Tower Bridge Fender Replacement Project

West Sacramento, Yolo County
03-Yol-275-PM 13.07
EA 3F550/EFIS 0313000137

Initial Study
with Proposed Mitigated Negative Declaration

Prepared by the
State of California Department of Transportation

December 2015

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INITIAL STUDY with Proposed MITIGATED Negative Declaration

Submitted Pursuant to: (State) Division 13, California Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

10-30-15
Date of Approval

John D. Webb
Chief, North Region Environmental Planning
California Department of Transportation
CEQA Lead Agency

~~Proposed~~ Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), is proposing to remove and replace the fender system surrounding Pier 6 and Pier 7 of the Tower Bridge (Bridge No. 22-0021) located on State Route (SR) 275 between the cities of West Sacramento and Sacramento, in Yolo and Sacramento counties. All work and staging activities would be conducted by the contractor entirely from barges launched from their equipment facilities. As proposed, no ground disturbing and vegetation removal activities will be required.

Determination

~~This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt an MND for this project. This does not mean that Caltrans' decision regarding the project is final. This MND is subject to change based on comments received by interested agencies and the public.~~ Caltrans has prepared an Initial Study for this project, and ~~pending~~ following public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on: Aesthetics, Agricultural and Forest Resources, Air Quality, Geology/Soils, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation/Traffic, and Utilities and Service Systems.

In addition, the proposed project would have less than significant effects on Biological Resources, Cultural Resources, Hazards and Hazardous Materials, and Hydrology and Water Quality because the following avoidance and minimization measures would reduce potential effects to insignificance:

- Biological Resources:
  - Establish environmentally sensitive areas (ESA) to avoid or minimize impacts to special status biological resources.
  - Conduct mandatory environmental awareness training for construction personnel.
  - Adhere to an in stream work window of July 1 to September 30 to avoid and minimize impacts to special status fish species.
  - Use aquatic sound attenuation devices (if necessary), including an air bubble curtain, de-watered attenuation casing, or de-watered cofferdam.
  - Relocate fish as part of de-watering activities.
  - Filter and/or treat water removed from de-watered areas.
  - Utilize containment measures/construction site Best Management Practices (BMP) to prevent construction debris from entering surface waters.
  - Prevent riparian vegetation removal along the banks of the Sacramento River.
  - Avoid nesting birds by installing exclusionary devices or adhering to an August 16 to February 28 work window on the bridge.
  - Avoid roosting bats by installing exclusionary devices or adhering to an August 16 to February 28 work window on the bridge.

- Cultural Resources:

- The Tower Bridge was listed in the National Register of Historic Places (NRHP) in 1982 at the state level of significance under Criterion A as a major link in U.S. 40, a historically important transcontinental route, and under Criterion C for its rare use of Streamlined Moderne architectural styling on a lift bridge, and as an outstanding expression of the social and architectural climate of the period.

- *Secretary of the Interior's Standard Action Plan (SOIS)R 1: A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*

  The Tower Bridge will retain its original use.

- *SOISR 3: Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.*

The proposed project does not include elements that would create a false sense of history.

- *SOISR 6: Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.*

  The proposed project calls for the removal and replacement of the timber fender system – a character defining feature of the bridge. Replacement of the timber fender system is required due to the deteriorated nature of the existing materials. According to an above water investigation of the fender system on 2012, due to the age and condition of the piles, framing and sheathing, repairs are not practical nor effective. Full replacement is required to restore the fenders to the required service condition. Please see Appendix A of the SOIS Action Plan for the Bridge Inspection Report.

  The proposed project will not adversely affect the historic character of the bridge. The proposed project will remove historic material (timber piles, wales, and sheathing). The removal of historic material is unavoidable due to the degree of decay. The alteration of features will be minor since the replacement of plastic waling and sheathing will be aesthetically treated so as to appear as timber (will have a wood grain pattern).

  Although a character defining feature, the fender system was given a less significant (L) ranking, meaning that it still conveys sense of time and place, but to a lesser degree. According to the criteria matrix for ranking features (page 2 of Attachment C), the fender system: is standard historic fabric (commonly found during period of significance); scores low at conveying significance; scores medium for public benefit; is a primary, salient feature in regards to visibility and transparency; and is significantly altered in regards to integrity.

  The replacement fender system will match the old in design and the plastic wales and sheathing will be aesthetically treated to appear as timber. Please see Appendix B of the SOIS Action Plan for the Planning Study and Typical Fender Plan.

- *SOISR 9*: *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale and architectural features to protect the historic integrity of the property and its environment.*

  See discussion for SOISR 6 above. The proposed work will be differentiated from the old by the use of different materials (steel and plastic, rather than timber). The proposed work will match the original design and occupy the same footprint as the existing fender system, thus it will be compatible with the massing, size, scale and architectural features of the Tower Bridge.

- Hazards and Hazardous Materials:
  - Include Standard Special Provisions (SSP) 14-11.09 Treated Wood Waste in the project specifications.
  - "Best Management Practices" will be implemented during geotechnical drilling to prevent possible equipment leaks or drilling fluid spillage.

In addition, in order to reduce and minimize potential impacts on Hydrology and Water Quality, to a level that is considered less than significant, it is recommended that the following mitigation measures be incorporated and implemented during the course of the project.

- Hydrology and Water Quality:

  - The project shall incorporate appropriate pollution prevention best management practices (BMPs) and comply with the standard requirements of Caltrans' Statewide National Pollution Discharge Elimination System (NPDES) Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003 and the appropriate County Municipal Separate Storm Sewer System Phase I/II Permit (Sacramento County and Yolo County, respectively).
  - Any soil disturbance, created within the contract limits or at the Contractor's secured area(s), is required to be reviewed and approved by Caltrans Environmental staff and accounted for in the total Disturbed Soil Area (DSA) estimate. With that understanding, and at this time, no ground disturbance is anticipated for the proposed project.
  - Follow all applicable guidelines and requirements in the 2010 Caltrans Standard Specifications (2010 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.
  - Attention should be given to 2010 CSS, Section 13-4 (Job Site Management), to control potential sources of water pollution before it encounters any storm water system or watercourse.
  - The effective management and implementation of an approved Water Pollution Control Program (WPCP) is required to address the appropriate use of temporary construction site BMPs and for the purposes of implementing effective BMP handling, storage, and disposal practices during construction activities.
  - Project activities that may involve bridge access will require existing drainage facilities to be identified and protected by the application of appropriate Construction Site BMPs.
  - To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary de-watering activities, it is suggested that pumped water be filtered and/or treated before being discharged into receiving waters. Although the exact method has not been determined at this time, any discharge to surface waters must be done so in a manner that ensures conformance with the water quality requirements of the approved 401 permit, the Central Valley Regional Basin Plan, and all applicable NPDES permits.
  - Mitigation measures shall be implemented to contain construction related material, in manageable locations, and prevent debris from entering surface waters during in-water work and for any construction operations outside of receiving waters.

1-8-16

John D. Webb, Chief
North Region Environmental Services
California Department of Transportation

Date

Initial Study

Project Title

Tower Bridge Fender Replacement Project

Lead Agency Name, Address and Contact Person

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Project Location

The project is located on the Tower Bridge along State Route (SR) 275 over the Sacramento River between the cities of West Sacramento and Sacramento (see Figure 1). Tower Bridge provides access between the cities of Sacramento and West Sacramento. Old Sacramento, a major tourist area in Sacramento, is located just east of the bridge. Further east along Capital Mall is Sacramento's primary commercial center, including many private companies and government offices. To the west is Raley Field, home of the Pacific Coast League's Sacramento Rivercats baseball team. This area is also home to various commercial offices, homes, and recreational uses.

Purpose and Need

Purpose

The purpose of this project is to replace the deteriorating timber fender system with updated materials; in order to ensure that the fender system will continue to protect marine vessels and bridge piers in the navigable waters of the Sacramento River.

Need

Inspections reveal that the existing timber fender system that surrounds Piers 6 and 7 is deteriorated beyond practical repairs (Photos 1 – 4). USCG regulations require the bridge owner to keep all navigational aids and marine traffic protection in a state of good repair.

Description of Project

The California Department of Transportation (Caltrans), in conjunction with the Federal Highway Administration (FHWA), is proposing to remove and replace the fender system surrounding Pier 6 and Pier 7 of the Tower Bridge (Bridge No. 22-0021) located on State Route (SR) 275 between the cities of West Sacramento and Sacramento, in Yolo and Sacramento counties. All work and staging activities would be conducted by the contractor

entirely from barges launched from their equipment facilities. As proposed, no ground disturbing and vegetation removal activities will be required.

Current inspections reveal that much of the existing timber fender system protecting the Tower Bridge is deteriorated beyond all practical repairs. Fender sheathing has rotted away and the fenders have been deemed unsafe. United States Coast Guard (USCG) regulations require bridge owners to keep navigational aids and marine traffic protection in a state of good repair. The project, as proposed, will ensure that the fender system will continue to protect marine vessels, aid in navigation as applicable, and protect the bridge piers. Pier 6 and Pier 7 are currently protected by the deteriorated wood constructed fenders. The work will be comprised of removing existing timber fender system, driving piles and adding new walers and sheathing. Four built alternatives and a no-build alternative were considered. The different alternatives are listed below:

- ***Alternative 1A*:** Remove existing timber fender system and replace it using plastic walers and sheathing supported by hollow galvanized steel piles.
- ***Alternative 1B*:** Remove existing timber fender system and replace it using treated timber walers and sheathing supported by steel piles.
- ***Alternative 2*:** Remove existing timber fender system and replace it using treated timber walers and sheathing supported by treated timber piles.
- ***Alternative 3***: Remove existing timber fender system and replace it using plastic walers and sheathing supported by plastic piles.
- ***Alternative 4***: No Build. This alternative does not address the need to replace the deteriorated timber fender system.

The Project Development Team choose to go forward with one build alternative, Alternative 1A, and the no-build alternative. Of the 200 piles that will be driven into the riverbed, approximately 100 piles reside beneath the structure. Due to low overhead clearance and the profile of a crane with pile driving attachments, the piles (approximately 70 feet in length) require installation by driving and welding short segments to reach proper depth. Materials (wood and plastic piles) used in Alternatives 1B, 2, 3 are difficult to combine from shorter segments. Alternatives 1B and 2 involved treated lumber (creosote), creating a potential hazardous waste issue. According to "California Nonpoint Source Program, Water Quality Fact Sheet", the California Coastal Commission and California Department of Fish and Game no longer allow installation of creosote treated pilings. Alternative 3 uses of plastic piles. There is a splicing issue when using plastic piles, decreasing the stability and durability of the material.

Construction Details

The number of working days is approximately 153, which means that because of in-water work windows construction will be done in multiple seasons (2 construction seasons). Work will occur during the day; no night work is anticipated (please refer to the transportation

section regarding other construction restrictions). The work will be comprised of removing the existing timber fender system and existing piles, driving new piles and adding new wales and sheathing. The contractor will perform work from barges launched from their equipment facilities. The fender system will be replaced within the existing footprint and have the same appearance as the original system.

Barge Operation: The contractor will perform the fender replacement project work (including removal of the existing fender system, potential temporary cofferdam installation and removal, and pile driving) from a barge or barges which will be launched from their own equipment facilities and navigated to the project site by the contractor. The construction barges are expected to be the same as, or similar to, the construction barges described for geotechnical investigation activities, below. The construction barge(s) is proposed to be anchored to (tied against) the existing piers or potential temporary cofferdam to keep stationary during construction activities. Four concrete or steel anchors ("spuds" one at each corner of the barge) are also typically used for additional stabilization.

Removal of Existing Fender System: At piers 6 and 7, each of the existing fender systems is supported by 100 16-inch diameter treated timber piles which will be removed by vibratory extraction and will be replaced with steel piles in approximately the same location as the existing fender system (200 16-inch piles removed and replaced, total).

All existing sheathing and top planking are untreated Douglas fir. All existing piling and all other lumber are Douglas fir treated with creosote. Work surface on barge deck or pier will include a containment basin for the piles and any sediment removed during pulling. Upon removal from substrate the pile will be moved expeditiously from the water into a containment basin. The treated wood waste removed from the existing fender system will be collected by the contractor at their yard and disposed of in an appropriate landfill (Class 1 facility). The nearest Class 1 landfill facilities include:

- Placer County: Western Regional Landfill at 3195 Athens Road in Lincoln, CA
- Solano County: Hay Road Landfill at 6426 Hay Road near SR 113 in Vacaville, CA
- Yuba County: Ostrom Road Landfill at 5900 Ostrom Road in Wheatland, CA

Temporary Cofferdam Installation and De-Watering: The contractor may exercise the option to install temporary sheet-pile cofferdams and conduct de-watering activities during the course of the fender replacement activities, depending upon the feasibility of conducting certain construction activities and river flow conditions during the time of construction. Specifically, the steel tabs connected to the wales will be welded to the piles below the waterline. De-watered sheet-pile cofferdams are an option that would allow the contractor to conduct the welding work. If no coffer dam is used, the contractor may opt to install the horizontal wales using underwater divers. Additionally, the contractor may choose to use de-

watered sheet-pile cofferdams as a method to attenuate sound while driving piles for the new fender system.

If a temporary sheet-pile cofferdam is used, an undetermined number of sheet piles will be driven to the appropriate depth (a depth of 60 inches below the high water elevation) using a vibratory hammer. In order to guide and align the sheet piles, a framework may be used to support the sheet piles as they are driven into place and connected. The framework for each cofferdam will consist of up to four to eight H-piles (spuds) that are vibrated five to ten feet below the high water elevation and then supported with W-type piles (wales) that are welded to the frame.

Dewatering of the cofferdam interior will use pumps with fish screens installed at the intakes and outtakes. A qualified fisheries biologist who has authorization from the National Marine Fisheries Service (NMFS) will be on-site to capture and re-locate fish, including special status species, trapped in dewatered areas and pools. The biologist will relocate fish to suitable habitat outside of the construction area. The methods of fish removal will be limited to a combination of block nets and seining and/or electrofishing. Please refer to the biology section for further details.

Upon completion of construction activities at each pier, material used for the cofferdams and water diversion will be removed from the channel using a vibratory extractor.

Pile Driving - Permanent Piles: The permanent steel piles proposed for supporting the new fender system will be installed using an impact hammer operated from the contractor's construction barge(s). Delmag D36-32 and Delmag D46-32 diesel impact hammers were used to analyze the potential driving conditions and potential environmental impacts. Each 16-inch steel pile will require a maximum of 1,475 strikes using the Delmag D36-32 hammer, and that the entire project will require an estimated 295,000 total strikes (200 piles x 1475 strikes).

Geotechnical Drilling Activities

Prior to the final design and construction of the proposed fender system replacement project, Caltrans will collect subsurface data necessary for the preparation of foundation recommendations and design/construction procedures. The information from the subsurface data will generate a "Log of Test Boring" (LOTB). The LOTBs are a contractual document that provides the subsurface and geological information for the project site. The LOTB sheets are signed by a State of California Registered Civil Engineer or Registered Geologist and are included in Caltrans Contract Plans.

Geotechnical Drilling Operation

Caltrans Drilling Services and/or consultant contract drill crews will perform the geotechnical drilling operation. The drilling operation will be performed along the existing Sacramento River Tower Bridge California Route 275. A maximum total of four (4) borings will be drilled for this project (Figure 3). The proposed borings will be located adjacent to the existing fenders at piers 6 and 7, two borings at each pier.

A barge will be needed to perform the proposed geotechnical drilling operation in the active river channel. A barge operation requires a minimum water depth of 24 inches and might periodically come in contact with the bottom of the channel. The barge and drill rig equipment aboard will be towed to the Tower Bridge drill sites by a Caltrans 16-ft steel-hulled Boston Whaler boat powered by a 90-horsepower four-cycle outboard motor. The boat will be used throughout the barge work to maneuver the barge to the boring locations and to transport people and equipment. The barge and boat will be launched from the Natomas Park boat ramp located approximately 1.5 miles upstream of the Tower Bridge. No removal of perennial woody riparian vegetation will be required for barge access or staging.

A barge typically consists of nine sections, and each section typically is 6 feet x 15 feet, giving the barge an overall size of 18 feet x 45 feet. The barge will support a CS-1000 drill rig (dimensions of 11 feet x 6 feet with a weight of 7,580 lbs.), a B-47 drill rig (dimensions of 8 feet x 17 feet with a weight of 11,000 lbs), or a similar type of drill rig. A barge typically is anchored to (tied against) the existing piers to be kept stationary during drilling at each drilling location. In addition, four vertical anchors (steel or concrete shafts) one at each corner of the barge) typically are used for additional stabilization. Each anchor is installed through a sleeve in each corner of the barge and extended into the mud-line. The anchors are then hammered into the river bottom until refusal, typically to a depth of 5-10 feet. This system allows the barge to rise and fall with changes in the water level. Buoys with reflective tape will be attached to the anchor ropes for nighttime visibility purposes to designate anchor lines just beneath the water surface.

Drill and Sampling Methods

The drilling and sampling will be accomplished using a rotary-wash wire-line punch core system. In a “rotary wash” drilling operation, mud (a mixture of water and bentonite) circulates through the borehole or an outer casing, bringing the soil cuttings to the surface. A bit is connected to a series of “drill rods” that are attached to the drill head. The mud circulation system draws in the mud from a “mud tank” and sends the mud under pressure through the top of the drill head and down the inside of the drill rods. After the mud is discharged from the bit, the mud picks up the soil cuttings and carries them upwards between the drill rod and the sides of the borehole or between the drill rod and the outer casing. At the top of the hole, the mud pours out through a catch screen and back into the mud tank or a

settling basin. In areas of cohesion-less soils or highly erodible soils, an outer casing is used to contain the drill rods, creating a closed circulation system and providing a conduit for the drilling fluids to reach the mud tank on the barge. The Tower Bridge geotechnical investigation will utilize an outer casing with a diameter of 5 inches to create a closed-circulation system and a drill pipe diameter of 4.5 inches. The casing will first be driven to 10 - 15 feet below the mud-line and is then advanced concurrently with the drilling until it is seated in dense, un-erodible soils or bedrock.

The mud tank serves as a settling tank for the cuttings, which will be periodically drained and the contents placed in 55-gallon steel drums. For drilling work on the Tower Bridge, the drill rig and mud tank circulation system would be placed on a barge. Once the desired boring depth is reached, the borehole will be flushed with clear water to displace the drilling fluid back into the mud tank. After completion of the Geotechnical investigation the borings will be sealed in compliance with GS Geotechnical Manual Supplemental "A" (GMSA). The drilling fluid and water will then be pumped from the mud tank into 55-gallon steel drums that will be removed from the job site and transferred to an appropriate staging area, usually at a nearby Caltrans Maintenance yard. During drilling, water will be drafted (pumping water from the river) from the Sacramento River. Caltrans will comply with water drafting specifications issued by California Department of Fish and Wildlife (CDFW). Water drafting will not introduce foreign water into the Sacramento River.

Wireline core drilling is a special type of core drilling. Unlike some types of drilling, the aim of core drilling is not to make a hole, but to retrieve a core sample - a long solid cylinder of rock/sediment that geologists can analyze to determine the composition of rock/sediment under the ground.

A typical core drill string is a series of connected long hollow tubes (“drill rods” as described above), with a barrel at the end connected to a special cutting bit (drill head) at the bottom of the hole. As the drill moves further into the earth, the driller adds rods onto the end, lengthening the drill rod string. As the driller rotates the drill rod, downward pressure and abrasion from the drill head cuts into the rock, pushing core into the core barrel (also called a “punch-core barrel”). This process creates a lot of friction and heat, so a flushing medium (in this case, the mud circulation system) is used to cool the bit, lubricate the core, remove the loose bits of rock (called the cuttings), and help stabilize the hole.

When the driller wants to remove a core from a conventional core drill, the entire core barrel has to be removed from the hole. This is time-consuming, as each rod has to be removed one at a time. With wireline drilling, a barrel of core can be removed from the bottom of the hole without removing the rod string. When the driller wants to remove the core, an overshot is lowered on the end of a wireline. The overshot attaches to the back of the core barrel inner

wireline drilling, the rods are made of fine high-tensile steel. This makes them thin, so that the core can be as large as possible.

Soil sampling during Tower Bridge geotechnical investigation will be taken at 5-foot intervals. Drilling is stopped every 5 feet in order to retrieve a soil-filled punch-core barrel by wire-line. Before drilling commences again, another drill rod section is added and another empty punch-core bucket is inserted in the drill rod. This sequence will continue until the specified depth of the boring is reached. Standard Penetration Test (SPT) samples are taken before the empty punch-core barrel is inserted into the drill rod. SPT sampling requires driving a thick-walled sample tube, with an outside diameter of two inches and an inside diameter of 1.4 inches, and a length of approximately 25.6 inches. This tube is driven into the ground at the desired sampling interval inside the borehole casing by a slide hammer with a weight of 140 lbs., free falling a distance of 30 inches. The tube is driven 18 inches into the ground or until hammer refusal.

Each boring will take approximately four working days to complete. The maximum depth of the borings will be approximately 125-150 feet. The boreholes drilled in the river channel will be backfilled and sealed in compliance with "Caltrans Geotechnical Manual, Supplement-A (GMSA)". Borehole backfill will consist of either bentonite chips, cement-bentonite grout, neat cement grout, or No. 8 sand. Neat-cement grout is a mixture in the proportion of 94 pounds of Portland cement and not more than 6 gallons of water. Cement-bentonite grout means bentonite is added to cement to increase set volume, reduce shrinkage, decrease density, and decrease water loss from the cement. Up to 5 percent bentonite by weight may be added to cement slurries, although 1-2% is the more commonly used and preferred amount.

All borings and drilling activities will occur within the project's environmental study limits. No borings are on or near any resources.

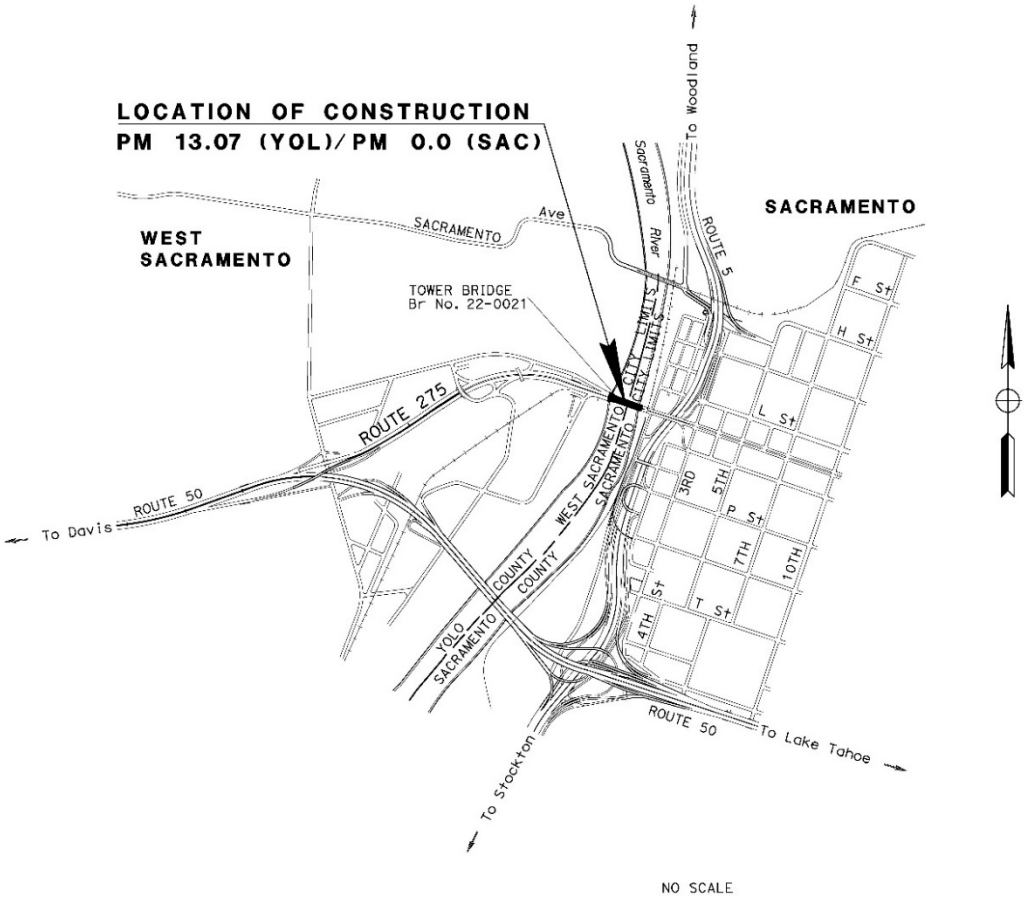
Permits and Approvals Needed

Permits:

- Regional Water Quality Control Board (RWQCB) Section 401 Permit
- US Army Corps of Engineers (USACE) Section 404 Permit
- California Department of Fish and Wildlife (CDFW) 1600 Agreement
- Central Valley Flood Prevention Board Encroachment Permit
- US Coast Guard Permit

Approvals:

- US Fish and Wildlife Service (USFWS) Biological Opinion
- National Marine Fisheries Service (NMFS) Biological Opinion



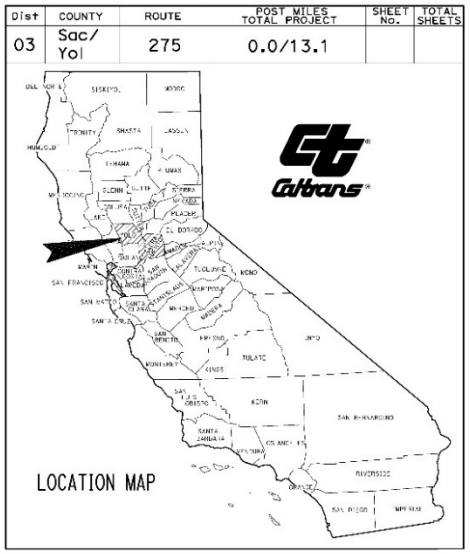


FIGURE 1
Location Map
Tower Bridge Fender Replacement Project
03-YOL-275 (PM 13.07)
State of California
Department of Transportation

SEPTEMBER 2015

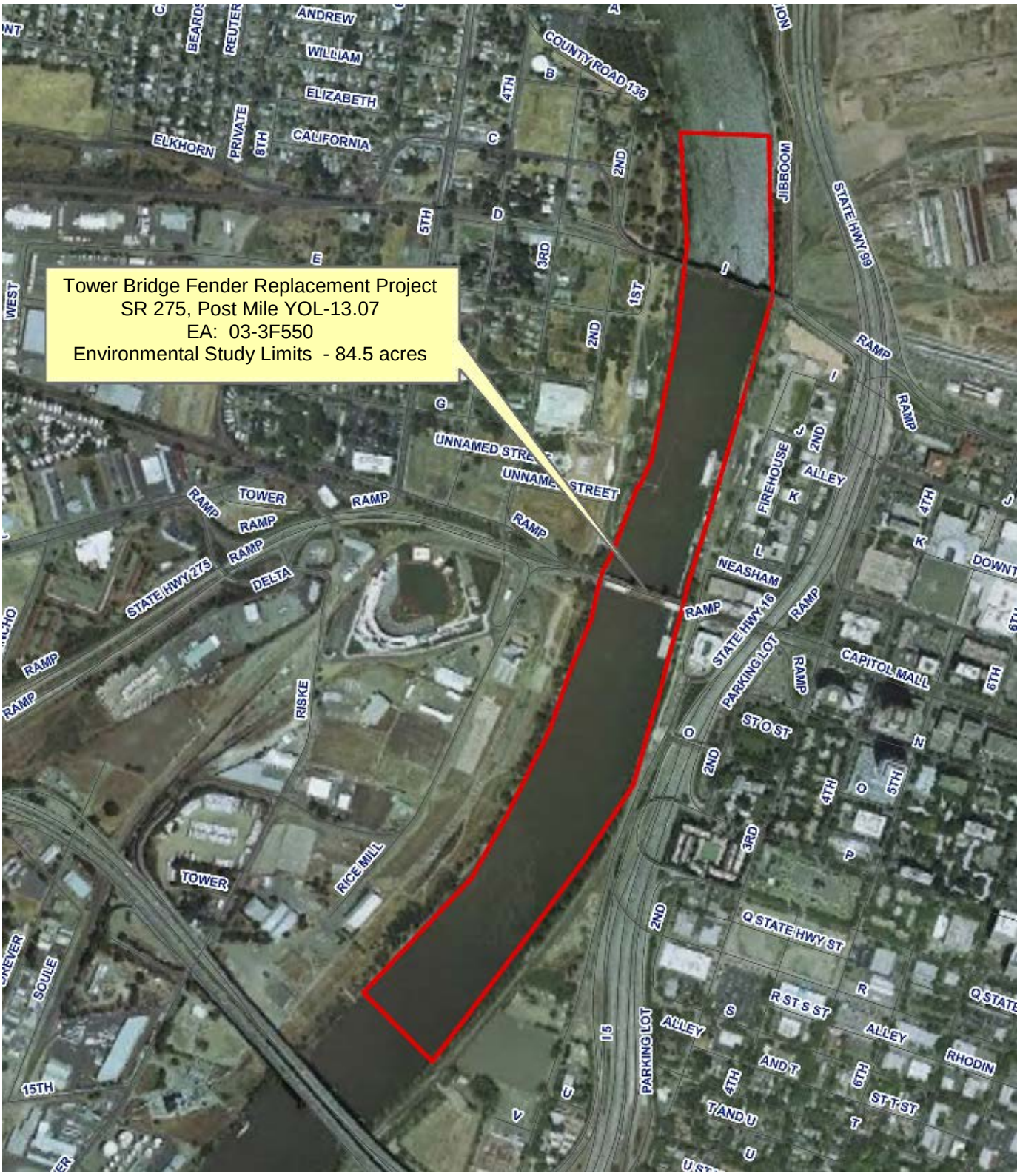


FIGURE 2
Environmental Study Limit (ESL) Map
Tower Bridge Fender Replacement Project
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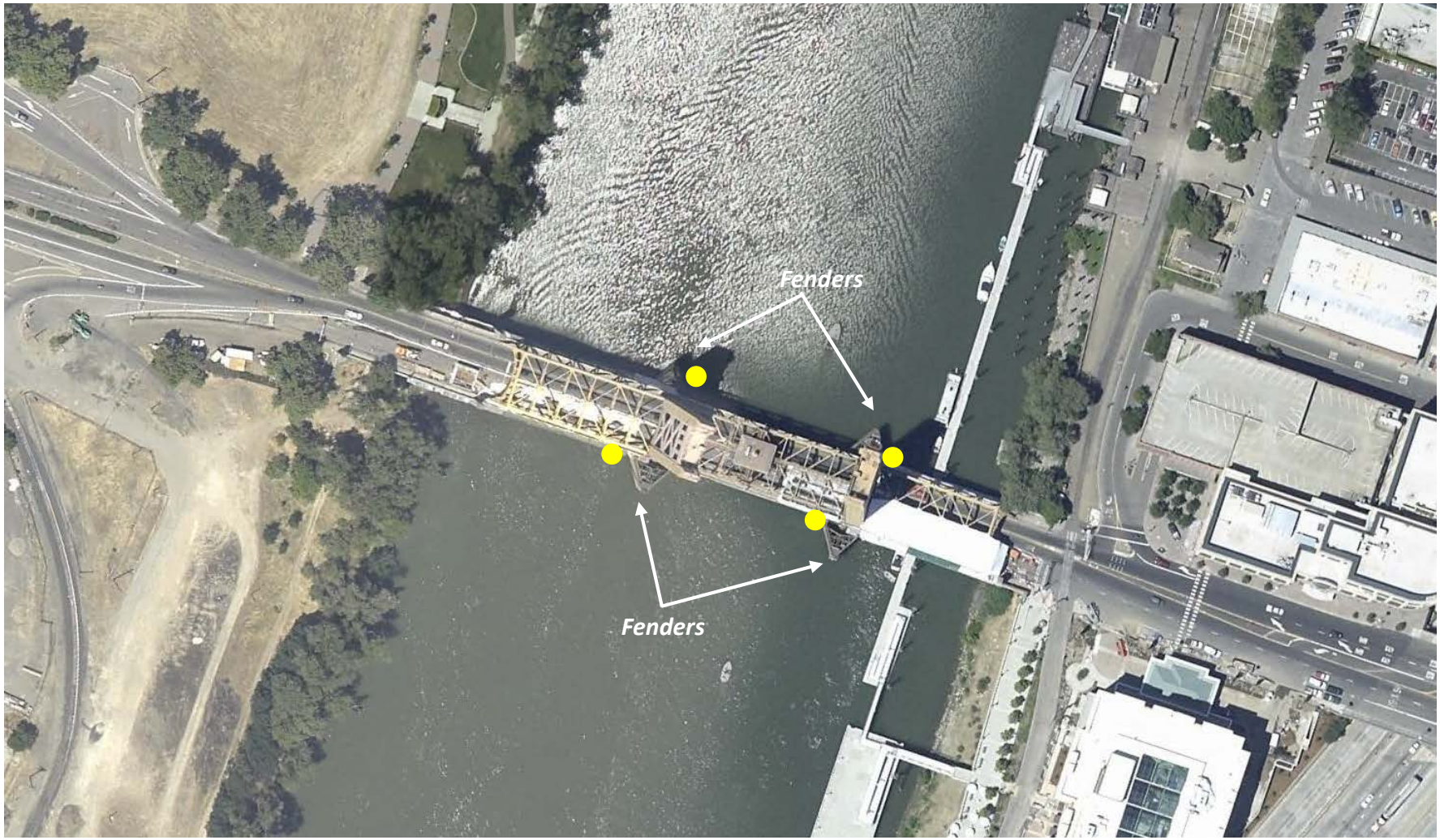

Boring locations

FIGURE 3
Geotech Boring Locations

Photo 1: Looking Towards Abutment 1

Photo 2: Failed Fender System during High Water Pier 7

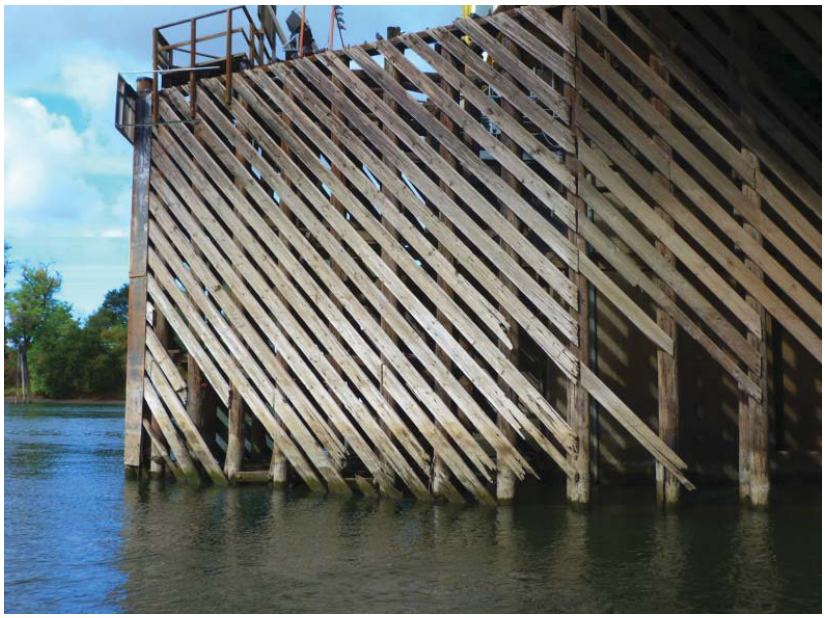

Photo 3: Downstream end of fender surrounding Pier 7

Photo 4: East side of upstream end of fenders surrounding Piers 6 and 7

Impacts Checklist

The impacts checklist starting below identifies physical, biological, social, and economic factors that might be affected by the proposed project. The California Environmental Quality Act impact levels include “potentially significant impact,” “less than significant impact with mitigation,” “less than significant impact,” and “no impact.”

A brief explanation of each California Environmental Quality Act checklist determination follows each checklist item. The checklist is followed by a focused discussion of biological resources, cultural resources, hazardous waste, and water quality issues relating to this project.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

"No Impact" determinations for a, b, c, and d are based on the November 2014 Visual Impact Assessment(VIA) prepared for the project.

II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

"No Impact" determinations are based on review of aerials and planning documents that show that there are no agricultural resources affected by the project.

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

"No Impact" determinations for a, b, c, d, and e are based on the February 2014 Air Quality Assessment.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact

IV. BIOLOGICAL RESOURCES: Would the project:

Discussion of impacts and mitigation measures starts at the Biological Resources section of this Initial Study.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐

A "Less Than Significant Impact" is based on the measures recommended in the Avoidance and Minimization section for biological resources.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐

A "Less Than Significant Impact" is based on the measures recommended in the Avoidance and Minimization section for biological resources.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

"No Impact" determinations for b, e, and f are based on the August 2015 Natural Environment Study (NES).

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐

A "Less Than Significant Impact" is based on the measures recommended in the Avoidance and Minimization section for cultural resources.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

"No Impact" determinations for b and d are based on the August 2015 Cultural Resources Study.

"No Impacts" determination for c is based on the conclusion that there are no paleo resources affected.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

"No Impact" determinations are based on the February 2015 Preliminary Foundation Report and with conversations with Caltrans geotechnical staff.

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

"No Impact" determinations for a, b, c, d, e, f, g, and h are based on the January 2015 Initial Site Assessment.

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐

Discussion of impacts and mitigation measures starts at the Water Quality section of this Initial Study.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant	Less Than Significant Impact	No Impact

		with Mitigation		
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐

Discussion of impacts and mitigation measures are included in the Water Quality section of this Initial Study.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

"No Impact" determinations for b, c, d, e, g, h, I, and j are based on the March 2015 Water Quality Assessment and with conversations with Caltrans water quality staff.

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

"No Impact" determinations are based on reviews of local planning documents, maps, and project scope.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

"No Impact" determinations are based on the conclusion that no mineral resources will be affected.

XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

"No Impact" determinations for a, b, c, d, e and f are based on the February 2015 Noise Assessment.

XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

"No Impact" determinations are based on the project's scope and location.

XIV. PUBLIC SERVICES:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

"No Impact" determinations are based on traffic information, Traffic Management Plan, construction timing, and the project's scope and location.

XV. RECREATION:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

"No Impact" determinations are based on the project's scope and location.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
A "Less Than Significant Impact" is based on the temporary nature of the disruption to boat traffic and the measures recommended in the Avoidance and Minimization section for transportation facilities.				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
"No Impact" determinations are based on the project's January 2015 Traffic Management Plan and input of Caltrans Traffic Operations staff.				
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

"No Impact" determinations are based on the project's scope and location.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Affected Environment, Environmental Consequences, and Avoidance/Minimization Measures

Environmental studies were prepared by Caltrans specialists for the following topics: air quality, biological resources, cultural resources, hazards and hazardous materials, noise, traffic/transportation, visual resources (aesthetics), and water quality/hydrology. As part of the scoping and environmental analysis carried for the project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document:

- Aesthetics, agricultural and forest resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, and utilities and service systems.

A focused discussion of biological resources, cultural resources, hazardous waste, and water quality issues relating to this project is included. Construction avoidance and minimization measures for air quality, noise, and transportation/traffic are also discussed.

Biological Resources

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a No Effect finding. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. CDFW is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined

in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the CDFW. For species listed under both the FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

Caltrans biologist prepared a Natural Environment ~~Assessment~~ Study (NES) in August 2015.

Waters of the United States: Clean Water Act Section 404 "Wetlands"

The methodology described in the *1987 Corps of Engineers Wetlands Manual* was used to ~~delineate~~ identify potentially jurisdictional wetlands. No potentially jurisdictional wetlands were recorded within the project environmental study limits (ESL).

Waters of the United States: Clean Water Act Section 404 "Other Waters" of the United States

The methodology described in the 1987 Corps of Engineers Wetlands Manual as well as the methodology described in USACE's 2005 Regulatory Guidance Letter ("Ordinary High Water Mark Identification") was used to delineate "other" jurisdictional waters of the United States (OWUS) in the form of perennial stream (the Sacramento River). Within the ESL, the Ordinary High Water Mark (OHWM) of the Sacramento River occurs at the 20-foot elevation contour shown on the Sacramento West US Geographical Service (USGS) 7.5-minute quadrangle. Streams within the project study area possess bed and bank, and riparian vegetation. A total of 84.28 acres of jurisdictional OWUS was delineated within the project ESL.

Special Status Plant Species

A list of special status plant species and habitats potentially occurring within the project vicinity was developed based on information compiled from the USFWS, CDFW California Natural Diversity Database (CNDDB) Rarefind 2015 (Sacramento West and Sacramento East 7.5-minute USGS quads),

the California Native Plant Society (CNPS) 2015 Electronic Inventory, and from the current literature (Attachment 1 and 2).

Special Status Habitats and Vegetation Communities

A list of special status habitats potentially occurring within the project vicinity was developed based on information compiled from the USFWS, CDFW CNDDB ("CNDDB Rarefind" 2015 Sacramento West and Sacramento East 7.5-minute USGS quads), the CNPS 2013 Electronic Inventory, and from the current literature (Attachment 1 and 2).

Jurisdictional Waters of the State of California (Excluding Waters of the United States):

The California Fish and Game Code (CFGC), Sections 1600-1616, regulates activities that would alter the flow, bed, banks, channel or associated riparian areas of a river, stream or lake—all considered "waters of the state of California (W/CA)". All areas qualifying as W/US under Clean Water Act Section 404 also qualify as W/CA; however, some areas considered as W/CA do not qualify as "waters of the United States". W/CA jurisdiction at streams, lakes, and ponds considered as OWUS extends beyond the OHWM to the top of the bank or to the greatest lateral extent of riparian vegetation, whichever is greater. Therefore, any area within the project ESL that falls between the OHWM of the Sacramento River and the top of the Sacramento River levee will be considered as W/CA. Any woody riparian vegetation occurring within this area will also be considered as components of W/CA.

The ESL extends approximately 3,130 feet south (downstream) and approximately 3,130 feet north (upstream) of the Tower Bridge in the channel of the Sacramento River and extends approximately to the 20-foot elevation contour indicated on the Sacramento West 7.5-minute quadrangle on the east and west banks of the River. Within the ESL, the OHWM of the Sacramento River also occurs at the 20-foot elevation contour shown on the Sacramento West USGS 7.5-minute quadrangle; therefore all waters in the project action area qualifying as W/US under Section 404 of the CWA are also jurisdictional under CFGC Section 1600 and no additional areas qualifying for jurisdiction as W/CA occur within the project ESL.

Special Status Wildlife Species

A list of special status wildlife species potentially occurring within the project vicinity was developed based on information compiled from the USFWS, CDFW CNDDB Rarefind 2015 (Sacramento West and Sacramento East 7.5- minute USGS quads) and from current literature (Attachments 1 and 2).

The following special status wildlife species occur or are likely to occur within the ESL:

Green Sturgeon, Southern DPS (*Acipenser medirostris*)

The green sturgeon is a federally threatened species. Green sturgeon occupy freshwater rivers from the Sacramento River up through British Columbia but spawning has been confirmed in only three rivers, the Rogue River in Oregon and the Klamath and Sacramento rivers in California. Based on genetic analyses and spawning site fidelity, NMFS has determined green sturgeon are comprised of at least two distinct population segments (DPSs): (1) A Northern DPS consisting of populations originating from coastal watersheds northward of and including the Eel River (*i.e.*, the Klamath and Rogue rivers) called "Northern DPS"; and (2) a southern DPS consisting of populations originating from coastal watersheds south of the Eel River, with the only known spawning population in the Sacramento River ("Southern DPS"). The Northern DPS and Southern DPS are distinguished based on genetic data and spawning locations, but their distribution outside of native waters generally overlap with one another. Both Northern DPS and Southern DPS green sturgeon occupy coastal estuaries and coastal marine waters from southern California to Alaska, including Humboldt Bay, the lower Columbia River estuary, Willapa Bay, Grays Harbor, and coastal waters between Vancouver Island, BC, and southeast Alaska.

For freshwater riverine habitats, the lateral extent of critical habitat units is the width of the stream channel defined by the ordinary highwater line, as defined by the U.S. Army Corps of Engineers (USACE) in 33 CFR 329.11. In areas for which the ordinary high-water line has not been defined pursuant to 33 CFR 329.11, the extent is defined by the width of the stream channel by its bankfull elevation. Bankfull elevation is the level at which water begins to leave the channel and move into the floodplain and is reached at a discharge which generally has a recurrence interval of 1 to 2 years on the annual flood series. Critical habitat for this species occurs within the ESL in the Sacramento River.

Delta Smelt (Hypomesus transpacificus)

The Delta smelt is a FESA-listed threatened species. A 12-month finding in April 7, 2010 found that reclassification from threatened to endangered is warranted but precluded by other higher priority listing actions. Delta smelt are found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Final ruling on Critical Habitat for the Delta smelt was established in Federal Register on September 19, 1994. The Delta smelt critical habitat designation includes areas in California of water and all submerged lands below ordinary high water mark and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays), as well as the length of Montezuma Slough, and the existing contiguous waters contained within the Delta. The Sacramento River within the project ESL is considered as critical habitat for this species.

Central Valley Steelhead (*Oncorhynchus mykiss irideus*)

The Central Valley steelhead is a federally threatened species, but it has no State status. Currently, the Central Valley steelhead Evolutionary Significant Unit (ESU) includes steelhead in all river reaches accessible to the Sacramento and San Joaquin Rivers and their tributaries in California. Also included are river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge.

For the Central Valley ESU, designated critical habitat includes all river reaches accessible to listed steelhead in the Sacramento and San Joaquin Rivers and their tributaries in California. Also included are adjacent riparian zones, river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. The Sacramento River within the project ESL is considered as critical habitat for this species.

Central Valley spring-run chinook salmon (Oncorhynchus tshawytscha)

The Central Valley spring-run Chinook salmon ESU is Federally and State listed as threatened. This ESU occurs in the Sacramento and San Joaquin Rivers and their tributaries, and is primarily found in Butte, Big Chico, Deer, and Mill Creeks. In the mainstem Sacramento River and the Feather River, early-running Chinook salmon occur, but significant hybridization with fall-run has occurred.

In 2005, NMFS published the final designation of critical habitat, which includes the Sacramento, lower Feather, and Yuba Rivers; and Beegum, Battle, Clear, Cottonwood, Antelope, Mill, Deer, Butte, and Big Chico Creeks. The Sacramento River within the project ESL is considered as critical habitat for this species.

Winter-run chinook salmon, Sacramento River (*Oncorhynchus tshawytscha)*

The Sacramento winter-run Chinook salmon ESU is Federally and State endangered. This ESU occurs in the Sacramento River below Keswick. Historically, winter-run populations existed in the Upper Sacramento, Pit, McCloud, and Calaveras Rivers. The spawning habitat for these stocks was primarily located in the Sierra Nevada Eco-region. Construction of dams on these rivers in the 1940s led to the extirpation of populations in the San Joaquin River Basin and displaced the Sacramento River population to areas below Shasta Dam.

In 1993, NMFS published the final designation of critical habitat, and in 1999 critical habitat was re-designated and amended, and includes the Sacramento River from Keswick Dam, Shasta County (River Mile 302) to Chipps Island (River Mile 0) at the westward margin of the Sacramento-San

Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. The Sacramento River within the project ESL is considered as critical habitat for this species.

Sacramento Splittail (Pogonicthys macrolepidotus)

The Sacramento splittail is considered as a species of concern by the CDFW, and was recently de-listed (2003) as a threatened species by the USFWS. This species is native to rivers, sloughs, and lakes in the Sacramento and San Joaquin valleys. The largest portion of splittail spawning habitat occurs in the Yolo Bypass and higher Splittail young-of-the-year abundances are strongly correlated with the flooding of the Yolo Bypass. There are indications, based on presence of larvae and juveniles, that spawning in the Sacramento River occurs relatively far upstream at Colusa. It is therefore expected that splittail occur within the Sacramento River within the project ESL.

Longfin Smelt (Spirinchus thaleichthys)

The logfin smelt is listed as threatened under CESA and is a candidate for FESA listing. The longfin smelt is an anadromous smelt (family osmeridae) found in California's bay, estuary, and nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon border. Longfin smelt have been collected in the Cache Slough complex (including the lower Deepwater Ship Channel and Miner Slough), the Yolo Bypass, the lower Sacramento River to almost the city of Sacramento, the Mokelumne River to Hog Slough, within the San Joaquin River to the vicinity of Turner Cut and Rough-and-Ready Island, and in the South Sacramento-San Joaquin Delta. Near their upstream limits, longfin smelt catches were more frequent and more numerous during winters and springs with low and moderate river flows.

The project ESL is located outside of the areas considered by CDFW as longfin smelt habitat. CNDDB records indicate that longfin smelt are present in the Sacramento River downstream of the I-5 bridge near the Sacramento Airport based on detection from CDFW trawl surveys conducted between 1974 and 2004, however CDFW considers incidences of longfin smelt upstream of Sacramento to be extremely rare (Jim Starr, CDFW, personal communication 9/21/2015) and therefore longfin smelt are not expected to occur in the Sacramento River within the project ESL.

Western Pond Turtle (*Emys marmorata*)

The western pond turtle (WPT) is considered a Species of Concern by the State of California. The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Western pond turtles are associated with permanent or nearly

permanent water in a wide variety of habitat types. Individuals normally associate with permanent ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams.

No CNDDB records for this species occur within the vicinity of the project ESL; however, Western pond turtles were observed along the south bank of the Sacramento River within the project ESL during biological surveys.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Migratory birds are expected to occupy the project ESL and may be expected to nest within the project ESL in trees, snags, and shrubs, and on the ground or on existing structures (including bridges) between March 1st and August 15th.

The Tower Bridge was surveyed to determine the potential for migratory birds to use the structure for nesting. Evidence of cliff swallow nesting was apparent, and several other species of migratory birds are known to use similar structures for nesting.

Bats

Several species of bats are considered Species of Concern by the State of California. In addition to bat species listed as sensitive by the resource agencies, state laws protect bats and their occupied roosts from harassment and destruction. Protection under California Law is found in the Fish Game code Section 2000, 2002, 2014 and 4150, and under California Code of Regulations section 251.1.

Bats are commonly found in association with open forests and woodlands, where there is a water source nearby over which to feed. Suitable roosting and nesting areas include caves, mines, tree snags, buildings, and other human-made structures. In California, these species generally mate during the late fall and give birth to their young between early May and the end of July. Loss of riparian foraging areas and roosting habitat presents the biggest threat to declining bat populations in the state.

Several species of bats require trees as daytime roosts (critical for thermal regulation, predator avoidance, and in reproduction), and several other species day roost in trees occasionally or use trees as important night roosts (temporary resting and feeding roosts for between-foraging flights). Many bats that live in trees instead of caves live year-round in tree foliage or hollows.

The following are tree roosting bat species that may be expected to occur in the project vicinity:

Obligate Tree Roosting Species (always roosting in trees)

Silver haired bat *(Lasionycteris noctivagans)*, hoary bat *(Lasiurus cinereus)*, and red eared bat *(Lasiurus blossevillii)*.

Tree Important

Pallid bat (*Antrozous pallidus)*, big brown bat (*Episticus fuscus*), California Myotis bat (*Myotis californicus*), small footed Myotis bat (*Myotis ciliolabrum*), long eared Myotis bat (*Myotis evotis)*, little brown Myotis (*Myotis lucifugus*), fringed Myotis bat (*Myotis thysanodes*), long legged Myotis bat (*Myotis volans*), and Yuma Myotis bat (*Myotis yumanensis*)

CNDDB has recorded one occurrence of the hoary bat (*Lasiurus cinereus)* within approximately one mile of the project ESL, based on a specimen deposited at the Berkeley Museum of Vertebrate Zoology collected in 1991. This species may be expected to occur and roost at appropriate sites (mature trees) and forage within the project ESL.

Several species of bats are known to use bridges and other man-made structures as daytime roosts (critical for thermal regulation, predator avoidance, and in reproduction). Several species of bats are also likely to use bridge structures as night roosts (temporary resting and feeding roosts for between-foraging flights). The following are bridge/structures roosting bat species that may be expected to occur in the project vicinity:

Species Commonly Found in Bridges

Pallid bat (*Antrozous pallidus)*, big brown bat (*Episticus fuscus*), little brown Myotis (*Myotis lucifugus*), Yuma Myotis bat (*Myotis yumanensis*), and Mexican free-tailed bat (*Tadarida brasiliensis)*

Species Sometimes Found in Bridges

Townsend's big-eared bat (*Corynorhinus townsendii)*, California Myotis bat (*Myotis californicus*), long-eared myotis bat (*Myotis evotis)*, fringed Myotis bat (*Myotis thysanodes*), cave myotis bat (*Myotis velifer*), and long-legged myotis bat (*Myotis volans*)

The Tower Bridge was surveyed to determine the potential for bats to use these structures as day roosts or night roosts. Features appropriate for bat day roosting or maternity roosting (such as expansion joints between bridge deck sections, or any structural features providing a ½" to 1" wide vertical gaps) are the most commonly used features for bat daytime roosts. Potential day roosting sites do not appear to be available on the Tower Bridge; however, the bridge provide features (concrete abutments, concrete piers/bents) which are appropriate for night roosting.

Environmental Consequences

Wetlands

No potentially jurisdictional wetlands were recorded within the project ESL and therefore no direct permanent or temporary impacts to wetlands are expected as a result of the project.

Other Waters of the United States

The most current estimates of impacts to jurisdictional waters, based on non-USACE-verified jurisdictional boundaries and the most current project design, are as follows:

Permanent impacts:	none
Temporary impacts:	0.27 acres (if temporary cofferdams are used for de-watering; no impacts if cofferdams are not used)

Special Status Plant Species

Due to the project area being outside the range of the species, the lack of suitable habitat or habitat components in the project area, the lack of detection during recent Caltrans surveys or because the project would not harm individuals or alter the species' habitat, it is Caltrans' determination that the proposed project will have "no effect" on Federally or State listed species, California rare plant species, or plant species protected by the California Native Plant Protection Act.

Special Status Habitats and Vegetation Communities

Jurisdictional Waters of the State of California (Excluding Waters of the United States)

All waters in the project action area qualifying as W/US under Section 404 of the CWA are also jurisdictional under CFGC Section 1600 and no additional areas qualifying for jurisdiction as W/CA occur within the project ESL. Therefore no direct permanent or temporary impacts to non-W/US W/CA are expected to occur as a result of the proposed project.

Special Status Fish Species

The following Special Status Fish Species are located within the project limits:

Green Sturgeon, Central Valley Steelhead, Sacramento River Winter Run Chinook Salmon, Central Valley Spring Run Chinook, Delta Smelt, Longfin Smelt, and Sacramento Splittail.

Effects of Geotechnical Investigation

Potential effects to special status fish species due to geotechnical investigation activities include exposure to increased noise and vibration during drilling activities that could possibly injure or kill fish, exposure to heightened levels of suspended sediment in the water column (including minor

turbidity events) that may cause injury or death, and exposure to the introduction or re-suspension of contaminants to the water column that could disorient fish and cause physiological harm and/or death.

Effects of Contaminants/Toxic Chemicals from Geotechnical Investigation: Project related activities could potentially impair water quality should hazardous chemicals *(e.g.* drilling fluids or core materials) or other materials enter the water column of the Sacramento River. Project related chemical spills could potentially affect listed fish by causing physiological stress, reducing biodiversity, interfering with fish passage, and causing direct mortality. Implementation of BMPs and a SPCCP will avoid the potential for fish exposure to hazardous chemicals and will result in chemical spills entering the river to be very unlikely. Therefore the potential for adverse effects to listed fish or their critical habitat associated with topside spills of drilling fluids during geotechnical investigation activities is insignificant.

Effects of Mobilization of Sediment From Geotechnical Investigation Activities: Increases in sediment in-river can lead to decreased benthic vertebrate abundance, increased stress responses in fish, and increased fish mortality. Disturbance to soils and vegetation within the project limits may temporarily increase suspended sediment and turbidity in the Sacramento River. Any increase in sedimentation and turbidity resulting from geotechnical investigation activities will be limited to the short duration in-water work period of no more than 16 days (4 boreholes, each takes 4 days to complete) and to a very small portion of the river during construction activities. In addition, BMPs will be deployed around and beneath all drilling equipment for both over water and upland borings and an emergency response plan will be implemented 14 days prior to construction activities. Therefore the potential for adverse effects to listed fish or their critical habitat due to sedimentation and turbidity during geotechnical investigation activities are discountable and/or insignificant.

The initial placement of the drill rod, drill bit and outer casing in the streambed and the subsequent removal of these components have the potential to generate small sediment plumes. Additional streambed disturbance could be expected from the barge operation itself. The barge is proposed to be anchored to (tied against) the existing piers to be kept stationary during drilling at each subsurface exploration location. Four anchors (one at each corner of the barge) are also typically used for additional stabilization. In addition, the barge operation requires a minimum water depth of 24 inches and might periodically come in contact with the bottom of the channel.

The placement of four borings within the Sacramento River is expected to result in 19.63 square inches (0.14 square feet) of temporary disturbance to the riverbed. This activity could affect the migratory patterns of listed fish through the action area and cause potential disorientation, physiological harm, and/or direct mortality. Using an outer casing closed system technique for the in-water borings effectively creates a sealed system preventing upstream or downstream sedimentation and turbidity during drilling, and after the drilling is completed, borings will be

backfilled and/or plugged with bentonite chips to prevent leakage into the water column. The bentonite chips swell rapidly upon contact with water, fill the borehole, and expand in the borehole for 10-20 minutes prior to the drill rod and outer casing is removed from the borehole. This will prevent the loss of drilling fluids or core materials to into the streambed of the Sacramento River. Therefore the introduction or re-suspension of contaminants to the water column as a result of in-water geotechnical investigation activities that could potentially adversely affect listed fish or their critical habitat is discountable.

Effects of Sound Exposure During Geotechnical Investigation: Drilling-related noise and vibration can affect listed fish by causing physiological harm and/or direct mortality. Caltrans Drilling Services has performed a noise study for the noise levels typically produced by a SPT drills and hammers. Table 7 below summarizes the results of the noise study and presents noise readings at various distances from the drill rig as a result of hammering and drilling operations. The study was performed utilizing a Mobile B-47 trailer mounted drill rig at the Caltrans Maintenance yard in Vallejo on April 23, 1999, at the request of District 4 Environmental Engineering Branch. Sound exposure levels (SELs) due to geotechnical drilling or hammering are not expected to reach or exceed threshold sound exposure levels:

Noise Generated by SPT Drill Rig at Various Distance From Drill Rig:

Distance from rig (ft)	**Drilling**	**Hammering**
5	92.1 dB	93.4 dB
25	73.3 dB	79.9 dB
50	69.0 dB	72.8 dB
75	65.5 dB	69.3 dB
100	64.2 dB	No Data Available

No adverse acoustic effects are anticipated as a result of the conducting the geotechnical investigation activities due to the small size of the drop hammer to be used and the fact that all rotary drill work will take place through the casings. At most, anticipated noise levels resulting from hammering and drilling activities will be no higher than 94 decibels (dB) and 92 dB respectively, which is well below the agreed upon interim criteria for injury to fish (FHWG, 2008) of 187 dB for fish weighing more than two grams, and 183 dB for fish weighing less than two grams. Therefore the potential for adverse effects to listed fish or their critical habitat due to acoustics in-river during geotechnical investigation activities is discountable.

Effects of De-Watering Project Areas for Geotechnical Investigation: Geotechnical investigation activities conducted in the river will be limited to the short duration in-water work period of no more than 16 days between July **1** and September 30 when listed fish are least likely to be present in the action area. No dewatering activities are proposed and no cofferdams are required to perform the geotechnical drilling operations. Water temperatures can range from 76 to upwards of 80 degrees

Fahrenheit in this reach of the Sacramento River during the in-water work timeframe which is likely too warm to support salmonids (CDEC 2015). The avoidance, mitigation, and minimization measures outlined above indicate that the potential for adverse effects to special status fish are either insignificant or discountable for the geotechnical investigation activities.

Effects of Project Construction

Sound Exposure Thresholds for Fish Injury: Available information indicates that fish may be injured or killed when exposed to elevated levels of underwater sound pressure generated from driving piles with impact hammers. Pathologies associated with very high sound levels are collectively known as barotraumas. These include hemorrhage and rupture of internal organs, including the swim-bladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage and elicit stress responses in fish.

The degree to which an individual fish exposed to underwater sound from pile driving may be affected is dependent on a number of variables, including, but not limited to, size of the fish, hearing ability of fish, presence of swim-bladder, life-stage, fish behavior, presence of predators, sound amplitude and frequency, and effectiveness of any sound attenuation technology. Also, sound wave forms are affected by the size and type of pile and installation equipment.

Several descriptors are used to describe underwater noise. Two common descriptors are the instantaneous peak sound pressure level (dBpeak) and the Root Mean Square (dBRMS) pressure level during the impulse, sometimes referred to as the peak and RMS level respectively. The peak pressure is the instantaneous maximum over-pressure or under-pressure observed during each pulse and can be presented in Pascals (Pa) or SPL in decibels (dB) referenced to a pressure of 1 micropascal (dB re: 1 μPa). The RMS level is the square root of the energy divided by the impulse duration. This level is the mean square pressure level of the pulse. It has been used by NMFS to describe disturbance-related effects (i.e., harassment) to marine mammals from underwater impulse-type noises. When evaluating potential injury impacts to fish, peak sound pressure (dBpeak) is often used. Peak levels are generally 10 to 20 dB higher than RMS levels.

Sound Exposure Level (SEL) is often used as a metric for acoustic events and is often used as an indication of the energy dose. SEL is calculated by summing the cumulative pressure squared (p2), integrating over time, and normalizing to 1 second. This metric accounts for both negative and positive pressures because p^2 is positive for both, and both are treated equally in the cumulative sum of p^2. The units for SEL are dB re: 1 μPa2 sec.

In an evaluation of pile driving impacts on fish, it may be necessary to estimate the cumulative SEL ($SEL_{cumulative}$) associated with a series of pile strike events. $SEL_{cumulative}$ can be estimated from a

representative single-strike SEL value and the number of strikes that likely would be required to place the pile at its final depth by using the following equation:

SELcumulative = SELsingle strike + 10 log (# of pile strikes).

Caltrans, in coordination with the Federal Highways Administration (FHWA) and the departments of transportation in Oregon and Washington, established a Fisheries Hydroacoustic Working Group (FHWG) in order to improve and coordinate information on fishery impacts due to underwater sound pressure caused by in-water pile driving. In addition to the above transportation agencies, the FHWG is composed of representatives from NOAA Fisheries (Southwest), NOAA Fisheries (Northwest), U.S. Fish and Wildlife Service, California Department of Fish and Game, and the U.S. Army Corps of Engineers. The FHWG is supported by a panel of hydro-acoustic and fisheries experts who have been recommended by the FHWG members.

The FHWG met in June 2008 and agreed to new interim criteria for injury to fish from pile driving noise. This new criteria is to be used as of August 2008 until further notice. This is a dual criteria including a peak level of 206 dB (peak) AND a cumulative SEL level of 187 dB (SEL) for fish 2 grams and heavier OR a cumulative SEL of 183 dB (SEL) for fish smaller than 2 grams.

Temporary Sheet Pile Installation – Vibratory Hammer Driving: The temporary sheet piles for proposed temporary cofferdams, if used, are proposed to be installed using a vibratory hammer and are proposed to be removed by a vibrating extractor at the conclusion of construction activities. Vibratory hammers vibrate the pile into the sediment by use of an oscillating hammer placed on top of the pile. The vibratory action causes the sediment immediately surrounding the pile to liquefy and the pile can be driven through the sediment. For vibratory installation, the acoustic “event” is either defined as the entire duration of the sound or a fixed time. Using the duration of the event would not provide data that could be compared to other pile driving events. Therefore, the SEL is presented as measured over one continuous second of vibratory pile installation.

Based on studies conducted by the Washington State Department of Transportation (WSDOT), the installation of 0.6 meter (24-inch) steel sheet (typical sheet pile) may be expected to result in $175 dB_{peak}$, $160 dB_{RMS}$, and $160 dB_{SEL}$, well below the interim thresholds for fish injury.

Temporary sheet piles driven by vibratory hammer are not expected to require “proofing” strikes with an impact hammer. Sound levels produced by vibratory hammers are not only lower, but generate different sound wave forms and lower sound frequencies that are less injurious than those produced by an impact hammer. Therefore it is expected that underwater sound produced during the driving of the project’s temporary sheet piles with a vibratory hammer will not exceed levels that result in injury or mortality of special status fish species. Impacts on fishes or other aquatic organisms have not been observed in association with vibratory hammers. This may be due to the

slower rise time and the fact that the energy produced is spread out over the time it takes to drive the pile. As such, vibratory driving of piles is generally considered less harmful to aquatic organisms.

Removal of Existing Tiber Piles – Vibratory Extraction: The existing piles are proposed to be removed by a vibrating extractor. Like vibratory pile installation, it is expected that underwater sound produced during the extraction of the project's temporary sheet piles with a vibratory extractor will not exceed levels that result in injury or mortality of special status fish species.

Permanent Steel Pile Installation – Impact Hammer Driving: The permanent steel piles proposed for supporting the new fender system are proposed to be installed using an impact hammer.

When steel piles are used in conjunction with an impact hammer, high sound levels are likely to be generated during construction. Noise generated by impact pile driving is impulsive in nature. Impulsive noises have short duration and consist of a broad range of frequencies.

Impulsive waveforms are characterized by a rapid pressure rise time (the time in milliseconds it takes the wave form to rise from 10 percent to 90 percent of its highest peak) that occurs within the first few milliseconds followed by rapid fluctuation (under-pressure and over- pressure) about the ambient pressure.

Based on studies conducted by the WSDOT, the un-mitigated installation of 16-inch steel piles with the use of an impact hammer (without the use of air bubble curtain, de-watered area, or other attenuation techniques) is expected to result in un-attenuated single-strike sound levels of 200 dB_{peak} and 187 dB_{RMS} at 9 meters (30 feet) from the pile with an estimated SEL of 175 dB. This estimated peak sound level is below the interim threshold for fish injury. With the use of sound attenuation devices such as a bubble curtain, assuming that it may provide a *minimum* 5 dB of noise reduction, is expected to result in *maximum* attenuated single-strike sound levels of 195 dB_{peak} and 182 dB_{RMS} at 9 meters (30 feet) from the pile with an estimated SEL of 170 dB.

In order to estimate the number of pile strikes and the $SEL_{cumulative}$, Caltrans Office of Geotechnical Support performed a driveablity study. This study involved modeling the performance of a selected hammer/driving system to reflect the rated energy possibly appropriate for the installation of the subject piles to the specified tip elevations at the support locations. For the purpose of this study, Delmag D36-32 and APE D46-32 diesel hammers were used to analyze the potential driving conditions for the specified rated energy of the subject hammers with respect to the controlling support locations. Preliminary soil profile information was used for the driveability study, resulting in the resistance parameters that were used in the analyses. A complete geotechnical analysis has not been completed at the time of the driveablity study.

The analysis was performed using GRLWEAP™ computer program, Version 2010, recommended and default parameters. For the assumed hammers, the analysis was performed with the hammers operating at rated efficiencies for determining driving-behavior stresses imparted to the subject piles. The analyses performed for the subject hammers were utilized to demonstrate the predicted blow counts and corresponding maximum compressive stresses expected during pile driving. Standard configurations for the hammer driving system and related components were based on information from GRLWEAP™ hammer database. The selected hammers (with all the default parameters) were used for the design purpose only. The hammer characteristics used for this design phase analyses are listed below:

Hammer Model*	Delmag D36-32	APE D46-32
Hammer Type*	Open End Diesel	Open End Diesel
Related Energy*	90.56 ft-kips**	122.19 ft-kips**
Ram Weight*	7.93 kips**	10.14 kips**
Eq. Rated Stroke*	11.42 ft.	12.05 ft
# strikes per minute min/max	36/53	36/50
Estimate # of Strikes to Reach Tip Elevation (85.0 ft)	1,475	946

* Based on information from hammer database (GRLWEAP Version 2010)
* * *kip-ft* = one thousand foot-pounds. A *kip* is unit of force. It equals 1000 pounds-force

Assuming that each 16-inch steel pile will require a maximum of 1,475 strikes using the Delmag D36-32 hammer, the entire project will require an estimated (200 piles * 1475 strikes=) 295,000 total strikes. Based on the estimated blows per minute estimates provided by the GRLWEAP database, the Delmag D-36-32 and APE D-1000-42 diesel impact hammers are capable of delivering 17,280-25,440 blows per eight-hour working day under continuous operation. Based on an estimated 17,280 blows per day, the un-attenuated $SEL_{cumulative}$ is estimated at 217 dB at 9 meters (30 feet) from the pile, above the interim threshold for fish injury. The installation of 200 16-inch steel piles is therefore expected to require approximately 18 days. Mitigation employing approved aquatic sound attenuation devices is expected to reduce peak and root mean squared sound levels, and therefore the cumulative sound levels, to below the interim threshold for fish injury. With the use of sound attenuation devices such as a bubble curtain, assuming that it may provide a *minimum* 5 dB of noise reduction, the attenuated $SEL_{cumulative}$ is estimated at 212 dB at 9 meters from the pile, also above the interim threshold for fish injury.

Determination of Action Area Based on Noise Attenuation: The point where project noise attenuates to the baseline/ambient noise level underwater provides the maximum distance from the source where sound will be detectable. This distance is considered when determining the extent of the project action area for projects producing underwater noise. NOAA Fisheries and USFWS require identification of a project action area for Section 7 consultation under the federal ESA. With regard to underwater noise from pile driving, the Services consider the project action area to be the underwater area where peak pile driving noise is predicted to exceed the ambient noise level. The

project action area is therefore defined by the distance needed for the peak sound pressure level generated by pile driving activities to attenuate to a level that is equal to the ambient noise level. Predicting audibility (or detectability) with any certainty at distances beyond 500 to 1,000 meters is not possible. Consequently, the project action area based on pile driving noise should never be considered to extend more than 1,000 meters from the pile driving activity.

The proposed project assumes an ambient peak sound pressure level of 150dB. Without the use of sound attenuation techniques, the distance at which pile driving noise attenuates to the baseline/ambient underwater noise level is approximately 2,636 meters (8,648 feet).

With the use of sound attenuation devices such as a bubble curtain, assuming it may provide a *minimum* 5 dB of noise reduction, the *maximum* distance at which pile driving noise attenuates to the baseline/ambient underwater noise level is approximately 1,223 meters (4,012 feet). The "action area" for the proposed fender replacement project will therefore to extend than 1,000 meters (3,281 feet) from the pile driving activity upstream and downstream of the Tower Bridge of the Sacramento River.

Determination of Acoustic Impact Area: A similar process is used to estimate the acoustic impact area, which is based on the distance at which pile driving sound attenuates to a level that equals an injury threshold. In general, if the injury thresholds are not predicted to be exceeded beyond 10 meters from the pile, no further analysis is necessary and no injury to fish is indicated. If the thresholds are predicted to be exceeded beyond 10 meters from the pile, the acoustic impact area needs to be determined. In rivers and streams where this distance is greater than half the width of the channel, the acoustic impact area will be equal to twice the calculated distance at which the pile driving noise level attenuates to the injury threshold level multiplied by the width of the river.

Because the peak sound pressure level at 9 meters of 200 dB is less than the 206-dBpeak injury threshold, it is not necessary to calculate the distance to 206 dB threshold for the proposed project. No further analysis is necessary and no injury to fish is indicated.

The distance at which the pile driving noise attenuates to the 187 dB SELcummulative threshold is approximately 170 meters. With the use of sound attenuation devices such as a bubble curtain, assuming it may provide a *minimum* 5 dB of noise reduction, the *maximum* distance at which the pile driving noise attenuates to the 187 dB SELcummulative threshold is approximately 79 meters (260 feet).

In order to reduce potential sound impacts to special status fish species, all impact pile driving of 16-inch diameter steel piles will be performed behind a NMFS-approved aquatic sound attenuation device that reduces transmission of sound through the water. Aquatic sound attenuation devices that may be approved by NMFS include: 1) un-confined air-bubble curtain; 3) de-watered attenuation casing or confined air bubble curtain, or 3) de-watered cofferdam. Each of these attenuation devices

are methods to reduce the transmission of sound through water are based on the principle that air provides an effective barrier to sound propagating through water due to the difference in density between air and water. “Cushion blocks” may also be used to reduce the noise generated through the pile:

Air Bubble Curtain (Un-confined): Air bubble systems employ a compressor and perforated hose or pipe system which releases large quantities of air into the water surrounding the pile, creating a bubble screen that inhibits the propagation of sound from the pile. An air bubble curtain used on a steel or concrete pile with a maximum cross-section dimension of 24 inches or less will provide about 5-30 dB of noise reduction. The unconfined air bubble curtain is the least expensive means of placing a wall of air around a source, however the bubbles are subject to horizontal movement under high currents.

De-Watered Attenuation Casing: Attenuation casings consist of hollow steel shells encompassing the piles being driven. This involves vibrating in a steel pile that is larger than the pile to be driven (sleeve). The casing is then either de-watered or equipped with an air bubble curtain between the pile and the casing prior to pile driving. It is expected that underwater sound produced during the driving of temporary steel pile-casings with a vibratory hammer will not exceed levels that result in injury or mortality of special status fish species. The casing is placed around the pile being driven from the sediment surface to a few feet above the surface waterline. If the casing is de-watered, the curtain of air around the sound must be perfect (no gaps or holes in the curtain). Attenuating casings equipped with air bubble curtain between the pile and the casing are sometimes referred to as “confined” air bubble curtains. Confined air bubble curtains employ a casing installation which surrounds the pile and keeps the bubbles in place and are typically used in area of high flow or tidal influence to essentially trap the sound in the region around the pile.

Confined air bubble curtains can provide *25-30 dB of noise reduction*. The casing must be of sufficient strength to withstand the loads from installation, removal, water and earth pressures. Attenuation casings are similar to cofferdams in that they isolate the work area from the water column; however, because isolation casings have a smaller footprint, they cannot be used to isolate large areas. In addition, because the air space is smaller between the pile and the casing, isolation casings do not have as much attenuation value as cofferdams. Dewatered isolation casings generally can be expected to provide attenuation that is at least as great as the attenuation provided by air bubble curtains.

De-Watered Cofferdam: Cofferdams can be used to isolate the piling from the surrounding water column. Cofferdams typically are dewatered to isolate the piling from the water, which attenuates sound by providing an air space between the exposed pile and the water column. Their effectiveness is significantly reduced if the water is left inside. Cofferdams that have

been dewatered down to the mud line substantially reduce underwater pile driving sound and are the best isolation that can be provided, providing *15-35 dB of noise reduction*. If the cofferdam is dewatered, CDFW-approved dewatering and fish salvage protocols need to be implemented. Cofferdams that are not dewatered also can be used, but they provide only limited attenuation. Additional attenuation can be achieved by using a bubble curtain inside a cofferdam, if the cofferdam cannot be effectively dewatered.

Cushion Blocks: Cushion blocks are blocks of material that are used with impact hammer pile drivers. They consist of blocks of material placed atop a piling during pile driving to minimize the noise generated while driving the pile. Materials typically used for cushion blocks include wood, nylon, and micarta blocks. Other materials also may be used.

Studies conducted by the Washington State Department of Transportation indicate the following reductions in sound pressure levels with various cushion block types:

- Wood – 11 to 26 dB
- Micarta – 7 to 8 dB
- Nylon – 4 to 5 dB

Cushion blocks can be used in conjunction with other BMPs, such as air bubble curtains, cofferdams, and isolation casings, to provide attenuation that is additive to the noise reduction provided by these systems.

Using any of these sound attenuation devices, elevated sound levels generated by pile driving are expected to travel through the ground and streambed. Sound flanking occurs when a pressure wave travels down the pile, is transmitted into the soil, and then travels back up through the soil and into the water column. Although below the level of physical injury, special status fish species could be exposed to high pressure sound waves travelling through the streambed. Special status fish species may be present in wetted habitats immediately upstream and downstream of the aquatic sound attenuation device. The degree to which an individual special status fish species may be affected by high pressure sound waves is dependent on many variables including size of fish, peak sound pressure, frequency, etc.

It is unknown how much transmission loss occurs within the soil – the assumption is that it is greater than what occurs in water or air due to the denseness of the soil. It is known that soil type (density and composition) can affect transmission loss. It is impossible to predict what the transmission loss in soil will be and what the sound level will be at when it enters the water column. The WSDOT has monitored the transmission loss through soil for piles that have been driven in the dry; adjacent to or within the OHWM (and behind a de-watered cofferdam) of a river. This includes H-piles, 16-inch steel, and 72-inch steel piles. In all cases, the pile installation did not exceed the current thresholds

(*Biological Assessment Preparation for Transportation Projects - Advanced Training Manual - Chapter 7 – Noise Impact Assessment, February 2015*).

Effects on special status fish species during the driving of steel piles with an impact hammer in conjunction with an approved sound attenuation devices are expected to range from a stress response to no response.

Effects of De-Watering Project Area

The primary purpose of a cofferdam is to hold out water and unstable soil from the construction area, and thereby, allow in-the-dry construction of the permanent structure below the water line. *If determined to be necessary*, temporary sheet-pile cofferdams may be installed to contain work around each of the existing piers. Temporary cofferdams are not expected to impede the passage of fish up or downstream of the action area or to significantly impede the flow of the Sacramento River. De-watering activities would be expected to occur following sheet-pile installation during the initial phase of construction

Any temporary sheet-pile cofferdam will be installed during the initial phase of construction each season or during the initial phase of construction at each pier. Due to the fact that de- watering the area inside the cofferdam requires continuous pumping to maintain the de-watered area, and because a temporary cofferdam is not designed to withstand expected winter high flows and possible flood conditions, it is unfeasible for temporary sheet-pile cofferdams to be left in place between construction seasons. It is assumed that any temporary cofferdams will be installed at one pier, the necessary fender replacement construction activities will be implemented, and then the temporary cofferdam will be completely removed at one pier before constructing the temporary cofferdam and implementing project construction activities at the second pier.

If temporary sheet-pile cofferdams are used to conduct project construction activities or used as a sound-attenuation device, the installation of sheet piles to isolate the work area from the water column would result in the temporary loss of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the area behind the temporary cofferdams. The installation of sheet pile cofferdams and subsequent de-watering would result in a maximum *temporary* loss of approximately 11,712.24 square feet (0.27 acre) of substrate habitat and approximately 175,683.6 cubic feet (6,506.8 cubic yards) of water column habitat in the Sacramento River.

If de-watering activities are conducted, the operations may involve the release of pumped water from cofferdams into receiving waters. Although specific details regarding this activity have not been presented at this time, it is assumed that turbidity is most probably the highest priority pollutant of concern needing to be addressed. To mitigate for this, the de-watering process would most likely involve filtering and/or treating pumped water prior to discharge into the Sacramento River. Guidance provided by the Central Valley RWQCB has indicated that this type of operation is typically described

in the 401 Permit, which includes monitoring requirements and may include operational constraints. Additional discussions regarding de-watering and permitting can found in sections throughout this report.

Fish relocation at the potential project de-watering sites will be conducted with electroshocking gear, seining gear, or dip nets by qualified biologists. Water in the de-watered areas behind temporary cofferdams will then be removed using screened pumps. When stream habitats have been sufficiently dewatered, relocation efforts will continue until all fish have been removed from the dewatered reach. By removing fish from the stream reaches within the construction areas, the project is expected to significantly reduce the number of juvenile anadromous salmonids and other special status fish species that are injured or killed during the summer work season. In the absence of fish relocation, special status fish species would be exposed to dewatering, thermal stress, desiccation, physical injury from construction equipment and may be exposed to elevated sound levels during pile driving.

Despite these measures, some mortality of fish is likely at each de-watered site due to injury from relocation methods (seining or electrofishing), stress related to handling, and individual fish eluding capture. These latter fish will die when the work areas are dewatered. Mortality associated with fish relocation activities is expected to be low. To minimize impacts during fish collection and relocation, Caltrans proposes to use only experienced biologists, approved by NMFS and the CDFW. Fish will be relocated to suitable habitats within the action area but outside of the construction area (those areas within the action area that are beyond the maximum distance at which the pile driving noise is expected to attenuate to the 183-187 dB $SEL_{cumulative}$ threshold , approximately 418 meters (1,371 feet) from pile driving activities**)**. Based on review of up-to-date fish relocation techniques and protocols, unintentional mortality of juvenile fish is not expected to exceed three percent of the fish collected. Biologists with electrofishing experience and skill can reduce injury and mortality rates to near one percent.

During the potential dewatering and fish relocation phase (during the in-water work window of July 1 to September 30), special status fish species may be expected to be present at each stream de-watering site:

- Juvenile steelhead may be present but densities are expected to be low. Adult steelhead are not expected to be present
- Juvenile Chinook salmon may be present but densities are expected to be low. Adult Chinook salmon may be present but densities are expected to be very low
- Juvenile, sub-adult, or adult green sturgeon may be present, but densities are expected to be low.
- Juvenile Delta smelt may be present but densities are expected to be low. Adult Delta smelt are not expected to be present
- Adult and juvenile longfin smelt may be present but densities are expected to be very low
- Juvenile Sacramento splittail may be present but densities are expected to be low.

Adult splittail are not expected to be present.

Effects of Riparian Vegetation Removal

When streamside vegetation is removed, summer water temperatures typically increase in proportion to the increase in sunlight that reaches the stream surface. Increases in solar radiation to stream reaches may also change aquatic species composition, increase algal biomass and alter invertebrate communities. Primary elements of habitat for special status fish species and other aquatic species such as large woody debris, pool and riffle formation, and food inputs may also to be impacted by the riparian vegetation removal. In addition, removal of riparian vegetation can change local microclimate, soil moisture, groundcover, and susceptibility to bank erosion, and influence the re-establishment of vegetation.

Removal of riparian vegetation along the banks of the Sacramento River within the ESL is not expected to occur as a result of the proposed project. Construction contractors will enter the action area by barge and no construction activities, access, staging, or disposal areas are proposed to occur above the OHWM of the Sacramento River. Therefore no adverse effects to special status fish species or other aquatic species due to increased water temperature or increased solar radiation inputs in the Sacramento River are expected to occur as result of the proposed project.

Effects of Mobilization of Sediment from Construction Activities

Suspended and deposited fine sediment can adversely affect rearing and spawning habitat for special status fish species, if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas. The level of disturbance also may cause juveniles to abandon protective habitat or reduce their ability to detect predators, potentially increasing their vulnerability to predators. Increased levels of fine sediment can also adversely affect spawning habitat and other in-stream habitat features utilized by special status fish species within the action area by covering or degrading the quality of gravel riffles, and reducing cover for juvenile fish by filling-in pools and the interstitial spaces of gravel, cobble, and boulder substrates.

Within the action area, sediment originating from construction activities may be deposited in The Sacramento River. Several activities associated with construction of the project may result in an increase delivery of sediment to streams in the action area. These include in-channel work such barge operation, installation and removal of cofferdams (if used), and pile removal and installation:

Mobilization of Sediment from Removal of Existing Timber Piles: The removal of the existing timber piles using a vibratory extractor has the potential to temporarily disturb the streambed and generate sediment plumes

Mobilization of Sediment from Barge Operation: The construction barge(s) is proposed to be anchored to (tied against) the existing piers or temporary cofferdam to be kept stationary during construction activities. Four anchors ("spuds" one at each corner of the barge) are also typically used for additional stabilization. In addition, the barge operation requires a minimum water depth of 24 inches and might periodically come in contact with the bottom of the channel. The placement of the barge anchors and the possibility of the barge coming in contact with the bottom of the channel have the potential to temporarily disturb the streambed and generate small sediment plumes.

Mobilization of Sediment from Installation of New Piles: If new piles are installed without the use of a temporary cofferdam, the installation of sheet piles using an impact hammer (steel piles, alternatives 1A and 1B) or a vibratory hammer (timber or plastic piles, alternatives 2 and 3) has the potential to temporarily disturb the streambed and generate sediment plumes.

Mobilization of Sediment from Installation and Removal of Temporary Sheet Pile Cofferdam: If temporary sheet-pile cofferdams are deemed necessary, the installation of sheet piles using a vibratory hammer and the subsequent removal of sheet piles with a vibratory extractor at the conclusion of construction activities has the potential to temporarily disturb the streambed and generate sediment plumes.

Although increased amounts of sediment input to habitat for special status fish species could be generated during project construction, sediment quantities have not been estimated by Caltrans for this analysis. Considering the limited amount of streambed area that would be disturbed by the proposed project, any adverse effect to the special status fish species or their habitat due to suspended and/or deposited fine sediment is expected to be minimal, if any.

Mobilization of Sediment: Effects on Spawning Habitat: Moderate, but short-duration temporary increases in turbidity are expected to occur during the installation and subsequent removal of temporary sheet-pile cofferdams around each pier or by the placement and removal of any anchoring system used for construction barges. Sediment input by project construction has the potential to degrade existing spawning habitat conditions in the action area, if any exists. Fine sediments input associated with project construction could reduce the permeability of gravels, inter-gravel flow, and the availability of dissolved oxygen for developing embryos, and interfere with emergence success by occluding interstitial pore space. Laboratory studies have found an inverse relationship between fine sediment and fry survival, with decreases of 3.4 percent survival for each one percent increase in fine sediment.

The Sacramento River at the Tower Bridge on SR-275 does not appear to provide appropriate spawning substrate for green sturgeon, steelhead or Chinook salmon. Each of these species requires relatively fast moving water and gravel, cobble, or boulder substrates for spawning; these types of substrates are not available in the Sacramento River within the project ESL. Adult steelhead,

Chinook, and green sturgeon entering the action area spawn primarily upstream of the action area. Project activities with the potential to generate sediment have been timed to avoid spawning runs of special status fish species. Therefore adverse effects to spawning habitat for these species resulting from suspended and/or deposited fine sediment is not expected to occur.

Delta smelt spawning occurs in sloughs and shallow edge areas in the delta and the Sacramento and Sacramento River downstream of Rio Vista, in the Cache Slough/ Sacramento Deepwater Ship Channel Complex. Spawning has also been reported in Suisun March and the Napa River. After hatching Delta smelt larvae are dispersed throughout low-salinity habitats, generally moving into Suisun Bay, Montezuma Slough, and the lower Sacramento River below Rio Vista as they mature. The Sacramento River within the project ESL is unlikely to be used as spawning habitat for the Delta smelt. Project activities with the potential to generate sediment have been timed to avoid spawning runs of special status fish species. Therefore adverse effects to spawning habitat for this species resulting from suspended and/or deposited fine sediment is not expected to occur.

Sacramento splittail spawning habitat includes the natural and newly restored floodplainsof the Cosumnes River, managed floodplains such as the Yolo and Sutter bypasses, and disjunct segments of floodplain adjacent to the Sacramento and San Joaquin rivers and tributaries.

There are indications, based on presence of larvae and juveniles, that spawning in the Sacramento River occurs relatively far upstream at Colusa, therefore spawning habitat for the Sacramento splittail is inferred to be present in the Sacramento River within the project ESL. Project activities with the potential to generate sediment have been timed to avoid spawning runs of special status fish species. Therefore there is a potential for adverse effects to spawning habitat for this species resulting from suspended and/or deposited fine sediment.

In the Sacramento River, longfin smelt are thought to spawn from slightly upstream from Rio Vista (on the Sacramento River in the Delta) including the Cache Slough region and Medford Island (on the San Joaquin River in the Delta) downstream through Suisun Bay and Suisun Marsh. The Sacramento River within the project ESL is unlikely to be used as spawning habitat for the longfin smelt. Project activities with the potential to generate sediment have been timed to avoid spawning runs of special status fish species. Therefore adverse effects to spawning habitat for this species resulting from suspended and/or deposited fine sediment is not expected to occur.

Mobilization of Sediment: Effects on Life Stages: Construction activities are known to cause temporary increases in water turbidity. Short-term increases in turbidity could occur during construction.

High levels of turbidity and suspended sediment in the action area may affect adult and special status fish species by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency, reduce growth rates, and increase plasma cortisol levels.

Even small pulses of turbid water will cause special status fish species to disperse from established territories, which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles.

Increased turbidity levels associated with the Tower Bridge fender replacement project are not expected to physically injure special status fish species or result in adverse behavioral effects. Moderate, but short-duration temporary increases in turbidity are expected to occur during the removal of existing timber piles, if installation and subsequent removal of temporary sheet-pile cofferdams around each pier is determined to be necessary, by the placement and removal of any anchoring system used for construction barges, and during the installation of new piles if the new piles are not installed behind a temporary cofferdam. These levels will likely result in some limited behavioral effects, such as temporarily reduced feeding efficiency of special status fish species in the action area. These behavioral changes are not expected to cause mortality or decrease the probability of individual juvenile or adult special status fish species survival within the action area.

Effects of Contaminants/Toxic Chemicals

The proposed project could involve the storage, use, or discharge of toxic and other harmful substances near streams and other water-bodies that could result in contamination of these water-bodies and potentially affect fish and other aquatic organisms. Potential impacts range from avoidance of the project site to mortality, which could occur through exposure to lethal concentrations of contaminants or exposure to non-lethal levels that cause physiological stress and increased susceptibility to other sources of mortality (e.g., predation and disease). Project activities that could result in the accidental or unintentional runoff or discharge of toxic materials and other harmful substances to streams include the following:

- Potential accidental spill of petroleum products
- Operation of vehicles and equipment in or adjacent to stream channels or drainages
- Storage of pavement, petroleum products, concrete, and other construction materials
- Discharge of water from construction areas
- Disturbance and mobilization of contaminants with adsorbed metals

The operation of construction barges, heavy equipment, cranes, vibratory and/or impact hammer rigs, and other construction equipment in or near the stream can result in accidental spills and leakage of fuel, lubricants, hydraulic fluids, and coolants. In addition, re-suspension of sediments with adsorbed metals during in-water construction potentially could lead to localized degradation of water quality and food resources. Re-suspended particulate material also could be transported to downstream locations as a result of transport by flow, thus leading to potential degradation of water quality and food resources beyond the immediate construction area.

Caltrans may use bentonite as a lubricant for pile placement and an accidental release of bentonite may occur. Bentonite is potentially lethal to fish. Sigler *et al*. (1984) reported that steelhead and Coho salmon show reduced growth rates or increased emigration rates when exposed to 125 to 175 mg/l bentonite. In addition to toxic chemicals associated with construction equipment, stream water that comes into contact with wet cement can adversely affect water quality by raising the pH of water, which may result in injury or death to special status fish species. Measures will be implemented that should minimize the potential for a spill.

The potential magnitude of biological effects resulting from these accidental, unintentional, or intentional actions depends on a number of factors, including the type, amount, concentration, and solubility of the contaminant; and the timing and duration of the discharge or channel disturbance. Contaminants can affect survival and growth rates, as well as the reproductive success of fish and other aquatic organisms. The level of effect depends on species and life stage sensitivity, duration and frequency of exposure, condition or health of individuals (e.g., nutritional status), and physical or chemical properties of the water (e.g., flow volume, temperature, and dissolved oxygen).

Disturbance and Direct Injury

Noise, vibrations, artificial light, and other physical disturbances can harass fish, disrupt or delay normal activities, or cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water-body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on fish would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating in or adjacent to the water-body. However, survival may be altered if disturbance causes fish to leave protective habitat (e.g., causing increased exposure to predators) or is of sufficient duration and magnitude to affect growth and spawning success. In the absence of mitigation, injury or mortality may result from direct and indirect contact with humans and machinery, materials being placed in the stream, and physiological stress.

Impacts on special status fish species migrating adults, spawning, and egg incubation will be avoided by limiting any in-channel construction to the season when these sensitive life stages are considered to be absent (July 1 to September 30), however, because of their potential year-round presence in the Sacramento River, juvenile special status fish species would be subject to potential harassment, injury, or mortality during work activities occurring in or near the stream channel. Most juveniles would be expected to move upstream or downstream of the immediate project area in response to disturbance. Displacement could affect survival by increasing the exposure of juveniles to predators and possibly increasing competition with other juveniles, especially if suitable rearing habitat is limited or not readily available.

Although juveniles are capable of actively moving away from disturbances, some juveniles may seek cover in active work areas, where they may be injured or killed by exposure to harmful levels of suspended sediment or other factors. Fry and small juveniles are at highest risk because of their tendency to hide in the substrate and reluctance to move away from protective near-shore habitat.

Short-term noise disturbance caused by construction equipment, including barge operations and the use of vibratory pile drivers and vibratory extractors, could occur during construction. The likely effects on fry and juveniles would be avoidance of habitat adjacent to the construction area. Effects, however, are not expected to rise to a level that result in injury to or direct mortality of fry or juveniles.

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over waterways, may alter behavior of animals that prey on fish (e.g., piscivorous birds, mammals, and fish) in adjacent and affected habitats or may make fish more visible to predators, thereby leading to increased mortality of fish through increased predation. Night-time work is not proposed as part of this project.

Effects on Critical Habitat

The Sacramento River within the ESL is designated critical habitat for the FESA-listed green sturgeon, Central Valley steelhead, Sacramento River winter run Chinook, Central Valley spring-run Chinook, and Delta smelt.

The primary constituent elements of critical habitat in the ESL are freshwater rearing habitat with water quantity and quality, natural cover, forage, and passage conditions supporting migration and rearing of the FESA-listed fish species. The Sacramento River at the Tower Bridge on SR-275 does not appear to provide appropriate spawning habitat for the FESA-listed special status fish species (sturgeon, steelhead, Chinook, Delta smelt). Critical habitat for FESA-listed species in the ESL includes the lateral extent of the channel up to the ordinary or mean high water elevation.

The proposed project may affect, but is not likely to adversely affect, designated critical habitat for the green sturgeon, Central Valley steelhead, Sacramento River winter run Chinook, Central Valley spring-run Chinook, and Delta smelt. Impacts on critical habitat of these FESA listed fish species would consist of temporary effects on the water column (water quality impacts). These impacts would be the same as those discussed above for special status fish species.

Effects on Essential Fish Habitat

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) Fisheries on activities that may adversely affect EFH. Important components of EFH are substrate;

water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity.

EFH for green sturgeon, Central Valley steelhead, Sacramento River winter run Chinook, and Central Valley spring-run Chinook could be affected by the project. Impacts on green sturgeon, Central Valley steelhead, Sacramento River winter run Chinook, and Central Valley spring-run Chinook EFH would be similar to the impacts on species and critical habitat discussed above regarding special status fish species

The following environmental conditions resulting from project implementation could affect green sturgeon, Central Valley steelhead, Sacramento River winter run Chinook, and Central Valley spring-run Chinook EFH:

- Sedimentation and turbidity
- Hazardous materials and contaminants in the Sacramento River
- Temporary loss of aquatic habitat due to temporary de-watering

Potential effects on EFH related to sedimentation and turbidity, hazardous materials and contaminants, and construction activities to isolate the work area from the water column would be temporary. Potential adverse environmental effects of the proposed project on EFH would be limited to temporary, localized, and minor increases in turbidity and suspended sediment. Potential adverse effects of temporarily increased fine sediment and turbidity on EFH will be avoided or minimized through implementation of all applicable BMPs and the SWPPP, which would substantially reduce or eliminate the potential for accidental spill and unintentional discharge of contaminants. Limiting in-channel construction to the July 1 – September 30 period will further avoid and minimize the potential for adverse effects on downstream habitats.

If temporary sheet-pile cofferdams are used to conduct project construction activities or used as a sound-attenuation device, the installation of sheet piles to isolate the work area from the water column would result in the temporary loss of aquatic habitat (substrate and water column) equal to the enclosed area and volume of the area behind the temporary cofferdams. The installation of sheet pile cofferdams and subsequent de-watering would result in a maximum *temporary* loss of approximately 11,712.24 square feet (0.27 acre) of substrate habitat and approximately 175,683.6 cubic feet (6,506.8 cubic yards) of water column habitat in the Sacramento River.

Special Status Wildlife Species

Giant Garter Snake

Habitat types found within the GGS's range that are not suitable GGS habitat include: larger rivers and other water bodies; wetlands with sand, gravel, or rock substrates; and riparian woodlands. No CNDDB records for this species occur within the vicinity of the project ESL, and larger rivers such as the Sacramento and American Rivers are not considered as suitable GGS habitat. The closest

CNDDB record for the GGS occurs approximately 3.6 miles north of the project ESL at a drainage canal in Natomas near Del Paso Road, based on the collection of a juvenile GGS in 1986. The GGS is therefore not expected to occur within the project ESL and is not expected to be affected by the proposed Tower Bridge fender replacement project.

Western Pond Turtle

Western pond turtles (WPT) were observed along the south bank of the Sacramento River within the project ESL during biological surveys. WPT requires aquatic habitat as well as upland habitat including near-water basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks, and upland sites with appropriate soils for egg-laying.

During construction activities constructed in aquatic habitat, WPT may be potentially affected similarly to special status fish species by underwater sound exposure, exposure to sediment or toxic chemicals, or by direct disturbance.

No data is currently available by which to assess criteria for injury to WPT from pile driving noise. Barotrauma research on sea turtles is available, but the extent to which this data may be applied to the WPT is unknown. However, all reptiles, including the WPT, have a single bone in the middle ear that conducts vibrations to the inner ear. The outer ear of turtles is connected directly to the inner ear by an almost straight rod. This analysis will assume that pile driving noise may result in the potential for physical injury to WPT similarly to fish of 2 grams or heavier (206 dBpeak and a SELcummulative level of 187 dB). Unlike sea turtles and fish, semi-aquatic turtles such as the WPT can readily move out of aquatic habitat in response to underwater noise. The effects on WPT are expected to be limited to avoidance behavior in response to noises, including pile driving, caused by construction personnel and equipment operating in or adjacent to the water-body

The un-mitigated installation of 16-inch steel piles with the use of an impact hammer (without the use of air bubble curtain, de-watered area, or other attenuation techniques) is expected to result in estimated peak sound level is below the interim threshold for fish/turtle injury.

The un-attenuated SELcumulative is estimated at 206 dB at 9 meters from the pile, equal to the interim threshold for fish injury. Mitigation employing approved aquatic sound attenuation devices is expected to reduce peak and root mean squared sound levels, and therefore the cumulative sound levels, to below the interim threshold for fish injury. With the use of sound attenuation devices such as a bubble curtain, assuming that it may provide a minimum 5 dB of noise reduction, the attenuated $SEL_{cumulative}$ is estimated at 201 dB at 9 meters from the pile, below the interim threshold for fish/turtle injury.

Several activities associated with construction of the project may result in an increase delivery of sediment to streams in the action area, and are discussed above under “special status fish species”. High levels of suspended solids may reduce feeding, and cause turtles to avoid some areas. The level

of disturbance also may cause juveniles to abandon protective habitat, reduce their ability to detect predators, potentially increasing their vulnerability to predators, or adversely affect aquatic foraging habitat and other in-stream habitat features utilized by turtles within the action area.

The proposed project could involve the storage, use, or discharge of toxic and other harmful substances near streams and other water-bodies that could result in contamination of these water-bodies and potentially affect aquatic organisms including WPTs. The project activities that could result in the accidental or unintentional runoff or discharge of toxic materials and other harmful substances to streams and their potential effects to WPT are the same as those identified and discussed above for “special status fish species”.

Noise, vibrations, artificial light, and other physical disturbances can harass turtles, disrupt or delay normal activities, or cause injury or mortality. For most activities, the effects on WPT would be limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment operating in the water-body. However, survival may be altered if disturbance causes turtles to leave protective habitat (e.g., causing increased exposure to predators) or is of sufficient duration and magnitude to affect growth and reproductive success.

Because of their potential year-round presence in the Sacramento River, adult and juvenile WPT would be subject to potential harassment, injury, or mortality during work activities occurring in or near the stream channel. Short-term noise disturbance caused by construction equipment, including barge operations and the use of vibratory pile extractors and/or vibratory pile drivers, could occur during construction. Most turtles would be expected to move upstream or downstream of the immediate project area in response to disturbance. Displacement could affect survival by increasing the exposure of turtles to predators. The likely effects on WPT would be avoidance of habitat adjacent to the construction area. Effects, however, are not expected to rise to a level that result in injury to or direct mortality of juvenile or adult WPT.

Temporary lighting of work areas to facilitate nighttime construction, especially at construction sites adjacent to or over waterways, may alter behavior of animals that prey on turtles in adjacent and affected habitats or may make turtles more visible to predators, thereby leading to increased mortality of turtles through increased predation. Therefore, night-time work is not proposed as part of this project.

Because the construction contractor will perform work from barges launched from their equipment facilities, all construction activities are expected to occur below the ordinary high mark of the Sacramento River; no access to the levee banks will be provided to the construction contractor and therefore non-aquatic habitat that may be potentially utilized by WPT (near-shore basking areas and potential egg laying substrates) is not expected to be affected by the proposed Tower Bridge fender replacement project.

Migratory Birds and Raptors

The Migratory Bird Treaty Act ("MBTA"; 16 USC §§ 703 - 711; 50 CFR Subchapter B) makes it unlawful to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Migratory birds are expected to occupy the project ESL and may be expected to nest within the project ESL in trees, snags, and shrubs, and on the ground or on existing structures (including bridges) between March 1st and August 15th.

The Tower Bridge was surveyed to determine the potential for migratory birds to use the structure for nesting. Evidence of cliff swallow nesting was apparent underneath the bridge deck, and several other species of migratory birds are known to use similar structures for nesting. No evidence of migratory bird nesting was apparent on either the existing fender system or on the existing piers.

Removal of riparian vegetation along the banks of the Sacramento River within the ESL is not expected to occur as a result of the proposed project. Construction contractors will enter the action area by barge and no construction activities, access, staging, or disposal areas are proposed to occur above the OHWM of the Sacramento River. Therefore no adverse effects to migratory birds are expected to occur as result of the proposed project.

Because avoidance and minimization measures will be implemented to ensure project compliance with the MBTA, the proposed project is not expected to result in the pursuit, take, or killing of any migratory bird, or any part, nest, or egg of any migratory bird.

Bats

The Tower Bridge was surveyed to determine the potential for bats to use these structures as day roosts, maternity roosts, or night roosts. Features appropriate for bat day roosting or maternity roosting such as expansion joints between bridge deck sections, or any structural features providing a ½" to 1" wide vertical gaps which are the most commonly used features for bat daytime and maternal roosts. Potential day-roosting and maternal roost sites do not appear to be available on this structure, and therefore no impacts to bat day roosts or maternity roosts are expected to occur. However, the bridge provide features (concrete abutments, concrete piers/bents) appropriate for night roosting.

Night-time work is not proposed as part of this project. Although daytime work will take place directly adjacent to the concrete piers and near the concrete abutments, the proposed Tower Bridge fender replacement project does not propose work on the actual piers or abutment and therefore, no impacts to bat night roosts are expected to occur.

Avoidance and Minimization Measures

Establish Environmentally Sensitive Areas: Additional direct and indirect impacts to special status biological resources, including wetland and SEZ resources, throughout the project area will be

avoided or minimized by designating these features outside of the construction impact area as "Environmentally Sensitive Areas" (ESAs) on project plans and in project specifications. ESA information will be shown on contract plans and discussed in the Special Provisions. All areas outside of the Tower Bridge fender replacement project ESL shall be considered as ESAs for biological resources. Contractor encroachment into ESAs will be prohibited (including the staging/operation of heavy equipment or casting of excavated materials).

Conduct Mandatory Environmental Awareness Training for Construction Personnel: Before any work occurs in the project area, the project proponent will retain a qualified biologist (familiar with the resources to be protected) to conduct a mandatory contractor/worker environmental awareness training for construction personnel. The awareness training will be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid and minimize effects to sensitive biological resources (e.g., jurisdictional waters, special-status species, roosting bats, nesting birds) adjacent to and within construction areas and the penalties for not complying with applicable state and federal laws and permit requirements. The biologist will inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the biological opinion or submitted to the project proponent, and other overseeing agencies (i.e., CDFW, USFWS, and NMFS), as appropriate.

The environmental training also will cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during project construction. The training also will include identifying the BMPs written into construction specifications for avoiding and minimizing the discharge of construction materials or other contaminants into jurisdictional waters.

Avoidance and Minimization of Impacts to Special Status Fish Species: In-Stream Work Window: USFWS' recommended in-water work window for avoiding effects to delta smelt in this segment of the Sacramento River is between August 1 and November 30. The NMFS recommended in-water work for avoiding effects to listed salmonids and green sturgeon in this segment of the Sacramento River is between July 1 and September 30. Due to the number of working days required and the feasibility of conducting in-water work during potentially high flows during the rainy season, Caltrans proposes that any work occurring below the OHWM of the Sacramento River within the project ESL, including barge operation, cofferdam installation and removal, and removal and installation of piles and the new fender system, shall occur between July 1 and September 30 of any construction season, unless earlier or later dates for in-channel construction activities are approved by CDFW, USFWS, and NMFS. By requiring contractors to adhere to these dates for in-channel construction, the project proponent will avoid and minimize project effects on sensitive life stages of special status fish species.

Avoidance and Minimization of Impacts to Special Status Fish Species: Aquatic Sound Attenuation Devices: This measure consists of furnishing, installing operating, maintaining and removing an aquatic sound attenuation system to reduce noise generated by driving piles in the water. Approved aquatic sound attenuation systems include:

1) Air bubble curtain used with attenuation casing (confined air bubble curtain).

With approval from the NMFS, USFWS and CDFW, the following aquatic sound attenuation systems may be used:

1) De-watered attenuation casing
2) De-watered cofferdam

The contractor will be required to submit working drawings and the supplement for sound attenuation system to the Caltrans Resident Engineer (RE) for approval in conformance with the provisions of Section 5-1.02 "Plans and Working Drawings", and shall include the following:

1) Complete details of the system including mechanical and structural details
2) Details of anchorage components, air compressors, supply lines, distribution manifolds, aeration pipes and frames
3) Details of proposed means of isolating noise-producing systems on the driving platform
4) Details of meters gauges, and recording devices
5) Details of the manufacturer's recommendations for the installation of the flow meters in conditions of laminar flow and non-laminar flow.

The supplement to the working drawings shall include the following:

1) Documentation of previous successful use of the system to be used for sound attenuation
2) Materials list including name of manufacturer and the source, model number, description, and standard of manufacture
3) Manufacturer's descriptive data and catalog cuts for all products proposed for the system including air compressors

The RE will be required to inspect the sound attenuation system for proper operation before each deployment and as necessary during deployment. Proper operation during deployment will be determined by the gauges in the monitoring system and by other methods determined by the RE. Air pressure and air flow meters and gauges will be calibrated by a private laboratory approved by the RE prior to use in the air bubble curtain system. The condition of the sound attenuation system will be monitored and daily inspection reports will be prepared during pile installation operations and no less than every other day during periods of no activity.

The approved sound attenuation system must be operating prior to beginning pile driving at any given pile location. If the attenuation system fails, pile driving shall immediately stop and may not resume at that location until it is again operating.

A sound attenuation system is not required for pile or casing installation using a vibratory hammer.

Pile driving equipment shall be isolated from the platform it is on. The isolation shall be such that noise from the pile driving operation is not transmitted through the platform to the water. The platform supporting the pile driving equipment is not required to be contained within the attenuation system

De-Watering Activities – Fish Relocation: After any water diversion structures are in place and before dewatering is initiated, qualified fish biologists who have authorization from NMFS will be on site to capture and relocate salmonids from areas to be dewatered. During dewatering, water will be incrementally diverted from the cofferdam, with diversion progressively increasing over a four-hour period in the following increments: 50%, 75%, 90%, and 100%. Incremental reduction in flow allows fish that elude initial capture to move to deeper habitats where they can be captured and relocated before affected stream segments are completely dewatered. The biologists will relocate fish to suitable habitat outside of the construction area. The methods of removal and relocation of fish captured during the dewatering of the construction areas will be implemented in close coordination with NMFS and CDFW.

De-Watering Activities – Water Quality: De-watering activities have the potential to create a turbid water condition that may exceed the acceptable limits defined in the Central Valley RWQCB (Regional Board) Basin Plan. In order to address this condition and prevent the potential discharge of turbid water into the Sacramento River, pumped water from de-watered areas may need to be filtered and/or treated. While this method may work, from a compliance standpoint, it could be unfeasible to implement during the construction phase. Ultimately, the Contractor will be responsible for employing an approved method that will ensure conformance with the water quality requirements and conditions of the approved 401 permit, issued by the Regional Board, prior to being discharged into the aforementioned receiving water.

Containment Measures/Construction Site Best Management Practices: The Contractor shall implement measures so as to contain construction related material, in manageable locations, and prevent debris from entering surface waters during in-water work and for construction operations outside of receiving waters.

BMPs utilized for erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters receiving waters. Areas where a disturbance of soil has occurred will be stabilized appropriately and approved by the Central Valley RWQCB prior to filing the Notice of Termination. BMP options and selected mitigation measures relating to in-water

work will be considered, evaluated, and dependent on factors such as field conditions, changes to construction strategies, constructability, and regulatory requirements in order to protect the beneficial uses of receiving waters to the maximum extent practicable. Early project coordination with the Central Valley RWQCB may be necessary to discuss BMP options, BMP deployment, and operational methods meant to achieve compliance with NPDES and 401 Permit requirements. The project design team may specify BMPs to be utilized during construction in addition to, or in place of, other temporary measures selected by the Contractor.

Compliance with all construction site BMPs, specified in the approved Water Pollution Control Program (WPCP) and any other permit conditions, is mandatory to minimize the introduction of construction related contaminants and sediment to receiving waters. In order to achieve this and reduce the potential for discharge, the Contractor shall follow all applicable guidelines and requirements in the 2010 Caltrans Standard Specifications (2010 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water. Project specific BMPs shall address (among other things) soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices and will be based on the best conventional and best available technology. Caltrans staff and the Contractor shall perform routine inspections of the construction area to verify that field BMPs are properly implemented, maintained, and are operating effectively and as designed. BMPs and mitigation measures selected must meet the standards and objectives to minimize water pollution impacts set forth in the 2010 CSS and shall include (but not be limited to) the following:

- Conduct all in-water work within streams that provide habitat for special status fish species (Sacramento River) between July 1 and September 30.
- Use only equipment in good working order and free of dripping or leaking engine fluids. Conduct any necessary equipment washing where water is prevented from flowing into MS4 drainage conveyance systems and receiving waters.
- In case of an accidental spill, an “emergency response plan” will be prepared and submitted to the NMFS and CDFW for review and approval at least 14 days prior to conducting any construction work. A spill prevention control and countermeasures plan will be onsite and in place to handle any topside spills. The plan will include strict onsite handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also will identify the parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the spill prevention and countermeasure plan.
- BMPs for spill containment measures (plastic sheeting, absorbent pads and/or other containment devices) will be utilized during all barge-mounted construction activities. BMPs will be deployed around and beneath all over-water or barge-mounted construction equipment. Supplemental equipment will be on-site to collect and remove any spills.
- For all construction activities, prevent discharge of turbid water to the Sacramento River by utilizing filter bags, diverting water to settling tanks or infiltration areas, or implementing

other comparable mitigation measures. Strategies utilized to address turbidity, involving in-water work, may vary and have not been determined at this time. However, the field methods implemented must be done so in a manner that is consistent with, and in conformance of, the water quality requirements of the approved 401 Permit issued by the Central Valley RWQCB.

Pile Removal BMPs: The purpose of the following BMPs is to control turbidity and sediments re-entering the water column during pile removal (removal of existing fender timber piles and removal of any temporary sheet pile cofferdams), and prescribe debris capture and disposal of removed piles and debris.

- Vibratory extraction is the preferred method of pile removal.
- Crane operator shall be trained to remove pile slowly. This will minimize turbidity in the water column as well as sediment disturbance.
- Operator to "Wake up" pile to break up bond with sediment.
- Vibrate to break the skin friction bond between pile and soil. Bond breaking avoids pulling out a large block of soil – possibly breaking off the pile in the process. Usually there is little or no sediment attached to the skin of the pile during withdrawal. In some cases material may be attached to the pile tip, in line with the pile.
- Extraction equipment shall be kept out of the water. A creosote release to the environment may occur if equipment (bucket, steel cable, vibratory hammer) pinches a creosoted piling below the water line. Piling must not be broken off intentionally by twisting, bending or other deformation. This practice has the potential for releasing creosote to the water column. Work surface on barge deck or pier shall include a containment basin for pile and any sediment removed during pulling. Upon removal from substrate the pile shall be moved expeditiously from the water into a containment basin. The pile shall not be shaken, hosed-off, stripped or scraped off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.
- Pulled pile shall be placed in a containment basin to capture any adhering sediment. This should be done immediately after the pile is initially removed from the water.
- Work surface and containment basin shall be cleaned by disposing of sediment or other residues along with removed piling in a manner complying with applicable federal and state regulations.

Limit Vegetation Removal: Removal of riparian vegetation along the banks of the Sacramento River within the ESL is not expected to occur as a result of the proposed project. Construction contractors will enter the action area by barge and no construction activities, access, staging, or disposal areas are proposed to occur above the OHWM of the Sacramento River.

Nesting Bird Avoidance:

<u>Bridge/ Structures Work</u>
The contractor shall take such measures as necessary to prevent disturbing portions of the bridge structure that will cause conflict between performing necessary work and nesting migratory birds.

Birds shall be allowed to nest on portions of the bridge where conflicts with construction are not anticipated. If contractors work does not conflict with bird nesting, then no further measures are required

If work interfering with bird nesting sites is proposed to occur between February 15th and August 31st, exclusionary devices such as netting shall be used to block access to bird nesting sites where work will be performed. Exclusionary devices shall be installed after August 31st, but before February 15th, and left in place until work is completed.

If contractors work on the bridge structures occurs between September 1st and February 14th, then no further measures are required.

If nesting birds cannot be excluded from areas conflicting with proposed construction activities, and work potentially interfering with active migratory bird nests is proposed to occur between February 15th and August 31st, then:

- A qualified biologist shall perform a pre-construction nesting bird survey. If active nests are found, project related work interfering with active migratory bird nests will not occur until Caltrans performs consultation with CDFW regarding appropriate action to comply with provisions of the Fish and Game Code of California, and the MBTA. If a lapse in project related work of fifteen days or longer occurs, another survey and, if required, consultation with CDFW will be required before the work can be reinitiated.

Roosting Bat Avoidance:

Bridges/Structures Work

The contractor shall take such measures as necessary to prevent disturbing portions of the bridge structure that will cause conflict between performing necessary work and day- roosting bats.

Bats shall be allowed to roost on portions of the bridge where conflicts with construction are not anticipated. If contractors work does not conflict with bat roosting, then no further measures are required.

If work interfering with known bat day-roosts or potential bat day-roosting structures is proposed to occur between February 15th and August 31st, exclusionary devices shall be used to block access to bat day-roosting sites where work will be performed. Exclusionary devices shall be installed after August 31st but before February 15th and left in place until work is completed.

(Optional) Prior to February 15th a temporary bat roost ("bat box") may be installed on the bridge structure to discourage the use of more marginal day roost sites on the structure.

If contractors work on the bridge structure occurs between September 1st and February 14th, then no further measures are required

If bat day-roosting areas cannot be excluded, and work potentially interfering with known bat day-roosts or potential bat day-roosting structures is proposed to occur between February 15th and August 31st, then:

- A qualified biologist shall perform a pre-construction roosting bat survey. If bat day- roosts are found, project related work interfering with bat day-roosts will not occur until Caltrans performs consultation with CDFW regarding appropriate action to comply with provisions of the Fish and Game Code of California, and California Code of Regulations. If a lapse in project related work of fifteen days or longer occurs, another survey and, if required, consultation with CDFW will be required before the work can be reinitiated.

Cultural Resources

Regulatory Setting

The term "cultural resources" as used in this document refers to all "built environment" resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966 , as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation [36 Code of Federal Regulations (CFR) 800]. On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, the Federal Highway Administration (FHWA), State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as CA Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet the National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

Affected Environment

A Historic Properties Survey Report (HPSR) was prepared for this project in September 2015. One historic property, the Sacramento River (Tower Bridge) Bridge (Bridge No. 22-0021), was identified within the project's area of potential effects (APE).

The proposed project would affect the Sacramento River (Tower Bridge) Bridge (Bridge No. 22-0021), which was listed in the National Register of Historic Places (NRHP) in 1982 at the state level of significance under Criterion A as a major link in U.S. 40, a historically important transcontinental route, and under Criterion C for its rare use of Streamlined Moderne architectural styling on a lift bridge, and as an outstanding expression of the social and architectural climate of the period. The fenders are considered character-defining features of the bridge and contribute to its eligibility.

No archaeological properties listed within the NRHP, California Historical Landmarks, California Inventory of Historic Resources, California Points of Historical Interest, or California Register of Historical Resources are present adjacent to the proposed project.

A search of Caltrans cultural files revealed that State Route 275, specifically the Tower Bridge, has been the subject of several routine maintenance and bridge rehabilitation projects, with no archaeological resources identified.

Environmental Consequences

Caltrans, in accordance with Section 106 Programmatic Agreement Stipulation X.B.1.b. and Attachment 5, has determined a Finding of No Adverse Effect with Standard Conditions – Secretary of the Interior's Standards (SOIS) is appropriate for this undertaking. Caltrans' Cultural Studies Office (CSO) has concurred with this finding. Joan Fine, who meets the Professionally Qualified Staff Standards in Section 106 Programmatic Agreement Attachment 1 as Principal Architectural Historian determined that the project will be constructed in a way consistent with the Rehabilitation Standards outlined in the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (1995), Weeks and Grimmer (SOIS). A copy of the SOIS is attached to the HPSR.

Avoidance and Minimization Measures

The project, which consists of removing and replacing the timber fender system with updated material, is consistent with the following Standards for Rehabilitation as outlined in the SOIS:

- ***SOISR 1: A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.***

The Tower Bridge will retain its original use.

- ***SOISR 3: Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.***

The proposed project does not include elements that would create a false sense of history.

- ***SOISR 6: Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.***

The proposed project calls for the removal and replacement of the timber fender system – a character defining feature of the bridge. Replacement of the timber fender system is required due to the deteriorated nature of the existing materials. According to an above water investigation of the fender system on 2012, due to the age and condition of the piles, framing and sheathing, repairs are not practical nor effective. Full replacement is required to restore the fenders to the required service condition. Please see Appendix A of the SOIS Action Plan for the Bridge Inspection Report.

The proposed project will not adversely affect the historic character of the bridge. The proposed project will remove historic material (timber piles, wales, and sheathing). The removal of historic material is unavoidable due to the degree of decay. The alteration of features will be minor since the replacement of plastic waling and sheathing will be aesthetically treated so as to appear as timber (will have a wood grain pattern).

Although a character defining feature, the fender system was given a less significant (L) ranking, meaning that it still conveys sense of time and place, but to a lesser degree. According to the criteria matrix for ranking features (page 2 of Attachment C), the fender system: is standard historic fabric (commonly found during period of significance); scores low at conveying significance; scores medium for public benefit; is a primary, salient feature in regards to visibility and transparency; and is significantly altered in regards to integrity.

The replacement fender system will match the old in design and the plastic wales and sheathing will be aesthetically treated to appear as timber. Please see Appendix B of the SOIS Action Plan for the Planning Study and Typical Fender Plan.

- ***SOISR 9*: *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale and architectural features to protect the historic integrity of the property and its environment.***

See discussion for SOISR 6 above. The proposed work will be differentiated from the old by the use of different materials (steel and plastic, rather than timber). The proposed work will match the

original design and occupy the same footprint as the existing fender system, thus it will be compatible with the massing, size, scale and architectural features of the Tower Bridge.

Hazardous Waste

Affected Environment

An Initial Site Assessment (ISA) was prepared in January 2015. Based on the Fender System As-Built for the Tower Bridge (dated 1945), all sheathing and the top planking lumber is untreated Douglas fir. All pilling and all other lumber are Douglas fir treated with creosote.

Environmental Consequences

The treated wood waste removed from the existing fender system will be collected by the contractor and disposed of in an appropriate landfill (Class 1 facility). The nearest Class 1 landfill facilities include the following:

Placer County: Western Regional Landfill at 3195 Athens Road in Lincoln, CA
Solano County: Hay Road Landfill at 6426 Hay Road near SR 113 in Vacaville, CA
Yuba County: Ostrom Road Landfill at 5900 Ostrom Road in Wheatland, CA

Temporary storage will also be needed for the treated wood waste before transfer to a Class 1 landfill facility. The temporary storage will be located at the contractor's yard.

Avoidance and Minimization Measures

Include Standard Special Provisions (SSP) 14-11.09 Treated Wood Waste in the project specifications.

"Best Management Practices" will be implemented during geotech drilling to prevent possible equipment leaks or drilling fluid spillage. The barge deck will be draped as deemed appropriate with plastic tarps, absorption mats and jute waddle dikes. In the event of an unexpected fluid spill, the driller will immediately stop the drilling, contain the escaping fluids on the barge and mitigate any further potential fluid loss. The contained fluids will be trapped in absorbent materials. These materials will be deposited in 55-gal. drums for lawful disposal.

Water Quality

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the

discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. A point source is any discrete conveyance such as a pipe or a man-made ditch. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (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 United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

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

that order. The Guidelines also restrict permitting activities that violate 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. The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall." In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the 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 (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, 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 storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 under 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 (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1, 2013. The permit has three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (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, Caltrans 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 Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices (BMPs). The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that 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. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must

comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

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

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (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.

Affected Environment

The project involves work within the Sacramento River and lies within the following planning watershed:

Planning Watershed 5510000000

Hydrologic Sub-Area #	510.00
Regional Board	Central Valley
Hydrologic Region	Sacramento River
Hydrologic Unit	SACRAMENTO DELTA
Hydrologic Area	undefined
Hydrologic Sub-Area	undefined

The project is also within a designated high risk receiving watershed and lists the following TMDLs associated with the Delta Waterways (Northern Portion):

Delta Waterways (northern portion)	Chlordane	6795 Acres	TMDL required
Delta Waterways (northern portion)	Chlorpyrifos	6795 Acres	Being addressed with USEPA approved TMDL
Delta Waterways (northern portion)	DDT (Dichlorodiphenyltrichloroethane)	6795 Acres	TMDL required
Delta Waterways (northern portion)	Diazinon	6795 Acres	Being addressed with USEPA approved TMDL
Delta Waterways (northern portion)	Dieldrin	6795 Acres	TMDL required
Delta Waterways (northern portion)	Group A Pesticides	6795 Acres	TMDL required
Delta Waterways (northern portion)	Invasive Species	6795 Acres	TMDL required
Delta Waterways (northern portion)	Mercury	6795 Acres	TMDL required
Delta Waterways (northern portion)	PCBs (Polychlorinated biphenyls)	6795 Acres	TMDL required
Delta Waterways (northern portion)	Unknown Toxicity	6795 Acres	TMDL required

Per the Regional Water Board online report posting, the following TMDLs (referenced above), have been adopted and have sources identified:

TMDL/*Source Identified*	**Year TMDL Adopted**
Chlordane	2011
Agriculture	
Chlorpyrifos	2007
Agriculture	
Urban Runoff/Storm Sewers	
DDT (Dichlorodiphenyltrichloroethane)	2011
Agriculture	
Diazinon	2007
Agriculture	
Urban Runoff/Storm Sewers	
Dieldrin	2011
Agriculture	
Group A Pesticides	2011
Agriculture	
Mercury	2009
Resource Extraction	

Caltrans is not a stakeholder for, or contributor of, any of the TMDLs listed above. Proposed dewatering operations will focus on mitigating for turbidity and is not anticipated to encompass the TMDL pollutants listed in the above table.

The following beneficial uses are indicated for the Hydraulic Sub-Area No. identified (HSA 510):

SURFACE WATER BODIES AND BENEFICIAL USES

	SURFACE WATER BODIES (1)	HYDRO UNIT NUMBER	MUN	AGRI-CULTURE		INDUSTRY			RECREATION			FRESHWATER HABITAT (2)		MIGRATION		SPAWNING		WILD	NAV
				AGR		PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN			
			MUNICIPAL AND DOMESTIC SUPPLY	IRRIGATION	STOCK WATERING	PROCESS	SERVICE SUPPLY	POWER	CONTACT	CANOEING (1) AND RAFTING	OTHER NONCONTACT	WARM	COLD	WARM (3)	COLD (4)	WARM (3)	COLD (4)	WILDLIFE HABITAT	NAVIGATION
52	YOLO BYPASS (8)	510.		E	E				E		E	E	P	E	E	E		E	

Water bodies, associated with the receiving waters listed, that have TMDLs by use of the tributary rule are not anticipated to be the responsibility of Caltrans to address through the use of permanent treatment BMPs for this project.

The project lies within the City of Sacramento's Municipal Separate Storm Sewer System (MS4) Phase I permit boundary and Yolo County's Phase II permitted area (City of West Sacramento). Accordingly, Caltrans is required to adhere to both jurisdictional MS4 permits.

Environmental Consequences

No drinking water reservoirs were identified, where potential spills from operations within Caltrans right-of-way could enter, and no significant water quality impacts are anticipated. With that understanding, while the threat to water quality appears to be low, impact minimization and avoidance is dependent upon the appropriate and proper deployment of construction site BMPs and periodic field inspections (meant to evaluate BMP effectiveness) by the Contractor.

Avoidance, Minimization, and Mitigation Measures

In order to prevent the receiving water bodies from pollution arising from construction activities and/or operations related to this project, the following actions are recommended:

1. As previously mentioned in this report, the Central Valley RWQCB (Regional Board) has determined that conditions relating to proposed de-watering activities will be included within the 401 Permit. Additionally, the Contractor will be responsible for preparing a de-watering/discharge monitoring plan that must be submitted and approved by the Regional Board prior to beginning de-watering operations. With that understanding, coordination with Regional Board staff (by Caltrans and the Contractor) may be needed in order to more clearly identify required documentation and submittal material necessary for review. This process may also involve discussions relating to monitoring and reporting requirements in order to obtain final approval.

   Non-Standard Special Provisions (NSSP) will need to be prepared and approved prior to PS&E, and additional de-watering requirements (not previously mentioned) may be necessary, due to the nature of work, project visibility, perceived environmental threat, and receiving water sensitivity (as deemed by the Regional Board).

2. If temporary storage of equipment and material on State property is permitted by the Engineer, all soil disturbance created within the contract limits or at the Contractor's secured area(s), shall be accounted for in the total DSA estimate.

3. Caltrans' Storm Water Management Plan (SWMP), Project Planning and Design Guide (PPDG) Section 4, and Evaluation Documentation Form (EDF) provide detailed guidance in determining if a specific project requires the consideration of permanent Treatment BMPs. Line Item BMPs may be required during the Plans Specifications and Estimate (PS&E) phase of the project.

4. The project shall adhere to the conditions of the Caltrans Statewide NPDES MS4 Permit Order No. 2012-0011-DWQ, CAS No. 000003, and all adopted amendments under this permit. The project area also falls within Sacramento County's Phase I permitted area and Yolo County's designated Phase II permitted area (City of West Sacramento). As such, additional NPDES Permit requirements may apply.

5. The completion of a Caltrans approved Water Pollution Control Program (WPCP) is anticipated, which will specify the level of temporary pollution control measures for the project; however, a Storm Water Pollution Prevention Plan (SWPP) may be required by the Regional Board, due to the nature of work proposed and the perceived threat to water quality.

6. Adherence to the following is recommended to prevent receiving water pollution as a result of construction activities and/or operations from this project:

   a. Follow all applicable guidelines and requirements in the 2010 Caltrans Standard Specifications (2010 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.

   b. Consideration should be given to 2010 CSS, Section 13-4 (Job Site Management), to control potential sources of water pollution before it encounters any storm water system or watercourse. It requires the Contractor to control material pollution, manage waste and non-storm water at the construction site.

   c. The Contractor prepared WPCP (or SWPPP, if required) shall incorporate appropriate temporary construction site BMPs to implement effective handling, storage, use, and disposal practices during construction activities.

   d. If any work is proposed on the bridge deck, then existing drainage facilities shall be identified and protected by the application of appropriate Construction Site BMPs.

7. To prevent the potential discharge of turbid water into the Sacramento River that may result from temporary de-watering activities, water removed from the de-watered areas will be filtered and/or treated in a manner to ensure conformance with the water quality requirements of the approved 401 permit, issued by the Central Valley RWQCB, prior to being discharged into the aforementioned receiving waters.

8. Containment Measures/Construction Site Best Management Practices: The Contractor shall implement measures so as to contain construction related material, in manageable locations, and prevent debris from entering surface waters during in-water work and for construction operations outside of receiving waters. Please refer to the biological resources avoidance and minimization section for specifics regarding this measure.

In addition, in order to reduce and minimize potential impacts on Hydrology and Water Quality, to a level that is considered less than significant, it is recommended that the following mitigation measures be incorporated and implemented during the course of the project.

1. The project shall incorporate appropriate pollution prevention best management practices (BMPs) and comply with the standard requirements of Caltrans' Statewide National Pollution Discharge Elimination System (NPDES) Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003 and the appropriate County Municipal Separate Storm Sewer System Phase I/II Permit (Sacramento County and Yolo County, respectively).
2. Any soil disturbance, created within the contract limits or at the Contractor's secured area(s), is required to be reviewed and approved by Caltrans Environmental staff and accounted for in the total Disturbed Soil Area (DSA) estimate. No ground disturbance is anticipated.
3. Follow all applicable guidelines and requirements in the 2010 Caltrans Standard Specifications (2010 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water.
4. Attention should be given to 2010 CSS, Section 13-4 (Job Site Management), to control potential sources of water pollution before it encounters any storm water system or watercourse.
5. The effective management and implementation of an approved WPCP is required to address the appropriate use of temporary construction site BMPs and for the purposes of implementing effective BMP handling, storage, and disposal practices during construction activities.
6. Project activities that may involve bridge access will require existing drainage facilities to be identified and protected by the application of appropriate Construction Site BMPs.
7. The exact details relating to de-watering activities is not yet know; however, if the Contractor proposes a process that involves pumping water from de-watering areas and discharging into receiving waters, certain conditions and requirements will apply. First and foremost, discharges into receiving waters must be done so in a manner that ensures conformance with the water quality requirements of the approved 401 permit, issued by the Central Valley RWQCB (Regional Board), and the Regional Board Basin Plan. Other jurisdictional and non-jurisdictional permit requirements may also apply, in addition to Caltrans MS4 Permit. Discussions with the Regional Board will be necessary, which will most likely include Caltrans and the Contractor, in order to clarify permitting requirements for proposed de-watering activities.
8. Mitigation measures shall be implemented to contain construction related material, in manageable locations, and prevent debris from entering surface waters during in-water work and for any construction operations outside of receiving waters.

Air Quality

This project is exempt from all air quality conformity analysis requirements per Table 2 of 40 CFR §93.126, subsection "Safety" No further analysis is required.

Construction Impacts

The proposed project may result in the generation of short-term construction-related air emissions, including fugitive dust and exhaust emissions from construction equipment. Fugitive dust, sometimes referred to as windblown dust or PM_{10}, would be the primary short-term construction impact, which may be generated during excavation, grading and hauling activities. However, both fugitive dust and construction equipment exhaust emissions would be temporary and transitory in nature.

Avoidance and Minimization Measures

Caltrans Standard Specifications, a required part of all construction contracts, should effectively reduce and control emission impacts during construction under the provisions of Section 7-1.02C "Emission Reduction" and Section 14-9.03 "Dust Control". Provision 14-9.02 "Air Pollution Control" requires the contractor to comply with all pertinent rules, regulations, ordinances, and statutes of the local air district.

Noise

Construction Impacts

This project is considered a Type III project and it is exempt from traffic noise impact analysis under Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772). No operational noise impacts are anticipated.

Avoidance and Minimization Measures

During construction noise may be generated from the contractors' equipment and vehicles. Caltrans requires the Contractor to conform to the provisions of Standard Specification, Section 14-8.02 "Noise Control". "Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 p.m. to 6 a.m.". Equip an internal combustion engine with manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

Transportation

Construction Impacts

Tower Bridge, SR 275, is a conventional highway. In 2013, the average annual daily traffic (AADT) over the bridge was 16,500 vehicles per day; the peak-hour AADT (both directions) was 1,850. Lane closures are not anticipated; however, lane closure procedures will be included in the Traffic Management Plan (see below).

Boat traffic on the river may be temporarily affected during construction. Most work will be from barges on the river. Boat traffic will be routed around the construction area and it is possible boat

traffic may be stopped temporarily when work is being conducted in specific locations. This is not a significant impact.

The U. S. Coast Guard will most likely make a determination of how much construction can impede the river when Caltrans applies for the U. S. Coast Guard permit during the design phase of the project.

Avoidance and Minimization Measures

Caltrans prepared a Traffic Management Plan (TMP) in January 2015. The plan recommends the following measures:

- Lane closures will be performed in accordance with Standard Plan Sheet T11, "Traffic Control System for Lane Closure on multilane Lane Conventional Highways".
- Access to residences, businesses, bikeways, and cross streets shall be maintained during construction.
- Pedestrian and bike access shall be maintained.
- No lane closures, shoulder closures, or other restrictions will be allowed on designated holidays and the day preceding designated holidays, and when construction operations are not actively in progress.
- No lane closures, shoulder closures, or other traffic restrictions will be allowed in the eastbound/westbound direction of SR 275 during the annual California State Fair in July, Mardi Gras Days in February, Sacramento Jazz Jubilee in May, Pacific Rim Festival in June and the Tour of California Bike Race in February.
- Portable changeable message signs (PCMS) will be required in the direction of traffic for each lane, and shoulder closure.
- The full closure of the Tower Bridge, (Br.No. 22-0021) along with a detailed detour plan in coordination with the city of Sacramento and city of West Sacramento will require the approval of the District-3 Lane Closure Review Committee (DLCRC). Full closures will occur only Monday through Friday, 12 – 6 AM.
- Meet with local residents and stakeholders to determine the best time to perform the full closure.
- Provide a comprehensive public outreach campaign to inform the public and encourage road users to avoid the work zone during extended full closure.
- Portable changeable message signs (PCMS) will be required to inform motorist of full closure and detour routes.
- Coordination with projects within, or nearby the project limits will be required to avoid conflicts.
- Coordination with the City of West Sacramento Police, City of Sacramento police and California Highway Patrol is required for any traffic impact concerns within the vicinity.
- Complying with United States Coast Guard (USCG) regulation regarding marine traffic is required.
- Lane closure charts, specifications and final TMP estimate will be developed prior to P&E.

Following these TMP measures will minimize traffic impacts during construction.

Public Participation

On October 30, 2015, Caltrans released a draft Initial Study (IS) for the Tower Bridge Fender Replacement Project for public review and comment. The public review period extended for 30 days until December 1, 2015. Caltrans sent a notice of availability of the draft IS to approximately 32 public agencies, elected officials, and organizations. A copy of the draft IS was sent to the Central Public Library in the City of Sacramento and the Arthur F. Turner Community Library in the City of West Sacramento. The notice appeared in the Sacramento Bee on November 2, 2015.

Caltrans received three comment letters; the US Army Corps of Engineers, the Central Valley Water Quality Control Board, and the Central Valley Flood Protection Board. Copies of the comments, with Caltrans responses, follows.

Letter Comments

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

November 24, 2015

Regulatory Division SPK-2015-01042

California Department of Transportation
Attn: Mr. Kendall Schinke
District 3, Office of Environmental Management
2379 Gateway Oaks Drive, Suite 150
Sacramento, California 95833

Dear Mr. Schinke:

We are responding to your November 2015, request for comments on the Tower Bridge Piers 6 &7 Fender Replacement (Bridge No. 22-0021) project. The approximately project site is located on the Sacramento River, Latitude 38.58054°, Longitude -121.50825°, Sacramento and Yolo Counties, California.

The Corps of Engineers' jurisdiction within the study area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into waters of the United States and/or Section 10 of the Rivers and Harbors Act for work in navigable water. Waters of the United States include, but are not limited to, rivers, perennial or intermittent streams, lakes, ponds, wetlands, vernal pools, marshes, wet meadows, and seeps. Project features that result in the discharge of dredged or fill material into waters of the United States will require Department of the Army authorization prior to starting work.

Based on the information you provided in the Draft Initial Study, it appears that a Corps permit would be required for the proposed geotechnical borings and the sheet pile cofferdam. 1

You should notify the United States Coast Guard to ascertain what permits may be required for work on bridge under Section 9 of the Rivers and Harbors Act. 2

Please refer to identification number SPK-2015-01042 in any correspondence concerning this project. If you have any questions, please contact me at U.S. Army Corps of Engineers, Regulatory Division, California South Branch, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at *Marc.A.Fugler@usace.army.mil*, or telephone at 916-557-5255. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

Sincerely,

Marc A. Fugler
Senior Project Manager, CA South Branch
Regulatory Division

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

24 November 2015

Kendall Schinke
California Department of Transportation
2379 Gateway Oaks Drive, #150
Sacramento, CA 95833

CERTIFIED MAIL
91 7199 9991 7035 8420 8861

COMMENTS TO REQUEST FOR REVIEW FOR THE MITIGATED NEGATIVE DECLARATION, TOWER BRIDGE FENDER REPLACEMENT PROJECT, SCH# 2015112002, SACRAMENTO AND YOLO COUNTIES

Pursuant to the State Clearinghouse's 2 November 2015 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Mitigated Negative Declaration* for the Tower Bridge Fender Replacement Project, located in Sacramento and Yolo Counties.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38. 3

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases,

KARL E. LONGLEY SCD, P.E., CHAIR | PAMELA C. CREEDON P.E., BCEE, EXECUTIVE OFFICER

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RECYCLED PAPER

the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality. 4

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan 5

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process. 6

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. 7

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water 8

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. 9

Waste Discharge Requirements – Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. 10

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply: 11

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating

in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits. 12

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.

Stephanie Tadlock

Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682

December 8, 2015

Ms. Kendall Shinke
California Department of Transportation, District 3
2379 Gateway Oaks Drive, #150
Sacramento, California 95833

Subject: CEQA Comments: Tower Bridge Fender Replacement Project
Mitigated Negative Declaration, SCH No.: 2015112002

Location: Sacramento and Yolo County

Dear Ms. Shinke:

Central Valley Flood Protection Board (Board) staff has reviewed the subject document and provides the following comments:

The proposed project is within the Sacramento River, a regulated stream under Board jurisdiction. New work at this location would typically require a Board permit prior to construction, however based on the replacement nature of the project, a permit may not be necessary.

The Board's jurisdiction covers the entire Central Valley including all tributaries and distributaries of the Sacramento and San Joaquin Rivers, and the Tulare and Buena Vista basins.

Under authorities granted by California Water Code and Public Resources Code statutes, the Board enforces, its Title 23, California Code of Regulations (Title 23) for the construction, maintenance, and protection of adopted plans of flood control that protect the public from floods. Adopted plans of flood control include the federal-State facilities of the State Plan of Flood Control, regulated streams, and designated floodways.

Pursuant to Title 23, Section 6 a Board permit is required prior to working within the Board's jurisdiction for the placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee. 13

Permits may also be required to bring existing works that predate permitting into compliance with Title 23, or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the works has not been clearly established or ownership and use have been revised.

Other federal (including U.S. Army Corps of Engineers Section 10 and 404 regulatory permits), State and local agency permits may be required and are the applicant's responsibility to obtain.

Board permit applications and Title 23 regulations are available on our website at http://www.cvfpb.ca.gov/. Maps of the Board's jurisdiction are also available from the California Department of Water Resources at http://gis.bam.water.ca.gov/bam/.

Mr. James Herota is available to assist you further to confirm whether or not the proposed work requires a permit. James may be contacted at (916) 574-0651, or via email at james.herota@water.ca.gov.

Sincerely,

Eric R. Butler

Eric Butler
Supervising Engineer
Projects and Environmental Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

Letter Responses

1 Because the geotech drilling will occur before installing the sheet pile cofferdam, Caltrans will obtain a separate permit for each of these activities.

2 Caltrans will contact the US Coast Guard regarding necessary permits when the design phase of the project begins.

3 The information presented in the comment is standard boilerplate permit language. Comment noted.

4 Please refer to Response 3.

5 The project is not anticipated to disturb any soil, so the Construction Storm Water General Permit is not be applicable, unless the Central Valley Regional Water Quality Control Board (CVRWQCB) deems the project poses an eminent threat to water quality.

6 The project will not involve the addition of new impervious area, so hydromodification and Low Impact Development components are not applicable.

7 Please refer to Response 3.

8 Please refer to Response 3.

9 Please refer to Response 3.

10 Please refer to Response 3.

11 Please refer to Response 3.

12 Caltrans acknowledges, from previous discussions with (and direction received by) the Central Valley Regional Water Quality Control Board (May 2015), that conditions related to dewatering operations involving discharge to water will be covered in the 401 Certification and not a General Order.

13 Caltrans will contact the Central Valley Flood Protection Board regarding a Board permit when the design phase of the project begins.

References

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WSDOT (Washington State Department of Transportation). *Biological Assessment Preparation, Advanced Training Manual Version 02-2015, Section 7 Construction Noise Impact Assessment*. February 2015.

List of Preparers

The following Caltrans North Region staff contributed to the preparation of this Initial Study:

William Bertucci, Transportation Engineer; Contribution: Geotechnical Investigations

Alicia Beyer-Salinas, Associate Environmental Planner (Hazardous Waste/Materials); Contribution: Initial Site Assessment (ISA)

Sean Cross, Transportation Engineer; Contribution: Water Quality Assessment Report

Tim Ellison, Associate Landscape Architect; Contribution: Visual Impact Assessment (VIA)

Joan Fine, Associate Environmental Planner, Architecture History; Contribution: Cultural Resources Study

Rich Olson, Associate Environmental Planner, Archaeology; Contribution: Native American Consultation

Ken Lastufka, Associate Environmental Planner; Contribution: Environmental document preparation, Community Impact Assessment (CIA).

Jason Miegs, Associate Environmental Planner, Natural Resources; Contribution: Natural Environment Study (NES)

Saied Zandian, Transportation Engineer; Contribution: Air Quality and Noise Assessment

ATTACHMENT 1: CNDDB SPECIES LIST

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Sacramento East (3812154) or Sacramento West (3812155))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Endangered	G2G3	S1S2	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T2	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S2S3	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Oncorhynchus tshawytscha chinook salmon - Central Valley spring-run ESU	AFCHA0205A	Threatened	Threatened	G5	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oncorhynchus tshawytscha chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5	S1	
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	G2	S2	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant garter snake	ARADB36150	Threatened	Threatened	G2	S2	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 30

ATTACHMENT 2: USFWS SPECIES LIST

U.S. Fish & Wildlife Service

Tower Bridge Fender Replacement

IPaC Trust Resource Report

Generated July 22, 2015 02:54 PM MDT

US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Tower Bridge Fender Replacement

PROJECT CODE

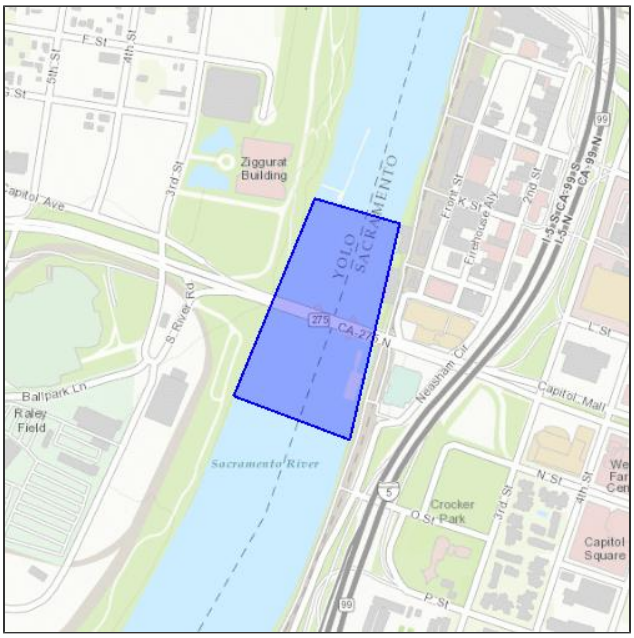
CS6EV-XMK6F-FCXJH-OYZWF-EYJQJQ

LOCATION

Sacramento and Yolo counties, California

DESCRIPTION

No description provided



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

San Francisco Bay-delta Fish And Wildlife
650 Capitol Mall
SUITE 8-300
Sacramento, CA 95814
(916) 930-5603

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

There are no endangered species identified for this project area

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

Chinook Salmon Critical Habitat Final designated
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E06D#crithab

Delta Smelt Critical Habitat Final designated
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E070#crithab

Steelhead Critical Habitat Final designated
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E08D#crithab

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Burrowing Owl Athene cunicularia — **Bird of conservation concern**
Year-round

Costa's Hummingbird Calypte costae — **Bird of conservation concern**
Season: Breeding

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Wintering

Least Bittern Ixobrychus exilis — **Bird of conservation concern**
Season: Breeding

Lewis's Woodpecker Melanerpes lewis — **Bird of conservation concern**
Season: Wintering

Loggerhead Shrike Lanius ludovicianus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S

Mountain Plover Charadrius montanus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B078

Nuttall's Woodpecker Picoides nuttallii — **Bird of conservation concern**
Year-round

Oak Titmouse Baeolophus inornatus — **Bird of conservation concern**
Year-round

Peregrine Falcon Falco peregrinus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Short-eared Owl Asio flammeus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Swainson's Hawk Buteo swainsoni **Bird of conservation concern**

Season: Breeding

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Tricolored Blackbird Agelaius tricolor **Bird of conservation concern**

Year-round

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06P

Williamson's Sapsucker Sphyrapicus thyroideus **Bird of conservation concern**

Year-round

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FX

Yellow-billed Magpie Pica nuttalli **Bird of conservation concern**

Year-round

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Freshwater Forested/shrub Wetland

PFOA 2.1 acres

Riverine

R2UBH 521.0 acres