for the proposed Project to adversely affect special aquatic sites.

4.1.2.2 Habitat for Fish and Other Aquatic Organisms

As noted above, the project will result in minor impacts to wetlands and non-wetlands waters associated with the Tuolumne River that support fish and other aquatic organisms. Construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion. Therefore, there is a low potential for the proposed Project to adversely affect habitat for fish and other aquatic organisms.

Fish Passage (Beneficial Uses)

The Tuolumne River within the project area provides migration habitat for Central Valley steelhead and Central Valley fall-run Chinook salmon, and provides migration habitat for both species. Construction activities may be allowed during low flows of the Tuolumne River. Therefore, flow diversion may be required to divert flows around the construction zone; however, water would not need to be diverted outside the channel. In addition, construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion, and existing drainage patterns would be maintained. Therefore, there is a low potential for the proposed Project to adversely affect fish passage.

4.1.2.3 Wildlife Habitat

In addition to impacts to special aquatic sites discussed above, the proposed Project would also result in impacts to riparian habitat associated with the Tuolumne River that supports wildlife species. The proposed Project would result in minor permanent impacts, and temporary impacts that are primarily limited to the understory (although seven valley oak trees will be removed). Construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion, and existing drainage patterns would be maintained. Therefore, there is a low potential for the proposed Project to adversely affect wildlife habitat.

Wildlife Passage (Beneficial Uses)

As noted above, the proposed Project would result in minor permanent impacts, and temporary impacts that are primarily limited to the understory. Construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management would be implemented along with water diversion, and existing drainage patterns would be maintained. Therefore, there is a low potential for the proposed Project to adversely affect wildlife passage.

4.1.2.4 Endangered or Threatened Species

As noted above, the project area supports federally threatened Central Valley steelhead and VELB through disturbance and/or removal of suitable habitat. Although construction BMPs including but not limited to stabilized construction entrance/exit, preservation of existing vegetation, streambank stabilization, gravel bag berms, sandbag barriers, concrete curing, and solid waste management will be implemented, the project is likely to adversely affect Central Valley steelhead and VELB. Consequently, it is likely that consultation with NMFS and USFWS, respectively, pursuant to the Federal Endangered Species Act, will be required.

4.1.2.5 Invasive Species

Construction of the proposed Project may provide opportunities for the movement of invasive species through the landscape. Invasive species can be transported by pedestrians, bicyclists, and other forms of sidewalk use. Invasive plants can be moved from site to site during spraying and mowing operations. Weed seed can be inadvertently introduced into the corridor on equipment during construction and through the use of mulch, imported soil or gravel, and sod. Some invasive plant species might be

deliberately planted in erosion control, landscape, or wildflower projects. In compliance with Executive Order (EO) 13112, a weed measures will be implemented to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur. Measures addressing invasive species abatement and eradication would be included in the project design and contract specifications, and would be implemented and enforced by the construction contractor. Therefore, with compliance with EO 13112, it is not anticipated that construction of the proposed Project would result in adverse impacts related to the spread and introduction of invasive species.

4.1.3 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

4.1.3.1 Existing and Potential Water Supplies; Water Conservation

Landscaping would not be required as part of the proposed Project. Therefore, the proposed Project would not require irrigation, and there are no other demands for harvested water that exist on the project site.

4.1.3.2 Recreation or Commercial Fisheries

The project area is used for recreational fishing purposes but not for commercial fishing. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs including, but not limited to, Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site. Therefore, the proposed Project will not result in adverse effects on recreational or commercial fishing.

4.1.3.3 Other Water Related Recreation

Trash and debris, oil and grease, nutrients, and sediment can decrease the recreational value and safety of a water body for contact and noncontact recreational activities. These materials could be introduced into the watercourse during construction of the proposed Project. The County would be required to prepare a SWPPP and implement Construction BMPs (including, but not limited to, Good Housekeeping BMPs) to prevent spills, leaks, and discharges of construction debris and waste into receiving water stream. Therefore, there is a low potential for the proposed Project to adversely affect noncontact recreational activities.

4.1.3.4 Aesthetic of the Aquatic Ecosystem

Pollutants of concern during construction include sediments, trash, and petroleum products. Construction activities would comply with the requirements of the CGP. In compliance with the CGP, the City would be required to prepare and implement an effective SWPPP during construction to address pollutants of concern. Construction

BMPs would include, but are not limited to, Erosion and Sediment Control and Good Housekeeping BMPs. Therefore, there is a low potential for construction activities associated with the proposed Project to have an adverse effect on the aesthetics of the aquatic ecosystem.

4.1.3.5 Parks, National and Historic Monuments, National Seashores, Wild and Scenic Rivers, Wilderness Areas, etc.

The reach of the Tuolumne River within the project area is not a designated wild and scenic river by the National Wild and Scenic Rivers System. In addition, there are no national or historic monuments, national seashores, or wilderness areas in the vicinity of the project site. Therefore, the proposed Project would not have an adverse effect on any parks, national or historic monuments, national seashores, wild and scenic rivers, or wilderness areas.

4.1.3.6 Traffic/Transportation Patterns

Although construction of the proposed Project would affect traffic and transportation patterns in the project area, the aquatic resources in the project area are not used for transportation. Therefore, there is no potential for the proposed Project to have an adverse effect on aquatic traffic/transportation patterns.

4.1.3.7 Energy Consumption or Generation

The waters in the project area are not used for energy generation. Therefore, there is no potential for the proposed Project to have an adverse effect on energy consumption or energy generation.

4.1.3.8 Navigation

The waters in the project area are altered in some form and carry ephemeral flows that are not used for navigation. Therefore, the proposed Project would not have an adverse effect on navigation.

4.1.3.9 Safety

Safety concerns associated with the proposed Project would be associated with higher flows/velocities in the reach of the Tuolumne River within the project area. The proposed Project would construct the new bridge that would not adversely affect flow capacity. Therefore, implementation of the proposed Project would not adversely affect safety.

4.1.4 Short Term Impacts During Construction

Construction equipment will be used during construction activities and may have the potential to result in minor spills of gasoline, oil, or other fluids. Additionally, similar

fluids may be handled and stored on site. In order to reduce spills of fluids from construction equipment and onsite handling/storage the construction contractor will be required to implement BMPs that will reduce such impacts and ensure water quality is not degraded.

4.1.4.1 Physical/Chemical Characteristics of the Aquatic Environment

Construction activities for the proposed Project involve grading and earthmoving activities. Grading and earthmoving equipment are a source of sedimentation, chemicals, liquid products, and petroleum products if the equipment leaks. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs (including, but not limited to, Good Housekeeping BMPs) to prevent spills, leaks, and discharges of construction debris and waste into receiving waters. Therefore, there is a low potential for the proposed Project to contribute to adverse water quality effects related to sedimentation, oil, grease, and chemical pollutants

4.1.4.2 Biological Characteristics of the Aquatic Environment

The Tuolumne River is a perennial stream that supports well-developed riparian corridor and provides critical habitat to listed steelhead, in addition to habitat for other wildlife species. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs aimed at reducing pollutants of concern in storm water runoff. Construction BMPs would include, but are not limited to, Erosion and Sediment Control BMPs designed to minimize erosion and retain sediment on site, and Good Housekeeping BMPs to prevent spills, leaks, and discharges of construction debris and waste into receiving waters. Therefore, no short-term water quality impacts to the biological characteristics of the on-site or downstream aquatic environment during construction are anticipated.

4.1.4.3 Human Use Characteristics of the Aquatic Environment

The Basin Plan identifies both contact and noncontact recreation uses for the Tuolumne River in the project area. Runoff from the site during construction would drain into the Tuolumne River. In compliance with the CGP, the County would be required to prepare a SWPPP and implement Construction BMPs aimed at reducing pollutants of concern in storm water runoff. Therefore, the potential for short-term water quality impacts during construction to adversely affect the human use characteristics during construction is considered to be very low.

4.1.5 Long-Term Impacts During Operation and Maintenance

After Project completion, the potential for adverse long-term impacts to water quality would be reduced. Long-term water quality impacts are usually due to changes in stormwater drainage. The proposed Project would be developed similar to the original bridge and the stormwater drainage pattern of the area would remain the same. Water runoff and water quality issues would not occur at surrounding waterways or canals with implementation of the proposed Project. The area of the new bridge would be slightly larger than the original bridge, thereby increasing the amount of impervious surfaces in the Project area. However, the nominal increase in impervious surfaces in the Project area would not result in a measureable increase in water runoff for the Tuolumne River.

Implementation of Avoidance and Minimization Measures WQ-2 and WQ-4 would include the use of Design Pollution Prevention and Treatment Control BMPs and sedimentation control measures to reduce stormwater drainage and water quality issues during operation of the proposed Project, therefore reducing adverse water quality impacts.

4.1.5.1 Physical/Chemical Characteristics of the Aquatic Environment

Increases in chemical pollutants and changes in temperature and pH may lead to detrimental effects to downstream receiving waters. Since the impervious surface of the new bridge would only be slightly larger than the original bridge, the nominal increase in impervious surfaces in the Project area would not result in a measureable increase in water runoff. Therefore, there is low potential for the proposed Project to have an adverse effect on the physical/chemical characteristics of the on-site or downstream aquatic environment.

4.1.5.2 Biological Characteristics of the Aquatic Environment

As noted above, there are several sensitive biological resources associated with the project area. Since the impervious surface of the new bridge would only be slightly larger than the original bridge, the nominal increase in impervious surfaces in the Project area would not result in a measureable increase in water runoff. Therefore, there is low potential for the proposed Project to have long-term impacts to biological characteristics of the aquatic environment.

4.1.5.3 Human Use Characteristics of the Aquatic Environment

The Basin Plan identifies both contact and noncontact recreation uses for the Tuolumne River in the project area and runoff from the site during construction would drain into the Tuolumne. However, since the impervious surface of the new bridge would only be

slightly larger than the original bridge, the nominal increase in impervious surfaces in the Project area would not result in a measureable increase in water runoff. Therefore, there is low potential for the proposed Project to have long-term impacts to human use characteristics of the aquatic environment.

4.2 Impact Assessment Methodology

The purpose of this Water Quality Assessment Report is to analyze the difference between the existing condition and the project build condition with respect to water quality impacts. The assessment takes the following into consideration:

- Pollutant sources (change in land use)
- Impervious area and relation to amount of runoff (increase or decrease)
- Application of BMPs (number of BMPs, new technologies, effectiveness)
- Discharges into impaired waters (listed pursuant to Section 303[d] of the CWA)

4.3 Alternative-Specific Impact Analysis

There is no further alternative-specific impact analysis.

4.4 Cumulative Impacts

Once construction has been completed, the proposed Project would have approximately 1.37 acres of impervious surfaces, compared to 1.03 acres of existing impervious surfaces at the proposed Project site. The proposed Project site is located in the San Joaquin Valley Groundwater Basin, which covers an area of 707,000 acres. The area of impervious surfaces of the proposed Project would be nominal (less than 1 percent) compared to the amount of impervious surfaces existing within the San Joaquin Valley Groundwater Basin. Implementation of the construction and post-construction BMPs that will be specified in the SWPPP and the measures identified above would ensure that the proposed Project would have a minimal cumulative contribution to surface and groundwater quality issues in the San Joaquin River Basin.

Chapter 5 Avoidance and Minimization Measures

WQ-1 Preparation and implementation of construction site temporary BMPs would comply with the provisions of the Caltrans Statewide NPDES Permit and any subsequent permit as they relate to construction activities for the proposed Project. These BMPs would include submission of a Notice of Intention to the Central Valley RWQCB at least 30 days before the start of construction and submission of a NOT to the RWQCB upon completion of construction and stabilization of the Project site. The temporary BMPs would be installed prior to any construction operations and would be in place for the duration of the contract. The removal of these BMPs would be the final operation, along with the Project site cleanup.

WQ-2 Follow Design Pollution Prevention and Treatment Control BMPs for the proposed Project in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide. Compliance with Design Pollution Prevention and Treatment Control BMPs would include coordination with the RWQCB with respect to feasibility, maintenance, and monitoring of Treatment Control BMPs as set forth in Caltrans' SWMP. Since the Project will disturb less than one acre, a WPCP will need to be prepared by a Qualified SWPPP Practitioner.

WQ-3 All refueling, maintenance, and staging of equipment and vehicles would occur at least 18.3 meters (60 feet) from riparian habitat or water bodies and not in a location from where a spill would drain directly toward aquatic habitat. The County would conduct sufficient monitoring to ensure contamination of habitat does not occur during such operations. All workers would be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

WQ-4 To control sedimentation during and after Project implementation, Caltrans and the County would implement best management practices outlined in any authorizations or permits, issued under the authorities of the CWA that it receives for the Project. If best management practices are ineffective, the County would attempt to remedy the situation immediately, in consultation with the regulatory and resource agencies.

The avoidance and minimization measures above would reduce adverse impacts to water quality.

Chapter 6 References

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6.1 Preparer(s) Qualifications

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