## Water Quality Assessment Report



## **Stratford Kings River Bridge Replacement**

State Route 41 Kings County File: 06-0V110/0616000208 KIN 41 PM 32.3

## December 2018



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STATE OF CALIFORNIA Department of Transportation

1100

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#### **EXECUTIVE SUMMARY**

Caltrans proposes to replace the Kings River Bridge (No. 45-0007) carrying State Route 41 (SR 41) over the Kings River South Fork in Kings County, located 0.7 miles southwest of City of Stratford, California. During the demolition of the existing bridge and construction of the new bridge, a section of SR 41 and the Kings River Bridge will be closed with the traffic being detoured utilizing county roads. The existing Kings River Bridge was built in 1942 and widened in 1987. Kings River Bridge is 260-foot long and designed to have 77 concrete supportive piles installed across the river bed. Inspections conducted prior to September 2015, have indicated that more than 70% of those piles are corroded and structurally deficient. Cracks are also evident within the bridge's widened portions.

SR 41 is a heavily traveled transportation route in Kings County, with a traffic of more than 7,700 vehicles a day, of which approximately 16% are trucks. The bridge spans the Kings River South Fork, which is one of the many branches of the 133-mile long Kings River originating in the Sierra Nevada mountain range. As part of Section 303(d) of the Clean Water Act, the State of California is required to maintain a list of surface water bodies that exceed applicable water quality standards. This includes prioritization of these surface water bodies and descriptions of the impairment sources to generate a Total Maximum Daily Loads (TMDLs). Currently, the Kings River South Fork is listed as an impaired water body with low priority on TMDLs. The replacement of the bridge on Kings River South Fork is expected to cause short-term construction related impacts to surface water quality. Construction activities may increase the amount of pollutants discharged into river. Pile driving and river bank widening activities may cause turbidity to increase in water, and the removal of vegetation in land may contribute to potential erosion, sedimentation, and runoff. The Best Management Practices (BMPs) identified in this Water Quality Assessment Report (WQAR) would be implemented as part of Caltrans Stormwater Management Plan (SWMP) and would minimize these potentially short-term impacts to surface water quality.

The proposed project would be required to obtain specific regulatory permits as part of the project approval process. The proposed project has the potential to cause adverse impacts to the Kings River South Fork streambed and associated riparian habitat, thus it would require a Section 1600 Streambed Alteration Agreement prior to construction. In addition, to safeguard against potentially permanent adverse impacts to the Kings River South Fork, a Water Quality Certification (Section 401) and Nationwide Permit for Water of the U.S. (404) would be obtained prior to construction. Acquiring these permits would mitigate against potentially adverse impacts to water quality and the riparian habitat of the Kings River South Fork. Coordination with the California Department of Fish and Wildlife (CDFW), the Central Valley Regional Water Quality Control Board (RWQCB), and U.S. Army Corps of Engineers (USACE) would be necessary to secure these permits. Other permits required would include the National Pollution Discharge Elimination System (NPDES) General Construction Permit for discharges of stormwater associated with construction activities. Development of a Stormwater Pollution Prevention Plan (SWPPP) would be implemented as part of the General Construction Permit requirements.

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#### 1. INTRODUCTION

#### 1.1 Approach to Water Quality Assessment

The purpose of the Water Quality Assessment Report (WQAR) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to provide information for National Pollutant Discharge Elimination System (NPDES) permitting. This WQAR includes a discussion of the proposed project, the general environmental 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.

The Kings River Bridge (No. 45-0007) on State Route (SR) 41, Post Mile (PM) 32.3, has been determined as structurally deficient. This project proposes the demolition and removal of the existing bridge, and construction of a new replacement bridge. To accomplish the construction of the new bridge, work activities are planned within some portions of the river channel which could lead to potential impacts on water quality of the Kings River.

#### 1.2 **Project Description**

The project would be replacing the Kings River Bridge (No. 45-0007) on SR 41 (Figure 1) with an incremental pre-cast slab bridge. The alignment and centerline of the new bridge will match the existing bridge. The number and size of the supporting columns for the replacement bridge will be determined during the detailed design phase. A 50-foot wide temporary wood trestle bridge would be built on the east side of the existing bridge for dismantling and installing the new bridge. The trestle bridge would be erected from the northeast bank of the Kings River and stop just before the southeast bank.

During construction, SR 41 will be temporarily closed, and traffic would be redirected onto an estimated 32-mile long detour. Traffic heading south from Fresno would turn onto State Route 198 heading west, then south onto Avenal-Cutoff Road. From Avenal-Cutoff Road traffic would head west onto State Route 269, then south on Interstate 5, then back onto SR 41 at Kettleman City. Traffic heading north from Paso Robles would take the reverse order to get back onto SR 41.

Temporary traffic signals will be required at the intersection of Avenal-cutoff Road, SR 269, and Interstate-5. Work will include installing temporarily wood poles and trenching. All work on the detour will be within Caltrans right-of-way. Construction including the detour, is estimated to take 200 working days to complete the project.

#### **Purpose:**

The purpose of this project is to address superstructure, substructure, and seismic deficiencies of this bridge to ensure the safety and reliability of SR 41.

#### Need:

The existing Kings River Bridge (No. 45-0007) was built in 1942 and widened in 1987. The bridge is exhibiting continued deterioration and corrosion of the columns supporting the bridge. The underside of the widened portions of the bridge also show's signs of cracks about five feet long and spaced as close as three feet on center. Further studies found that a bridge replacement was required to address the structural and seismic deficiencies. The columns will continue to corrode and deteriorate to the point where it will no longer be able to support the bridge if the bridge is not replaced.

As part of the Construction General Permit (CGP), a Risk Level 1 and a disturbed soil area (DSA) of 13.9 acres have been determined for this project during the project initiation phase. CGP procedures and requirements are described in more detail on Section 2.2.



#### Figure 1 – Project Location and Vicinity

Caltrans Project Development Team (PDT) developed and recommended alternatives that best address the project's purpose and need, while avoiding or minimizing environmental impacts and costs. Major features used for comparison include project cost, level of service and other traffic data, and specific environmental impacts. The alternatives considered and recommended by the PDT are described below.

#### **1.2.1** No Project Alternative

The "no build' alternative was not considered for this project as the bridge is considered outdated and deficient. The supporting piles are in advance state of deterioration that replacement of all existing columns would be warranted.

#### 1.2.2 Alternative 1A/1B

Alternative 1A proposes to detour the traffic temporarily using an adjacent temporary prefabricated bridge placed approximately 40 feet downstream of SR 41. Three 60-inch culverts would temporarily be extended, and one irrigation ditch on west side of the road would be temporarily relocated. Additional road modification for the Lincoln Ave/SR 41 intersection is anticipated to accommodate the temporary road. This alternative was not considered due to higher costs.

Alternative 1B proposes to detour traffic temporarily using an adjacent temporary prefabricated bridge placed approximately 40 feet downstream of SR 41. Three 60-inch culverts would temporarily be extended. Additional modification to the Lincoln Avenue/SR 41 intersection is anticipated. This alternative was not considered due to higher costs.

#### 1.2.3 Alternative 2

Alternative 2 proposes a new replacement bridge (see Figure 2), using local county road Laurel Ave to the west and 22<sup>nd</sup> Avenue to the south of SR 41 as detouring routes during construction phase (see Figure 3). No culvert work is anticipated for this alternative, but the culvert headwalls may require cushion shielding due to the close proximity of the roadway. The PDT selected Alternative 2 as the preferred alternative for this project.

#### 1.2.3.1 New Bridge Construction Considerations and Approaches

Using the existing bridge as a support platform for construction of the new bridge would have been the ideal approach because it would facilitate construction operations, minimize environmental impacts, and save costs. However, this approach has been eliminated due to safety considerations concerning equipment loads on a structurally deficient bridge. The existing bridge was built with unreinforced columns and has low loading capacity. Thus, two alternate approaches for construction support are currently being considered:

- temporary trestles would be installed to facilitate bridge construction, one next to each end of the bridge. The piles may be driven by an impact hammer or a vibratory hammer and would be spaced 5 to 10 feet apart. After construction of the new bridge and demolition of the existing bridge are complete, the trestle superstructures would be removed by crane and the piles would be removed by a vibratory extraction method or cut 3 feet below the mudline.
- 2) Temporary widening of the river banks for platform work by filling in portions of the river channel with clean rocks. The rock fill would be removed and river banks restored to their original condition once the construction of the new bridge is completed.



Figure 2 – Alternative 2 Bridge Replacement



**Figure 3 – Traffic Detouring Plan** 

#### 2. Regulatory Setting

The following section defines the regulatory environment framework associated with water quality at the federal level, the state level and at the local level. This section defines the applicable regulatory environment requirements as it pertains to water quality.

#### 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 stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. 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. The Federal Environmental Protection Agency delegated to the California State Water Resources Control Board (SWRCB) the implementation and administration of the NPDES program in California. The SWRCB established nine Regional Water Quality Control Boards (RWQCBs). The SWRCB enacts and enforces the Federal NPDES program and all water quality programs and regulations that cross Regional boundaries. The nine RWQCBs enact, administer and enforce all programs, including NPDES permitting, within their jurisdictional boundaries. Section 402(p) requires permits for discharges of stormwater 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, including wetlands. 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."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional 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 Individual permits: Standard Individual permit and Letter of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Individual permits. For Standard Individual permit, 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 (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 as required by the CWA and regulating discharges to protect beneficial uses of water bodies. 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 standards necessary to protect these uses. Consequently, the water quality standards developed for particular water body segments are based on the designated use and vary depending on such use. Water body segments that fail to meet standards for specific pollutants are included in a Statewide List in accordance with CWA Section 303(d). If a Regional Board 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.

The SWRCB implemented the requirements of CWA Section 303(d) through Attachment IV of the Caltrans Statewide MS4, as it includes specific TMDLs for which Caltrans is the named stakeholder.

#### 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 Pollutant Discharge Elimination System (NPDES) Program

#### Municipal Separate Storm Sewer Systems (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater 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 stormwater." 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, NPDES No. CAS000003, SWRCB 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) 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 stormwater and non-stormwater discharges; and
- 3. The Department stormwater 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 deemed necessary by the SWRCB and/or other agency having authority reviewing the stormwater component of the project.

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing stormwater 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 stormwater and non-stormwater 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 stormwater runoff.

#### 2.2.3 Construction General Permit

Construction General Permit (NPDES No. CAS000002, SWRCB Order No. 2009-0009-DWQ, adopted on November 16, 2010) became effective on February 14, 2011 and was amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. The permit regulates stormwater 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, the applicant is required to hire a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD) to develop and implement an effective SWPPP. All Project Registration Documents, including the SWPPP, are required to be uploaded into the SWRCB's on-line Stormwater Multiple Application and Report Tracking System (SMARTS), at least 30 days prior to construction.

#### Waivers from CGP coverage.

Projects that disturb over 1.0 acre but less than 5 acres of soil, may qualify for waiver of CGP coverage. This occurs whenever the R factor of the **Watershed Erosion Estimate (=RxKxLS)** in tons/acre is less than 5. Within this CGP formula, there is a factor related to when and where the construction will take place. This factor, the 'R' factor, may be low, medium or high. When the R factor is below the numeric value of 5, projects can be waived from coverage under the CGP, and are instead covered by the Caltrans Statewide MS4.

In accordance with SWMP, a Water Pollution Control Plan (WPCP) is necessary for construction of a Caltrans project not covered by 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 a SWPPP, to implement soil erosion and pollution prevention control measures, and to obtain coverage under the CGP.

The CGP contains a risk-based permitting approach by establishing three levels of risk possible for a construction site. Risk levels are determined during the planning, design, and construction phases, and are based on project risk of generating sediments and receiving water risk of becoming impaired. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater 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 prescribe a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act). WDRs may specify the inclusion of additional project 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.

#### 2.2.5 California Department of Fish and Wildlife Code Section 1602

The CDFW is responsible for ensuring the protection of fish, wildlife, and native plant resources. To fulfill this responsibility, the CDFW Code (Sections 1601-1603) grants authority to CDFW to issue agreements for any proposed activity that requires substantial alterations to a river, stream, or lake where there is a potential for adverse impacts to fish, wildlife, and or native plant resources. CDFW defines streams and rivers by the existence of a channel bed and banks and at a minimum, the recurrent seasonal flow of water. Streams and rivers that support riparian vegetation are subject to CDFW jurisdiction beyond the channel banks. In this circumstance the lateral extent of the water body would be defined by the boundary of growing riparian vegetation.

The CDFW Code 1602 requires notification of any proposed activity that will result in substantial modification to any river, stream, or lake. This may include the deviation or obstruction of the natural flow of a river, stream, or lake; change or use of material from the bed, channel, or bank of, a river, stream, or lake; or deposit or dispose of debris, waste or other material containing fragments of pavement that could pass into a river, stream, or lake. CDFW Code 1602 is applicable to all streams, rivers, and lakes within the State that are perennial or intermittent in nature.

#### 2.3 Regional and Local Requirements

This project is under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). Their *Water Quality Control Plan (Basin Plan [ Revised October 2011 with approved amendments]) for the Sacramento River and San Joaquin River Basin* designates beneficial uses, establishes water quality objectives, and contains plans and policies for all waters of the basin.

The regional inland surface water quality objectives contained in the RWQCB Basin Plan include: ammonia; bacteria, coliform; bioaccumulation; biochemical oxygen demand (BOD); biostimulatory substances; chemical constituents; chlorine, total residual; color; exotic vegetation; floating material; methylene blue activated substances (MBAs); mineral quality; nitrogen (nitrate, nitrite); oil and grease; oxygen, dissolved (DO); pesticides; pH; polychlorinated biphenyls (PCBs); radioactive substances; solid, suspended, or settleable materials; taste and odor; temperature; toxicity; and turbidity. The regional objectives for groundwaters contained in the Basin Plan include: bacteria; chemical constituents and radioactivity; toxicity; mineral quality; nitrogen (nitrate, nitrite); and taste and odor.

The Kings River South Fork within the project area is managed by the Kings River Watershed Coalition Authority. The Kings River Watershed Coalition Authority is a Joint Powers Authority formed amongst the 28 entities that comprise the Kings River Water Association (KRWA) and the Kings River Conservation District (KRCD) for the express purpose of conducting the necessary monitoring required by the Central California Regional Water Quality Control Board (Regional Board) under Order R5-2008-0005. On November 20, 2013, the Kings River Watershed Coalition Authority was approved by the Regional Board to act as the "third-party" under the requirements set forth in R5-2013-0120, General Order of Waste Discharge for members of a Third Party Group in the Tulare Lake Basin (excluding Westlands) (General Order). The Coalition serves the Kings River and Tulare Lake Basins, plus selected outlying areas located adjacent to the KRCD boundaries.

#### **3. AFFECTED ENVIRONMENT**

#### 3.1 General Environmental Setting

SR 41 is a heavily traveled transportation route in Kings County. The Kings River Bridge (No. 45-0007) on SR 41 was built on Kings River South Fork approximately 0.7 miles southwest of Stratford, California. The project lies near the historic shoreline of Tulare Lake which was once the largest freshwater lake west of the Mississippi River. Tulare Lake dried up after its tributary rivers were diverted for agricultural irrigation and municipal water uses. Because of its source streams being diverted, the last time the lake overflowed was 1878, and today it no longer exists.

Kings River South Fork is one of the main tributary of the old Tulare Lake that flows due south through Kings County, past Stratford, and approaches the old Tulare Lake bed from the north. At this reach, the river is controlled by two flood control points (Empire Weir No.1 and 2). Empire Weir No.1 is located west of Lemoore and forms a large pool for diversions into the area near Stratford, and for about four miles below Empire Weir No.1, the river meanders southerly, with high groundwater insuring that the pools are filled. Empire Weir No.2 pools water for diversion into Tulare Lake, Kings River South Fork, and Blakeley canals. Because the pools formed by the two weirs hold some water at nearly all times, they support water fisheries, and are popular with anglers.

#### 3.1.1 Population and Land Use

Stratford is the nearest city located approximately 0.7 miles northeast of the Kings River Bridge. The Stratford population was 1,292 at the 2018 census. South of the bridge, field crops are the dominant pattern in this region.

#### 3.1.2 Topography

From the foothills of the Sierra mountains to the flat lands at west, the lower reaches of Kings River form a large and gently sloping inland delta, or alluvial fan, extending laterally across the Central Valley, as the result of material deposited from millions of years of erosion that carved Kings Canyon. The alluvial fan raised the elevation of the valley floor and blocked water flowing northward into the San Joaquin River, essentially creating a large bowl in the southern part of the valley, forming the Tulare Lake basin.

#### 3.1.3 Hydrology

#### 3.1.3.1 Regional Hydrology

The Kings River watershed area includes about 1,700 square miles above Piedra, 1,545 of which lies above Pine Flat Dam. It lies along the westward face of the highest portion of the Sierra Nevada. Elevations in the watershed area range from a maximum of about 14,000 feet at the headwaters to about 400 feet at the edge of the Valley floor. This watershed area is among the most rugged of the entire Sierra Nevada and is characterized by sharp peaks and ridges, precipitous canyons, and granite domes. Kings River headwaters are comprised of many small glacier lakes at elevations of 12,000 feet or more, near the crest of the Sierra Nevada. Nearly all of the tributaries flow in deep granite canyons and the main canyon below the junction of the Middle and South Forks is more than 5,000 feet deep.

From the impoundment of Kings River in Pine Flat Lake, it flows into the San Joaquin Valley (the southern half of the Central Valley) southeast of Fresno. With its upper and middle course in Fresno County, the Kings River diverges into multiple branches in Kings County, with some water flowing south to the old Tulare Lake bed and the rest flowing north to the San Joaquin River. However, most of the water is consumed for irrigation well upstream of either point.

#### 3.1.3.2 Local Hydrology

The Kings River is divided into the "upper river" (Pine Flat to Hwy 99) and the "lower river" (Hwy 99 to the north and south forks). Kings River Bridge No. 45-0007 is intersected by flowing waters of the Kings River South Fork. Water is typically present in the upper river year-round, while the lower river receives water during irrigation deliveries or flood releases.

#### 3.1.3.2.1 Precipitation and Climate

In Stratford, a wet day is one with at least 0.04 inches of precipitation. The chance of wet days in Stratford varies throughout the year. The wetter season lasts from November through April, with a greater than 12% chance of a given day being a wet day. The drier season lasts from May through October. Most of the rainfall occurs during the 31 days centered around January 4, with an average total accumulation of 2.1 inches. The rainless period of the year lasts for about 6 months, from April to October. The least rain falls around the month of August, with an average total accumulation of 0.0 inches.

The summers are sweltering, arid, and clear and the winters are short, cold, and partly cloudy. Over the course of the year, the temperature typically varies from 38 degrees Fahrenheit (°F) to 98°F and is rarely below 28°F or above 105°F. The hot season lasts for 3.7 months, from June 3 to September 23, with an average daily high temperature above 90°F. The cool season lasts for 3 months, from November 21 to February 19, with an average daily high temperature below 65°F.

#### 3.1.3.2.2 Surface Waters

Kings River originates from natural runoff from accumulation of rainfall and snowfall in the Sierra Nevada Mountain Range to the east. As it drains to the west, the river and its tributaries supply much of the surface water used for irrigation and much of the ground water pumped for irrigation, domestic, and industrial uses. Some of its water is conveyed to the western part of Kings County through the California Aqueduct, and then distributed to the irrigation districts.

Kings River Bridge No. 45-0007 is just upstream of the last diversion point on the Kings River South Fork. From there, the water is split into three canals: the Tulare Lake Canal along the north rim, the Blakely Canal along the west rim, and the remaining reach of the Kings River South Fork which flows into Tulare Lake. Prior to the split into three canals, the waters are pooled (Empire Pool No.2), and is one of Stratford's local amenities that serves as a prime example of agricultural and recreational use of water. The pool is maintained by the Empire Westside Irrigation District. The pool serves primarily as a temporary irrigation water storage holding basin, and, secondarily, as benefits to the adjacent community which have been noted to provide opportunities for fishing, boating, swimming and camping.

FRSH

The beneficial uses of the Kings River South Fork that includes the Empire Weir No. 2 listed on the CVRWQCB Basin Plan are presented in Table 1 below.

	STREAM	MUN	AGR	IND	PRO	MOd	REC-1	REC-2	WARM	COLD	MILD	RARE	SPWN
Kings River													

# Table 1Tulare Lake Basin Surface Water Beneficial Uses

Agricultural Supply (AGR) Water Contact Recreation (REC-1) Non-Contact Water recreation (REC-2) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD) Ground Water Recharge (GWR).

Empire Weir No. 2 on South Fork

Peoples Weir to Stinson Weir on North Fork and to

The RWQCB 303(d) current listing included in the 2014-2016 Integrated Report, includes the water bodies of the Lower Kings River from Island Weir to the Stinson and Empire Weirs. The Kings River in this reach has elevated levels of electrical conductivity and toxaphene. The 303(d) list gives the reach a low priority for the development of a total maximum daily load (TMDL). Some segments along the King River South Fork are impacted by high salt soils due to the perched groundwater in the region and the deposits that have formed in the area due to flood and drying cycles.

#### 3.1.3.2.3 Floodplains

According to the FEMA map shown on Figure 4, Kings River South Fork within the project area is identified in the Special Flood Hazard Areas as zone A, "without" Base Flood Elevations (BFE). Zone A is included in the 1-percent annual chance flood, which is also referred to as the base flood or 100-year flood.



#### **Figure 4 – Flood Hazard Areas**

#### 3.1.3.2.4 Municipal Supply

Groundwater is used to meet all of the urban demands in the Lower Kings Basin. Groundwater pumping for agricultural use varies as a function of crop water requirements, hydrologic variability, surface water rights, and access to facilities to deliver water.

A number of drinking water production wells are located within the Stratford. The Stratford Public Utility District operates these wells and supply water for the local population.

#### 3.1.3.3 Groundwater Hydrology

The Lower Kings Basin groundwater aquifer system consists of unconsolidated continental deposits (DWR, 2003). The deposits are divided into formations that include older alluvium, marsh deposits, younger alluvium, and flood-basin deposits. The older alluvium is an important aquifer that readily yields water to wells. It consists of lenses of clay, silt, sand, gravel, cobbles, and boulders and is generally fine grained near the deepest part of the valley. Marsh deposits are mixed in with the older alluvium in the Lower Kings Basin. The younger alluvium is a sedimentary deposit found beneath the river channels and is highly permeable.

The flood-basin deposits consist of sand, silt, and clay and occur along Fresno Slough and James Bypass. There are no known major faults or fault zones that have been mapped or identified that would inhibit groundwater flow within the Lower Kings Basin, or between the Lower Kings Basin and surrounding areas.

Groundwater is replenished from natural precipitation, stream and creek flows, imported water, and underground flows which vary annually depending on hydrologic conditions. However, a significant portion of the Kings County is underlain by the Corcoran Clay layer which limits and prevents the efficient recharge of groundwater in these areas. As a result, the County relies on areas north and east of the County for recharge of the lower aquifers. As discussed above, groundwater within a mile northwest of the bridge at SR 41 and Kings River South Fork is the source of drinking water supply for the population at the Stratford.

#### 3.1.4 Geology/Soils

Soil types within the San Joaquin Valley (the southern half of the Central Valley) at southeast of Fresno range from coarse textured sands to fine clays. The coarse textured soils are typically located in the eastern to center regions of the basin, with the finer textured soils in the western and southern portions.

The surface soil present on the floodplain of the Kings River South Fork near Stratford consists mainly of the dark gray fine sandy loam with moderate quantity of organic matter. A brownish-gray loose subsoil mottled with iron stains occurs from 8 to 20 inches of depth. A light brownish gray loose stratified loamy fine sand or sand highly mottled with iron stains occurs between the depths of 28 and 36 inches.

#### 3.1.5 Biological Communities

#### 3.1.5.1 Aquatic Habitat

The Kings River South Fork in the project area is highly managed and retains some natural riparian and wetland features. Infrastructure for water management, including gates, weirs, and pump systems, are present in the Kings River-South Fork Canal, and allow for movement of water in different directions and between different systems when conditions are appropriate.

In-channel emergent vegetation was observed north of Kings River Bridge along the eastern bank of the canal. Overhanging fragmented black willow thicket riparian vegetation was also observed on the banks of the canal north of Kings River Bridge. Other aquatic species such as presence of fishes and crustaceans are still being assessed concurrent to this assessment report.

#### 3.1.5.1.1 Special Status Species

A preliminary literature/database review for the special-status species with potential to occur within or adjacent to the project area are listed in Table 2.

#### Table 2

Species						
Scientific Name	Fed	СА	Other			
Vulpes macrotis mutica	FE	FT				
Dipodomys nitratoides nitratoides	FE	SE				
Charadrius alexandrinus nivosus	FT		SSC			
Buteo swainsonii		ST				
Athene cunicularia			SSC			
Emys marmorata			SSC			
Var. sp.						
SE = State Endangered	FCH = Federal Critical Habit					
ST = State Threatened	PCH = Proposed Critical Habitat					
	Scientific Name   Scientific Name   Vulpes macrotis mutica   Dipodomys nitratoides nitratoides   Charadrius alexandrinus nivosus   Buteo swainsonii   Athene cunicularia   Emys marmorata   Var. sp.   SE = State Endangered   ST = State Threatened   SC = State Charadria	Scientific Name Fed   Scientific Name Fed   Vulpes macrotis mutica FE   Dipodomys nitratoides nitratoides FE   Charadrius alexandrinus nivosus FT   Buteo swainsonii FT   Athene cunicularia Emys marmorata   Var. sp. SE = State Endangered   SE = State Threatened FCH = Fe   SCE = State Threatened PCH = Pi   SCE = State Threatened PCH = Pi	Scientific NameStatusScientific NameFedCAScientific NameFedCA $Vulpes$ macrotis muticaFEFTDipodomys nitratoides nitratoidesFESECharadrius alexandrinus nivosusFTSTButeo swainsoniiSTSTAthene cuniculariaImage: Colored and the second and the s			

#### Potential Special-Status Species Occurrence Within or Adjacent to the Project Area

#### K

F F FCS = Federal Candidate Species FP = State Fully Protected

R = State Rare

SCS = State Candidate Species SSC = State Species of Concern

#### 3.1.5.1.2 Stream/Riparian Habitats

There are a few riparian trees identified in the project area that includes red willow (Salix laevigata) and cottonwood (Populus fremontii), but the area is otherwise heavily disturbed and lacking in vegetation due to frequent use by members of the public, Kings River Conservation District maintenance crew, and local farmers.

Kings River South Fork is a riparian corridor dominated by red willows and cottonwoods which is subject to livestock grazing. Non-native grasses, such as bromes (Bromus spp.), dominate the understory throughout most of the riparian corridor. In addition to the river, there are several maintained canals that have little to no vegetation.

#### 3.1.5.1.3 Wetlands

Freshwater emergent wetlands were observed during the survey adjacent to Blakeley Canal and Kings River South Fork Canal. The wetland is classified in the Cowardin system as a freshwater emergent wetland that is temporarily flooded. This feature meets the federal definition of a wetland, and is adjacent to a RPW that has hydrologic connectivity to the Tulare Lake dry lake bed.

#### 3.1.5.1.4 **Fish Passage**

During the construction of the new bridge, additional fill may be placed into portions of the river channel to extend the river banks temporarily. Despite this temporary water disturbance from construction work, the partial blocking is not anticipated to prevent the passage of fish.

## 4. ENVIRONMENTAL CONSEQUENCES

#### 4.1 Introduction

This section provides a discussion of the water quality findings associated with short-term impacts during construction work only. Long-term water quality impacts are not anticipated because the replacement of a bridge of similar design is not expected to change the current environmental conditions.

#### 4.2 Potential Impacts to Water Quality

Short-term water quality impacts would be related to activities during construction. The widening of the river banks, or temporary trestles approaches for construction support, and the installation of piles in the river bed for foundation support of the new bridge, will cause temporary disturbances on the sediment bottom of the river bed, increase the water turbidity, and impact the aquatic life locally. In addition, there is a potential for construction-related accidents, including the misuse of materials that could discharge contaminants into Kings River. Construction materials, such as concrete curing compounds containing chemicals and petroleumbased products used for operation of construction equipment, are potentially damaging to water quality and aquatic and/or riparian habitat. To prevent the discharge of unwanted contaminants into Kings River, a list mitigation measures and BMPs are required to minimize any potentially adverse impacts. Implementation of BMPs and adherence to regulatory requirements would substantially reduce or, even eliminate, the potential for short-term impacts to occur in water quality and other aquatic and/or riparian habitat. The Avoidance, Minimization, and/or Mitigation Measures are presented in Section 5.

#### 4.2.1 Anticipated changes to the Physical/Chemical Characteristics of the Aquatic Environment

Potential impacts on water quality could occur during construction activities associated with the river bank widening, temporary trestle and falsework construction and demolition, pile driving, bridge demolition, and highway drainage work.

The total disturbed soil area (DSA) is estimated at approximately 13.9 acres. The net new impervious area is not expected to increase. The proposed project will not alter the course of the Kings River South Fork, nor will it alter the existing drainage configuration beneath the bridge. The drainage of the new bridge is not expected to result in substantial on or offsite siltation or erosion. In addition, the proposed project would not substantially increase the amount or rate of surface runoff such that on or off-site flooding would occur, nor would it create any additional features or change the surrounding land uses in such a way that would exceed the existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

#### 4.2.1.1 Substrate

Short-term water quality impacts would be related to activities during construction, including the potential erosion of bare or disturbed soils and contaminating pollutants entering Kings River South Fork. Disturbances to the ground surface from heavy construction machinery would

potentially increase the quantity of sediments entering the river. Increases in runoff during periods of high rainfall may have substantial adverse effects to exposed or graded surfaces due to sediments conceivably being carried downstream. If the effects of runoff are not properly regulated, accumulation of harmful sediments could potentially impact downstream water quality and aquatic and/or riparian habitat. Widening of river banks into the river channel to support construction work may restrict the current flow and cause adverse effects on drainage and flood conditions upstream. Flows will be redirected back to their natural pathways as soon as construction work has finished.

#### 4.2.1.2 *Currents, Circulation or Drainage Patterns*

Natural current, drainage pattern, and flow will be altered temporarily during the construction of the new bridge. However, water flow in the river will be restored to its normal course and natural conditions after the construction of the new bridge.

#### 4.2.1.3 Suspended Particulates (Turbidity)

Suspended material is normally the predominant source of contamination to water quality due to increased erosion from exposed loose soil created during excavation, grading, and filling during construction activities. Sediment loads from the removal of the existing bridge's concrete piers may increase turbidity temporarily once the diversion is ceased and the river is stored to its normal flow.

#### 4.2.1.4 Oil, Grease and Chemical Pollutants

There is a potential for construction-related accidents, including the misuse of materials that could discharge contaminants into the Kings River South Fork. Construction materials, such as concrete curing compounds containing chemicals and petroleum based products used for operation of construction equipment, are potentially damaging to water quality and aquatic and/or riparian habitat. To inhibit the discharge of unwanted contaminants into river, a list mitigation measures and BMPs are required to minimize any potentially adverse impacts. Implementation of BMPs and adherence to regulatory requirements would substantially reduce the short and long-term, if any, impacts to water quality and other aquatic and/or riparian habitat. Section 5 presents the avoidance and minimization measures.

#### 4.2.1.5 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, Caltrans 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.

#### 4.2.1.6 Flood Control Functions

Waters of Kings River South Fork beneath SR 41 bridge are controlled by two weirs (Empire Weir No. 1 and No. 2). Empire Weir No.1 is upgradient and Empire Weir No.2 is downgradient of the bridge. The Kings River South Fork is used to convey irrigation water to canals that divert from Empire Weir No.1 and Empire Weir No.2. At Empire Weir No.1 water can be

diverted into the Stratford, Westlake, and Empire Westside Canals. At Empire Weir No.2, water can be diverted into the Blakely Canal and the Tulare Lake Canal or continue over the weir to the Kings River South Fork Canal, all of which serve lands on the Tulare Lakebed. Below the weir, the Kings River South Fork Canal flows another 10 miles (16 km) to the lowest point in the Tulare Lakebed where it intersects the Tule River Canal. Most flood-flows entering the Tulare Lakebed come in via the Kings River South Fork and thus can be measured at Empire Weir No.2.

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

#### 4.2.1.7 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, Caltrans 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.

#### 4.2.1.9 Aquifer Recharge/Groundwater

Kings River connects to the Lower Kings Basin and serve as a source of recharge. The current land use, proximity to canals or a water delivery system, the ability of soil to absorb and hold water, and elevations allowing for downward flow into the aquifer makes the area of the bridge a favorite recharge area.

#### 4.2.1.10 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 or no 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.

#### 4.2.2 Anticipated Changes to the Biological Characteristics of the Aquatic Environment

#### 4.2.2.1 Special aquatic sites

The proposed project is likely to cause minor permanent impacts to wetlands and non-wetland waters during installation of the new bridge piers and approach ramps. Temporary impacts to wetlands and non-wetland waters will occur as the result of installation of the temporary access ramp, temporary work trestle, and removal of the existing bridge. 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. 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 Kings River South Fork 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.

#### 4.2.2.3 Wildlife Habitat

The proposed project would only result in minor permanent impacts, and temporary impacts that are primarily limited to the immediate adjacency beneath the new bridge. 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.

#### 4.2.3 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

#### 4.2.3.1 Recreational Fisheries

Empire Weir No.2 is used for recreational fishing and boating by the locals. In compliance with the CGP, Caltrans 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.

#### 4.2.3.2 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. Caltrans 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.

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

The Kings River South Fork reach within the project area is not listed as 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.

#### 4.2.4 Short Term Impacts During Construction

Placing rock fill to expand the river banks, driving piles, and building temporary trestles will disturb the river bed sediments and potentially increase the turbidity. To control the disturbed sediments from spreading downstream, BMPs associated with silt containment should be implemented. 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. To reduce spills of fluids from construction equipment and onsite handling/storage, the construction contractor will be required to implement BMPs that will reduce and/or eliminate such impacts and ensure water quality is not degraded.

#### 4.2.5 Long-term Impacts During Operation and Maintenance

After project completion, the potential for adverse long-term impacts to water quality is not anticipated. Long-term water quality impacts are usually due to changes in stormwater drainage and the net impervious area. The proposed project is to replace the deficient bridge with a similar one. Therefore, stormwater drainage pattern of the area would remain essentially unchanged with no increase in net impervious area.

#### 5. AVOIDANCE AND MINIMIZATION MEASURES

The Stratford Kings River Bridge Replacement project would require the following measures, to minimize potential water quality and hydrological impacts associated with construction and operation.

- WQ-1: Implement Stormwater BMPs. The project will be required to conform to the requirements of the Caltrans Statewide NPDES Stormwater Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003, adopted by the SWRCB on September 19, 2012, and any subsequent permit in effect at the time of construction. In addition, the project will be required to comply with the requirements of the NPDES Permit for Construction Activities, Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ, NPDES No. CAS000002, as well as implementation of the BMPs specified in Caltrans' Stormwater Management Plan (Caltrans, 2003b).
- WQ-2: Prepare and Implement an SWPPP. The Contractor will be required to develop an acceptable SWPPP. The SWPPP shall contain BMPs that have demonstrated effectiveness at reducing stormwater pollution. The SWPPP shall address all construction-related activities, equipment, and materials that have the potential to affect water quality. All Construction Site BMPs will follow the latest edition of the Stormwater Quality Handbooks, Construction Site BMPs Manual to control and minimize the impacts of construction-related pollutants. The SWPPP shall include BMPs to control pollutants, sediment from erosion, stormwater runoff, and other construction related impacts. In addition, the SWPPP shall include implementation of specific stormwater effluent monitoring requirements based on the project's risk level to ensure that the implemented BMPs are effective in preventing discharges from exceeding any of the water quality standards.
- WQ-3: Comply with Local Jurisdiction Requirements. The project may be subject to Kings County conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution associated with street and road construction, as appropriate. Other organizations to be consulted for project conditioning may include the KCRD and the Empire Westside Irrigation District.

#### 5.2 Construction Discharges

If construction of the project requires the discharge of groundwater to the environment or dredged or fill material, the project would require the following measures to minimize potential water quality and hydrological impacts associated with construction.

• WQ-4: Discharge of Construction Water. If dewatering is expected for the preferred alternative, the contractor shall fully conform to the requirements specified in the CVRWQCB. If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that

discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

- WQ-5: Discharge of Dredged or Fill Material. Because the proposed project involves work over Waters of the U.S. (i.e., SAR), a Section 404 Permit may be required for the discharge of dredged or fill material into Waters of the U.S.
- WQ-6: Discharge of Pollutants into Waters of the U.S. A Section 401 Certification from the State is required in tandem with a Section 404 Permit; therefore, a 401 Certification from the State may be required to ensure that the discharge will comply with applicable federal and State effluent limitations and water quality standards.

#### 5.3 Bank or Streambed Alteration

For any proposed construction activity in any river, stream, or lake, the project would require the following measure to minimize potential water quality and hydrological impacts.

• **WQ-7: Streambed Alteration Agreement.** Per Section 1602 of the Fish and Wildlife Code, the Stratford Kings River Bridge Replacement project will be required to notify CDFW and obtain a Section 1600 Streambed Alteration Agreement for any proposed activity that impacts "waters of the State".

#### 6. **REFERENCES**

Caltrans Division of Design Stormwater homepage for guidance and tools (Project Risk Level, Estimating for CGP, Erosion Prediction software, etc.): <u>http://www.dot.ca.gov/design/hsd/index.html</u>

Caltrans Division of Environmental Analysis Stormwater Homepage: http://www.dot.ca.gov/hq/env/stormwater/

Caltrans Standard Environmental Reference (SER) Volume I

- For wetlands, hydromorphic method and water assessment information, see Chapter 15 -Waters of the U.S. and the State: http://www.dot.ca.gov/ser/vol1/sec3/natural/ch15wetland/ch15wetland.htm
- For hydraulic studies and floodplain encroachment information, see Chapter 17 Floodplains: <u>http://www.dot.ca.gov/ser/vol1/sec3/special/ch17flood/chap17.htm</u>
- For Coastal Zone permits information, see Volume 5 Coastal Zone: http://www.dot.ca.gov/ser/vol5/vol5.htm
- For Wild and Scenic Rivers information, see Chapter 19 Wild and Scenic Rivers: http://www.dot.ca.gov/ser/vol1/sec3/special/ch19wsrivers/chap19.htm

Caltrans Stormwater Quality Handbook Project Planning and Design Guide (PPDG): http://www.dot.ca.gov/design/hsd/ppdg/PPDG-Final 2017-07.pdf

Caltrans Stormwater Quality Practice Guidelines: <u>http://www.dot.ca.gov/hq/env/stormwater/special/newsetup/\_pdfs/management\_ar\_rwp/CTSW-RT-02-009.pdf</u>

Caltrans Water Quality Planning Tool: http://www.water-programs.com/wqpt.htm

Regional Water Quality Control Board website and Basin Plans: <u>http://www.swrcb.ca.gov/plans\_policies/</u>

State Water Resources Control Board Storm Water Program, 2009-0009-DWQ Construction General Permit: <u>http://www.waterboards.ca.gov/water\_issues/programs/stormwater/constpermits.shtml</u>

State Water Resources Control Board Watershed Management: http://www.swrcb.ca.gov/water\_issues/programs/watershed/ United States (U.S.) Environmental Protection Agency Section 404(b)(1) guidelines: <u>http://www.epa.gov/owow/wetlands/pdf/40cfrPart230.pdf</u>

U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey: <u>http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm</u>

#### 6.1 Works Cited

California Regional Water Quality Control Board Central Valley, Revised 2018. *Water Quality Control Basin for the Tulare Lake Basin*, Second Edition. Revised January 2015 (With Approved Amendments).

County of Kings 2035 General Plan, Stratford Community Plan,

Kings River Watershed Coalition Authority, The Kings River Handbook, September 2009

Kings River Watershed Coalition Authority, Surface Water Monitoring Plan, May 19, 2014