

EAST SAND SLOUGH SIDE CHANNEL PROJECT

INITIAL STUDY/FINAL MITIGATED NEGATIVE DECLARATION

August 2019



PREPARED BY:

Resource Conservation District of Tehama County
2 Sutter Street, Suite D
Red Bluff, CA 96080
(530) 527-3013



CEQA LEAD AGENCY:

Resource Conservation District of Tehama County

FINAL MITIGATED NEGATIVE DECLARATION

Project: East Sand Slough Side Channel Project

Lead Agency: Resource Conservation District of Tehama County

Availability of Documents: In response to comments received during public review minor revisions were made to the initial study. Revisions are shown as underlines and strike through for deletion. Changes made to the final MND clarify, amplify, or make insignificant modifications to the proposed MND. The final MND does not identify any new significant avoidable effects that require new mitigation measures or project revisions to reduce the effect to insignificance, nor does it include substitutions of mitigation measures.

The Draft Initial Study for this Proposed Mitigated Negative Declaration is available for review at:

<http://www.tehamacountyrcd.org/>

A printed copy is available to view during business hours (8:00 a.m. to 5:00 p.m.) at the Resource Conservation District of Tehama County (RCDTC) office located at 2 Sutter Street in Red Bluff.

Questions or comments regarding this Proposed Mitigated Negative Declaration and Initial Study may be addressed to:

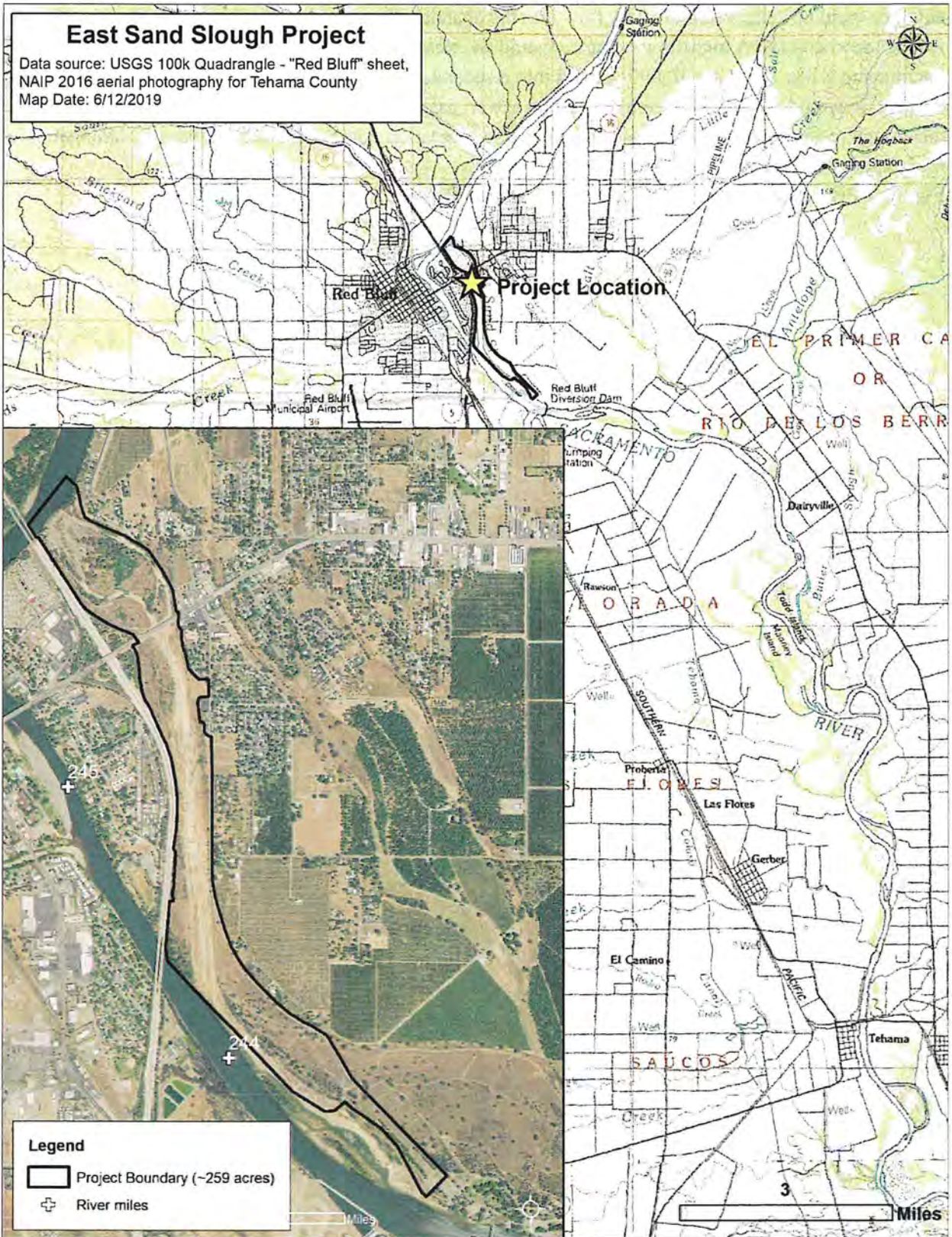
Tom McCubbins
CEQA Projects Manager
2 Sutter Street, Suite D
Red Bluff, CA 96080
tom@tehamacountyrcd.org
(530) 200-1231

Project Location: The Project area is located in Tehama County adjacent to the City of Red Bluff, California, along the left bank of the Sacramento River at about river mile (RM) 246 (see **Figure 1 Proposed East Sand Slough Side Channel Project Location**). The Project area lies within the United States Geological Survey 7.5-minute Red Bluff East quadrangle map (T27N R3W, Mount Diablo Meridian) at approximately 40°10'36.62"N Latitude and 122°13'15.11"W Longitude.

Project Description: The proposed Project is a salmonid rearing habitat restoration project. The proposed Project consists of reconnecting East Sand Slough to the Sacramento River during minimal flows by excavating the main channel and entrances. ~~flood to provide side channel habitat.~~ The main channel

entrance would be excavated to allow flow into the channel when Sacramento River flows are 5,000 cubic feet per second (cfs). A high-flow entrance would be excavated to allow flow into the main channel when Sacramento River flows are 10,000 cfs and into a secondary channel when flows are 15,000 cfs. Channel excavation would require relocation of existing sewer, gas, electric, and telecommunication lines that cross the slough. The proposed Project also consists of a recreation component that includes a combination of trail expansion and boat ramp restoration.

Figure 1 Proposed East Sand Slough Side Channel Project Location



Findings: An Initial Study was prepared to assess the proposed Project's potential effects on the environment and the significance of those impacts. Based on the Initial Study, the RCDTC has determined that the proposed Project would not have a significant impact on the environment because mitigation measures would be implemented to reduce impacts to less-than-significant levels. This conclusion is supported by the following findings:

1. The proposed Project would have no impact on:

- Agricultural and Forest Resources.
- Land Use and Planning.
- Mineral Resources.
- Population and Housing.
- Public Services.
- Wildfire.

2. The proposed Project would result in a less-than-significant impact on:

- Aesthetics.
- Energy.
- Geology and Soils.
- Greenhouse Gas Emissions.

3. Mitigation measures have been adopted by the RCDTC to reduce potentially significant impacts to less-than-significant levels on:

- Air Quality.
- Biological Resources.
- Cultural Resources.
- Hazards and Hazardous Materials.
- Hydrology and Water Quality.
- Noise.
- Recreation.
- Transportation.
- Tribal Cultural Resources.
- Utilities and Service Systems.

Mitigation Measures

The following mitigation measures shall be implemented by the RCDTC to avoid, minimize, and mitigate environmental impacts resulting from implementation of the proposed Project. Implementation of these mitigation measures would reduce the environmental impacts of the proposed Project to a less-than-significant level.

Air Quality

Mitigation Measure AQ-1: Implement Fugitive Dust Control Measures

The Project Contractor shall demonstrate compliance with this measure during construction through the submission of weekly monitoring reports to the RCDTC Project Manager. RCDTC personnel shall monitor the application of dust control measures by the Contractor at least once a week on an ongoing basis during all phases of construction and maintain a monitoring log in the project files. In the event monitoring indicates that in-place measures do not adequately control dust, the RCDTC Project Manager shall take necessary steps to assure the Contractor's adequate control of project-related dust. The following provisions shall apply to monitoring and control of dust at spoil sites, access roads, and staging areas:

- 'Reasonably Available Control Measures', as defined by the TCAPCD, shall be implemented for each fugitive dust source type, as defined in Table I, Page 4:24-3 of the TCAPCD air quality regulations.
- Traffic and equipment speeds on all unpaved surfaces shall be reduced to 15 miles per hour or less, and unnecessary vehicle traffic shall be reduced by restricting access.
- Hauling of spoil material outside of the project area shall be limited to Monday through Friday, except holidays, from 7 am to 7 pm.
- All routes used to access staging areas, areas of excavation, and spoil sites shall be watered at a sufficient concentration and frequency to maintain a stabilized surface when project-related equipment is operating in those areas during dry periods. The RCDTC Project Manager or Contractor (if assigned by RCDTC Project Manager) shall monitor for dust generation and shall ensure that impacted surfaces are watered when airborne dust is being transported outside of the project area. The RCDTC Project Manager or Contractor shall ensure that dust control measures are implemented in the vicinity of any elderberry shrub within 100 feet of construction activities.
- The RCDTC shall apply for a TCAPD Fugitive Dust Permit and assure that all Contractor personnel adhere to all permit provisions, along with all other requirements of the TCAPCD.

Mitigation Measure AQ-2: Control Construction Equipment Exhaust

- All construction equipment shall be maintained in proper tune according to manufacturer's specifications. Maintenance, repair, and tuning reports for equipment shall be prepared by the Contractor and provided when requested by the RCDTC Project Manager. Tuning reports prepared for the RCDTC shall be submitted to:

Resource Conservation District of Tehama County
Attn: Jon Barrett
2 Sutter Street, Suite D
Red Bluff, CA 96080

- To the extent feasible, the use of diesel construction equipment meeting current CARB certification standards for off-road heavy-duty diesel engines shall be maximized.
- Unnecessary vehicle idling shall be restricted to 5 minutes or less.

Mitigation Measure AQ-3: Register Heavy Equipment

- All off-road heavy-duty diesel equipment greater than 50 horsepower used in execution of the Project shall be registered with the Air Resources Board's Diesel Off-Road Online Reporting System (DOORS) and meet all applicable standards for replacement and/or retrofit.
- All portable equipment used in the execution of Project construction, including generators and air compressors rated over 50 brake horsepower, shall be registered in the Portable Equipment Registration Program or permitted through the TCAPCD.

Biological Resources

Mitigation Measure BIO-1: Implement General Measures to Protect Special-Status Species

The following measures shall be implemented and enforced during all project construction activities to avoid or minimize adverse effects on candidate, sensitive, and special-status species.

- *General measures:* No pets of any kind shall be permitted on the construction sites. No firearms (except for federal, State, or local law enforcement officers and security personnel) would be permitted on the construction site.
Fencing: All sensitive areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible.
- *Construction monitoring:* A qualified biologist shall monitor the construction area at project-appropriate intervals to assure Contractor implementation and adherence with all established resource impact avoidance/minimization measures. The amount and duration of monitoring shall depend upon project specifics and shall be based upon consultation with CDFW, USFWS, and permitting entities.
- *Worker awareness training:* Before any construction begins, a qualified biologist and the RCDTC Project Manager shall conduct a mandatory training session for all construction crew personnel. The training shall include a discussion of the sensitive biological resources, including the valley elderberry longhorn beetle and its elderberry host plant, within the Project area and the potential presence of special-status species. Special-status species habitat protection measures (including Best Management Practices, Mitigation Measures, permit requirements, and other site-specific requirements established by the RCDTC Project Manager or agency personnel) shall also be discussed along with the extent of project boundaries to ensure such species are not impacted by project activities. The training and any supporting materials shall include a discussion of penalties for noncompliance. Upon completion of training, construction personnel shall sign a form stating that they have attended the training and understand all the conservation measures. Training shall be conducted in English and other languages, as appropriate. Proof of this instruction (signed forms) shall be kept on file with Contractor and the RCDTC, who shall provide a copy (as requested) to USFWS and permitting entities, along with a copy of the training materials.
- *Litter Control:* A litter control program shall be instituted. The contractor shall provide closed garbage containers for the disposal of all food-related trash items. All garbage shall be removed daily.
- *Delineation of Project boundary:* Project boundaries shall be clearly marked on final project design drawings with work confined within those boundaries. Prior to construction, the Project Contractor and RCDTC Project Manager shall meet on site to agree upon and flag boundaries of sensitive areas,

particularly those within riparian areas.

- *Relocation of special-status species:* If a special-status species enters a work area, the Project Contractor shall contact the RCDTC Project Manager for further guidance. In such instances the RCDTC Project Managers shall contact appropriate State and/or federal regulatory agencies for guidance. If a federal or State- listed species or any other special- status species enters the work area, the species shall not be captured or handled without permission from the appropriate agency (State listed – CDFW; Federally listed – USFWS) as conveyed to the Project Contractor by the RCDTC. Construction activities shall cease until it is determined that the species shall not be harmed or that it has left the construction area on its own.

Mitigation Measure BIO-2: Implement Specific Mitigation and Avoidance Measures for Fish

To reduce the potential for impacts to fish species during project implementation, the following measures shall be employed.

- Work windows shall be restricted to October 1 to March 1 for any channel with flowing water. Work in areas separated from the main channel by gravel berms that are naturally present or artificially created may occur outside this window, as long as other environmental work is in compliance with related work windows.
- Heavy equipment operation practices that minimize the potential for injury or death of listed aquatic species' vulnerable life stages shall include alerting fish to equipment operation in the channel before gravel is placed in watered areas (e.g., slow, deliberate equipment operation and tapping water surface prior to entering in place or newly developed slough channels).
- Work within watered areas shall only occur for up to 12 hours per day to allow a 12-hour window of time for fish to migrate through without noise disturbance.
- In-river work with heavy equipment shall be completed during timing windows designed to have the lowest potential to adversely affect salmonids and sturgeon. Where feasible (i.e. in most side channel areas), the work area shall be separated from the river by gravel berms or other methods to prevent fish from entering the work area.
-
- Any work with the potential to affect listed salmonids shall require consultation with CDFW and/or NMFS. Such work shall also be implemented according to the requirements of all appropriate permits or other authorizations.

Mitigation Measure BIO-3: Implement Specific Protection Measures for Chinook Salmon

Within one week prior to construction, the RCDTC Project Manager or designated qualified biologist shall coordinate with CDFW to determine if salmon are spawning in the Sacramento River at that time. If so, the RCDTC shall obtain real-time aerial or boat redd survey data from CDFW, if available. A qualified biologist shall perform pre-construction surveys the day prior to construction; if redds from listed species are present within 200 feet downstream of the Project area the RCDTC Project Manager or designated qualified biologist shall contact NMFS with an impact minimization plan to be approved by NMFS personnel prior to final approval of project implementation.

Mitigation Measure BIO-4: Implement Specific Protection Measures for the Western Pond Turtle

If a western pond turtle is observed in the Project area during construction activities, the Contractor shall temporarily halt construction until it is determined that the turtle will not be harmed or until the turtle has moved to a safe location outside of the construction limits. The Contractor shall inform the RCDTC Project Manager of such occurrences. If construction is to occur during the nesting season (late June - July), a pre-construction survey for turtles and nest sites shall be conducted by a qualified biologist. This survey shall be conducted within 660 feet of the Project area no more than 2 days prior to the start of construction or restoration activities in suitable habitat. If a pond turtle nest is found, the biologist shall flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, in consultation with CDFW, a no-disturbance buffer zone may be established around the nest until the young have left the nest. If weather conditions prevent implementation of construction for more than 2 days after completion of turtle surveys, resurvey for this species shall be completed.

Mitigation Measure BIO-5: Implement General Protection Measures for Birds

To reduce the potential for impacts to bird species resulting from project implementation, the following protection measures shall be implemented:

- Nationwide Standard Conservation Measures shall be employed (USFWS 2018b)
- Vegetation removal shall not occur during the peak bird breeding season, typically between March 1 and August 31.
- In order to protect potential nesting habitat, only the minimum number of trees required to satisfy the proposed Project design shall be removed or trimmed during project implementation. Trees larger than 10" in diameter shall not be removed unless retaining such trees shall prevent project implementation or are a safety hazard as determined by the RCDTC Project Manager. If such trees are identified by the Contractor, approval of such removal shall be obtained from the RCDTC Project Manager which shall be based upon guidance provided by appropriate State/federal regulatory agency personnel.
- If construction activity inadvertently results in take of individual birds or their nests, appropriate mitigation shall be determined by the RCDTC Project Manager in coordination with CDFW.
- Vehicle speed limits shall not exceed 15 MPH to avoid striking birds.

Mitigation Measure BIO-6: Conduct Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

For migratory birds, a qualified biologist shall conduct a pre-construction survey no more than one week prior to commencement of construction or restoration activities scheduled between March 1 and August 31. The pre-construction survey shall be used to determine if active nests of these species are present in or within 250 feet of where construction activities take place. If an active nest is found, a qualified biologist in consultation with CDFW and/or USFWS shall determine the extent of a No-Treatment Buffer Zone to be established around the nest. If establishing a buffer zone is not feasible, a qualified biologist shall consult with CDFW and/or USFWS for guidance to minimize impacts. If no active nests are identified, no further mitigation is necessary.

Mitigation Measure BIO-7: Conduct Pre-Construction Surveys for Nesting Raptors, including the White-Tailed Kite

A qualified biologist shall conduct a pre-construction surveys in all suitable upland and riparian habitat for common raptors. Surveys shall occur no more than one week prior to commencement of construction or restoration activities scheduled between February 1 and August 31. In addition to areas where project construction will occur, these surveys shall be conducted along proposed access roads and within the equipment staging area and spoil disposal sites. Surveys shall include examination of nests for raptor activity, visual searches for whitewash, listening for calls and any other evidence of nesting raptors within the Project area.

If an active nest is found, a qualified biologist, in consultation with CDFW, shall determine a No-Treatment Buffer to be established around the nest until the young have fledged. In consultation with CDFW, a plan shall be developed to monitor whether construction activity is disturbing the reproductive process and to determine when the young have fledged. If no active nests are identified, no further mitigation is necessary.

Modifications and possible reduction in “No Treatment Buffer” sizes for both Listed and Non-Listed Raptors may be made after consultation by the RCDTC Project Manager with the CDFW and/or USFWS personnel as appropriate.

Mitigation Measure BIO-8: Implement Specific Protection Measures for Swainson’s Hawk

A qualified biologist shall conduct a pre-construction survey of accessible areas within a 0.25-mile radius of the Project area between March 1 and September 15; the required survey radius may be reduced (on a case-by-case basis) if approved in advance by CDFW, but in no case will be less than 500 feet. At least one survey shall be conducted no more than one week prior to the initiation of construction activities. If no active nests are located, no further measures are necessary to avoid impacts to active Swainson's hawk nests. If active nests are identified, the following measures shall be implemented:

- A no-disturbance buffer zone shall be established around the nest site. The width of the buffer zone shall be determined by a qualified biologist in coordination with CDFW. Determination of the required width of the buffer zone shall consider the distance of the nest site from construction activities, the line of sight from the nest site to construction activities, the existing level of disturbance, and other factors established with CDFW on a case-by-case basis.
- A qualified biologist shall monitor active nests within 500 feet (or the width of the buffer zone) of construction activities. The first monitoring event shall coincide with the initial implementation of construction activities and monitoring shall continue continuously for the duration of construction activities, or any other activities that may impact nesting success, until the young have fledged. If the biologist determines that construction activities are causing the birds to exhibit distress and/or abnormal nesting behavior or reproductive failure (nest abandonment and loss of eggs and/or young) is possible, the biologist shall halt work immediately and notify CDFW. Measures to avoid nest failure shall be implemented in coordination with CDFW and may include halting some or all construction activities until the young have fledged. For monitored nest sites, a monitoring report shall be submitted to CDFG within 2 weeks after termination of monitoring activities.

Mitigation Measure BIO-9: Implement Specific Protection Measures for Burrowing Owls

A qualified biologist shall conduct a pre-construction survey no less than 14 days prior to initiating ground disturbance activities. If positive owl presence is found, the following avoidance and mitigation measures shall be implemented:

- Place visible markers near burrows to ensure that construction equipment or vehicles do not collapse burrows.
- Avoid disturbing occupied burrows during the nesting period, from February 1 through August 31.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- A no-disturbance buffer shall be established surrounding occupied burrows. The width of the buffer shall be established in consultation with the Department and will take into account time of year and level of disturbance in proximity to the burrow site.

Mitigation Measure BIO-10: Implement Specific Protection Measures for the Bald Eagle

A qualified biologist shall conduct a pre-construction survey no more than one week prior to initiating ground disturbance activities. If an active bald eagle nest is found within 0.5 mile of the Project area, the following avoidance and mitigation measures shall be implemented:

- Construction activities located within 0.5 mile of a known bald eagle nest shall occur between September 1 and December 31.
- If construction activities are to occur outside of this period, a 660-foot buffer around the nest would be maintained for a single construction activity visible from the nest and within one mile of the nest (USFWS 2007).
- If established, the construction buffer shall remain in place until after the nesting season, or until the biologist determines that the young have fledged during subsequent surveys.

Mitigation Measure BIO-11: Implement Specific Protection Measures for Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

The following protection measures (United States Fish and Wildlife Service 2017; United States Bureau of Reclamation 2016) shall be implemented to protect valley elderberry longhorn beetles and their host plant, the elderberry shrub, if elderberry shrubs occur on or within 50 meters (165 feet) of the Project area:

- During Project implementation, no elderberry shrubs shall be removed.
- For activities that have the potential to damage or kill an elderberry shrub (e.g. trenching, paving, spoiling), an avoidance area shall be established at least 6 meters (20 feet) from the elderberry shrub's drip-line.
- As feasible, all Project-related activities that could occur within 50 meters (165 feet) of an elderberry shrub shall be conducted outside of the flight season of the valley elderberry longhorn beetle (March - July).
- To avoid and minimize adverse effects to valley elderberry longhorn beetle during trimming operations, all elderberry shrub trimming activities shall occur between November and February. Such trimming shall avoid the removal of any branches or stems that are ≥ 1 inch in diameter. Measures to address

regular and/or large-scale maintenance (trimming) shall be established as required in consultation with USFWS.

- Herbicides shall not be used within the drip-line of the any elderberry shrub. Insecticides shall not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals shall be applied using a backpack sprayer or similar direct application method.
- Temporary stockpiling of excavated material shall occur only in approved construction material staging areas created more than 20 feet from elderberry shrub drip-lines. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate area.
- Mechanical weed removal within the drip-line of the elderberry shrub shall be limited to the season when adult elderberry longhorn beetles are not active (August - February) and will avoid damaging the elderberry shrub.
- Construction personnel shall ensure that dust control measures (e.g., watering) are implemented in the vicinity of any elderberry shrub within 100 feet of construction activities. To avoid affecting the valley elderberry longhorn beetle, dirt roads within 100 feet of elderberry shrubs shall be watered at least twice each day when being used by gravel trucks and other project-related vehicles during dry periods.

Mitigation Measure BIO-12: Implement Protective Measures During Removal of Trees That Provide Suitable Bat Roosting Habitat.

All removal of trees that provide suitable bat roosting (such as trees with deep bark crevices, snags, or holes) shall be conducted between August 31 and October 30, or earlier than October 30 if evening temperatures fall below 45 degrees Fahrenheit and/or more than a half inch of rainfall occurs within 24 hours. These dates correspond to the time period when bats would not be caring for non-volant young and have not yet entered torpor. A qualified biologist shall monitor removal/trimming of trees that provide suitable bat roosting habitat. Tree removal/trimming shall occur over two consecutive days. On the first day in the afternoon, limbs and branches shall be removed using chainsaws only. Limbs with cavities, crevices, or deep bark fissures shall be avoided, and only branches or limbs without those features shall be removed. On the second day, the entire tree shall be removed. Prior to tree removal/trimming, each tree shall be shaken gently and several minutes shall pass before felling trees or limbs to allow bats time to arouse and leave the tree. The biologist shall search downed vegetation for dead or injured bat species and report any dead or injured special-status bat species to CDFW.

Mitigation Measure BIO-13: Implement Bat Protection Measures during Construction Activities Under or Within 100 Feet of the Antelope Boulevard/Highway 36 Bridge

Construction activities associated with relocation of the utility lines, bridge protection, and channel excavation under or within 100 feet of the Antelope Boulevard/Highway 36 Bridge shall not occur from April 15 through August 31 to avoid impacts to roosting bats during the bat maternity season (non-volant period for young) or after October 30 (or earlier than October 30 if evening temperatures fall below 45 degrees Fahrenheit and/or more than a half inch of rainfall occurs within 24 hours) to avoid impacts to hibernating bats.

If construction activities must be conducted within 100 feet of the Antelope Boulevard/Highway 36 Bridge during the maternity season, a qualified biologist shall conduct pre-construction surveys for active maternity roosts within 48 hours prior to the start of proposed construction activities. If there is a lapse in

construction activities of two weeks or greater, the area shall be resurveyed within 48 hours prior to recommencement of work. If a bat maternity roost is located, appropriate buffers around the roost sites shall be determined in consultation with CDFW and implemented to avoid abandonment of the roost. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (which typically ends August 31) or until a qualified biologist confirms the maternity roost is no longer active.

Mitigation Measure BIO-14: Prevent the Introduction of Invasive Plant Species

The Contractor shall implement the following best management practices, to the extent feasible, to prevent the introduction of invasive plant species:

- Construction equipment shall be washed prior to entering the Project area.
- If straw bales or other vegetative materials are used for erosion control, they shall be certified weed free.
- All re-vegetation materials (e.g., mulches, seed mixtures) shall be certified weed free and come from locally adapted native plant materials, to the extent practicable.

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan

Refer to Hydrology and Water Quality.

Mitigation Measure WQ-2: Conduct Turbidity Monitoring

Refer to Hydrology and Water Quality.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

Refer Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Hazards and Hazardous Materials.

Cultural Resources

Mitigation Measure CUL-1: Protect Newly Discovered Archeological, Prehistoric, or Historic Resources

If proposed Project construction exposes previously unknown archeological, prehistoric, or historic resources within the Project area the site shall be avoided. Work may continue elsewhere within the Project area. Exposed cultural resources shall be appropriately flagged by the RCDTC Project Manager or a professional archeologist in order to immediately establish a “No Treatment Buffer” of at least 100 feet. Reclamation Cultural Resource staff would be notified and consulted on how to proceed. Reclamation would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13. The provisions of this measure shall apply to all ground-disturbing activities associated

with channel excavation, access roads, the equipment staging area, and spoil disposal sites. Work may not continue in the area of the discovery until Reclamation issues a notice to proceed.

Mitigation Measure CUL-2: Implement Appropriate Procedures for the Treatment of Human Remains

If during the execution of proposed construction human remains are found, the RCDTC Project Manager, or Contractor after having informed the RCDTC Project Manager of such findings, shall halt work at that location and Reclamation's Regional Archaeologist shall be notified immediately. Notification shall be followed by a written report within 48 hours. The professional archeologist shall then assess the significance of the remains, process them and immediately notify the Tehama County Coroner pursuant to Health and Human Safety Code Section 7050.5. As required by PRC Section 5097, if the remains are determined by the County coroner to be Native American, the Native American Heritage Commission (NAHC) and Native American groups at the discretion of the professional archaeologist shall be notified within 24 hours of such determination. The professional archaeologist shall adhere to the guidelines of the NAHC in the treatment and disposition of the remains. Findings of significance shall be prepared and submitted to appropriate agencies at the discretion of the professional archaeologist. Findings shall also be recorded (as appropriate) in the Project Files by the RCDTC Project Manager. Project construction may continue in other portions of the Project area. Note that all human remains identified on lands owned by the Federal government are subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001). The procedures for the treatment of human remains on Federal lands are described in the regulations that implement NAGPRA, found at 43 CFR § 10. Project implementation in the vicinity of the discovery shall not resume until Reclamation complies with the 43 CFR § 10 regulations and provides notification to proceed.

Hazards and Hazardous Materials

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

To reduce potential impacts associated with fuel spills in streams and riparian areas, the contractor shall develop, and the RCDTC Project Manager shall enforce, a **Spill Prevention Containment and Countermeasures Plan (SPCCP)**. The Project Contractor shall assure that spill prevention and cleanup kits are maintained in close proximity to construction areas. Contractor supplied workers and RCDTC personnel involved with Project construction shall be trained in the use of spill containment kits by the RCDTC Project Manager. The Contractor shall ensure that gasoline and lubricants are at no time transported across a live stream other than in the tank of equipment being moved or already applied to such equipment. Only pre-established roads shall be used to move personnel, equipment, and materials into and out of the Project area unless previously approved by the RCDTC Project Manager. The following would also be conditions of the SPCCP:

- Standard precautions shall be employed by construction personnel to prevent the accidental release of fuel, oil, lubricant or other hazardous materials.

- Construction equipment refueling, regular maintenance, and equipment storage shall be restricted to designated staging areas located away from streams and sensitive habitats (at least 50' from waterbodies). The RCDTC Project Manager or Contractor shall inspect refueling areas to verify these sites' adequacy in protecting riparian and terrestrial resources as well as the availability of containment equipment.
- Fuel containment equipment including absorbent sheets and wattles shall be made available by the Project Contractor at all refueling and maintenance areas.
- Major vehicle maintenance and washing shall be conducted off site.
- All spent fluids including motor oil, radiator coolant, or other fluids along with used vehicle batteries shall be collected, stored, and recycled as hazardous waste off site.
- Dry cleanup methods (i.e. absorbent materials, dry sweep, and/or rags) shall be used whenever possible.
- Spilled dry materials shall be swept up immediately.
- Project Contractor personnel shall make daily inspections of all equipment for leaks (e.g. cracked hoses, loose filling caps, stripped drain plugs) of oil, fuel, herbicide and other hazardous materials.
- All leaks found during such inspections shall be repaired prior to use within any portion of the project area.
- External occurrences of fuel, oil, grease and herbicide shall be removed by hand prior to the start of daily operation.
- Inspection reports related to daily inspections shall be submitted to: **Resource Conservation District of Tehama County, Attn: Jon Barrett, 2 Sutter Street Suite D, Red Bluff, CA 96080**. The results of these inspections reports shall be incorporated into the RCDTC project files along with evidence of any repairs required and completed before returning equipment to project work sites.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

To ensure the proper transport, storage, mixing, loading, application, and disposal of herbicides used within the Project area, the RCDTC Project Manager shall develop and enforce an **Herbicide Use Plan**. The Herbicide Use Plan shall include, but not be limited to, the following measures:

- Landowners and residents shall be informed in writing as to the date when herbicides shall be applied on particular properties. This notification shall provide information regarding the chemicals to be used and Mitigation Measures developed to reduce environmental impacts. The notification shall recommend that all persons and animals stay out of treatment areas for a specified period of time.
- Prior to and during herbicide applications, signs shall be posited along access points to minimize potential exposure by the public.
- All applications of herbicide shall be done by a Qualified Licensed Applicator and under the supervision of a Licensed Pest Control Advisor in accordance with applicable, federal, state, and local laws or guidelines. All applicators shall have been trained to safely handle and apply herbicides per State of California regulations as well as those of the Tehama County Department of Agriculture.
- All workers involved with herbicide applications shall wear appropriate protective clothing and related safety equipment (masks, gloves, etc.) as per the guidelines of the California Department of Industrial Relations Division of Occupational Safety and Health and those of the manufacturer.

- Clean soap and water shall be readily available on site for the purpose of emergency washing. Wash stations shall be located away from any natural waterway to avoid contamination of waterways and ponds in the area.
- Dependable radios or phone communication shall be available on site to report any emergency that may occur.
- No herbicide applications shall take place when wind velocity is less than two (2) miles per hour or exceeds ten (10) miles per hour or when there is greater than a thirty percent (30%) forecast of rain within six (6) hours of treatments. Wind speeds shall be monitored hourly.
- Herbicide applicators shall avoid spraying wildlife observed in herbicide treatment areas. Areas not sprayed due to the presence of wildlife may be sprayed once wildlife has left the site of application. Those areas suspected of containing occupied nesting or denning habitats shall also be avoided and not treated until wildlife have left the area.
- Herbicide treatments shall occur outside the breeding period of all special-status species. Any special-status wildlife species that may be found during herbicide application shall be moved to a safe location under directives obtained from CDFW. Personnel conducting vegetation treatments or herbicide applications shall search for and relocate special-status species that may be under vegetation prior to any herbicide applications. Personnel involved with the movement of wildlife shall not handle chemicals.
- The RCDTC Project Manager or Contractor (as permitted by the RCDTC Project Manager) shall assure that no mixed herbicides or other chemicals are transported across flowing water at any time. Only unmixed herbicides and related chemicals in their original sealed containers shall be allowed transport over flowing water.
- A suitable stain or dye shall be incorporated into the herbicide prior to application to increase applicator accuracy, avoid missed vegetation and overspray as well as to indicate personal exposure to herbicides.

Mitigation Measure HAZ-3: Maintain Fire Protection Equipment Onsite during Project Construction

To reduce impacts associated with exposure of people or structures to wildland fires, the RCDTC Project Manager or Project Contractor Representative shall ensure that adequate fire protection equipment is available at work sites. This shall include fire extinguishers attached to all mechanized equipment. Firefighting hand tools shall be made available at all areas where equipment is operated. The RCDTC Project Manager and Project Contractor shall comply with all applicable fire safe standards as found in Public Resources Code Division 4, Chapter 6, (PRC's 4427, 4428, 4429, 4431, 4442, list not all inclusive). Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire. Only appropriately Certified Pesticide Applicators who are trained in wildfire prevention and suppression shall be used in the execution of Project construction. All motorized equipment shall have approved spark arrestors.

Hydrology and Water Quality

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan

A stormwater pollution prevention plan (SWPPP) shall be prepared by the Contractor prior to the start of construction activities. BMPs incorporated into the SWPPP shall be site-specific and shall be prepared consistent with the RWQCB field manual. The SWPPP shall include, but not be limited to, the following standard BMPs:

- The construction contractor shall minimize ground disturbance and the disturbance/destruction of existing vegetation. This shall be accomplished, in part, through establishing designated equipment staging areas, ingress and egress corridors, equipment exclusion zones prior to the commencement of any grading operations, and protection of existing trees.
- Equipment and materials shall be staged in designated staging areas.
- Disturbed soils within the Project area shall be stabilized to reduce erosion potential both during and following construction. Finer sediment spoils material shall be hydroseeded. Where larger gravels and cobbles are intermixed with fine sediments, the material shall be rinsed when Project construction is complete. Where appropriate, planting, seeding with native species, and mulching may be used as feasible. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material would be used for such stabilization.

Mitigation Measure WQ-2: Conduct Turbidity Monitoring

Turbidity and settleable solids shall be monitored during instream work to maintain compliance with U.S. Army Corps of Engineers Section 404 and SWRCB 401 permit requirements. If turbidity exceeds permit criteria, construction would be slowed or stopped until turbidity is within permitted levels.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

Refer to Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Hazards and Hazardous Materials.

Noise

Mitigation Measure NOISE-1: Implement General Noise Protection and Reduction Measures

- Equipment not in use shall not be left idling for more than 5 minutes.
- All noise producing equipment shall be equipped with noise control devices such as mufflers, in accordance with manufacturers' specifications and shall be maintained in proper operating condition.
- Transportation routes shall be coordinated, and equipment arranged to minimize disturbance to noise-sensitive uses.

- The RCDTC Project Manager shall appoint a disturbance coordinator who shall respond to all public complaints.

Mitigation Measure NOISE-2: Limit Period of Operation

All project construction activities entailing the use of mechanical equipment or engines, including mechanical hand tools, shall be conducted between the hours of 7 AM to 7 PM (or as otherwise established in the City or Red Bluff General Plan) when construction activities occur within 500 feet of a residential or other noise-sensitive land uses. Off-site hauling of spoil material shall be limited to weekdays, with the exception of holidays.

Mitigation Measure NOISE-3: Coordinate with Adjacent Residences to Minimize Noise Disturbance

The RCD of Tehama County Project Manager shall work with the Project Contractor and adjacent residents to develop additional reasonable measures to minimize disturbance of occupied residences. Before implementation of construction activities near noise-sensitive receptors, the RCDTC shall provide written notification to potentially affected receptors identifying the type, duration, and frequency of construction operations. Notification materials shall also identify a mechanism for residents to register noise-related complaints with the RCDTC, who shall consider noise-related concerns on a case-by-case basis.

Recreation

Refer to the mitigation measures included in Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Tribal Cultural Resources, and Utilities and Service Systems.

Transportation

Mitigation Measure Trans-1: Implement Traffic Safety Measures at Haul Truck Road Entrances on Sale Lane

The following measures shall be incorporated at the Sale Lane haul truck road entrance(s) during Project construction:

- The haul truck entrance(s) onto Sale Lane from the middle and/or lower access roads shall be flag controlled using appropriately trained personnel provided by the Project Contractor. A flag person wearing OSHA-approved vests and using the “Stop/Slow” paddle shall be present whenever haul trucks are scheduled to cross.
- Trails adjacent to the haul truck road crossing shall be signed, cautioning users of the equipment in the area.
- The haul truck road entrance areas shall be swept periodically to ensure that rock and soil material do not accumulate on the road surface.

Tribal Cultural Resources

Mitigation Measure CUL 1: Protect Newly Discovered Archeological, Prehistoric, or Historic Resources

Refer to Cultural Resources.

Mitigation Measure CUL-2: Implement Appropriate Procedures for the Treatment of Human Remains

Refer to Cultural Resources.

Utilities and Service Systems


Refer to the mitigation measures included in Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Recreation, Transportation, and Tribal Cultural Resources.

STATEMENT OF NO SIGNIFICANT EFFECT

In accordance with Section 21082.1 of the California Environmental Quality Act, RCDTC staff have independently reviewed and analyzed the Initial Study and Proposed Mitigated Negative Declaration for the East Sand Slough Side Channel Project and find that the Initial Study and Proposed Mitigated Negative Declaration reflect the independent judgment of RCDTC staff.

The RCDTC has reviewed potential environmental effects of the East Sand Slough Side Channel Project. Incorporated into this Mitigated Negative Declaration is an Initial Study in which potential impacts of the proposed Project are discussed. A number of special-status animals and plants were identified within or around the Project area. Although the proposed Project is intended to benefit these species and the natural environment overall, significant adverse impacts from proposed Project implementation are possible for ten resource areas including: **Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Recreation, Transportation, Tribal Cultural Resources, and Utilities and Service Systems**. Various environmental commitments and formally established mitigation measures have been developed and described in the Initial Study to avoid, minimize, or mitigate impacts that could occur during implementation of the proposed Project.

The RCDTC finds these environmental protection measures and mitigation measures adequate to reduce potential impacts that could occur during proposed Project implementation to less than significant levels. Consequently, the RCDTC has determined that the East Sand Slough Side Channel Project as developed, implemented, and mitigated, would not have a significant adverse impact on the environment.



Jon Barrett, Project Manager
Resource Conservation District of Tehama County

Date 3-12-2019

PROJECT INFORMATION

1. Project Title	East Sand Slough Side Channel Project
2. Lead Agency Name and Address	Resource Conservation District of Tehama County 2 Sutter Street, Suite D Red Bluff, CA 96080
3. Contact Person and Phone Number	Tom McCubbins CEQA Projects Manager (530) 200-1231 tom@tehamacountyrcd.org
4. Project Sponsor's Name and Address	United States Bureau of Reclamation Bay Delta Office 801 I Street, Suite 140 Sacramento, CA 95814
5. Project Location	The Project area is located in Tehama County adjacent to the City of Red Bluff, California, along the left bank of the Sacramento River at about river mile (RM) 246. The Project area lies within the United States Geological Survey 7.5-minute Red Bluff East quadrangle map (T27N R3W, Mount Diablo Meridian) at approximately 40°10'36.62"N Latitude and 122°13'15.11"W Longitude.
6. General Plan Designation	Water, Resource Lands
7. Zoning	Flood Zone (East Sand Slough Channel)
8. Description of Project	The proposed Project is a salmonid rearing habitat restoration project. The proposed Project consists of reconnecting East Sand Slough to the Sacramento River during minimal flows by excavating the main channel and entrances. Channel excavation would require relocation of existing water, sewer, gas, electric, and telecommunication lines that cross the slough. The main channel would be excavated to provide side channel habitat. The main channel entrance would be excavated to allow flow into the channel when Sacramento River flows are 5,000 cubic feet per second (cfs). A high-flow entrance would be excavated to allow flow into the main channel when Sacramento River flows are 10,000 cfs and into a secondary channel when flows are 15,000 cfs. The proposed Project also consists of a recreation component that includes trail expansion and removal of an abandoned boat ramp.

This page left intentionally blank.

<p>9. Surrounding Land Uses and Setting</p>	<p>Surrounding land uses include City, Suburban, and Rural Small Lot.</p>
<p>10. Other Public Agencies Whose Approval May Be Required</p>	<p>The proposed Project may require permits or approvals from the following: U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Central Valley Flood Protection Board, California Department of Transportation, California Department of Fish and Wildlife, State Historic Preservation Office, Central Valley Regional Water Quality Control Board, <u>California State Lands Commission</u>, City of Red Bluff, Tehama County Air Pollution Control District, Tehama County Department of Public Works, and Tehama County Agriculture Department.</p>
<p>11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significant of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?</p>	<p>No requests for consultation were received by the lead agency.</p>

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture Resources	<input checked="" type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources	<input checked="" type="checkbox"/> Cultural Resources	<input type="checkbox"/> Energy
<input type="checkbox"/> Geology/Soils	<input type="checkbox"/> Greenhouse Gas Emissions	<input checked="" type="checkbox"/> Hazards & Hazardous Materials
<input checked="" type="checkbox"/> Hydrology/Water Quality	<input type="checkbox"/> Land Use/Planning	<input type="checkbox"/> Mineral Resources
<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Population/Housing	<input type="checkbox"/> Public Services
<input checked="" type="checkbox"/> Recreation	<input checked="" type="checkbox"/> Transportation	<input checked="" type="checkbox"/> Tribal Cultural Resources
<input checked="" type="checkbox"/> Utilities/Service Systems	<input type="checkbox"/> Wildfire	<input checked="" type="checkbox"/> Mandatory Findings of Significance

LEAD AGENCY DETERMINATION

The Resource Conservation District of Tehama County (RCDTC) has determined that the East Sand Slough Side Channel Project (proposed Project) would not have a significant adverse effect on the environment. This conclusion is based upon the project design as well as the mitigation measures and environmental commitments that would be incorporated into the proposed Project. The RCDTC has identified the possibility of potential environmental impacts to **Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Recreation, Transportation, Tribal Cultural Resources, and Utilities and Service Systems**. The proposed Project, its potential impact on the Project area, and the protection measures to be taken during Project implementation that avoid, reduce, or mitigate environmental impacts are described in this Initial Study. The evidence supporting this determination is drawn from information developed by RCDTC staff, others listed in *Chapter 5 List of Preparers and Contributors*, and this Project’s Technical Advisory Committee which includes personnel from the California Department of Water Resources, Central Valley Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the RCDTC.

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an

ENVIRONMENTAL IMPACT REPORT is required.

I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by Mitigation Measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or Mitigation Measures that are imposed upon the proposed project, nothing further is required.



Signature

8-12-2019

Date

Print Name and Title

Jon Barrett, Project Manager

Contents

PROJECT INFORMATION.....	1
Acronyms and Abbreviations	11
1.0 Introduction.....	13
1.1 Authorization.....	13
1.2 Lead Agency	13
1.3 Project Area.....	13
1.4 Project Purpose and Need	15
1.5 Project Objectives	19
1.6 Purpose and Intended Use of this Initial Study	19
1.7 Anticipated Permits and Approvals.....	19
2.0 Project Description.....	21
2.1 Side Channel Restoration	21
2.1.1 Channel Excavation.....	21
2.1.2 Materials Sorting	31
2.1.3 Utility Relocation	31
2.1.4 Staging Areas	32
2.1.5 Spoil Areas	33
2.1.6 Access Roads.....	34
2.1.7 Floodplain Planting	35
2.1.9 Construction Sequencing.....	35
2.2 Channel Maintenance	36
2.3 Recreation Enhancement and Expansion	36
2.3.2 Trail Expansion	36
2.3.3 Boat Ramp Restoration	37
2.3.5 Construction Sequencing.....	37
2.4 Anticipated Construction Equipment	37
2.5 Environmental Commitments	37
3.0 Environmental Checklist.....	40
3.1 Aesthetics	41

3.1.1 Environmental Setting/Affected Environment.....	41
3.1.2 Environmental Consequences	50
3.2 Agriculture and Forest Resources	52
3.2.1 Environmental Setting/Affected Environment.....	53
3.2.2 Environmental Consequences	53
3.3 Air Quality	54
3.3.1 Environmental Setting/Affected Environment.....	55
3.3.2 Environmental Consequences	58
3.4 Biological Resources.....	61
3.4.1 Environmental Setting/Affected Environment.....	62
3.4.2 Environmental Consequences	95
3.5 Cultural Resources	109
3.5.1 Regulatory Setting.....	110
3.5.2 Environmental Setting/Affected Environment.....	110
3.5.3 Environmental Consequences	118
3.6 Energy	120
3.6.1 Environmental Setting/Affected Environment.....	120
3.6.2 Environmental Consequences	120
3.7 Geology and Soils	121
3.7.1 Environmental Setting/Affected Environment.....	122
3.7.2 Environmental Consequences	123
3.8 Greenhouse Gas Emissions	126
3.8.1 Environmental Setting/Affected Environment.....	126
3.8.2 Regulatory Setting.....	126
3.8.3 Environmental Consequences	128
3.9 Hazards and Hazardous Materials.....	131
3.9.1 Environmental Setting/Affected Environment.....	132
3.9.2 Environmental Consequences	132

3.10 Hydrology and Water Quality	137
3.10.1 Environmental Setting/Affected Environment	138
3.10.2 Environmental Consequences	139
3.11 Land Use and Planning	143
3.11.1 Environmental Setting/Affected Environment	143
3.11.2 Environmental Consequences	144
3.12 Mineral Resources.....	144
3.12.1 Environmental Setting/Affected Environment	145
3.12.2 Environmental Consequences	145
3.13 Noise	145
3.13.1 Environmental Setting/Affected Environment	146
3.13.2 Environmental Consequences	147
3.14 Population and Housing	149
3.14.1 Environmental Setting/Affected Environment	150
3.14.2 Environmental Consequences	150
3.15 Public Services	151
3.15.1 Environmental Setting/Affected Environment	151
3.15.2 Environmental Consequences	152
3.16 Recreation.....	153
3.16.1 Environmental Setting/Affected Environment	153
3.16.2 Environmental Consequences	156
3.17 Transportation	157
3.17.1 Environmental Setting/Affected Environment	157
3.17.2 Environmental Consequences	159
3.18 Tribal Cultural Resources.....	161
3.18.1 Environmental Setting/Affected Environment	161
3.18.2 Environmental Consequences	162
3.19 Utilities and Service Systems.....	163
3.19.1 Environmental Setting/Affected Environment	164

3.19.2 Environmental Consequences	164
3.20 Wildfire	166
3.20.1 Environmental Setting/Affected Environment.....	166
3.20.2 Environmental Consequences	167
3.21 Mandatory Findings of Significance	168
3.21.1 Regulatory Setting.....	168
3.21.2 Environmental Consequences	169
4.0 References Cited	170
Biological Resources.....	170
Cultural Resources	171
Geology and Soils	172
Greenhouse Gas Emissions	173
Hazards and Hazardous Materials.....	173
Hydrology and Water Quality	173
Noise	173
5.0 List of Preparers and Contributors	174

List of Figures

Figure 1-1: Proposed East Sand Slough Side Channel Project Location.....	14
Figure 1-2: Known Fish Stranding Pools in East Sand Slough.....	16
Figure 1-3: East Sand Slough Side Channel Project Overview.....	17
Figure 1-4: Proposed East Sand Slough Side Channel Project Construction and Access Areas	18
Figure 2-1: Proposed Trail Expansion Route	38
Figure 2-2: Proposed Boat Ramp Restoration.....	39
Figure 3-1: Sensitive Receptors Within the Vicinity of the East Sand Slough Side Channel Project Area ..	57
Figure 3-2: Comparison of Vegetation Changes Following Loss of Lake Red Bluff and the 2013 East Sand Slough Fire	63
Figure 3-3: Distribution of Habitat Types within the Project Area.....	65
Figure 3-4: Distribution of Riparian Habitats within the Project Area	80
Figure 3-5: Elderberry Shrubs Mapped within and adjacent to the Project Area.....	85
Figure 3-6: Wetlands and Waters of the United States Delineation Map	94
Figure 3-7: Cultural Resources Survey Area	114
Figure 3-8: Road Network Adjacent to the East Sand Slough Side Channel Project Area	158

List of Photos

Photo 2-1: Example of dense channel side vegetation within East Sand Slough north of the Antelope Boulevard/Highway 36 Bridge.....	22
--	----

Photo 2-2: Main channel entrance to East Sand Slough.....	23
Photo 2-3: High-flow channel entrance to East Sand Slough.....	24
Photo 2-4: Main channel of East Sand Slough, upstream of the Antelope Boulevard/Hwy 36 Bridge.	25
Photo 2-5: Existing historical bridge abutment.....	26
Photo 2-6: Demolished car in main channel.	26
Photo 2-7: Secondary flood channel on the west side of East Sand Slough, north of the Antelope Boulevard/Highway 36 Bridge.....	27
Photo 2-8: Panoramic view of East Sand Slough north of the Antelope Boulevard/Highway 36 Bridge looking west..	28
Photo 2-9: Existing concrete and rock between two bridge bents under the Antelope Boulevard/Highway 36 Bridge.	29
Photo 2-11: Southern end of East Sand Slough adjacent to the Sacramento River’s mainstem, 5/24/17.	30
Photo 2-10: Southern end of East Sand Slough adjacent to the Sacramento River’s mainstem, 6/27/18.	30
Photo 2-12: East Sand Slough main channel downstream south of the Antelope Boulevard/Highway 36 Bridge.	30
Photo 2-13: Example of dense vegetation that quickly develops along channel banks within the East Sand Slough.	34
Photo 3-1: Oblique View of East Sand Slough Project area with major features labeled.	42
Photo 3-2: Winter flood flows within East Sand Slough downstream from the Antelope Boulevard.....	42
/Highway 36 Bridge.	42
Photo 3-3: Riparian tree and shrub species and grasses growing along the main (east) channel of East Sand Slough upstream from the Antelope Boulevard/Highway 36 Bridge near the channel’s upstream connection with the Sacramento River.....	43
Photo 3-4: Riparian vegetation along the secondary (west) channel of East Sand Slough, upstream from the Antelope Boulevard/Highway 36 Bridge.	44
Photo 3-5: Example of mixed cottonwood, willow, and shrub stands with interspersed grasslands adjacent to the secondary (west) channel of East Sand Slough.	44
Photo 3-6: Example of mixed riparian forest and grasslands on terraces between the main and secondary channels of East Sand Slough.	45
Photo 3-7: Example of well-developed riparian forest on terraces between the main and secondary channels of East Sand Slough.....	45
Photo 3-8: I-5 Bridge located on the northwest corner of the East Sand Slough Side channel Project area.	46
Photo 3-9: The western boundary of the East Sand Slough Project area is adjacent to the I-5 corridor within view of passing motorists.	47
Photo 3-10: Example of large lot/ranchette residential develop adjacent to the East Sand Slough Side Channel Project Area.....	47
Photo 3-11: High density commercial and residential development along the east side of the East Sand Slough Side Channel Project area at the intersection of Antelope Boulevard and Sale Lane.	48
Photo 3-12: Commercial development in close proximity to the East Sand Slough Side Channel Project Area.	49
Photo 3-13: Example of landscape in which Spoil Area 1 and 2 would be located.	49
Photo 3-14: Example of scour holes found throughout the East Sand Slough Side Channel project area.	69
Photo 3-15: Cultural Resources Site Number ARP 18-1 Southwest Pier Facing West.	115
Photo 3-16: Cultural Resources Site Number ARP18-1 Northeast Pier.	116

Photo 3-17: View of Cultural Resources Site Number ARP18-1 Southwest Pier Facing West.....	116
Photo 3-18: Cultural Resources Site Number ARP18-2 Pier Facing East.....	117
Photo 3-19: Wooden Piles Supporting Cultural Resources Site Number ARP18-1's Southwest Pier.....	117
Photo 3-20: The riffle area north of the I-5 Bridge and immediately offshore of the dry bar is a submerged bar that is a popular spot for steelhead anglers in the fall.....	154
Photos 3-21 and 3-22: Trail segments of the Mendocino National Forest's Red Bluff Recreation Area within oak woodlands and grasslands south of the Antelope Boulevard/Highway 36 Bridge near the Red Bluff Diversion Dam.....	155

List of Tables

Table 1 Required Permits and Approvals Anticipated for the East Sand Slough Side Channel Project.....	19
Table 2 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature.....	22
Table 3 Acreage of Habitat Types within the Project Area	64
Table 4 USGS 7.5-Minute Quadrangles Referenced for a California Natural Diversity Database Check of the Project Area	72
Table 5 Special-Status Species Known to Occur or Likely to Occur within the Project Area	72
Table 6 Invasive Plant Species Observed within the Project Area	89
Table 7 Recently Encountered Cultural Inventories in the Vicinity of the Project Area.....	111
Table 8 Anticipated Diesel Usage During Proposed Project Construction.....	129
Table 9 Anticipated Greenhouse Gas Emissions from Transportation of the Construction Workforce...	130
Table 10 Typical Construction-Related Noise Levels 50 Feet from the Source	147

Appendices

- Appendix A** Hydrology and Hydraulics Report
- Appendix B** Mitigation Monitoring and Reporting Plan
- Appendix C** Biological Assessment/Biological Evaluation Report
- Appendix D** Botanical Reconnaissance Survey Report
- Appendix E** Avian Monitoring Report
- Appendix F** Waters of the US Delineation Report

Acronyms and Abbreviations

AQAP	air quality attainment plans
ARP	Archaeological Research Program
ARPA	Archaeological Resources Protection Act
BMP	best management practice
CAA	Clean Air Act
Cal Fire	California Department of Forestry and Fire Protection
CAL-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGS	California Geological Survey
CO ₂ e	carbon dioxide equivalents
CRHR	California Register of Historical Resources
CSUC	California State University, Chico
CVPIA	Central Valley Project Improvement Act
dB	decibels
DWR	California Department of Water Resources
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
Forum	Sacramento River Forum
GHG	greenhouse gas
I-5	Interstate 5
Ldn	day-night average sound level
Leq	equivalent sound level
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native America Heritage Commission
NAVD	North American Vertical Datum

NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NEIC	Northeast Information Center
NHPA	National Historic Preservation Act
OHWM	ordinary high-water mark
PG&E	Pacific Gas and Electric
PM10	particulate matter less than 10 microns in diameter
proposed Project	East Sand Slough Side Channel Project
Qa	Quaternary Alluvium
RBDD	Red Bluff Diversion Dam
RCDTC	Resource Conservation District of Tehama County
Reclamation	United States Bureau of Reclamation
RM	river mile
SPCCP	Spill Prevention Containment and Countermeasure Plan
SRRT	Sacramento River Restoration Team
SWCMP	Sacramento Watershed Coordinated Monitoring Program
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCAPCD	Tehama County Air Pollution Control District
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

1.1 Authorization

The Central Valley Project Improvement Act (CVPIA), Section 3406 (b)(13) directs the Department of the Interior to develop and implement a continuing program for the purpose of restoring and replenishing, as needed, salmonid spawning gravel lost due to the construction and operation of Central Valley Project dams and other actions that have reduced the availability of spawning gravel and rearing habitat in the Sacramento River from Keswick Dam to the Red Bluff Diversion Dam (RBDD). The CVPIA Sacramento River Restoration Team (SRRT) is an interagency group with members including the United States Bureau of Reclamation (Reclamation), Sacramento River Forum (Forum), California Department of Water Resources (DWR), United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), Resource Conservation District of Tehama County (RCDTC), and State Water Resources Control Board (SWRCB). The SRRT was formed to provide technical support in the development of future salmonid spawning and rearing habitat restoration projects in the Sacramento River. The East Sand Slough Side Channel Project (Project or proposed Project) is a salmonid rearing habitat restoration project.

1.2 Lead Agency

The California Public Resources Code Sections 21000–21177 and California Environmental Quality Act (CEQA) Guidelines provide the statutory requirements for evaluating environmental impacts of proposed projects. The RCDTC, which was funded by Reclamation to carry out and physically implement the proposed Project, is serving as the State lead agency and has prepared this Initial Study for CEQA compliance. Reclamation is serving as the federal lead agency and has prepared a separate Environmental Assessment for National Environmental Policy Act (NEPA) compliance. These environmental documents will also support their respective State and federal permit compliance.

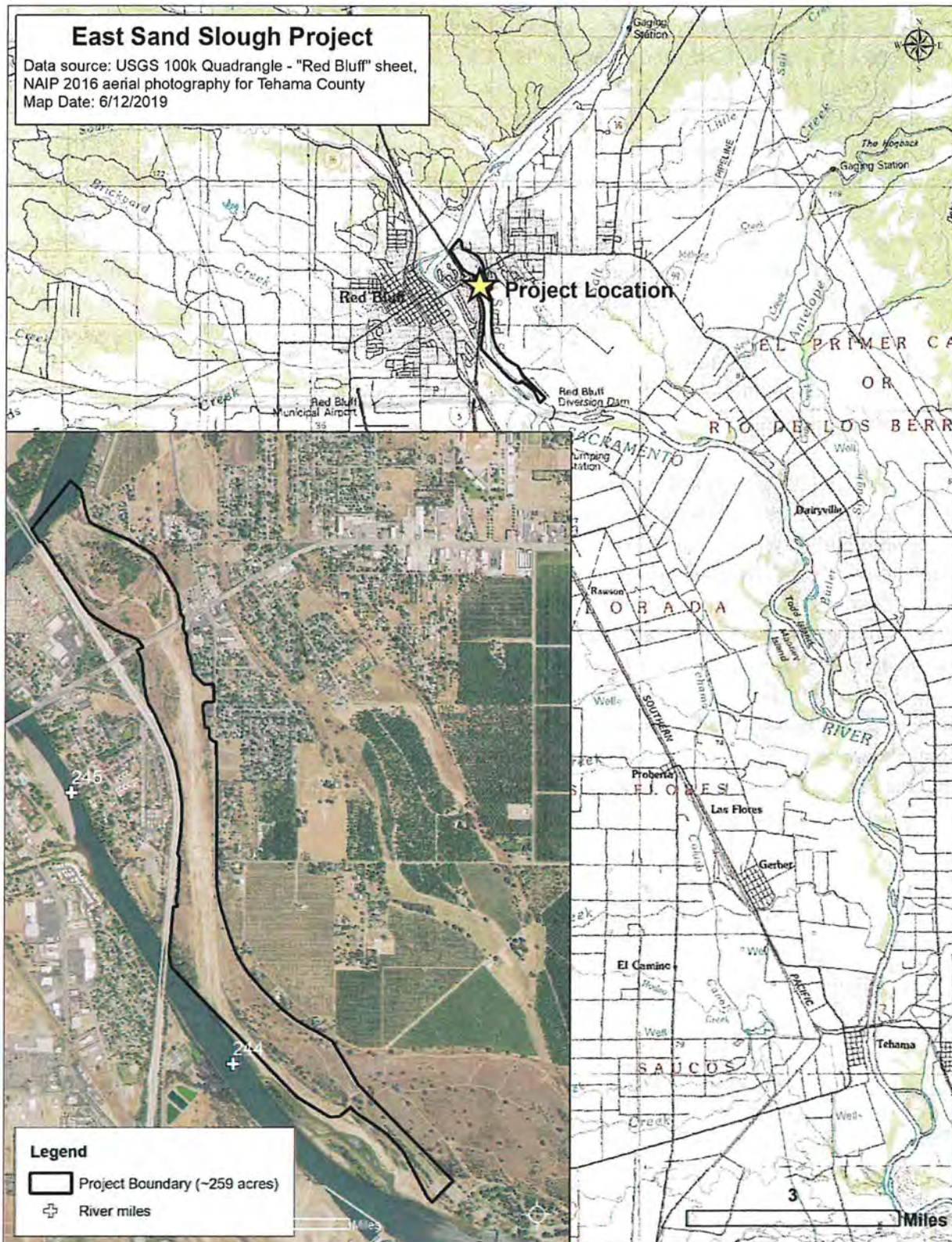
1.3 Project Area

The Project area is generally located within the city limits of Red Bluff, California and a developed area of Tehama County along the left bank¹ of the Sacramento River at about river mile (RM) 246 (see **Figure 1-1 Proposed East Sand Slough Side Channel Project Location**). Sacramento River flood flows enter the East Sand Slough channel approximately half a mile north of the Antelope Boulevard/Highway 36 Bridge and continue approximately 1.8 miles downstream before flowing back into the Sacramento River at about RM 244 (just upstream from the RBDD).

The Project area lies within the United States Geological Survey (USGS) 7.5-minute Red Bluff East quadrangle map (T27N R3W, Mount Diablo Meridian) at approximately 40°10'36.62"N Latitude and 122°13'15.11"W Longitude. The Project area is located on multiple land parcels including those under the ownership or management of Reclamation, the United States Forest Service (USFS), the City of Red Bluff, and the privately-owned Durango RV Park.

¹ Left side when looking downstream.

Figure 1-1: Proposed East Sand Slough Side Channel Project Location



1.4 Project Purpose and Need

The purpose of the proposed Project is to create a functional side channel at lower Sacramento River flows to provide rearing habitat for juvenile salmonids, and to enhance recreation opportunities within East Sand Slough and the Red Bluff Recreation Area. East Sand Slough is a natural flood channel that reduces flood risk within the City limits of Red Bluff and adjacent developed areas within Tehama County. Due to the timing and duration of flows through East Sand Slough under existing conditions, suitable rearing habitat for juvenile salmonids does not exist within the slough. Flows enter East Sand Slough when Sacramento River flows reach approximately 20,000 cfs at the ‘Sacramento River at Bend Bridge’ stream gage. As flows recede, numerous stranding pools are created within East Sand Slough (see **Figure 1-2 Known Fish Stranding Pools in East Sand Slough**). During stranding events, CDFW personnel must rescue the stranded fish. For example, East Sand Slough flowed for two days in April 2018. Once flood waters receded, CDFW personnel rescued approximately 3,300 juvenile salmonids from the stranding pools. The proposed excavation of East Sand Slough’s main channel and entrances would allow year-round flow in East Sand Slough, creating juvenile salmonid rearing habitat and reducing stranding pools.

An existing one-mile bicycle and pedestrian trail runs parallel to approximately 1,200 feet of lower East Sand Slough at the trail’s northern terminus. Views from the trail are of the surrounding grassland and an unvegetated portion of East Sand Slough. The bicycle and pedestrian trail originates from a parking lot within the Mendocino National Forest’s Red Bluff Recreation Area. The proposed 2,500-foot extension of this trail and construction of interpretive and wayfinding signage would expand recreation opportunities in this area and allow greater access to East Sand Slough which, post-project, would have year-round flow that would be able to support additional riparian vegetation. A boat ramp that is no longer connected to the Sacramento River and has fallen into disrepair is located adjacent to the parking lot. Proposed removal of the boat ramp would improve the aesthetics of this area. (see **Figure 1-3 East Sand Slough Side Channel Project Overview** and **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas**).

Figure 1-2: Known Fish Stranding Pools in East Sand Slough

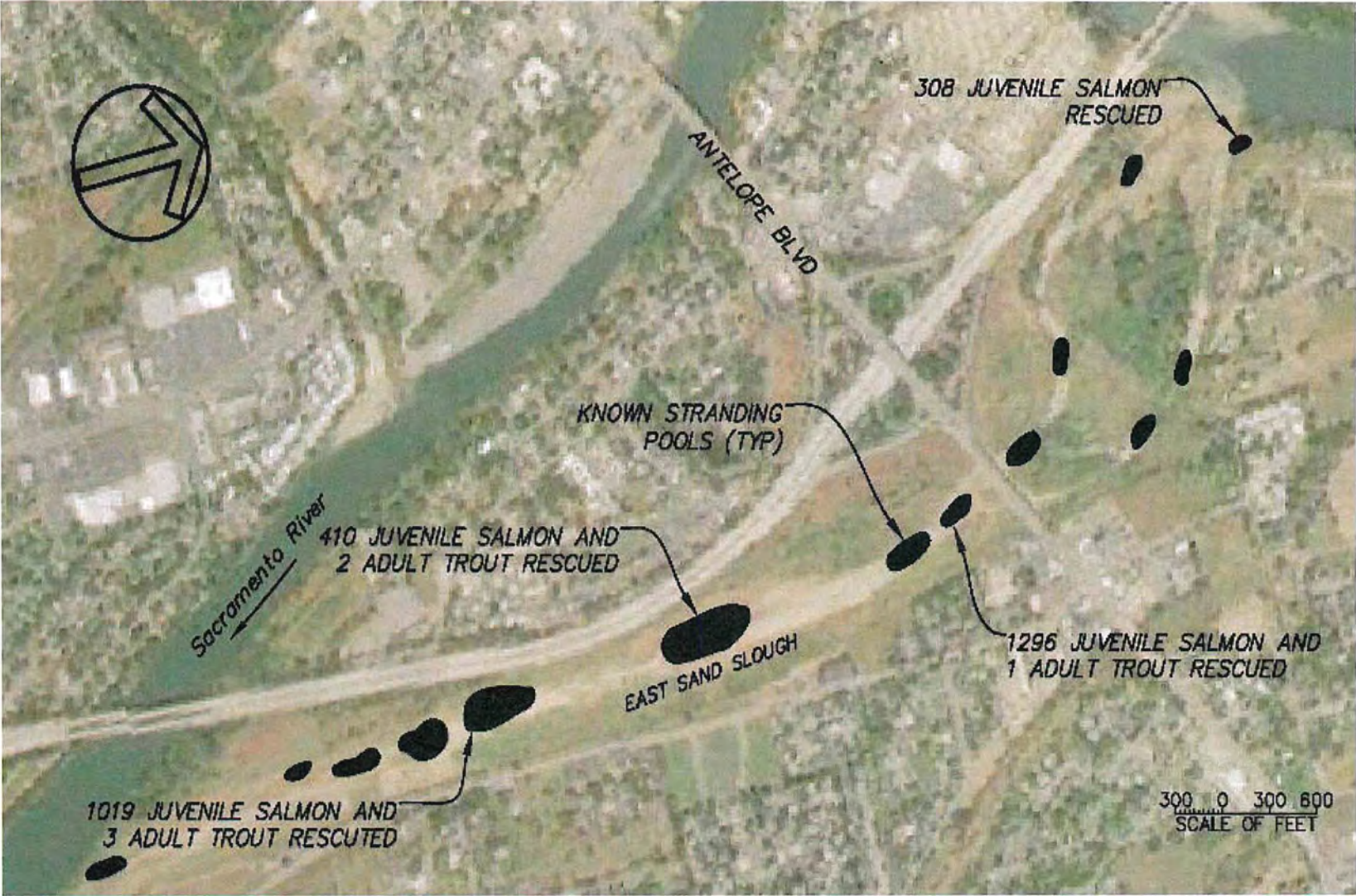


Figure 1-3: East Sand Slough Side Channel Project Overview

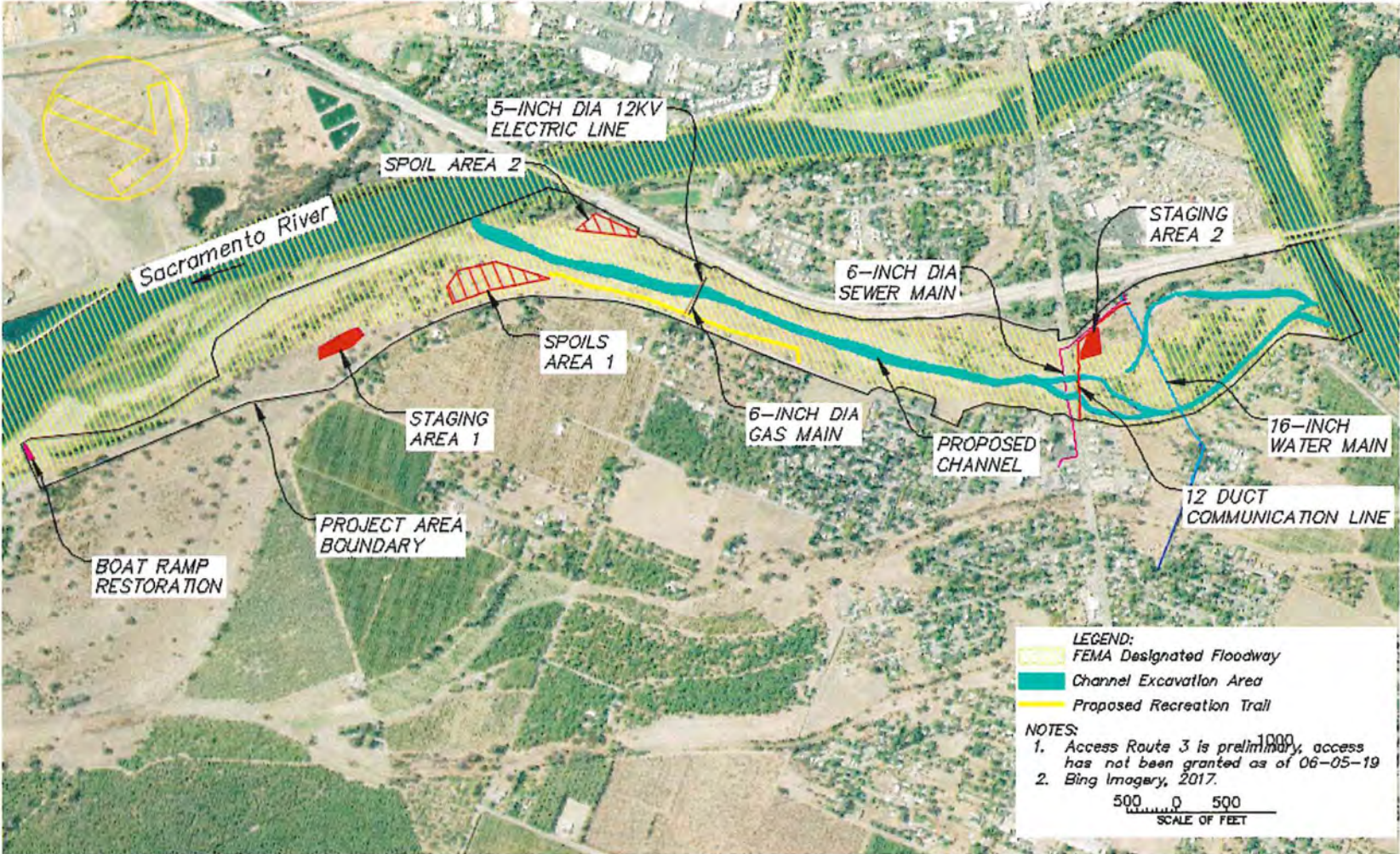
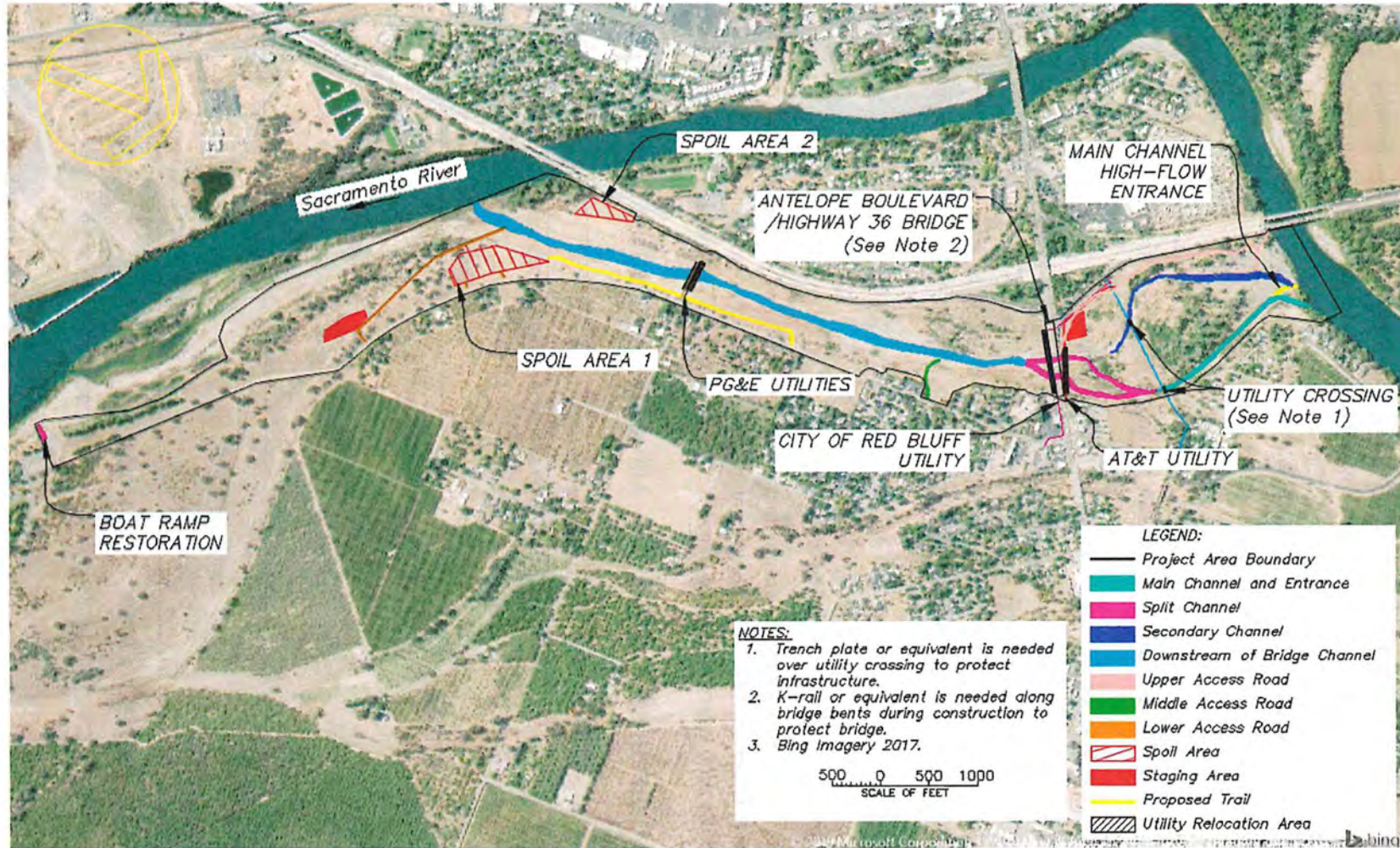


Figure 1-4: Proposed East Sand Slough Side Channel Project Construction and Access Areas



1.5 Project Objectives

The RCDTC is proposing to implement the Project to achieve the following primary objectives:

- Create juvenile salmonid rearing habitat in East Sand Slough during low flows in the Sacramento River.
- Reduce stranding pools within East Sand Slough.
- Create instream habitat structure within the main channel of East Sand Slough.

The RCDTC is also proposing to implement the Project to achieve the following secondary objective:

- Enhance and expand recreation opportunities within the Red Bluff Recreation Area.

1.6 Purpose and Intended Use of this Initial Study

This Initial Study has been prepared pursuant to CEQA for the purpose of determining if the proposed Project may have a significant impact on the environment and to identify measures to incorporate into Project construction to reduce or avoid significant impacts. The resulting level of significance of impacts helps to determine whether a Mitigated Negative Declaration or Environmental Impact Report should be prepared.

1.7 Anticipated Permits and Approvals

The RCDTC has the responsibility to ensure that all requirements of CEQA and other applicable regulations are met. Other potential permitting requirements for the proposed Project are listed in **Table 1 Required Permits and Approvals Anticipated for the East Sand Slough Side Channel Project**.

Table 1 Required Permits and Approvals Anticipated for the East Sand Slough Side Channel Project

Approving Agency	Required Permit/Approval	Required For
California Department of Fish and Wildlife	California Endangered Species Act Consultation (Section 2081)	Incidental take or otherwise lawful activities that may adversely affect State-listed species
	Lake and Streambed Alteration Agreement (Section 1601 of the Fish and Game Code)	Any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake
California Department of Transportation	Encroachment Permit	Activities that directly affect the Antelope Boulevard/Highway 36 Bridge
<u>California State Lands Commission</u>	<u>Lease</u>	<u>Activities on lands underlying navigable waters</u>

Central Valley Flood Protection Board	Encroachment Permit or Letter of Permission	Activities that may affect a regulated floodway
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Certification	Discharge of pollutants into waters of the United States
	Federal Clean Water Act Section 402 General Construction Activity Stormwater Permit	Stormwater discharges to navigable waters associated with construction activity for greater than one acre of land disturbance
City of Red Bluff	Encroachment Permit	Activities that directly affect City-maintained roads.
National Marine Fisheries Service	Magnuson-Stevens Fishery Conservation and Management Act Compliance	Potential impacts to Essential Fish Habitat of species covered by the Act
	Federal Endangered Species Act Section 7 Consultation	Potential impacts on federally-listed fish species
State Historic Preservation Officer	National Historic Preservation Act Section 106 Concurrence	Any actions that may have an adverse impact on historical resources
Tehama County Agriculture Department	Herbicide Use Permit	Conducting herbicide application
Tehama County Air Pollution Control District	Fugitive Dust Permit	Demolition, construction, or grading operations that have the potential to emit air pollutants
Tehama County Department of Public Works	Encroachment Permit	Activities that directly affect County-maintained roads.
U.S. Army Corps of Engineers	Federal Clean Water Act Section 404 Permit	Discharge of dredged or fill material into water of the United States
U.S. Fish and Wildlife Service	Federal Endangered Species Act Section 7 Consultation	Potential impacts on federally-listed species or critical habitat
	Federal Fish and Wildlife Coordination Act Report	Federal actions that may control or modify a natural stream or other body of water
	Migratory Bird Treaty Act Compliance	Potential impacts on migratory birds

2.0 Project Description

The proposed Project consists of the following components:

- Side Channel Restoration
 - Channel Excavation
 - Materials Sorting
 - Utility Relocation
 - Staging Areas
 - Spoil Areas
 - Access Roads
 - Floodplain Planting
- Channel Maintenance
- Recreation Enhancement and Expansion
 - Trail Expansion
 - Boat Ramp Restoration

These Project components are shown above in **Figure 1-3 East Sand Slough Side Channel Project Overview** and **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas** and described below.

2.1 Side Channel Restoration

East Sand Slough side channel restoration would consist of excavating two channel entrances and a new/improved channel network upstream of the Antelope Boulevard/Highway 36 Bridge, and a single channel below the bridge to provide rearing habitat for juvenile salmonids at different flow regimes on the Sacramento River. The channel was designed within the existing high-flow channel. Hydraulic modeling was performed to ensure that the velocities in the channel would be high enough to prevent deposition while avoiding scour potential around bridge piers (see **Appendix A Hydrology and Hydraulics Report**). Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, the Project area is located within the State Designated Floodway, with the exception of Spoil Area 2.

2.1.1 Channel Excavation

The majority of channel excavation upstream of the Antelope Boulevard/Highway 36 Bridge would occur along the toe of the bank within the ordinary high-water mark (OHWM), leaving existing vegetation and trees along the bank to provide shade and canopy (see **Photo 2-1**). Downstream of the bridge, the channel would be excavated in the barren cobble bottom of the slough. Heavy equipment would travel along the existing floodway corridor to minimize disturbance to existing vegetation and sensitive areas. Larger rocks and boulders excavated from the channel would be set aside and placed in the newly excavated channel to provide instream habitat structure. Large woody material may also be placed in the channel to provide habitat complexity.



Photo 2-1: Example of dense channel side vegetation within East Sand Slough north of the Antelope Boulevard/Highway 36 Bridge.

The proposed channel design consists of excavating material from five distinct features including the main entrance, high-flow entrance, main channel, secondary channel, split channel, and ‘downstream of bridge’ channel. An estimated 87,500 cubic yards of material would be excavated from an area of approximately 20 acres. **Table 2 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature** summarizes the estimated amount of material that would be excavated from each channel feature and the number of truckloads required to remove the material from the channel.

Table 2 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature

Channel Feature	Area of Disturbance (acres)	Estimated Amount of Excavated Material (cubic yards)	Number of Truckloads*
Main Entrance and Upstream of Bridge Channel	2.3	11,700	585
High-Flow Entrance	0.2	1,500	75
Secondary Channel	2.2	10,500	525
Split Channel	2.9	16,800	840
Downstream of Bridge Channel	10.6	47,000	2,350
TOTAL	18.2	87,500	4,375

* Assuming 20 cubic yards per truckload.

Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas shows the location of channel features that would be excavated. Excavated material would be spoiled onsite within designated spoil areas or where contouring is needed, or hauled to pre-determined off-site locations (including an existing quarry and stockpile yard) within 5 miles of the Project area. Excavated material from the channel entrances may be spread within the slough channel if flows preclude the transport of spoil material out of the channel.

2.1.1.1 Main Channel Entrance

The main channel entrance is located along the left bank of the Sacramento River. The 20-foot-wide main channel entrance would be excavated to an elevation of about 248 feet North American Vertical Datum 88 (NAVD 88), where water in the main channel would be approximately one foot deep at a design low flow of 5,000 cfs in the Sacramento River (as measured at the Sacramento River at Bend Bridge stream gage) (see **Photo 2-2**). At the design low flow, the main channel would flow at about 15 cfs, representing less than one percent of the total flow within the Sacramento River. The side slopes of the main channel entrance would be lined with larger rock to stabilize the banks at a slope of 3:1 or greater. If suitable material is available, rock would be obtained from the excavated channel material. Otherwise, rock material that has been cleaned and is free from organic matter or other deleterious substances would be imported from an existing local quarry.

2.1.1.2 High-Flow Entrance

The high-flow entrance, located about 200 feet downstream from the main channel entrance, would be excavated to an elevation of about 250 feet (NAVD 88). The 10-foot-wide high flow entrance would activate at a Sacramento River flow of 8,000 cfs at the Sacramento River at Bend Bridge stream gage (see **Photo 2-3**). At this flow, the high-flow entrance would add about 1 cfs to the main channel.



Photo 2-2: Main channel entrance to East Sand Slough. The main channel entrance would be excavated to allow flows into the main channel when Sacramento River flows are 5,000 cfs.



Photo 2-3: High-flow channel entrance to East Sand Slough. The high-flow channel entrance would be excavated to allow flows into the main channel when Sacramento River flows are 10,000 cfs and into a secondary channel when flows are 15,000 cfs. Photo taken on December 17, 2018.

2.1.1.3 Main Channel

The 20-foot-wide main channel would be excavated to have 2:1 side slopes for a depth of 2 feet, then would transition to a 3:1 side slope or greater. The new channel would be constructed along the toe of the existing bank to minimize disturbance to existing vegetation. The channel would meander downstream along the left bank for approximately 2,200 feet before splitting into two channels (see **Photo 2-4**).



Photo 2-4: Main channel of East Sand Slough, upstream of the Antelope Boulevard/Hwy 36 Bridge. Photo taken on December 17, 2018

During excavation, existing historical bridge piers located within the main channel would remain intact and would be avoided during construction (see **Photo 2-5**). An existing demolished car would be removed and disposed of properly prior to the start of excavation (see **Photo 2-6**).



Photo 2-3: Existing historical bridge abutment.

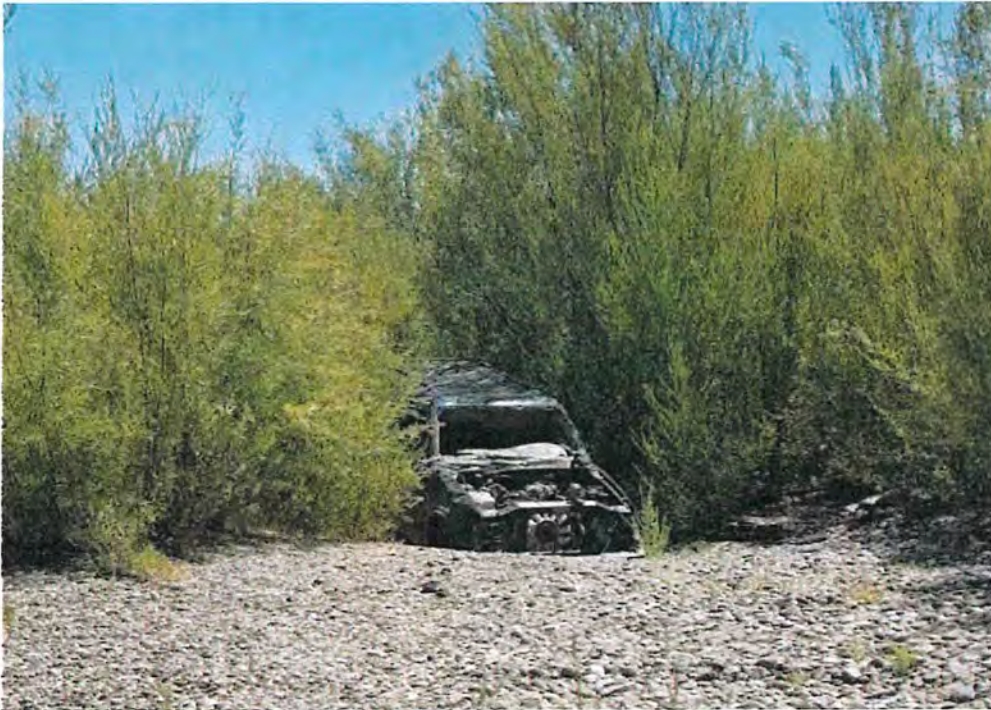


Photo 2-4: Demolished car in main channel.

2.1.1.4 Secondary Channel

The secondary channel would be excavated to create a 10-foot bottom width with 3:1 side slopes and would activate when flows in the Sacramento River measure 13,000 cfs at the Sacramento River at Bend Bridge stream gage. The secondary channel would meander through an existing scour channel and merge into the split channel (described below) upstream of the Antelope Boulevard/Highway 36 Bridge. The secondary channel would add approximately 4 cfs to the main channel when flows in the Sacramento River measure 13,000 cfs at the Sacramento River at Bend Bridge stream gage (see **Photo 2-7**).



Photo 2-5: Secondary flood channel on the west side of East Sand Slough, north of the Antelope Boulevard/Highway 36 Bridge. Interstate 5 is approximately 200 feet to the right.

2.1.1.5 Split Channel

A portion of the flow from the main channel would travel southwesterly in an excavated 8-foot-wide channel with 3:1 side slopes or greater. The remaining flow from the main channel would continue to travel along the left bank in an excavated 12-foot-wide channel with 3:1 side slopes or greater. The split channel would be approximately 1,300 feet long and merge back into one 20-foot-wide channel downstream of the Antelope Boulevard/Highway 36 Bridge (see **Photo 2-8**).



Photo 2-6: Panoramic view of East Sand Slough north of the Antelope Boulevard/Highway 36 Bridge looking west. Interstate 5 (I-5) is at the top of the photograph. The I-5/Antelope Boulevard interchange is at the top left. Note that the main (east) and secondary (west) channels merge just before the bridge structure.

2.1.1.6 Antelope Boulevard/Highway 36 Bridge

Excavation would be required under the Antelope Boulevard/Highway 36 Bridge. The California Department of Transportation (Caltrans) performed an initial scour analysis of the bridge and the proposed Project design and determined that no adverse impacts to the bridge would occur. Caltrans recommended the following:

1. Construct engineering guide banks at the inlets and outlets for both the smaller and the larger channels to avoid any migration of the thalweg into the spans adjacent to the proposed channels.
2. Properly encapsulate all H-piles of the affected bents in order to prevent corrosion related to their contact with water, which would be expected to occur.
3. Install concrete lining (or similar revetment material) in the channel rather than a rock mattress and tie the channel bottom to the existing concrete curtain walls between the H-piles, if scour analysis indicates this is necessary.
4. Establish maintenance requirements for project-developed channels and the guide banks.

Existing slabs of broken concrete under the bridge would be removed and hauled offsite to the Tehama County landfill. The large boulders under the bridge would be removed and later placed in the channel to provide instream habitat structure. Guide banks at the inlets and outlets would consist of large rock engineered by Caltrans and installed according to Caltrans specifications. Excavation under the bridge would occur in two locations between two bridge bents and three bridge bents, respectively. Bridge bents consist of a row of H-piles with suspended concrete walls that span the width of the bridge and are spaced 22 feet apart. H-piles would be encapsulated with a marine-grade reinforced epoxy coating made of low toxicity ingredients. The channel would be over-excavated and lined with large rock, unless the Caltrans scour analysis indicates that concrete lining is necessary. If suitable material is available, rock would be obtained from the excavated channel material. Otherwise, rock material that has been cleaned and is free from organic matter or other deleterious substances would be imported from an existing local quarry. The existing suspended concrete walls between the H-piles would remain but would be lowered to the channel grade (see **Photo 2-9**). Maintenance requirements for the channels and guide banks are discussed in *Section 2.2 Channel Maintenance*.



Photo 2-7: Existing concrete and rock between two bridge bents under the Antelope Boulevard/Highway 36 Bridge.

2.1.1.7 Downstream of Bridge Channel

The 20-foot-wide channel would continue downstream of the Antelope Boulevard/Highway 36 Bridge for approximately 6,000 feet before flowing back into the Sacramento River (see **Photo 2-10** and **Photo 2-11**). The landscape below the Antelope Boulevard/Highway 36 Bridge is a wide and barren flood channel that provides significant opportunities for floodplain development (see **Photo 2-12**). Excavation within this section of the channel was designed to create 2:1 side slopes for a depth of 2 feet and then gentle slopes of 6:1 and greater for floodplain habitat. Because test pit results indicate that portions of the channel consist mostly of sand, the channel would need to be over-excavated and backfilled with existing gravel.



Photo 2-9: Southern end of East Sand Slough adjacent to the Sacramento River's mainstem, 6/27/18



Photo 2-8: Southern end of East Sand Slough adjacent to the Sacramento River's mainstem, 5/24/17



Photo 2-102: East Sand Slough main channel downstream south of the Antelope Boulevard/Highway 36 Bridge.

2.1.2 Materials Sorting

An estimated 87,500 cubic yards of material would be excavated during construction (see **Table 2 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature**). For the purposes of the environmental impact analysis (see Chapter 3.0 Environmental Checklist), it is assumed that up to 100,000 cubic yards of material would be excavated from East Sand Slough. Of that amount, approximately 5 to 10 percent of the material would consist of overburden such as plant material that would be disposed of. The remaining approximately 90,000 cubic yards of material would consist of sand and gravel and would be sorted using a Chieftain 2100 powerscreen or equivalent. Gravel typically weighs 2,800 pounds per cubic yard, and 90,000 cubic yards of gravel weighs approximately 126,000 tons. Depending on feed size, mesh size, and material type, the powerscreen can process up to 600 tons per hour. Assuming 90,000 cubic yards of gravel for the purpose of estimating the maximum processing time and considering that processing would be limited to 8 hours per day, it would take approximately 30 days to process the excavated material.

Gravel would be processed onsite in a designated spoil area, staging area (described below), or portion of the slough channel. Suitable larger rock and boulders would be placed along the side slopes at the main channel entrance and within the Antelope Boulevard/Highway 36 Bridge section of the channel to eliminate any potential for erosion or scour. Downstream of the Antelope Boulevard/Highway 36 Bridge, the remaining gravel/cobble would be used to line the channel bottom. Sand and silt may be used for planting. The remaining material would be disposed of in designated spoil areas or hauled to pre-determined offsite locations within 5 miles of the Project area.

Test pit results indicate that excavated material would yield enough rock to meet the Project's needs. However, if additional material is needed, it would be imported from an existing stockpile location located on USFWS land approximately 8.5 miles from the Project area.

2.1.3 Utility Relocation

There are five utilities lines within the Project area. The utility lines, which include a water main, sewer main, gas line, electric line, and telecommunications line, are shown in **Figure 1-3 East Sand Slough Side Channel Project Overview** and described below.

2.1.3.1 Water Main

An underground City of Red Bluff 16-inch C-905 PVC water main crosses East Sand Slough. The water main is located upstream of the Antelope Boulevard/Highway 36 Bridge and is approximately 7 feet below proposed post-Project finish grade. Although there is sufficient cover, trench plates would be placed over the water main as a precaution to ensure that the heavy machinery will not adversely affect the pipe.

2.1.3.2 Sewer Main

A City of Red Bluff 6-inch steel sewer main is located immediately downstream of the Antelope Boulevard/Highway 36 Bridge and was originally placed 4 feet below existing ground level. Scour has occurred over time and the pipe's depth now varies. The sewer line is exposed along the right bank of

East Sand Slough; concrete has been poured on top of this portion of the line to stop a leak. At this location, the proposed Project design would require 7 to 8 feet of channel excavation to finish grade. The sewer line would therefore need to be lowered 10 or more feet. During this process, flow to the line would be temporarily stopped, sewage would be pumped from the line, and the site would be excavated around the line. All excavated materials would be stockpiled onsite. The line would be cut, and excavation would continue to a minimum of three feet below the bottom of the new side channel. New pipe would be installed and tested, and flows would resume. Once the new pipe is confirmed to be free of leaks, the site would be backfilled with the excavated material. All contaminated soil and sewer pipe would be hauled to a pre-determined location permitted to handle contaminated construction debris.

2.1.3.3 Gas and Electric Lines

The locations of a Pacific Gas and Electric (PG&E) gas line and electric line, which are located downstream of the Antelope Boulevard/Highway 36 Bridge, are shown in **Figure 1-3 East Sand Slough Side Channel Project Overview**. The gas line is a 6-inch diameter steel pipe. The 12-kilovolt electric line runs through a 5-inch ABS pipe. Both utility lines would be lowered by PG&E. Electricity would be turned off and the gas line blocked off on both sides of the line to isolate the work area. Gas within the line would then be removed. An excavator or vacuum truck would excavate down to the gas and electric lines and all excavated materials would be stored onsite. PG&E personnel would remove the electrical conduit/line and the gas pipe. PG&E crews would continue excavation down at least three feet below the bottom of the new side channel. New electrical conduit would be installed, and the lines replaced. New steel gas line would be installed, and all replaced utility infrastructure tested. Once the function of the utilities is confirmed, the site would be backfilled with the excavated materials. The excavated materials would then be replaced and compacted back to existing ground level.

2.1.3.4 Telecommunications Line

An AT&T 12-duct telecommunications line crosses East Sand Slough upstream of the Antelope Boulevard/Highway 36 Bridge (see **Figure 1-3 East Sand Slough Side Channel Project Overview**). The 12-duct system consists of twelve 4-inch diameter pipes that hold fiber optics and copper wire. Only six ducts are in use. The line would either be lowered by AT&T using one of two methods. The first method would use an excavator to unearth the line in two locations. The unused six ducts in the line would be spliced and extended, then lowered a minimum of 3 feet below the proposed channel bottom. Approximately 1,000 feet of new line would be pulled through the lowered 6-duct line; the lowered line would become the active line. The formerly active 6-duct line would then be removed. The second method would consist of replacing the entire line from one existing manhole to another at opposite edges of the slough either by directional boring or excavation. Where excavation is required, the site would be backfilled with excavated material and regraded to existing ground level.

2.1.4 Staging Areas

Two areas have been identified for staging. Staging Area 1 (see **Figure 1-3 East Sand Slough Side Channel Project Overview**) would be located on Forest Service managed land outside of the floodway in an area adjacent to an existing small parking lot along Sale Lane. This 1.4-acre area would primarily be used to refuel equipment, store equipment and construction supplies, and stockpile excavated material,

if needed. Staging Area 2 would be located within the slough just upstream of the Antelope Boulevard/Highway 36 Bridge. Staging Area 2 would be approximately 0.8 acres in size. Disturbed areas would be planted and/or hydroseeded following project construction.

2.1.5 Spoil Areas

Two spoil areas would be developed on lands managed by USFS (see **Figure 1-3 East Sand Slough Side Channel Project Overview**). Material spoiled in these areas would be spread outside of the dripline of existing trees and elderberry shrubs.

Spoil Area 1 would be just under 8 acres and located within the floodway. Spoil Area 1 would be used as both a stockpile and spoil location. A temporary access road connected to Sale Lane would be created within Spoil Area 1 to allow dump trucks direct access to stockpile materials for loading. An existing fence along Sale Lane would be altered to allow direct access and would be restored to pre-Project conditions following completion of truck haul activities. Approximately 12,500 cubic yards of material could be permanently placed in Spoil Area 1. Modeling results confirm that spoils in this area would not impact the 100-year flood elevation. Up to 3 feet of spoils would be placed in this area to an elevation of 262 feet with 2:1 side slopes. (see **Photo 2-13**).

Spoil Area 2 would be located along Interstate 5 (I-5). This spoil area would be approximately 1.6 acres in size and located outside the floodway. Within this spoil area, approximately 17,000 cubic yards of material could be placed along the existing bank to an elevation of 268 feet with 3:1 side slopes.

Both spoil areas would be planted and/or hydroseeded with vegetation that is compatible with the spoil material following construction.

The remaining approximately 60,500 cubic yards of spoil material would be hauled to pre-determined offsite locations within 5 miles of the Project area.



Photo 2-11: Example of dense vegetation that quickly develops along channel banks within the East Sand Slough.

2.1.6 Access Roads

The Project area would be accessed via I-5, Antelope Boulevard, and Sale Lane. Four temporary access roads would also be used (see **Figure 1-3 East Sand Slough Side Channel Project Overview**). The upper access road would be constructed to extend an existing road from Durango RV Park (under the I-5 Bridge) to just upstream of the Antelope Boulevard/Highway 36 Bridge. This road would be accessed via Antelope Boulevard to Belle Mill Road to East Avenue to Lake Avenue. The road would be accessed via the Durango RV Park during utility relocation, but otherwise would only be used on occasion by small vehicles transporting construction management personnel to the upper portion of the Project area. During channel excavation, the access road would also be used, but would be accessed via the slough rather than through the Durango RV Park.

The middle and lower access roads would be 12 feet wide and would be used for heavy equipment access. The middle access road, which would be accessed from Sale Lane, would consist of an existing 400-foot-long dirt road located on private land and lands managed by USFS. Use of this access road would be contingent upon landowner permission.

The two lower access roads would also be accessed from Sale Lane. The first lower access road, as described in *Section 2.1.5 Spoil Areas*, would be created within Spoil Area 1 to allow dump trucks direct access to stockpile materials for loading. An existing barbed wire fence that parallels Sale Lane would be

cut in two locations and temporary access roads would be created to allow access into the spoil area. The fence would be repaired once construction is completed. The second lower access road would consist of an existing 2,000-foot-long dirt road located on lands managed by USFS. The existing dirt road crosses a hiking trail before dropping down into East Sand Slough. Minimal grading may be required in this area to access the slough. Little to no earthwork would otherwise be needed to make these access roads suitable for construction equipment. Any disturbed areas associated with use or slight modification of the access roads would be planted and/or hydro-seeded as appropriate once construction is completed.

2.1.7 Floodplain Planting

The newly created channel downstream of the Antelope Boulevard/Highway 36 Bridge would have gentle side slopes of 6:1 or greater, creating areas of floodplain habitat for planting. Floodplain planting would consist of native, flexible-stemmed plant species that would not impede flood flows. Suitable plant species could include sandbar and arroyo willows, mule fat, California rose, and numerous perennial herbaceous species. Planting would be implemented where the resulting floodplain substrate and depth to water after excavation are appropriate to establish and maintain the plantings. Irrigation is not anticipated to be necessary; however, if plantings demonstrate signs of water stress during the growing season, irrigation water may be drawn from the slough and applied via portable water pump or small water truck until the plantings develop root systems that can access the water table. If necessary, irrigation may occur for up to three years. Willow plantings would consist of cuttings collected onsite; potted stock and/or plugs would be used for other plant species.

2.1.9 Construction Sequencing

Channel excavation activities would occur in three phases. During Phase I, the underground sewer line, electrical line, gas line, and telecommunications line would be lowered. These activities are anticipated to begin September 2019 but are dependent on permit acquisition. If September 2019 is not feasible, these activities are anticipated to begin June 2020.

During Phase II, the East Sand Slough channel bottom would be excavated to a rough grade starting 100 feet from the terminus of the slough to 100 feet from the entrance to the slough. Construction activities associated with bridge protection under the Antelope Boulevard/Hwy 36 Bridge would also be completed. Phase II construction is anticipated to occur under dry conditions from August through October 2020. Excavation of the lower channel downstream of the Antelope Boulevard/Highway 36 Bridge may occur as early as June or July 2020 in areas where vegetation is sparse and sensitive biological resources have not been identified.

During Phase III, final construction would occur. The secondary channel, which is designed for a higher flow, would be excavated all the way to the entrance. Once excavation of this channel is complete, the remaining 20 yards at the proposed outlet would be removed. The main channel entrance would be the last area excavated. Once excavated, the water depth would be shallow enough to allow heavy equipment to drive out of the channel. Phase III construction is anticipated to occur during the dry period and would begin September 2020. Final excavation of the channel outlet and channel entrances would occur between October 1st and March 1st when flows within the Sacramento River are reduced. Truck hauls associated with the transport of spoil material from Spoil Area 1 may also continue through March 1st. Floodplain

plantings would be installed following Phase III construction during the season appropriate for installation of plantings and cuttings, typically in late winter/early spring.

2.2 Channel Maintenance

The proposed channel is located within a regulatory floodway. A regulatory floodway is designed to carry flood flows during high flow events to reduce the chance of flooding in the surrounding area; it is therefore important to maintain the channel as a floodway. If natural recruitment of vegetation within the slough is so successful that it impedes flood flows, vegetation clearing would be required in some areas so that the floodway can continue to function as designed. Vegetation removal would not occur between March 1 and August 31.

The entrances and exit of the channel have the greatest potential to require future maintenance. The velocity in the channel entrance would be much lower than the velocity in the mainstem Sacramento River. As flood flows recede, the suspended sediment in the mainstem could settle out in the entrances to the side channel due to lower velocities in the channel. At the exit of the channel, the Sacramento River widens and velocities are greatly reduced. These flow conditions could potentially cause deposition at the channel exit. If maintenance is required to convey design flows into East Sand Slough, maintenance would consist of excavating the entrances, exit, and/or channel to the design grade. Excavation would occur between October 1st and March 1st when flows within the Sacramento River are reduced.

Maintenance under and around the Antelope Boulevard/Highway 36 Bridge may also be required. If the guide banks shift, the large rocks would be repositioned as designed. If the epoxy/concrete encapsulation on the bridge bents peels or becomes damaged, the epoxy/concrete would be reapplied. If required, bridge maintenance is anticipated to occur during September. Caltrans would continue to be responsible for debris removal along the bridge bents.

2.3 Recreation Enhancement and Expansion

The construction details associated with the Recreation Enhancement and Expansion component are described below.

2.3.2 Trail Expansion

As shown in **Figure 2-1 Proposed Trail Expansion Route**, a 2,500-foot extension of an existing 8-foot-wide bicycle and pedestrian trail would be constructed from the trail's northerly terminus (located approximately 1,200 feet south of Gilmore Ranch Road) to an existing overlook area along Sale Lane (located approximately 250 feet south of Gamay Court). The trail expansion would require minor grading, compaction, and installation of the road base, and would disturb approximately 25,000 square feet (8-foot-wide pavement, 1-foot-wide road base shoulders). The road base would be covered with either concrete or a synthetic polymer mixed with aggregate. The trail expansion area would include interpretive and wayfinding signage and would comply with the Americans with Disabilities Act. A small amount of herbaceous vegetation would be removed during construction of the trail; disturbed areas adjacent to the trail alignment would be stabilized and seeded with native grasses following construction.

2.3.3 Boat Ramp Restoration

An abandoned 6,800-square-foot concrete boat ramp located adjacent to an existing parking lot would be removed and planted with native grasses (see **Figure 2-2 Proposed Boat Ramp Restoration**).

2.3.5 Construction Sequencing

Proposed trail expansion would not be implemented until channel excavation is complete. The boat ramp restoration component could be implemented concurrently with channel restoration.

2.4 Anticipated Construction Equipment

A variety of vehicles and equipment would be used during project construction. Proposed project implementation is anticipated to require the use of the following equipment:

- | | |
|------------------------|--|
| (2) scrapers | (2) loaders |
| (4) excavators | (1) gravel sorter |
| (2) 35-ton dump trucks | (1) 7,000-gallon off-highway water truck |
| (2) dozers | (1) 4,000-gallon on-highway water truck |
| (2) roller screens | (4) walk-behind power trowels |
| (1) concrete truck | (1) end dump truck |
| (1) motor grader | (1) float tractor |

2.5 Environmental Commitments

Preventative measures were incorporated into the proposed Project's design to avoid or minimize potential adverse effects to the environment during construction. The boundary of Spoil Area 2 was revised to avoid a forested riparian wetland. Channel alignments were designed to avoid trees and bank vegetation, and construction activity areas were delineated to avoid elderberry shrubs. Construction sequencing was designed to avoid or minimize potential effects to the Sacramento River and existing roads were incorporated as access roads to minimize disturbance. Planting/seeding of disturbed areas post-construction was also incorporated into the Project design to minimize ground disturbance. During proposed Project construction, all construction activities would comply with required permits (see **Table 1 Required Permits and Approvals Anticipated for the East Sand Slough Side Channel Project**).

Figure 2-1: Proposed Trail Expansion Route



Aerial Imagery: The National Agriculture Imagery Program - NAIP 2018

Figure 2-2: Proposed Boat Ramp Restoration



Aerial Imagery: Google Earth 6/27/2018

3.0 Environmental Checklist

This chapter describes the affected environment within the Project area and discusses the anticipated environmental consequences associated with implementation of the proposed Project (described in *Chapter 2 Description of the Proposed Project*). CEQA Guidelines Appendix G was used as a basis for assessing the significance of potential environmental effects, taking into account the whole of the action as required by CEQA. Agency standards, regulatory requirements, and professional judgement were also used, where appropriate.

Each of the resource areas was evaluated and one of the following four determinations was made:

- **No Impact:** No impact to the environment would occur as a result of implementing the Project.
- **Less than Significant Impact:** Implementation of the Project would not result in a substantial and adverse change to the environment and no mitigation is required.
- **Potentially Significant Impact:** Implementation of the Project could result in an impact that has a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (CEQA Guidelines Section 15382).
- **Less than Significant with Mitigation Incorporated:** Implementation of the Project could result in a “potentially significant impact,” except that identified project-specific mitigation measures would reduce the effect to a less-than-significant level.

If a potentially significant impact was identified, mitigation measures were provided to reduce the impact to a less-than-significant level. Mitigation measures are summarized in **Appendix B Mitigation Monitoring and Reporting Plan**.

3.1 Aesthetics

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.1.1 Environmental Setting/Affected Environment

The Project area is within and immediately adjacent to the East Sand Slough, which is a natural flood channel of the Sacramento River's mainstem (see **Figure 1-1 Proposed East Sand Slough Side Channel Project Location**, **Figure 1-3 East Sand Slough Side Channel Project Overview** and **Photo 3-1**). The channel is inundated during winter flood flows (see **Photo 3-2**).



Photo 3-1: Oblique View of East Sand Slough Project area with major features labeled. The Project area continues approximately one mile north (top of the photograph) of the Antelope Boulevard/Highway 36 Bridge.



Photo 3-2: Winter flood flows within East Sand Slough downstream from the Antelope Boulevard /Highway 36 Bridge.

Under existing conditions, that portion of the Project area north of the Antelope Boulevard/Highway 36 Bridge contains two partially vegetated flood channels and extensive areas of riparian tree, shrub, and grass species between the two channels (see **Photos 3-3** through **3-7**). Immediately north of the Antelope Boulevard/Highway 36 Bridge, the two flood channels combine (see **Figure 1-3 East Sand Slough Side Channel Project Overview** and **Photo 2-8**). Numerous vegetation treatments have been completed by the RCDTC and other entities within this portion of the slough to remove invasive blackberry stands. Dead and dying trees along with other debris that resulted from the 2013 East Sand Slough fire were removed as well. In order to improve the health of riparian forests located adjacent to flood channels, overly dense stands of trees and brush have been removed. These actions have both improved the area's aesthetics and health of riparian forests stands within that portion of the Project area north of the bridge structure.



Photo 3-3: Riparian tree and shrub species and grasses growing along the main (east) channel of East Sand Slough upstream from the Antelope Boulevard/Highway 36 Bridge near the channel's upstream connection with the Sacramento River.



Photo 3-4: Riparian vegetation along the secondary (west) channel of East Sand Slough, upstream from the Antelope Boulevard/Highway 36 Bridge. I-5 is located approximately ¼ west of this site.



Photo 3-5: Example of mixed cottonwood, willow, and shrub stands with interspersed grasslands adjacent to the secondary (west) channel of East Sand Slough.



Photo 3-6: Example of mixed riparian forest and grasslands on terraces between the main and secondary channels of East Sand Slough.



Photo 3-7: Example of well-developed riparian forest on terraces between the main and secondary channels of East Sand Slough.

The proposed Project area is generally located within both the city limits of Red Bluff, California and a developed area of Tehama County (see **Figure 1-1 Proposed East Sand Slough Side Channel Project Location** and **Figure 1-3 East Sand Slough Side Channel Project Overview**). The north end of the Project area begins along the left bank of the Sacramento River immediately northeast of the North Red Bluff I-5 Bridge (see **Photo 3-8**). The western boundary is adjacent to the I-5 corridor (see **Photo 3-9**). The Project area's eastern boundary is bordered by residential neighborhoods (see **Photo 3-1**), large lot developments and ranchettes (see **Photo 3-10**), and commercial development (see **Photo 3-11** and **Photo 3-12**). South of the Antelope Boulevard/Highway 36 Bridge along Sale Lane are large orchards and other farming operations, as well as open grassland and oak woodlands managed by the Mendocino National Forest (see **Photo 3-13**). The Project area's southern boundary is East Sand Slough's terminus located across the river channel from the Red Bluff Pumping Plant and approximately 0.25 miles upstream from the RBDD (see **Photo 2-10** and **Photo 2-11**).



Photo 3-8: I-5 Bridge located on the northwest corner of the East Sand Slough Side channel Project area.



Photo 3-9: The western boundary of the East Sand Slough Project area is adjacent to the I-5 corridor within view of passing motorists. The freeway's flat, raised roadbed is shown at the upper left.



Photo 3-10: Example of large lot/ranchette residential develop adjacent to the East Sand Slough Side Channel Project Area.



Photo 3-11: High density commercial and residential development along the east side of the East Sand Slough Side Channel Project area at the intersection of Antelope Boulevard and Sale Lane.



Photo 3-12: Commercial development in close proximity to the East Sand Slough Side Channel Project Area.



Photo 3-13: Example of landscape in which Spoil Area 1 and 2 would be located.

As shown on **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas**, Staging Area 1 would be located outside of the floodway in a disturbed grassland area adjacent to Sale Lane. Staging Area 2 would be located within East Sand Slough just upstream of the Antelope Boulevard/Highway 36 Bridge.

Two spoil areas would be located on USFS-managed land (Mendocino National Forest). The spoil areas are shown on **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas**. **Photo 3-13** is representative of the grass component of Spoil Areas 1 and 2, but the two spoil sites contain few if any trees.

There are four construction access roads (1 upper, 1 middle, and 2 lower) identified on **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas**. Access roads would be approximately 12 feet wide. The upper access road would be 220-foot long. The middle access road would be a 400-foot long dirt road that would follow an existing access road originating immediately adjacent to Staging Area 1. One lower access road would consist of an existing 2,000-foot-long dirt road that leads directly from Sale Lane into the East Sand Slough channel. The other lower access road would consist of two new entry points in a grassy area connecting Sale Lane to Spoil Area 1.

Portions of the Project area are viewable by motorists passing by on I-5, Antelope Boulevard, and Sale Lane. The Project area can also be viewed from many of the residences and businesses along the Project area's eastern boundary. The lower portion of the Project area is viewable by recreationists and is accessible to the public while the upper portion experiences limited public use.

3.1.2 Environmental Consequences

a) Would the project have a substantial adverse effect on a scenic vista?

Less Than Significant. Vegetation within the Project area located both immediately adjacent to flood channels and on terraces within and adjacent to East Sand Slough would be protected from Project-related impacts, as ground-disturbing work would be conducted within the slough channels below the OHWM along the toe of adjacent banks, with the exception of a small, sparsely vegetated portion of the bank that would be disturbed during sewer pipeline relocation. Trees and other vegetation that occur outside of channel excavation areas would be left in place to provide shade and canopy as well as to maintain the Project area's existing aesthetic conditions. Grading and other excavation activities would require the removal of very little vegetation within East Sand Slough's channel bottom. The upper portion of the excavation (above the Antelope Boulevard/Highway 36 Bridge) would primarily deepen and connect existing unvegetated channels, with minor loss of vegetation in the channel and at the main channel entrance, so the aesthetic character would be maintained. The portion downstream of the bridge is largely an unvegetated cobble bottom channel. When the new side channel is excavated in this area, flexible, native plant species similar to the willow habitat found upstream of the bridge would be planted in suitable areas. This would improve the aesthetic character of the site.

Approximately 90,000 cubic yards of material would be removed from the channel within an area totaling 20 acres, representing disturbance to approximately 14% of the overall East Sand Slough area. As described in *Chapter 2.0 Description of the Proposed Project*, aesthetics in the Project area would be protected during construction by requiring heavy equipment to travel along established access roads within the floodway corridor to minimize disturbance to existing vegetation and sensitive areas.

The lower access roads would consist of an existing dirt road that leads directly into the East Sand Slough channel and two new entry points into Spoil Area 1 that would be dirt roads. Little to no earthwork would be required to establish the middle or lower access roads. The upper access road may require minimal grading. All temporary access roads would be restored to existing grade and disturbed hill slopes would be planted and/or hydro-seeded as appropriate once construction is completed. Similarly, the staging area(s) would be seeded as necessary.

The developed aesthetics of the area would be improved as concrete construction debris currently found under the Antelope Boulevard/Highway 36 Bridge (see **Photo 2-9**) within the flood channels would be removed. Proposed removal of the degraded boat ramp and replacement with native grasses would also improve the aesthetics of the area. Opportunities to view the Project area's improved aesthetics within the lower half of the Project area would be increased through the expansion of an existing bicycle and pedestrian trail (see **Figure 2-1 Proposed Trail Expansion Route**). Finally, during construction, motorists would have only a fleeting view of the Project area and other viewers would only be able to see portions of the Project area at any given time. Therefore, construction impacts to aesthetic conditions within the Project Area are anticipated to be less than significant.

If required, channel maintenance may result in the removal of newly established vegetation, but the overall aesthetic value of the area would be maintained and temporary impacts to aesthetic conditions within the Project Area would be less than significant.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Several piers from a long-ago demolished bridge structure that passed over the slough are located within the Project area (see **Photo 2-5**). As described in *Chapter 2.0 Description of the Proposed Project*, these structures would be avoided. No portion of the East Sand Slough Project area is within the viewshed of a State Highway segment formally classified as a State Scenic Highway, and no scenic resources would be damaged along any State Highway infrastructure. Therefore, there would be no impact.

c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant. Project implementation would not substantially degrade the existing visual character of the Project Area, but during construction the visual character of the Project area would change within various locations. However, activities related to Project implementation would be temporary. As described in *Chapter 2.0 Description of the Proposed Project*, vegetation within the Project area would be protected through avoidance and disturbed areas would be restored through planting, reseeding, or natural recruitment. It is anticipated that any impacts to aesthetic conditions within the Project area would be limited to the East Sand Slough channel bottom and temporary in nature given the rapidity with which vegetation and other slough conditions would return to pre-Project conditions. Impacts to the existing visual character would be temporary and less than significant.

If required, channel maintenance may result in the removal of newly established vegetation, but the existing visual character of the area would be maintained and impacts to aesthetic conditions within the Project Area would be less than significant.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The proposed Project does not include the installation of lighting. The proposed trail extension would be constructed using concrete and would not create substantial glare. There would be no impact to day or nighttime views in the area due to new sources of light or glare.

3.2 Agriculture and Forest Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

II. Agricultural 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, as updated) prepared by the California Department 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

3.2.1 Environmental Setting/Affected Environment

The Project area is located within portions of Red Bluff city limits and Tehama County that contain developed, semi-developed, and agricultural parcels. The Project's impact area is located within a slough channel adjacent to the Sacramento River that is not developed, forested, or under agricultural production.

3.2.2 Environmental Consequences

a) Would the project 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?

No Impact. None of the lands within the Project area are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, there would be no impact.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. Project construction would not change land use within the Project area or on surrounding lands and thus would not conflict with existing zoning for agricultural activities or Williamson Act contracts. Therefore, there would be no impact.

c) Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g))? -and-

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Due to its location, construction within the Project area would not conflict with existing zoning for, or cause rezoning of forest land, timberland, or timberland zoned Timberland Production, nor would it cause zoning changes to forest, range, or other wildland area. As a result, the proposed Project would not conflict with existing zoning or cause rezoning of timberland, zoned Timberland Production and there would be no impact.

e) Would the project 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. Due to its location within and immediately adjacent to an active flood channel as well as within public open lands not under agricultural production, and due to the nature of construction activities to be implemented (i.e. channel excavation, spreading of excavated channel sediment, and construction of temporary access roads), construction within the Project area would not involve other changes in the existing environment that could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, there would be no impact.

3.3 Air Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

III. Air Quality.

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.

Would the project:

- a) Conflict with or obstruct implementation of the applicable air quality plan?

- | | | | | |
|---|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c) Expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
-

3.3.1 Environmental Setting/Affected Environment

3.3.1.1 Criteria Air Pollutants and Precursor Emissions

The Project area is located within the city limits of Red Bluff and an adjacent developed portion of Tehama County. Local jurisdiction for air quality is under the authority of the Tehama County Air Pollution Control District (TCAPCD). The TCAPCD is responsible for the planning, maintenance, and attainment of air standards throughout Tehama County. Air Quality standards are based upon provisions of the federal and State Clean Air Acts, Air quality within Tehama County is regulated at the federal level by the U.S. Environmental Protection Agency (EPA) and at the State level by the California Air Resources Board (CARB).

In general, the air quality within Tehama County is good but does not currently fully meet State health standards for clean air, although no specific data is available for the Project area. Particulate matter and ozone are the air pollutants of greatest concern to Tehama County air officials. The climate and topography of the Northern Sacramento Valley traps man-made air pollution along with smoke from wildfires, both of which contribute to Tehama County's air quality problems. Particulate matter consists of fine mineral, metal, soot, smoke, and dust particles suspended in the air. For health reasons, the greatest concern is with inhalant particulate matter less than 10 microns in diameter (PM10), which can lodge in the most sensitive areas of the lungs and cause respiratory or other health problems. Tehama County is designated as a non-attainment² area for PM10 by State standards and as unclassified³ by federal standards.

Construction equipment can release large amounts of particulate matter into the atmosphere in a relatively short period of time. Ozone is an invisible pollutant formed by chemical reactions involving nitrogen oxides, reactive hydrocarbons such as diesel, and gasoline emissions in the presence of sunlight. It is a powerful respiratory irritant that can cause coughing, shortness of breath, headaches, fatigue, and lung

² Status assigned to areas where monitored pollutant concentrations violated national and/or State ambient air-quality standards within the last three years.

³ Status assigned to areas with insufficient data.

damage, especially among children, the elderly, and the sick. Tehama County is designated as non-attainment for ozone by State standards.

3.3.1.2 Sensitive Receptors

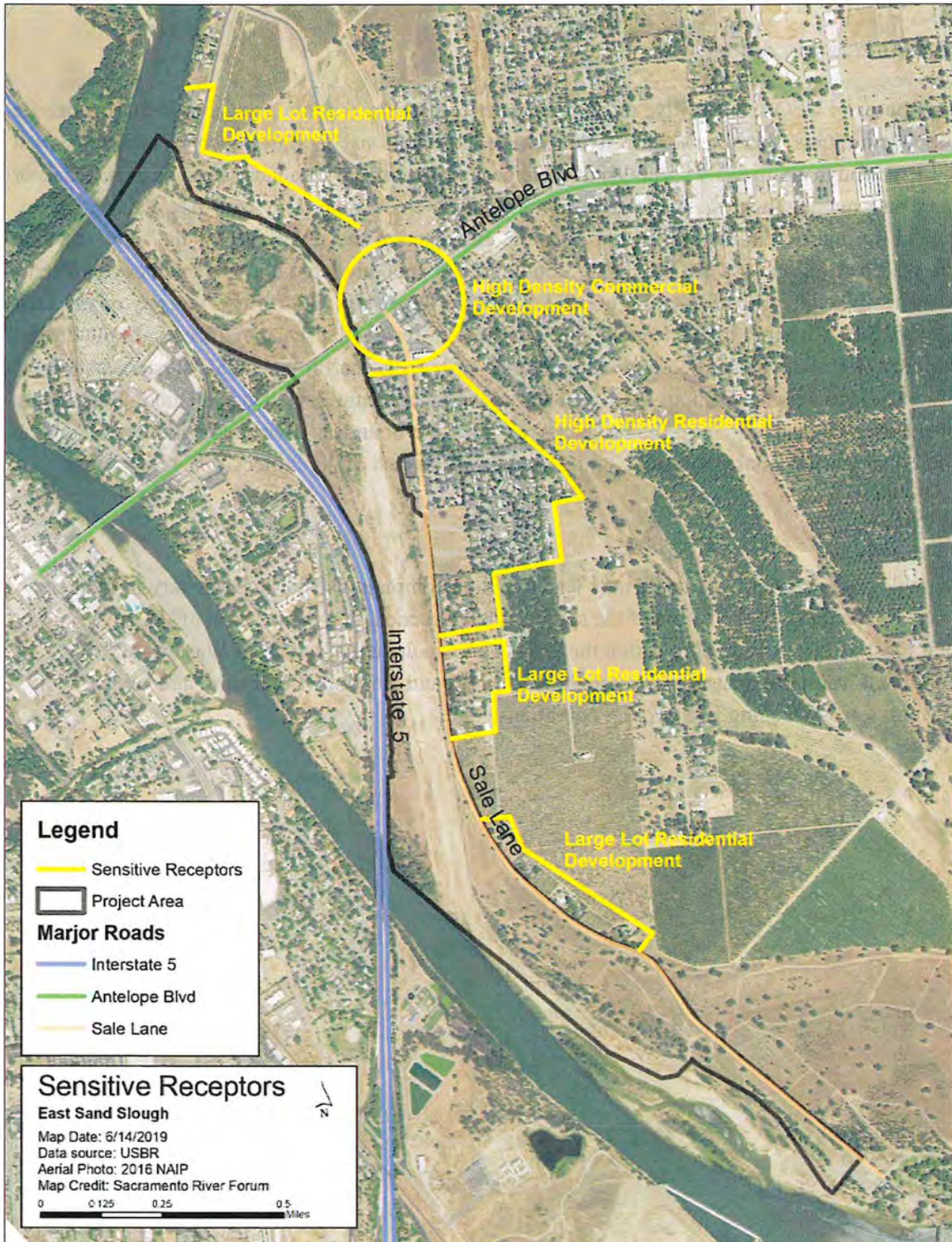
For the purposes of CEQA, a sensitive receptor is generically defined as any residence including private homes, condominiums, apartments, and living quarters; educational facilities such as preschools and kindergarten through grade twelve schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. Sensitive receptors also include long-term care hospitals, hospices, prisons, and dormitories or similar live-in housing. Based upon these definitions, the only sensitive receptors within or adjacent to the East Sand Slough Project area⁴ are large lot residential developments and high-density neighborhoods (see **Figure 3-1 Sensitive Receptors Within the Vicinity of the East Sand Slough Side Channel Project Area**). The closest non-residential sensitive receptor to the Project area is Mercy High School, located approximately 0.5 mile from the Project area's western boundary. The Shasta College Tehama Campus is located across the Sacramento River Channel along State Route 36W, approximately one mile from the Project area's southern boundary. Berrendos Middle School and Antelope Elementary School are located 2 miles and 2.5 miles east of the Project area, respectively.

3.3.1.3 Odors

Objectionable odors are unpleasant and may lead to public complaints. Odor impacts vary in frequency and severity, depending on the nature of the source, wind direction, and the location of sensitive receptors. Existing sources of odors within the Project area include the Red Bluff Wastewater Treatment Plant, vehicle exhaust from nearby traffic on I-5 and Antelope Boulevard, and vehicle exhaust from nearby ranching and farming operations.

⁴ The Project area analyzed for Air Quality was larger than the existing proposed Project area.

Figure 3-1: Sensitive Receptors Within the Vicinity of the East Sand Slough Side Channel Project Area



3.3.2 Environmental Consequences

In compliance with the California Clean Air Act (CCAA), air districts submit air quality attainment plans (AQAP) primarily to address ozone non-attainment. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, attainment plans must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections.

The AQAPs stress attainment of ozone standards and focus on strategies for reducing reactive organic gas and nitrogen oxide emissions. These plans also promote active public involvement, enforcement of compliance with district rules and regulations, education in the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled within the region, and implementation of stationary and mobile source control measures. The AQAPs become part of the State Implementation Plan in accordance with the requirements of the CCAA. The TCAPCD has not established quantitative thresholds of significance for the purposes of CEQA with respect to short-term construction emissions of criteria air pollutant or precursor emissions. Rather, the agency emphasizes control measures.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. Project construction would include the use of large construction equipment including dozers, earth haulers, and other earth-moving equipment. Transportation equipment and hand power tools would be used as well. Channel maintenance, if required, would also involve the use of large construction equipment. All of this equipment would be operated under current California Air Regulations as enforced by the TCAPCD. The limited effects to air quality that would result either directly or indirectly from Project construction or maintenance would be temporary and would occur intermittently. As a result, construction and maintenance activities are not anticipated to conflict with or obstruct implementation of the Tehama County Air Quality Plan or any State Air Quality Plans and there would be no impact.

b) Would the project 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?

Less Than Significant with Mitigation Incorporated. Proposed Project construction and maintenance activities have the potential to temporarily affect ambient air quality by generating criteria pollutant emissions during operation of construction vehicles and equipment. Potential Project-related emissions include PM10 and ozone precursors. Fugitive dust emissions from ground-disturbing activities and driving on unpaved roads would also contribute to increases of PM10. Project-related increases of these pollutants could be potentially significant because Tehama County is in nonattainment for these pollutants by State standards. However, construction- and maintenance-related emissions would be temporary, and implementation of the emission and dust control measures included in Mitigation Measures AQ-1, AQ-2, and AQ-3 would assure that the use of fueled equipment in connection with Project construction and

maintenance would not generate excessive amounts of particulate matter in the form of dust or equipment exhaust, effectively reducing potential impacts to less than significant.

Mitigation Measure AQ-1: Implement Fugitive Dust Control Measures

The Project Contractor shall demonstrate compliance with this measure during construction through the submission of weekly monitoring reports to the RCDTC Project Manager. RCDTC personnel shall monitor the application of dust control measures by the Contractor at least once a week on an ongoing basis during all phases of construction and maintain a monitoring log in the project files. In the event monitoring indicates that in-place measures do not adequately control dust, the RCDTC Project Manager shall take necessary steps to assure the Contractor's adequate control of project-related dust. The following provisions shall apply to monitoring and control of dust at spoil sites, access roads, and staging areas:

- 'Reasonably Available Control Measures', as defined by the TCAPCD, shall be implemented for each fugitive dust source type, as defined in Table I, Page 4:24-3 of the TCAPCD air quality regulations.
- Traffic and equipment speeds on all unpaved surfaces shall be reduced to 15 miles per hour or less, and unnecessary vehicle traffic shall be reduced by restricting access.
- Hauling of spoil material outside of the project area shall be limited to Monday through Friday, except holidays, from 7 am to 7 pm.
- All routes used to access staging areas, areas of excavation, and spoil sites shall be watered at a sufficient concentration and frequency to maintain a stabilized surface when project-related equipment is operating in those areas during dry periods. The RCDTC Project Manager or Contractor (if assigned by RCDTC Project Manager) shall monitor for dust generation and shall ensure that impacted surfaces are watered when airborne dust is being transported outside of the project area. The RCDTC Project Manager or Contractor shall ensure that dust control measures are implemented in the vicinity of any elderberry shrub within 100 feet of construction activities.
- The RCDTC shall apply for a TCAPD Fugitive Dust Permit and assure that all Contractor personnel adhere to all permit provisions, along with all other requirements of the TCAPCD.

Mitigation Measure AQ-2: Control Construction Equipment Exhaust

- All construction equipment shall be maintained in proper tune according to manufacturer's specifications. Maintenance, repair, and tuning reports for equipment shall be prepared by the Contractor and provided when requested by the RCDTC Project Manager. Tuning reports prepared for the RCDTC shall be submitted to:

Resource Conservation District of Tehama County

Attn: Jon Barrett

2 Sutter Street, Suite D
Red Bluff, CA 96080

- To the extent feasible, the use of diesel construction equipment meeting current CARB certification standards for off-road heavy-duty diesel engines shall be maximized.
- Unnecessary vehicle idling shall be restricted to 5 minutes or less.

Mitigation Measure AQ-3: Register Heavy Equipment

- All off-road heavy-duty diesel equipment greater than 50 horsepower used in execution of the Project shall be registered with the Air Resources Board's Diesel Off-Road Online Reporting System (DOORS) and meet all applicable standards for replacement and/or retrofit.
- All portable equipment used in the execution of Project construction, including generators and air compressors rated over 50 brake horsepower, shall be registered in the Portable Equipment Registration Program or permitted through the TCAPCD.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant. No significant air quality impacts to any of the sensitive receptors located adjacent to the Project area are anticipated due to the temporary and intermittent nature of Project construction and maintenance. It is anticipated that ambient air quality conditions would return to pre-Project conditions once all Project construction and maintenance entailing the use of heavy equipment has been completed. Impacts to adjacent developed sites would be minimized, as wind direction within the vicinity of the Project area trends from north to south and would push pollutants away from inhabited structures located near the Project area.

Project construction completed in connection with the proposed Project is expected to improve the environmental, aesthetic, and safety conditions within the Project area, increasing passive recreational use of the site. A resulting increase in automobile traffic is anticipated, however not to a degree that would significantly increase the generation of air pollutants that could affect current residents or future sensitive receptors. Impacts would therefore be less than significant and would be further reduced with implementation of the emission and dust control measures included in Mitigation Measures AQ-1, AQ-2, and AQ-3.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant. Project-related construction and maintenance activities would generate diesel emissions from dozers and other heavy equipment and gasoline emissions from transportation equipment. These emissions produce what many people consider to be objectionable odors. However, due to the fact that Project-related emissions would be temporary, any odors generated in connection with construction equipment would not significantly affect a substantial number of people for a long period of time. Additionally, no objectionable odors are anticipated to persist within the Project area or surrounding landscapes for more than one work period and would clear out of the area overnight. It is anticipated that air quality throughout the Project area would return to ambient conditions once all work utilizing heavy construction equipment has been completed. Impacts are therefore expected to be less than significant and would be further reduced with implementation of the emission and dust control measures included in Mitigation Measures AQ-1, AQ-2 and AQ-3.

3.4 Biological Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

IV. Biological Resources.

Would the project:

- | | | | | |
|--|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

- | | | | | |
|--|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

3.4.1 Environmental Setting/Affected Environment

The information included in this Biological Resources section is based on a **Biological Assessment/Biological Evaluation Report (Appendix C)** prepared by Sacramento River Forum personnel, a **Botanical Reconnaissance Survey Report (Appendix D)** prepared by DWR and Forum personnel, an **Avian Monitoring Report (Appendix E)** prepared by River Partners staff, and a **Waters of the US Delineation Report** prepared by Reclamation personnel (**Appendix F**)⁵.

3.4.1.1 Landscape Conditions and Site History

Prior to the construction of Shasta Dam, East Sand Slough appears to have been similar to its existing alignment as a large overflow channel of the Sacramento River. The near 90-degree bend of the Sacramento River against the Tehama formation just downstream of the East Sand Slough entrance slows the river velocity, leading to sediment deposition throughout the slough.

⁵ These supporting reports analyzed a larger Project area than the existing proposed Project area and therefore depict a larger Project area boundary in figures and report larger acreage totals than those included in this Initial Study.

The RBDD was completed in 1964 to provide irrigation flows for the Tehama-Colusa Canal and Corning Canal. The dam raised the upstream water elevation, creating ‘Lake Red Bluff’, which led to the increased growth of riparian forest within the slough due to a higher water table. In 2011, the dam was decommissioned and the dam gates were permanently raised, lowering the water surface elevation along East Sand Slough. This change stressed and killed some of the riparian vegetation along the slough. A wildfire in June 2013 within East Sand Slough burned many of the trees and riparian vegetation throughout the northern half of the slough (Resource Conservation District of Tehama County 2017). **Figure 3-2 Comparison of Vegetation Changes Following Loss of Lake Red Bluff and the 2013 East Sand Slough Fire** shows imagery of the northern slough both during Lake Red Bluff conditions and following the 2013 fire. Following the 2013 fire, burned areas were quickly colonized by annual grasses and early-successional shrubs such as elderberry, box elder, and arroyo willow. Remnant patches of riparian forest and woodland remain on the uplands north of Antelope Boulevard.

Figure 5-2: Comparison of Vegetation Changes Following Loss of Lake Red Bluff and the 2013 East Sand Slough Fire



3.4.1.2 Wildlife Habitats and Vegetation Communities

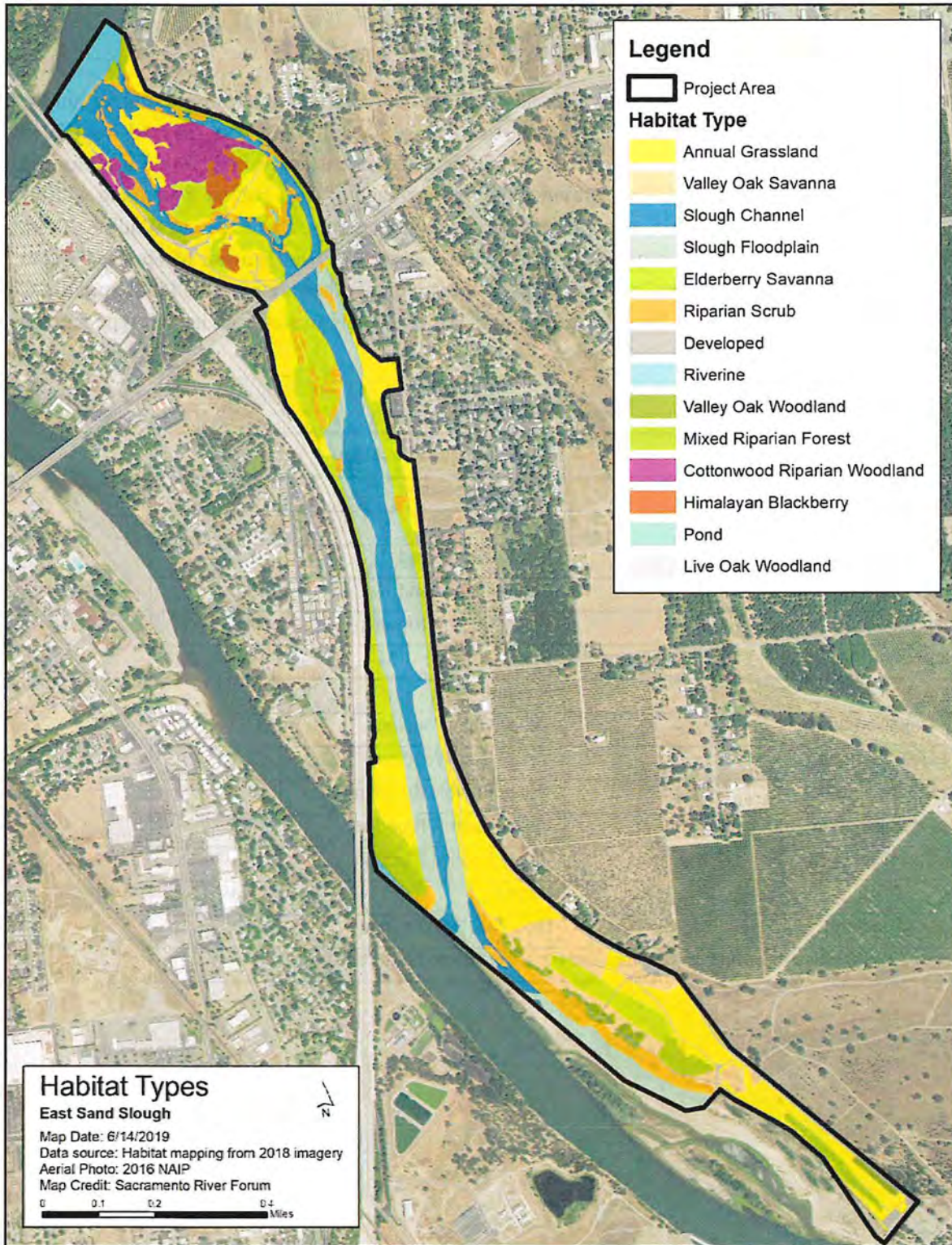
The Project area includes several habitat types that can be broadly divided into those found within the slough, its adjacent floodplain, and in the upland areas. These habitat types were mapped from 2018 aerial photography and assigned classifications to facilitate biological analysis. **Table 3 Acreage of Habitat Types within the Project Area** provides the total acreage of each habitat type along with its corresponding CWHR habitat classification scheme (California Department of Fish and Wildlife 2019). A Project area map of these habitat types is presented in **Figure 3-3 Distribution of Habitat Types within the Project Area**, and several detailed maps of these habitat types are presented in **Appendix C Biological Assessment/Biological Evaluation Report**. The characteristics of each habitat type and the associated wildlife species are discussed below.

Table 3 Acreage of Habitat Types within the Project Area

Habitat Type	CWHR ¹ Classification	Acres
Annual Grassland	Annual Grassland	57.5
Slough Channel	Barren	41
Slough Floodplain	Annual Grassland	38.9
Elderberry Savanna	Annual Grassland	39.5
Riparian Scrub	Valley Foothill Riparian	17.2
Developed	Barren	14.6
Riverine	Riverine	6.7
Valley Oak Woodland	Valley Oak Woodland	3.5
Valley Oak Savanna	Valley Oak Woodland	12.3
Mixed Riparian Forest	Valley Foothill Riparian	11.1
Cottonwood Riparian Woodland	Valley Foothill Riparian	10.9
Himalayan Blackberry	Valley Foothill Riparian	2.9
Pond	Barren	0.43
Live Oak Woodland	Blue Oak-Foothill Pine	0.25

¹California Wildlife Habitat Relationships (California Department of Fish and Wildlife 2019).

Figure 3-3: Distribution of Habitat Types within the Project Area



3.4.1.2.1 Annual Grassland Classification

The annual grassland (CWHR Class) is known to provide foraging habitat for many wildlife species, including the turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), and prairie falcon (*Falco mexicanus*). It also provides breeding habitat for the western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), western rattlesnake (*Crotalus oreganus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Aseo flammeus*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*). Mammals typically found in this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), American badger (*Taxidea taxus*), and coyote (*Canis latrans*) (California Department of Fish and Wildlife 2019). The annual grassland classification was differentiated into three distinct habitat types based on the associated vegetation communities in the Project area: annual grassland, slough floodplain, and elderberry savanna. These habitat types are described below.

Annual Grassland

Approximately 57.5 acres of annual grassland are found within the Project area. North of the Antelope Boulevard/Highway 36 Bridge, the understory of savannah and open forested areas is dominated by annual grassland. South of the Antelope Boulevard/Highway 36 Bridge, the grasslands dominate much of the upper floodplain of East Sand Slough and much of the southeast portion of the site. Dominant species are largely non-native and invasive grasses and forbs including ripgut brome (*Bromus diandrus*), common soft-brome (*Bromus hordaceus*), wild oats (*Avena barbata*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis* ssp. *rubens*), smooth cat's ear (*Hypochaeris glabra*), Italian rye grass (*Festuca perennis*), field mustard (*Brassica rapa*), and yellow starthistle (*Centaurea solstitialis*). Native herbs are less commonly found and include Oregon western rosinweed (*Calycadenia truncata*), naked buckwheat (*Eriogonum nudum*), rayless goldenaster (*Heterotheca oregona*), telegraphweed (*Heterotheca grandiflora*), rough-node bastard-sage (*Eriogonum wrightii* var. *trachygonum*), wand buckwheat (*Eriogonum roseum*), sacred thorn-apple (*Datura wrightii*), winecup clarkia (*Clarkia purpurea*), Spanish clover (*Acemisson americanus*), and foothill deervetch (*Acemisson brachycarpus*). Wildlife species observed during biological surveys within this habitat type include red fox (*Vulpes vulpes*), coyote, California ground squirrel, black-tailed jackrabbit (*Lepus californicus*), gopher snake (*Pituophis catenifer*), western fence lizard, and western skink (*Plestiodon skiltonianus*),

Slough Floodplain

Approximately 38.9 acres of slough floodplain habitat border East Sand Slough's main channel. This area receives periodic flood deposits of silts and sandy soils and supports a dense assemblage of weedy annual grasses, primarily ripgut brome. Field mustard and black mustard are dominant members of this vegetation. Patches of yellow starthistle are found in areas. Higher on the floodplain edges are scattered shrubs including blue elderberry, arroyo willow (*Salix lasiolepis*), Himalayan blackberry (*Rubus armeniacus*) and giant reed (*Arundo donax*). No wildlife species were observed within this habitat type during biological surveys, but raccoon (*Procyon lotor*) tracks were present.

Elderberry Savanna

Approximately 39.5 acres of elderberry savanna are found along the middle and upper terrace of the slough. This habitat type appears to be a successional regrowth in areas that had supported valley oak woodland and riparian woodlands but were burned in the 2013 fire. Blue elderberry is dominant in the shrub canopy, along with scattered young trees and shrubs such as box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), arroyo willow, red willow (*Salix laevigata*), black locust (*Robinia pseudoacacia*), interior live oak (*Quercus wislizeni*), and tree of heaven (*Ailanthus altissima*). The understory is typically composed of non-native annual grasses including ripgut brome with scattered forbs such as common hedge parsley (*Torilis arvensis*), Himalayan blackberry, California yerba santa (*Eriodictyon californicum*), mugwort (*Artemisia douglasiana*), California rose (*Rosa californica*), and milk thistle (*Silybum marianum*). Wildlife species observed during biological surveys within this habitat type include coyote, mule deer (*Odocoileus hemionus*), gopher snake, and western skink.

3.4.1.2.2 Valley Oak Woodland Classification

Valley Oak Woodland (CWHR Class) is known to provide food and cover for many wildlife species. Common bird species found in oak woodlands include European starling (*Sturnus vulgaris*), California quail (*Callipepla californica*), oak titmouse (*Baeolophus inornatus*), western scrub jay (*Aphelocoma californica*), rufous-sided towhee (*Pipilo erythrophthalmus*), Bewick's wren (*Thryomanes bewickii*), bushtit (*Psaltriparus minimus*), and acorn woodpecker (*Melanerpes formicivorus*). Common mammal species found in these habitats include foxes, western gray squirrels (*Sciurus griseus*), and mule deer (California Department of Fish and Wildlife 2019). The valley oak woodland classification was differentiated into three distinct habitat types based on the associated vegetation communities in the Project area: valley oak savanna and valley oak woodland. These habitat types are described below.

Valley Oak Savanna

Approximately 12.3 acres of valley oak savanna are found within the southeast portion of the site. The vegetation consists of widely scattered valley oaks (*Quercus lobata*) interspersed with annual grassland. The herbaceous cover is typically weedy annual grasses and forbs found in the surrounding grassland. Many of the valley oaks in the southern portion of the Project area are older trees with large canopies providing partial shade for forbs such as Amsinckia (*Amsinckia menziesii*), hairy vetch (*Vicia villosa*), sacred thorn-apple (*Datura wrightii*), and blue elderberry shrubs (*Sambucus nigra* subsp. *caerulea*). Wildlife species observed during biological surveys within this habitat type include California ground squirrel and gopher snake.

Valley Oak Woodland

Approximately 3.5 acres of valley oak woodland are scattered on higher terraces adjacent to riparian scrub habitats near the Sacramento River at the southern end of the Project area. The canopy is dominated by scattered valley oaks with an understory of non-native annual grasses, mugwort, milk thistle, and other forbs. Wildlife species observed during biological surveys within this habitat type include mule deer.

3.4.1.2.3 Barren Classification

Barren (CWHR Class) can provide habitat for birds and reptiles depending on the structure of the non-vegetated substrate (California Department of Fish and Wildlife 2019). The barren classification was

differentiated into three distinct habitat types based on the associated vegetation communities in the Project area: slough channel, developed, and pond. These habitat types are described below.

Slough Channel

Approximately 41 acres of slough channel habitat are found within the Project area. East Sand Slough is designed to reduce flooding in Red Bluff by redirecting Sacramento River flood flows. These flood flows have created a high flow channel around 380 feet wide through much of its length south of the Antelope Boulevard/Highway 36 Bridge. Periodic flood flows scour vegetation and deposit cobbles, sand, and silts along its length. As flood flows recede, muddy areas and temporary pools remain. These temporary pools located within scour holes strand fish (see **Photo 3-14**). Juvenile salmonid fish species have to be rescued from these temporary pools after flows through the channel recede (see **Figure 1-2 Known Fish Stranding Pools in East Sand Slough**).

The vegetation along the slough is sparse in areas with bare cobbles and sand bars. Areas with deeper soils support a variety of native and non-native plants including sandbar willow (*Salix exigua*), German knotgrass (*Scleranthus annuus*), clammyweed (*Polanisia dodecandra* ssp. *trachysperma*), curvepod yellowcress (*Rorippa curvisiliqua*), flatsedges (*Cyperus* sp.), leontodon (*Leontodon saxatilis*), cocklebur (*Xanthium strumarium*), stalked popcornflower (*Plagiobothrys stipitatus* ssp. *micranthus*), field mustard, curled dock (*Rumex crispus*), riggut brome, perennial ryegrass (*Festuca perennis*), and wild oats.

North of the main channel, the bare cobbles and sandy areas support a sparse community of herbs and scattered willows. Flaccid cryptantha (*Cryptantha flaccida*) was found in these areas, which indicates suitability for the Stoney Creek spurge (*Euphorbia ocellata* ssp. *rattanii*).

The slough's existing channel is relatively bare of vegetation and wildlife were not commonly seen on the cobbles and sand within the channel. Wildlife species observed during biological surveys within this habitat type include the gopher snake.

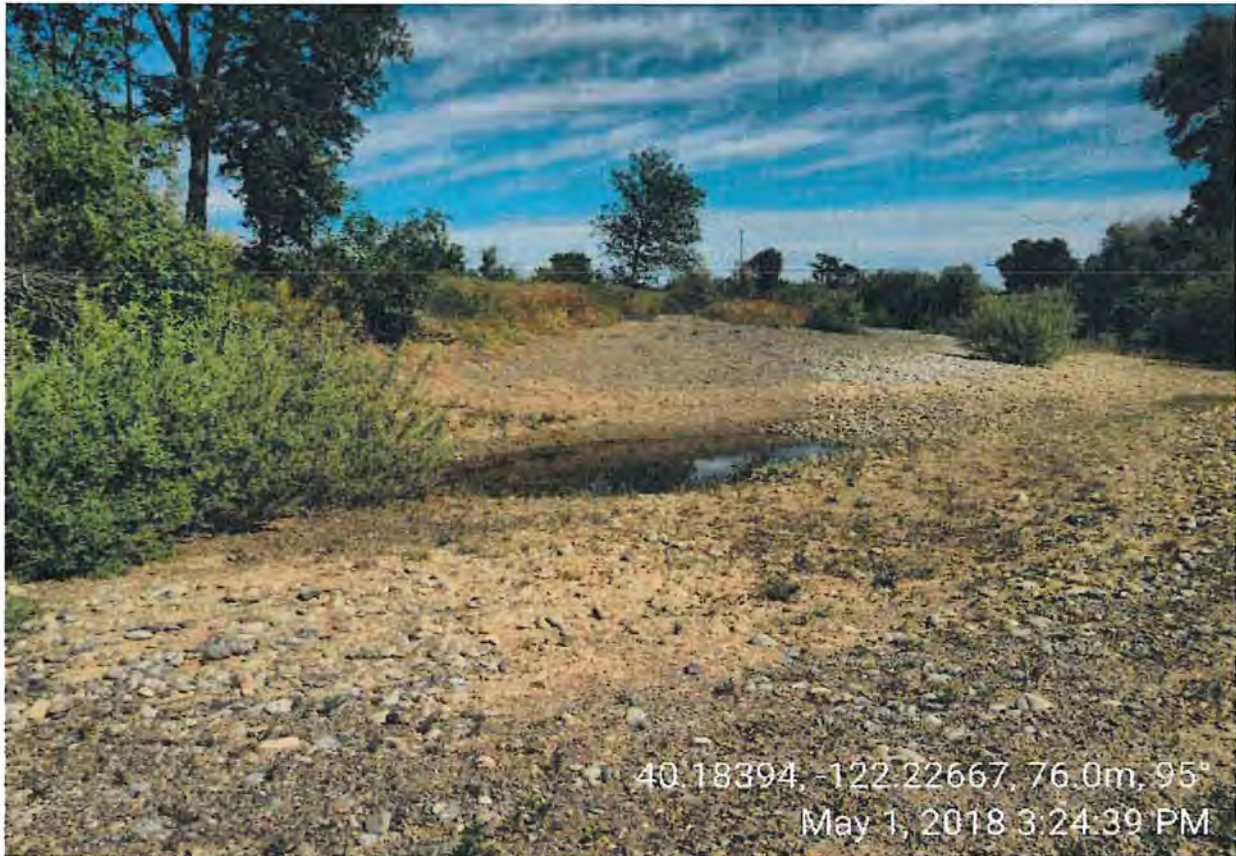


Photo 3-14: Example of scour holes found throughout the East Sand Slough Side Channel project area. This scour hole is located in the secondary (west) channel above the Antelope Boulevard/Highway 36 Bridge. Other scour hole locations are shown on Figure 1-2 Known Fish Stranding Pools in East Sand Slough.

Developed

Approximately 14.6 acres of the Project area are classified as developed. Developed areas include paved and unpaved roads, parking areas, boat ramps, walking trails, and facilities. The developed habitat type also includes disturbed lands such as compacted soils supporting sparse vegetation in historic gravel operation areas. Much of this habitat type is located within the Red Bluff Recreation Area. Vegetation in developed areas typically consists of ruderal or weedy annual plants or horticultural plantings. Wildlife species observed during biological surveys within this habitat type include nesting cliff swallows under the Antelope Boulevard/Highway 36 Bridge and the raccoon. Bat guano was also observed under the Antelope Boulevard/Highway 36 Bridge.

Pond

Approximately 0.43 acre of the Project area is classified as pond. Eight perennial ponds are scattered along the existing channel where scouring has formed low areas that may be contiguous with the groundwater, as indicated by their low temperatures and perennial nature. These ponds are located north of Antelope Boulevard. A variety of perennial aquatic species were found in these ponds, including creeping water-primrose (*Ludwigia peploides*), Brazilian waterweed (*Egeria densa*), crisp-leaved pondweed (*Potamogeton crispus*), sedges, rushes, and algae. Wildlife seen in the ponded areas included

a variety of birds. American bullfrogs (*Lithobates catesbeianus*) and bluegill (*Lepomis macrochirus*) are abundant in the permanently ponded areas. Red-eared sliders (*Trachemys scripta* ssp. *elegans*) and American beaver (*Castor canadensis*) occur in two of the largest ponds.

3.4.1.2.4 Valley Foothill Riparian Classification

Valley Foothill Riparian (CWHR Class) is known to provide food, water, migration and dispersal corridors, cover, nesting, and thermal cover for many wildlife species (California Department of Fish and Wildlife 2019). A study on the Sacramento River within 0.3 mile of the Project area found 147 bird species as nesters or winter visitants (Laymon 1984). About 55 species of mammals are known to use California's Central Valley riparian communities (Trapp et al. 1984). The valley foothill riparian classification was differentiated into four distinct habitat types based on the associated vegetation communities in the Project area: riparian scrub, mixed riparian forest, cottonwood riparian forest, and Himalayan blackberry. These habitat types are described below.

Riparian Scrub

Approximately 17.2 acres of riparian scrub are found primarily along the inlet channels north of the Antelope Boulevard/Highway 36 Bridge and along the upper bank of the Sacramento River south of the channel outlet. Dominant shrub species include sandbar willow, which forms scattered thickets in sandy and cobbly soils. Wildlife species observed during biological surveys within this habitat type include coyote, mule deer, raccoon, and Sierran chorus frog (*Pseudacris sierra*).

Mixed Riparian Forest

Approximately 11.1 acres of mixed riparian forest are found adjacent to the Sacramento River at the north and south ends of the slough. Dominant trees include northern California black walnut (*Juglans californica* var. *hindsii*), box elder, red willow, western sycamore (*Platanus racemosa*), Oregon ash, and Gooding's willow (*Salix gooddingii*). The herbaceous layer varies from weedy annual grasses and forbs to dense thickets of small trees with openings of Santa Barbara sedge (*Carex barbarae*), California mugwort, California wild rose, and Himalayan blackberry. Wildlife species observed during biological surveys within this habitat type include mule deer, raccoon, and Sierran chorus frog.

Cottonwood Riparian Woodland

Approximately 11 acres of cottonwood riparian woodland are found in two patches north of Antelope Boulevard that did not burn in the 2013 fire. This habitat type is dominated by Fremont cottonwood (*Populus fremontii*). Scattered western sycamore (*Platanus racemosa*) are in wetter soils. The understory is open with scattered shrubs and young trees including box elder, Oregon ash, northern California walnut, arroyo willow, red willow, Gooding's willow, blue elderberry, and Himalayan blackberry. The shrub layer consists largely of annual grasses and non-native forbs such as poison hemlock (*Conium maculatum*). Some intact patches of Santa Barbara sedge are found in areas.

Himalayan Blackberry

Two large patches of Himalayan blackberry occupy nearly 3 acres of land north of Antelope Boulevard. These areas appear to be depressional wetlands. The high availability of moisture and open canopy allows

blackberry to cover contiguous patches and vigorously compete with nearby shrubs such as willows and blue elderberry.

3.4.1.2.5 Riverine Classification

Riverine (CWHR Class) provides resting and escape cover for many species of waterfowl, and foraging habitat for insectivorous and piscivorous bird species. Waterfowl and shorebirds also forage near the shore. Common mammals associated with riverine habitats include northern river otter (*Lontra canadensis*), American mink (*Mustela vison*), common muskrat (*Ondatra zibethicus*), and American beaver (California Department of Fish and Wildlife 2019). The riverine classification was not further differentiated.

The Project area includes approximately 6.7 acres of riverine habitat (i.e. the Sacramento River) at the north and south end of the proposed channel alignment. The Sacramento River is designated as essential fish habitat (EFH) for chinook salmon. Bird species detected during avian monitoring that are associated with riverine habitat include mallard (*Anys platyrhynchos*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), and osprey (*Pandion haliaetus*).

3.4.1.2.6 Blue Oak-Foothill Pine

Blue-Oak Foothill Pine (CWHR Class) provides breeding habitat for numerous amphibian, reptile, bird, and mammal species. The blue-oak foothill pine classification was differentiated into a live oak woodland habitat type to better describe the vegetation community that exists within the Project area. This habitat type is described below.

Live Oak Woodland

Approximately 0.25 acre of the Project area is classified as live oak woodland. A small live oak woodland is situated on the upper terrace adjacent to the secondary channel. The woodland is composed of several large oak trees that were initially identified as interior live oak. However, identification is difficult due to conflicting plant characteristics. Interior live oak populations in northern California show genetic evidence of considerable introgression with coast live oak (*Quercus agrifolia*) (Brophy and Parnell 1974). The trees in this live oak woodland may be hybrids or possibly they are *Quercus agrifolia* planted during Interstate 5 construction. No wildlife species were observed within this habitat type during biological surveys

3.4.1.3 Special-Status Species

Special-status species include those species federally or State-listed as endangered, threatened, or candidate; State-listed as species of special concern or fully protected species; or ranked by the California Native Plant Society as a rare plant. A list of special-status species that have some likelihood of occurring within the Project area was generated. The likelihood of occurrence for each species was determined by proximity to known occurrences and by the availability of suitable habitat within the Project area. Species lists were generated in part by querying the California Natural Diversity Database (California Department of Fish and Wildlife 2018) for all species within 9 USGS quadrangles around the Project area (see **Table 4 USGS 7.5-Minute Quadrangles Referenced for a California Natural Diversity Database Check of**

the Project Area), and by querying the 2018 USFWS Information for Planning and Consultation (IPaC) system (United States Fish and Wildlife Service 2018a).

Table 4 USGS 7.5-Minute Quadrangles Referenced for a California Natural Diversity Database Check of the Project Area

Hooker	Bend	Dales
Red Bluff West	Red Bluff East*	Tuscan Springs
West of Gerber	Gerber	Los Molinos
*The Project area is located entirely within the Red Bluff East Quadrangle.		

Query results are presented in **Table 5 Special-Status Species Known to Occur or Likely to Occur within the Project Area**. Additional species known to be in the vicinity but not within the CNDDDB query results were also included in the table. Each of these special-status species are discussed below.

Table 5 Special-Status Species Known to Occur or Likely to Occur within the Project Area

Species	Common Name	Listing Status	Likelihood of Occurrence
Mammals			
<i>Antrozous pallidus</i>	pallid bat	CDFW: SSC	Moderate. Open habitats and surrounding woodland are suitable for this species.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	CDFW: SSC	Moderate. Riparian habitat may provide suitable foraging habitat.
<i>Eumops perotis californicus</i>	western mastiff bat	CDFW: SSC	Low. Limited number of occurrences near the Project area and lack of suitable roosting habitat.
<i>Lasiurus blossevillii</i>	western red bat	CDFW: SSC	High. Previous occurrence within Project area and suitable roost trees and foraging habitat are available throughout the Project area.
Birds			

Species	Common Name	Listing Status	Likelihood of Occurrence
<i>Agelaius tricolor</i>	tricolored blackbird	CESA: Candidate Endangered CDFW: SSC	Low. Lack of suitable breeding habitat and not detected during surveys.
<i>Athene cunicularia</i>	burrowing owl	CDFW: SSC	Moderate. Project area is in close proximity to known populations and potentially suitable habitat is available.
<i>Buteo swainsoni</i>	Swainson's hawk	CESA: Threatened	High. This species was observed during surveys and potentially suitable foraging and nesting habitat is available throughout the Project area.
<i>Coccyzus americanus</i> <i>occidentalis</i>	western yellow-billed cuckoo	ESA: Threatened CESA: Endangered	Low. Lack of suitable riparian habitat patches.
<i>Elanus leucurus</i>	white-tailed kite	CDFW: FP	High. Availability of suitable habitat and the proximity to known occurrences.
<i>Haliaeetus leucocephalus</i>	bald eagle	ESA: Delisted CESA: Endangered CDFW: FP	Moderate. Not observed during surveys, but potentially suitable habitat in proximity to the Sacramento River exists.
<i>Icteria virens</i>	yellow-breasted chat	CDFW: SSC	High. Project area is in close proximity to known occurrences and forested areas provide suitable habitat.
<i>Riparia riparia</i>	bank swallow	CESA: Threatened	High. Observed during surveys. Project area provides suitable foraging habitat.
<i>Setophaga petechia</i>	yellow warbler	CDFW: SSC	High. Numerous occurrences near the Project area and suitable breeding habitat exists throughout Project area.
<i>Vireo bellii pusillus</i>	least Bell's vireo	ESA: Endangered CESA: Endangered	Low. Known distribution now restricted to Southern California.

Species	Common Name	Listing Status	Likelihood of Occurrence
Reptiles			
<i>Actinemys marmorata</i>	western pond turtle	CDFW: SSC	Moderate. Presence of nearby populations and suitable habitat within Project area.
<i>Thamnophis gigas</i>	giant garter snake	ESA: Threatened CESA: Threatened	Low. Suitable habitat is not present in the Project area or surrounding area.
Amphibians			
<i>Rana boylei</i>	foothill yellow-legged frog	CESA: Candidate Threatened CDFW: SSC	Low. Presence of predators in suitable habitat and distance to known populations.
<i>Rana draytonii</i>	California red-legged frog	ESA: Threatened CDFW: SSC	Low. Presence of predators in suitable habitat, distance to known populations, and not observed during surveys.
<i>Spea hammondi</i>	western spadefoot	CDFW: SSC	Moderate. Known occurrences within two miles and potentially suitable habitat present.
Fish			
<i>Acipenser medirostris</i>	green sturgeon - Southern DPS	ESA: Threatened CDFW: SSC	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Lampetra ayresii</i>	river lamprey	CDFW: SSC	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Lampetra tridentata</i>	Pacific lamprey	CDFW: SSC	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Mylopharodon conocephalus</i>	hardhead	CDFW: SSC	High. The Project area is within a reach of the Sacramento River that is habitat for this species.

Species		Common Name	Listing Status	Likelihood of Occurrence
<i>Oncorhynchus mykiss</i>	<i>irideus</i>	steelhead - Central Valley DPS	ESA: Threatened	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Oncorhynchus tshawytscha</i>		Chinook salmon – Central Valley fall/late fall-run ESU	CDFW: SSC	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Oncorhynchus tshawytscha</i>		Chinook salmon - Sacramento River winter-run ESU	ESA: Endangered CESA: Endangered	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Oncorhynchus tshawytscha</i>		Chinook salmon - Central Valley spring-run ESU	ESA: Threatened CESA: Threatened	High. The Project area is within a reach of the Sacramento River that is habitat for this species.
<i>Pogonichthys macrolepidotus</i>		Sacramento splittail	CDFW: SSC	Low. Suitable habitat is generally lacking in this reach of the Sacramento River.
Invertebrates				
<i>Branchinecta lynchi</i>		vernal pool fairy shrimp	ESA: Threatened	Low. No suitable habitat within the Project area.
<i>Desmocerus dimorphus</i>	<i>californicus</i>	valley elderberry longhorn beetle	ESA: Threatened	High. Prior occurrence documented within Project area and suitable habitat available.
<i>Lepidurus packardii</i>		vernal pool tadpole shrimp	ESA: Endangered	Low. No suitable habitat within the Project area.
Plants				
<i>Acmispon rubriflorus</i>		red-flowered bird's-foot-trefoil	CNPS: 1B.1	Low. Distance to known occurrences and not observed during surveys.
<i>Agrostis hendersonii</i>		Henderson's bent grass	CNPS: 3.2	Moderate. Not observed during surveys, but suitable habitat exists within the Project area.

Species	Common Name	Listing Status	Likelihood of Occurrence
<i>Astragalus pauperculus</i>	depauperate milk-vetch	CNPS: 4.3	Moderate. Not observed during surveys, but suitable habitat exists within the Project area.
<i>Cypripedium montanum</i>	mountain lady's-slipper	CNPS: 4.2	Low. Lack of suitable habitat and not observed during surveys.
<i>Cryptantha crinita</i>	silky cryptantha	CNPS: 1B.2	High. Proximity to known populations and availability of potentially suitable habitat.
<i>Downingia pusilla</i>	dwarf downingia	CNPS: 2B.2	Low. Not detected during surveys and lack of suitable habitat.
<i>Erythranthe glaucescens</i>	shield-bracted monkeyflower	CNPS: 4.3	High. Availability of suitable habitat.
<i>Eriogonum tripodum</i>	tripod buckwheat	CNPS: 4.2	Low. Not detected during surveys and lack of suitable habitat.
<i>Euphorbia ocellata</i> ssp. <i>rattanii</i>	Stony Creek spurge	CNPS: 1B.2	High. Presence of suitable habitat and proximity to known occurrences.
<i>Fritillaria pluriflora</i>	adobe-lily	CNPS: 1B.2	Low. Not detected during surveys and lack of suitable habitat.
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	CESA: Endangered CNPS: 1B.2	High. Availability of suitable habitat.
<i>Hemizonia congesta</i> ssp. <i>calyculata</i>	Mendocino tarplant	CNPS: 4.3	Low. Not detected during surveys and lack of suitable habitat.
<i>Juncus leiospermus</i> var. <i>ahartii</i>	Ahart's dwarf rush	CNPS: 1B.2	Low. Not detected during surveys and lack of suitable habitat.
<i>Juncus leiospermus</i> var. <i>leiospermus</i>	Red Bluff dwarf rush	CNPS: 1B.1	High. Availability of suitable habitat.
<i>Legenere limosa</i>	legenere	CNPS: 1B.1	High. Availability of suitable habitat.
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	woolly meadowfoam	CNPS: 4.2	Moderate. Availability of potentially suitable habitat.

Species	Common Name	Listing Status	Likelihood of Occurrence
<i>Navarretia leucocephala</i> <i>ssp. bakeri</i>	Baker's navarretia	CNPS: 1B.1	Low. Not detected during surveys and lack of suitable habitat.
<i>Navarretia heterandra</i>	Tehama navarretia	CNPS: 4.3	Low. Not detected during surveys and lack of suitable habitat.
<i>Orcuttia tenuis</i>	slender Orcutt grass	ESA: Threatened CESA: Endangered CNPS: 1B.1	Low. Not detected during surveys and lack of suitable habitat.
<i>Paronychia ahartii</i>	Ahart's paronychia	CNPS: 1B.1	Low. Not detected during surveys and lack of suitable habitat.
<i>Polygonum bidwelliae</i>	Bidwell's knotweed	CNPS: 4.3	Low. Not detected during surveys and lack of suitable habitat.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	CNPS: 1B.2	Moderate. Availability of potentially suitable habitat.
<i>Sidalcea celata</i>	Redding Checkerbloom	CNPS: 3	Moderate. Availability of potentially suitable habitat.
<i>Wolffia brasiliensis</i>	Brazilian watermeal	CNPS: 2B.3	High. Availability of suitable habitat.

3.4.1.3.1 Mammals

Antrozous pallidus (Pallid Bat)

The pallid bat can be locally common in low elevations throughout much of California. A wide variety of habitats are occupied including grasslands, shrublands, woodlands. The species is most common in open, dry habitats with adequate roost sites; caves, mines, and occasionally hollow trees and buildings. Evidence of bat roosting was observed within and beneath the bents of the Antelope Boulevard/Highway 36 Bridge; although the observed guano is not indicative of pallid bats, these structures may provide suitable roosting habitat for the pallid bat. In addition, the open habitats and surrounding woodland are suitable habitat for this species. The availability of suitable habitat indicates that this species has a moderate likelihood of occurring within the Project area.

Corynorhinus townsendii (Townsend's Big-Eared Bat)

Townsend's big-eared bats are found throughout California but are considered uncommon. This bat is most abundant in mesic habitats where it feeds on insects by gleaning from foliage along habitat edges. Maternity roosts are found in caves, tunnels, mines, and buildings in relatively warm sites. These bats are in hibernacula from October to April. There are three recent observations of this species approximately 10 to 13 miles to the southeast of the Project area along foothill streams, though there are few occurrences found in the region (California Department of Fish and Wildlife 2018). The suitability

and availability of roosting habitat in the Project area is uncertain. Nearby buildings may serve as roosting habitat. The riparian habitat within the Project area may provide suitable foraging habitat. This species is considered to have a moderate likelihood of occurring within the Project area.

Eumops perotis californicus (Western Mastiff Bat)

The western mastiff bat is one of the largest bats in California. It is a colonial species that mates in the spring and gives birth to a single pup in the summer. This species is thought to have extensive foraging ranges and feed on insects. This species is broadly distributed in southern California, although a handful of occurrences have been documented in Butte, Tehama, and Siskiyou counties. The closest known occurrence to the Project area is located 2.4 miles to the southeast in the Butler Slough Ecological Reserve. Occupied habitats vary. A limiting factor to this species' distribution is the availability of significant rock features suitable for roosting. Natural roosts are found under large slabs of granite, sandstone, basalt, and on cliff faces. These types of slope and rock features are not present within the Project area. The limited number of occurrences and lack of suitable roosting habitat indicate that this species has a low likelihood of occurring within the Project area.

Lasiurus blossevillii (Western Red Bat)

The western red bat is locally common in some parts of California between Shasta County to the Mexican border and west of the Sierra Nevada / Cascade crest. Winter range includes western lowlands. Migration occurs between winter and summer ranges. Roosts are primarily in trees often in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected above, open below, and located above dark ground-cover. Foraging is typically along edges or habitat mosaics near roost trees and open areas. This species was observed within the southern end of the Project area in 1999 (California Department of Fish and Wildlife 2018). Suitable roost trees and foraging habitat are available throughout the Project area. This species is considered to have a high probability of occurring within the Project area.

3.4.1.3.2 Birds

Agelaius tricolor (Tricolored Blackbird)

The Project area is within the current range of the tricolored blackbird. Two colonies were found within 2 miles of the Project area on cattle-grazed pasture supporting large thickets of blackberry and thistle (California Department of Fish and Wildlife 2018). Breeding colonies are generally found in the San Joaquin and southern Sacramento Valley in freshwater marshes with tall emergent vegetation. The habitats within the Project area are not typical of known breeding habitat. This species was not detected during site surveys and is considered to have a low likelihood of occurring within the Project area.

Athene cunicularia (Burrowing Owl)

The burrowing owl is a small owl found throughout open landscapes in North and South America. This species was once common and locally abundant throughout much of California and Arizona. Breeding occurs in open areas with mammal burrows in various habitats including dry rolling hills, grasslands, fallow fields, washes, arroyos, and human disturbed landscapes. In California, this species is a year-round resident, especially in the Central Valley. The breeding season in California is March to August

but can begin as early as February and extend into December. In California, nests and roost burrows are most commonly dug by ground squirrels (Shuford 2008). In the southern portion of the Project area, large areas of annual grassland show signs of burrowing mammal activity that could provide suitable habitat for burrowing owls. The proximity to known populations and the availability of potentially suitable habitat indicate that this species has a moderate likelihood of occurring within the Project area.

Buteo swainsoni (Swainson's Hawk)

Swainson's hawks utilize open habitats for foraging such as grasslands, agricultural fields, and pastures. Scattered trees near foraging areas are utilized for nesting sites. This species was observed flying through the Project area during avian monitoring surveys. Potentially suitable foraging and nesting habitat is available throughout the Project area. This species is considered to have a high likelihood of occurring within the Project area.

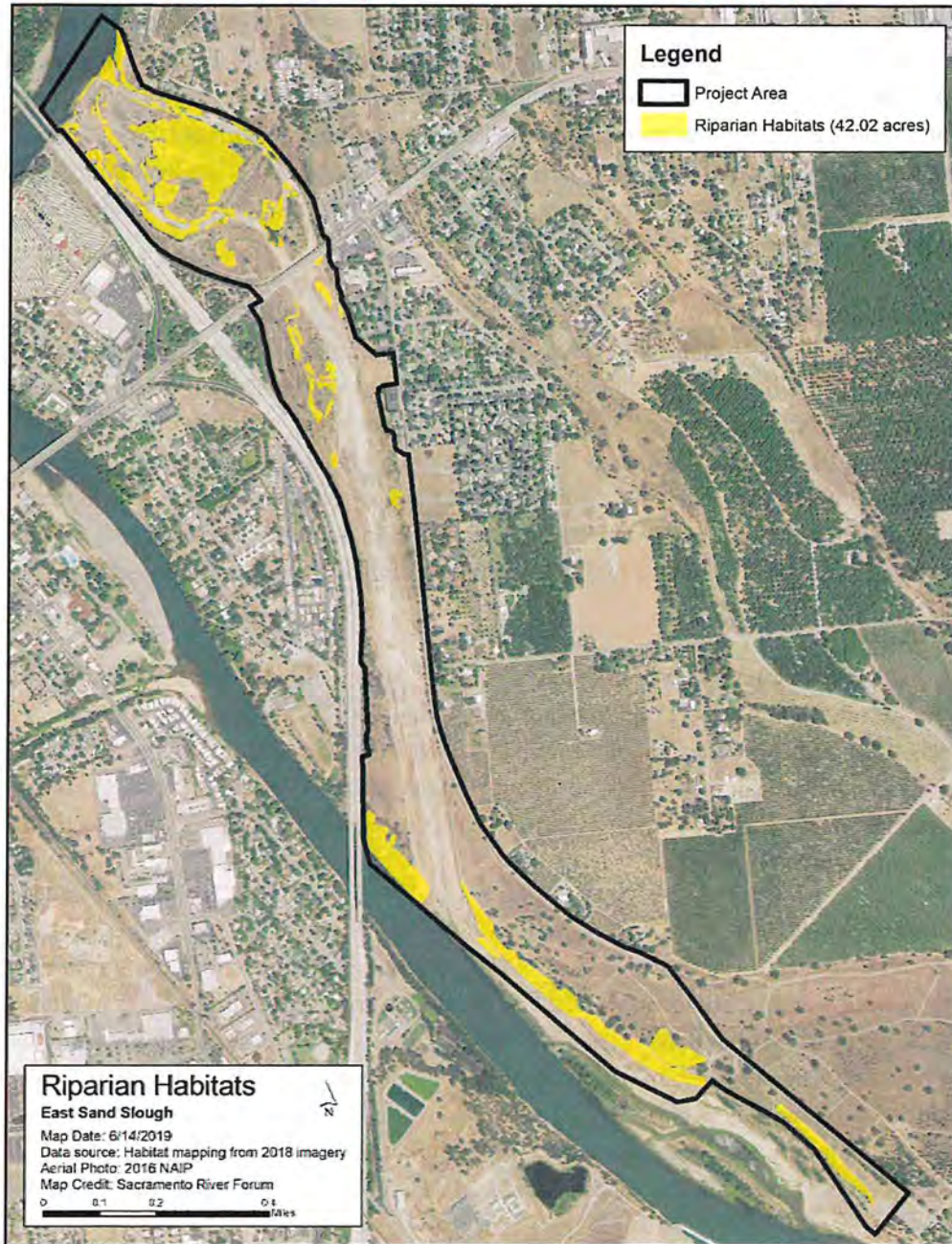
Coccyzus americanus occidentalis (Western Yellow-Billed Cuckoo)

Several observations of the western yellow-billed cuckoo have been documented along the Sacramento River approximately 2.5 miles from the Project area (United States Geological Survey 2019, California Department of Fish and Wildlife 2018). Critical habitat has been proposed for the Sacramento River Corridor (Federal Register: 79 FR 48547), and its northern extent is within 2.5 miles of the Project area.

The western yellow-billed cuckoo prefers dense riparian thickets with low-level foliage near slow-moving water sources. Nests are typically constructed in willows. Yellow-billed cuckoos typically forage by gleaning large insects. Foraging occurs extensively in cottonwood riparian habitat (Hughes 1999). Laymon and Halterman (1989) proposed that optimum habitat patches for the western yellow-billed cuckoo are greater than 200 acres in size and wider than 1,950 feet; sites 101 to 200 acres in size and wider than 650 feet were suitable; sites 50 to 100 acres in size and 325 to 65 feet were marginal; and sites with smaller habitat patches were defined as unsuitable.

A total of approximately 43 acres of riparian vegetation occurs within the Project area (see **Figure 3-4 Distribution of Riparian Habitats within the Project Area**). These riparian habitats include willow-dominated riparian scrub, cottonwood riparian woodland, and mixed riparian forest. These habitats are highly fragmented, with the largest patch of riparian forest being nearly 7 acres in size with a fairly open understory and a regular human presence. The size and quality of riparian habitats within the Project area indicate that western yellow-billed cuckoo has a low likelihood of occurring within the Project area.

Figure 3-4: Distribution of Riparian Habitats within the Project Area



Elanus leucurus (White-Tailed Kite)

The white-tailed kite is a small raptor found in western North America. It is found in the Central Valley. White-tailed kites feed primarily on rodents but will take other small prey. Nests are constructed in isolated trees. Occupied habitats include savannas, open woodlands, desert grasslands, partially cleared lands, and cultivated fields. Numerous observations of white-tailed kites have been recorded immediately adjacent to the Project area (eBird 2019). The availability of suitable habitat and the proximity to known sightings indicate that this species has a high likelihood of occurring within the Project area.

Haliaeetus leucocephalus (Bald Eagle)

Bald eagles require large bodies of water, or free-flowing rivers, with abundant fish and adjacent snags or other perches. This species nests in large trees with open branches, typically from February through July. Bald eagle nest sites have been documented within 2 miles of the Project area (California Department of Fish and Wildlife 2018), and several sightings have been made within the Project area (eBird 2019). However, no nests or individuals were seen during avian monitoring. The availability of large trees and snags within proximity of the Sacramento River indicate that this species is moderately likely to occur within the Project area.

Icteria virens (Yellow-Breasted Chat)

The yellow-breasted chat is a large songbird found in North America. Occupied habitats are thickets and other dense shrubby habitats. In California, breeding habitat requirements are dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground, and the edges of ponds (Small 1994). Foraging habitat is typically dense vegetation. Adults feed on insects and berries. Numerous occurrences of yellow-breasted chat are located around the Project area (eBird 2019), though avian monitoring did not detect any individuals. Suitable habitat is available in the forested areas of the Project area. This species is considered to have a high likelihood of occurring within the Project area.

Riparia riparia (Bank Swallow)

Bank swallows nest along the Sacramento River in recently eroded vertical cliffs or banks with friable soils. This species was detected within the Project area during avian surveys, though no evidence of breeding or nesting was observed. Foraging habitat is available over the Sacramento River and open habitats such as in the savannah, riparian scrub, and the slough's grasslands. There are no vertical sandy banks in the Project area that could be used by nesting colonies. This species is considered to have a high probability of occurring within the Project area.

Setophaga petechia (Yellow Warbler)

The yellow warbler is small songbird found throughout North America and northern South America. Adults breed in North America and overwinter in northern South America. Breeding season habitats include thickets and early successional habitats, particularly along streams and wetlands. Adults feed on insects by gleaning or hawking. Breeding habitat is typically riparian. Nests are built in shrubs or small trees, particularly in willows. Numerous occurrences of yellow warbler are located around the Project area (eBird 2019), though avian monitoring did not detect any individuals. Suitable breeding habitat is available throughout the Project area. This species is considered to have a high likelihood of occurring within the Project area.

Vireo bellii pusillus (Least Bell's Vireo)

Least Bell's vireo was historically present along the Sacramento Valley as far north as Red Bluff. The current known distribution of this species is restricted to Southern California. This species is considered to have a low likelihood of occurring within the Project area.

3.4.1.3.3 Reptiles

Actinemys marmorata (Western Pond Turtle)

The western pond turtle inhabits a wide range of waterbodies. Nest sites are typically on gentle slopes in compact soil from 10 to 1,300 feet from aquatic habitats. Overwintering sites are typically in upland habitat beyond the riparian zone, however aquatic environments such as mud bottoms, beneath undercut banks or logs, or in areas of emergent vegetation may be used for overwintering sites. This species may be inactive in the winter or active throughout the year depending on environmental conditions. The western pond turtle is known to occur in the general vicinity of the Project area but was not observed during pre-project surveys despite the presence of suitable habitat in the northern portion of the Project area. Red-eared sliders were observed in ponds that would also be suitable for western pond turtles. Due to the presence of nearby populations and suitable habitat, this species is considered to have a moderate likelihood of occurring within the Project area.

Thamnophis gigas (Giant Garter Snake)

Suitable habitat for the giant garter snake includes stagnant or slow-moving waterbodies with abundant emergent vegetation. The closest known populations in the Sacramento Valley are associated with dense networks of canals and wetlands in areas dominated by rice agriculture. Suitable aquatic habitat is not present within the Project area or surrounding area. This species is considered to have a low likelihood of occurring within the Project area.

3.4.1.3.4 Amphibians

Rana boylei (Foothill Yellow-Legged Frog)

The foothill yellow-legged frog is a small sized frog found in the foothills of the Sierra Nevada and the Cascade and Coast Ranges of Oregon and California. These frogs are found in or near rocky streams in a variety of habitats. Adults prey on aquatic and terrestrial invertebrates, while tadpoles are thought to graze on algae and diatoms along rocky stream bottoms. Within Northern California, the foothill yellow-legged frog is likely inactive or hibernating during the winter. Breeding and egg laying usually follows spring flooding, and usually commences from mid-March to May, depending on local water condition. Eggs clusters are attached to gravel or rocks in moving water near stream margins. This species was documented along the Sacramento River in this vicinity of the Project area from between 1912 and 1928. Recent documented occurrences are located 20 miles to the east of the Project area in the foothills of the Cascade Range (California Department of Fish and Wildlife 2018). Known predators include the American bullfrog and sunfishes (Centrarchidae). Bullfrog tadpoles and adults were found in all of the perennial ponds within the Project area. Bluegills, a type of sunfish, were found in three of the larger pools. The presence of these predators and distance to known populations indicate that the foothill yellow-legged frog has a low likelihood of occurring within the Project area.

3.4.1.3.5 Fish

Acipenser medirostris (Green Sturgeon)

Green sturgeon typically enter the Sacramento River to spawn between February and March and are thought to select deeper holes with fast flowing water and cobble sediment for spawning. Juveniles rear in fresh water for 1-2 years before migrating to the ocean where they mature into adults. The Project area is within a reach of the Sacramento River that is habitat for the North American Green Sturgeon Southern DPS. Green sturgeon have been documented downstream of the Project area in the vicinity of the RBDD (California Department of Fish and Wildlife 2018). The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat for this species. This species is considered to have a moderate likelihood of occurring within the Sacramento River adjacent to the Project area.

Lampetra ayresii (River Lamprey)

The Project area is within a reach of the Sacramento River that provides suitable migration habitat for upstream migrating adult and downstream migrating juvenile river lamprey but does not provide suitable spawning habitat. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

Lampetra tridentata (Pacific Lamprey)

The Project area is within a reach of the Sacramento River that provides suitable spawning habitat and a migration corridor for Pacific lamprey. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

Mylopharodon conocephalus (Hardhead)

The Project area is within a reach of the Sacramento River that provides suitable habitat and a migration corridor to and from smaller tributary streams for hardhead. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

Oncorhynchus mykiss irideus (Steelhead - Central Valley DPS)

The Project area is within a reach of the Sacramento River that is habitat for Central Valley steelhead. The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat for this species. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

Oncorhynchus tshawytscha (Chinook Salmon - Sacramento River Winter-Run ESU)

The Project area is within a reach of the Sacramento River that is habitat for the winter-run Chinook salmon. The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat for this species. This species is considered to have a high likelihood of occurring within the Project area.

Oncorhynchus tshawytscha (Chinook Salmon - Central Valley Fall / Late Fall-Run ESU)

The Project area is within a reach of the Sacramento River that is habitat for the fall / late fall-run Chinook salmon. The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat

for this species. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

***Oncorhynchus tshawytscha* (Chinook Salmon - Central Valley spring-run ESU)**

The Project area is within a reach of the Sacramento River that is habitat for the spring-run Chinook salmon. The Sacramento River provides spawning, adult holding, foraging, and juvenile rearing habitat for this species. This species is considered to have a high likelihood of occurring within the Sacramento River adjacent to the Project area.

3.4.1.3.6 Invertebrates

***Branchinecta lynchi* (Vernal Pool Fairy Shrimp)**

Vernal pool fairy shrimp inhabit vernal pools and vernal pool-like habitats. No vernal pools, vernal swales, or similar ephemeral aquatic habitats were found within the Project area. The pools along the channel were evaluated briefly for invertebrates. The perennial pools along the channel bottom do not appear suitable to support this species. Within temporary pools, invertebrate species were exceedingly rare, and it is likely that the rapid draining of these pools would prevent *Branchinecta lynchi* from establishing. This species is considered to have a low likelihood of occurring within the Project area.

***Desmocerus californicus dimorphus* (Valley Elderberry Longhorn Beetle)**

Potential habitat for the valley elderberry longhorn beetle is present within the Project area. A survey in 2018 located 1,246 blue elderberry shrubs within the Project area and about 150 shrubs adjacent to the Project area (see **Figure 3-5 Elderberry Shrubs Mapped within and adjacent to the Project Area**). An occurrence from 1987 is recorded at the north end of the Project area, and several other occurrences are within five miles of the Project area (California Department of Fish and Wildlife 2018). Elderberry shrubs occur within many of the upland habitats within the Project area. All elderberry shrubs are considered potential habitat for the valley elderberry longhorn beetle, with riparian areas having a higher likelihood of occupancy. Due to the availability of suitable habitat, this species is considered to have a high likelihood of occurring within the Project area.

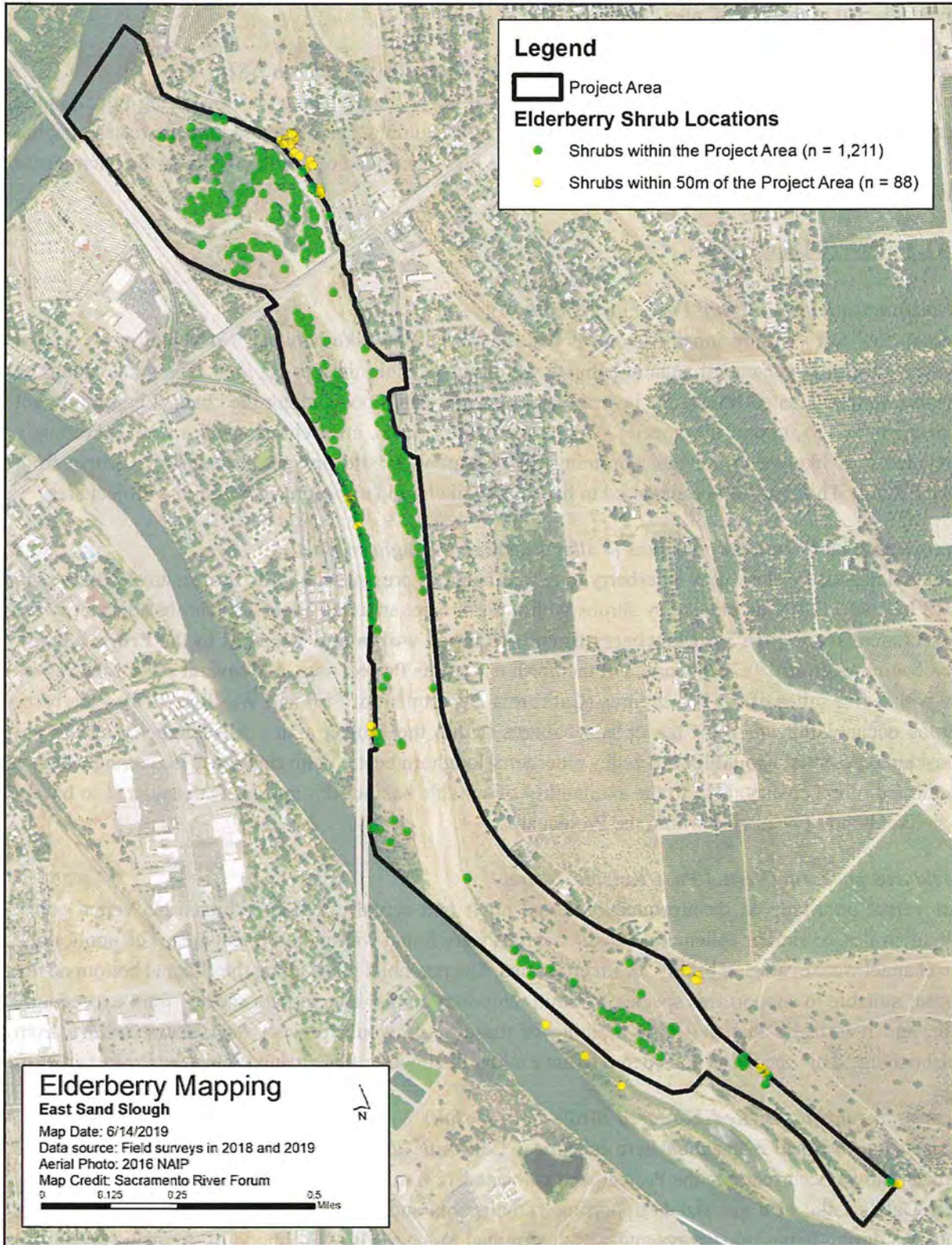
***Lepidurus packardii* (Vernal Pool Tadpole Shrimp)**

The vernal pool tadpole shrimp inhabits vernal pools and vernal pool-like habitats. No vernal pools, vernal swales, or similar ephemeral aquatic habitats were found within the Project area. The pools along the channel were evaluated briefly for invertebrates. The perennial pools along the channel bottom do not appear suitable to support this species. Within temporary pools, invertebrate species were exceedingly rare, and it is likely that the rapid draining of these pools would prevent *Lepidurus packardii* from establishing. This species is considered to have a low likelihood of occurring within the Project area.

***Acmispon rubriflorus* (Red-Flowered Bird's-Foot Trefoil)**

Acmispon rubriflorus is an annual herb endemic to California known from four disjunct occurrences. The closest known occurrence to the Project area is located 12.6 miles to the northeast on a volcanic plateau near Dale's Lake in a grassland supporting vernal pools and swales. *Acmispon rubriflorus* was not detected during botanical surveys and was determined to have a low likelihood of occurring within the Project area.

Figure 3-5: Elderberry Shrubs Mapped within and adjacent to the Project Area



3.4.1.3.7 Plants

***Agrostis hendersonii* (Henderson's Bent Grass)**

Agrostis hendersonii is an annual grass native to California. It is found in mesic habitats in valley and foothill grasslands and in vernal pools. The closest known occurrence to the Project area is located 5.5 miles to the northeast. Several low areas and temporary pools within the main channel are subject to periodic inundation followed by gradual soil dry-down and may be analogous to nearby vernal pool habitats, which may be suitable habitat for this species. *Agrostis hendersonii* was not detected during surveys but due to availability of suitable habitat, this species was determined to have a moderate likelihood of occurring within the Project area.

***Astragalus pauperculus* (Depauperate Milk-Vetch)**

Astragalus pauperculus is an annual herb endemic to California. It occurs in vernal mesic and volcanic habitats in chaparral, cismontane woodland, and valley and foothill grassland. This species was not detected during surveys but was determined to have a moderate likelihood of occurring within the Project area.

***Cryptantha crinita* (Silky Cryptantha)**

Cryptantha crinita is found in intermittent stream gravel bars and streambeds in nearby tributaries of the Sacramento River. *Cryptantha flaccida*, a relative and associate species of the rare *Cryptantha crinita*, was found growing in cobble and sandy soils within the channel near the north end of the slough. The proximity to known populations and availability of potential habitat indicates that *Cryptantha crinita* may occur within the Project area. This species was not detected during botanical surveys, although suitable habitat was found. This species was considered to have a high likelihood of occurring within the Project area.

***Cypripedium montanum* (Mountain Lady's-Slipper)**

Cypripedium montanum is a perennial herb native to California. It is found in broad-leafed upland forest, cismontane woodland, lower montane coniferous forest, and North Coast coniferous forest. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Downingia pusilla* (Dwarf Downingia)**

Downingia pusilla is an annual herb native to California that is found in vernal pools and roadside ditches in foothill woodland, valley grassland, freshwater wetlands, and wetland-riparian communities. Several occurrences are within five miles of the Project area in grasslands supporting vernal pools and swales. Characteristic habitats for *Downingia pusilla* are not present within the Project area, and the species was not detected during botanical surveys. Due to the lack of suitable habitat, this species was determined to have a low likelihood of occurring within the Project area.

***Eriogonum tripodum* (Tripod Buckwheat)**

Eriogonum tripodum is a shrub endemic to California. It occurs in chaparral and cismontane woodland, often in serpentinite soils. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Erythranthe glaucescens* (Shield-Bracted Monkeyflower)**

Erythranthe glaucescens is an annual herb endemic to California. This species is found along streambanks in valley and foothill grassland communities. It may also occur in intermittent stream gravel bars and streambeds in nearby tributaries to the Sacramento River. *Erythranthe glaucescens* was not detected during surveys but due to availability of suitable habitat, this species was determined to have a high likelihood of occurring within the Project area.

***Euphorbia ocellata* ssp. *rattanii* (Stony Creek Spurge)**

Euphorbia ocellata ssp. *rattanii* is an annual herb endemic to California. It is found primarily in Tehama, Glenn, and Colusa counties. Habitats for this species include intermittent stream gravel bars and streambeds in nearby tributaries to the Sacramento River. This species was not detected during surveys, though suitable habitat conditions are present. *Euphorbia ocellata* ssp. *ocellata*, a close relative of the rare *Euphorbia ocellata* ssp. *rattanii*, was found within the Project area. Due to the presence of suitable habitat and proximity to known occurrences, this species was found to have a high likelihood of occurring within the Project.

***Fritillaria pluriflora* (Adobe-Lily)**

Fritillaria pluriflora grows in adobe clay soils and is mainly limited to northern California. Adobe clay soils or similar clay outcrops do not occur within the Project area. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Gratiola heterosepala* (Boggs Lake Hedge-Hyssop)**

Gratiola heterosepala occurs along lake-margins, marshes, swamps, and vernal pool edges on clay soils. Several low areas and temporary pools within the main channel are subject to periodic inundation followed by gradual soil dry-down and may be analogous to nearby vernal pool habitats, which may be suitable habitat for this species. *Gratiola heterosepala* was not detected during surveys, but due to availability of suitable habitat, this species was determined to have a high likelihood of occurring within the Project area.

***Hemizonia congesta* ssp. *calyculata* (Mendocino Tarplant)**

Hemizonia congesta ssp. *calyculata* is an annual herb endemic to California. It occurs in cismontane woodland and valley and foothill grassland. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Juncus leiospermus* var. *ahartii* (Ahart's Dwarf Rush)**

Juncus leiospermus var. *ahartii* is an annual herb endemic to California that is found in mesic microhabitats in valley and foothill grassland habitats. The only occurrence known in Tehama County is located one mile to the southwest of the Project area in a grassland supporting vernal pools and vernal swales. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Juncus leiospermus* var. *leiospermus* (Red Bluff Dwarf Rush)**

Juncus leiospermus var. *leiospermus* is an annual herb endemic to California that is found in vernal mesic microhabitats in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pool habitats. Several low areas and temporary pools within the main channel are subject to periodic inundation followed by gradual soil dry-down and may be analogous to nearby vernal pool habitats, which may be suitable habitat for this species. *Juncus leiospermus* var. *leiospermus* was not detected during surveys but due to availability of potentially suitable habitat, this species was determined to have a high likelihood of occurring within the Project area.

***Legenere limosa* (Legenere)**

Legenere limosa is an annual herb endemic to California that is found in vernal pools and similar habitats. Several low areas and temporary pools within the main channel are subject to periodic inundation followed by gradual soil dry-down that may be analogous to nearby vernal pool habitats, which may be suitable habitat for this species. *Legenere limosa* was not detected during surveys, but due to the availability of potentially suitable habitat it was determined to have a high likelihood of occurring within the Project area.

***Limnanthes floccosa* ssp. *floccosa* (Woolly Meadowfoam)**

Limnanthes floccosa ssp. *floccosa* is an annual herb native to Oregon and California. Occupied microhabitats are vernal mesic and are typically in vernal pools, chaparral, cismontane woodland, valley and foothill grassland. The closest observations are three miles to the northeast of the Project area toward the Tuscan Buttes. An isolated occurrence three miles to the southwest of the Project area is in a grasslands vernal pool complex. The seasonally wet habitats in the bottom of East Sand Slough's channel north of Antelope Boulevard were found to be potentially suitable for *Limnanthes floccosa* ssp. *floccosa*. This species was not detected during surveys but was determined to have a moderate likelihood of occurring within the Project area.

***Navarretia heterandra* (Tehama Navarretia)**

Navarretia heterandra is an annual herb native to California and Oregon. It occurs in mesic habitats in valley and foothill grasslands and in vernal pools. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Navarretia leucocephala* ssp. *bakeri* (Baker's Navarretia)**

Navarretia leucocephala ssp. *bakeri* is an annual herb endemic to California that is found in vernal mesic microhabitats in cismontane woodland, low coniferous forests, meadows and seeps, valley and foothill grasslands, and vernal pool habitats. *Navarretia leucocephala* ssp. *bakeri* was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Orcuttia tenuis* (Slender Orcutt Grass)**

Orcuttia tenuis is an annual grass endemic to California's Central Valley and Modoc Plateau regions. Occupied habitats are often gravelly vernal pools; however, it has been reported from other natural and artificial wetlands such as stock ponds and borrow pits. *Orcuttia tenuis* was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Paronychia ahartii* (Ahart's Paronychia)**

Paronychia ahartii is an annual herb endemic to Northern California. It is found in cismontane woodland, valley and foothill grassland and vernal pool habitats. Microhabitats are often vernal moist and on barren clay or thin rocky soils with low plant cover. *Paronychia ahartii* was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Polygonum bidwelliae* (Bidwell's Knotweed)**

Polygonum bidwelliae is an annual herb endemic to California. It occurs in volcanic sites in chaparral, cismontane woodland, and valley and foothill grassland. This species was not detected during surveys and was determined to have a low likelihood of occurring within the Project area.

***Sagittaria sanfordii* (Sanford's Arrowhead)**

Sagittaria sanfordii is a perennial herb native to California that is found in marshes, swamps, and assorted shallow freshwater habitats. Several low areas and temporary pools within the main channel are subject to periodic inundation followed by gradual soil dry-down and may be analogous to nearby vernal pool habitats, which may be suitable habitat for this species. *Sagittaria sanfordii* was not detected during surveys but due to the availability of potentially suitable habitat it was determined to have a moderate likelihood of occurring within the Project area.

***Sidalcea celata* (Redding Checkerbloom)**

Sidalcea celata is an annual herb endemic to California. It occurs in cismontane woodland habitat in Shasta and Tehama Counties. This species was not detected during surveys but was determined to have a moderate likelihood of occurring within the Project area.

***Wolffia brasiliensis* (Brazilian Watermeal)**

Wolffia brasiliensis is a perennial herb native to California. It is found in assorted shallow freshwater habitats including marshes, swamps and sloughs. *Wolffia brasiliensis* was not detected during surveys but due to the availability of potentially suitable habitat it was determined to have a high likelihood of occurring within the Project area.

3.4.1.4 Invasive Plant Species

A variety of non-native and invasive plants have been documented within the Project area. **Table 6 Invasive Plant Species Observed within the Project Area** lists each non-native plant that has both a prevalence within the Project area and is either rated by the California Invasive Plant Council (CAL-IPC) or is of management concern.

Table 6 Invasive Plant Species Observed within the Project Area

Species	Common Name	Location within the Project Area	Cal-IPC Invasive Species Rating	Prevalence in the Project Area	Control Options
---------	-------------	----------------------------------	---------------------------------	--------------------------------	-----------------

<i>Ailanthus altissima</i>	tree of heaven	uplands	Moderate	Moderate	Herbicide & Manual/mechanical removal*
<i>Arundo donax</i>	giant reed	slough edges	High	Moderate	Herbicide & Manual/mechanical removal*
<i>Avena fatua</i>	wild oat	grassland	Moderate	High	No Treatment Proposed
<i>Brassica nigra</i>	black mustard	throughout slough bench	Moderate	High	No Treatment Proposed
<i>Brassica rapa</i>	field mustard	throughout slough bench	Limited	Moderate	No Treatment Proposed
<i>Bromus diandrus</i>	great brome	grassland	Moderate	High	No Treatment Proposed
<i>Bromus hordeaceus</i>	common soft-brome	grassland	Limited	High	No Treatment Proposed
<i>Bromus madritensis ssp. rubens</i>	red brome	grassland	High		No Treatment Proposed
<i>Carduus pycnocephalus</i>	Italian thistle	grassland, slough edges	Moderate	Low	No Treatment Proposed
<i>Catalpa speciosa</i>	Northern Catalpa	riparian forest, slough edges	Not rated	Low	Herbicide & Manual/mechanical removal*
<i>Centaurea solstitialis</i>	yellow starthistle	slough edges, uplands	High	High	Herbicide Manual/mechanical removal & Biological control*
<i>Conium maculatum</i>	poison hemlock	riparian forest	Moderate	High	Herbicide & Manual/mechanical removal**
<i>Convolvulus arvensis</i>	field bindweed	slough bottom and edges	Not rated	Low	No Treatment Proposed

<i>Cortaderia selloana</i>	pampas grass	slough edges	High		Herbicide & Manual/mechanical removal*
<i>Ficus carica</i>	common fig	riparian forest, wetlands	Moderate	Low	No Treatment Proposed
<i>Hirschfeldia incana</i>	shortpod mustard	grassland	Moderate	Moderate	No Treatment Proposed
<i>Hordeum murinum</i>	wall barley	grassland	Moderate	High	No Treatment Proposed
<i>Hypericum perforatum</i>	common St. John's wort	grasslands, riparian edges	Limited	Moderate	No Treatment Proposed
<i>Hypochaeris glabra</i>	smooth cat's ear	grassland	Limited	High	No Treatment Proposed
<i>Lepidium latifolium</i>	broadleaved pepperweed	slough edges, wetlands	High	Scattered	Herbicide & Manual/mechanical removal**
<i>Robinia pseudoacacia</i>	black locust	uplands	Limited	Moderate	Herbicide & Manual/mechanical removal*
<i>Rubus armeniacus</i>	Himalayan blackberry	wetlands, riparian forest, slough edges	High	Moderate	Herbicide & Manual/mechanical removal & Animal control*
<i>Secale cereal</i>	rye	uplands	Not rated	Moderate	No Treatment Proposed
<i>Sesbania punicea</i>	rattlebox, scarlet wisteria	slough edges, wetlands	High	Low	Herbicide Manual/mechanical removal Cut, herbicide on stumps Herbicide**

<i>Stipa miliacea</i> <i>var. miliacea</i>	smilo-grass	savanna/grassland	Limited	High	No Weed RIC Management Notes are available for this grass
<i>Silybum marianum</i>	milk thistle	savanna/grassland	Limited	Low	No Treatment Proposed
<i>Torilis arvensis</i>	hedgearsley	savanna/grassland	Moderate	High	No Treatment Proposed
<i>Tribulus terrestris</i>	puncture vine	uplands	Limited	Low	No Treatment Proposed
<i>Verbena bonariensis</i>	tall vervain	slough edges, wetlands	Watch	Low	No Treatment Proposed
<p>*Control options proposed in the Tehama County Resource Conservation District Weed Management Plan for East Sand Slough, Red Bluff, California 2012-2016. **Control options proposed in this document. Cal-IPC = California Invasive Plant Council Ratings: High = species have severe ecological impacts; Moderate = species have substantial and apparent, but generally not severe, ecological impacts; Limited = species are invasive, but their ecological impacts are minor on a statewide level; Watch = species have been assessed as posing a high risk of becoming invasive in the future in California.</p>					

The RCDTC prepared a weed management plan that coincides with the Project area (Tehama County Resource Conservation District 2016). Weed management efforts have been implemented in the last decade by various groups primarily in the northern half of the Project area. The USFS has also implemented weed abatement efforts in the Red Bluff Recreation Area. Field surveys in 2018 and 2019 documented dead and partially killed patches of *Ailanthus altissima*, *Arundo donax*, *Cortaderia selloana*, and *Rubus armeniacus*. Abatement efforts appear to have been successful in eliminating almost all *Catalpa speciosa* within the Project area.

3.4.1.5 Wetlands and Waters of the United States

As interpreted by USACE and the USEPA, Section 404 wetlands are defined as:

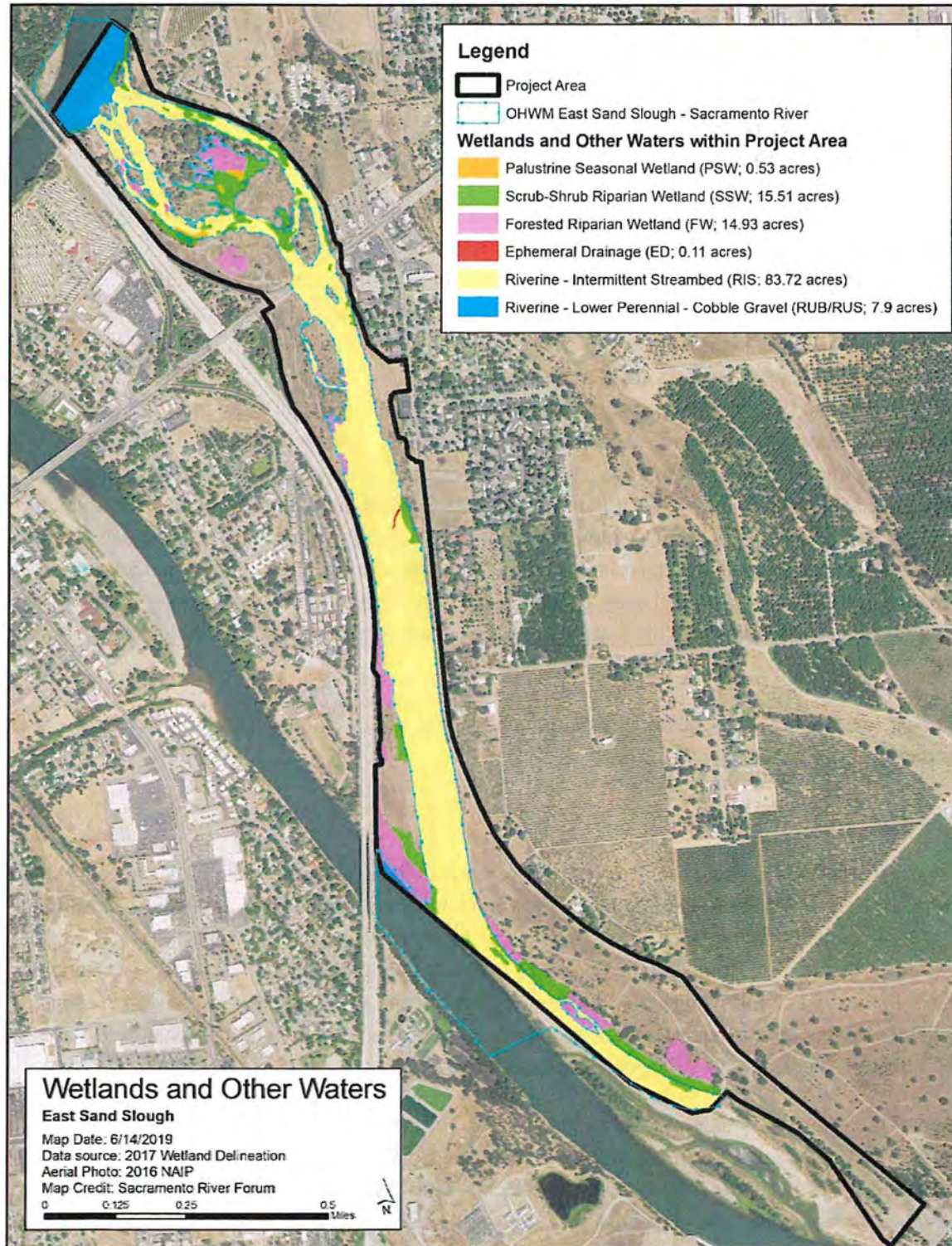
"...areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

More specifically, wetlands are areas where the frequent and prolonged presence of water at or near the soil surface drives the natural system. Wetland areas also contain the type of soils that support plant and wildlife communities that utilize moist sites along with those that are inundated during a large part of the year.

Reclamation conducted a formal delineation of wetlands and other waters of the United States that may be regulated by USACE under Section 404 of the Clean Water Act (see **Appendix F Waters of the U.S. Delineation Report**). Data collection in the field was conducted in accordance with ‘A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States’ (Lichvar and McColley 2008a), the ‘1987 Corps of Engineers Wetland Delineation Manual’ (United States Army Corps of Engineers 1987), and the ‘Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)’ (United States Army Corps of Engineers 2008b). The OHWM data for the Sacramento River and East Sand Slough were collected on the ‘Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States’ (United States Army Corps of Engineers 2010). Delineation of aquatic features was based on aerial photo interpretation in addition to data that was collected in the field. Site visits were conducted between May 1, 2018 and May 3, 2018 to assess the wetland status and potential USACE jurisdictional authority over various portions of the Project area. Research and field investigation resulted in the delineation of 122.69 acres of potential waters of the United States, which includes 30.95 acres of wetlands and 91.73 acres of other waters, within the Project area (see **Figure 3-6 Wetlands and Waters of the United States Delineation Map**).

Three jurisdictional wetland types occur within the Project area: Palustrine Seasonal Wetlands (0.53 acres), Scrub-Shrub Wetlands (15.51 acres), and Forested Wetlands (14.93 acres). Palustrine seasonal wetlands were delineated below the OHWM north of Antelope Boulevard and appeared to be frequently inundated and ponded. Scrub-shrub wetlands were delineated along the margins of the OHWM and within the channels and are dominated by stands of sandbar willow. Forested wetlands were delineated along the OHWM margins in seasonal overflow and low-flow channels and support riparian trees and shrubs such as Fremont cottonwood, western sycamore, box elder, black willow (*Salix goodingii*), and sandbar willow. The understory of these forested wetlands is typically composed of Himalayan blackberry.

Figure 3-6: Wetlands and Waters of the United States Delineation Map



3.4.2 Environmental Consequences

- a) *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?*

Less Than Significant with Mitigation Incorporated: The special-status species with the highest probability of occurring within the Project area inhabit riparian habitat and wet environments within the East Sand Slough channel bottom and adjacent banks. These species could be directly affected by construction noise and ground-disturbing activities, and indirectly affected by habitat modification or loss. Temporary impacts to habitat would occur within annual grassland (up to 9 acres) and the understory of elderberry savanna (0.58 acre), mixed riparian forest (0.02 acre), riparian scrub (0.13 acre), and valley oak savanna (0.19 acre). Construction activities within these habitat types would avoid tree and shrub vegetation, and disturbed areas would be planted or reseeded following completion of construction, resulting in a less than significant impact. Temporary impacts may also occur in up to 0.62 acre of slough channel habitat and ~~0.25~~1.1 acres of slough floodplain habitat during channel excavation, but these short-term impacts would occur in the dry, would not affect the functionality of the habitat, and would be less than significant. Permanent impacts to habitat types are discussed below as they relate to associated special-status species. Total acres of temporary and permanent impacts may slightly increase or decrease based on final design, but the level of significance of those impacts as discussed below would not change.

Proposed boat ramp removal and planting would not adversely affect wildlife habitat. These proposed activities therefore are not discussed further.

Special-Status Fish Species

Special-status fish species likely to occur within the Sacramento River adjacent to the Project area include green sturgeon, Central Valley steelhead, fall/late fall-run Chinook salmon, spring-run Chinook salmon, winter-run Chinook salmon, hardhead, river lamprey, and Pacific lamprey. These species would not be directly affected by excavation in slough channel and slough floodplain habitat, as channel excavation would occur in the dry and following completion of excavation, up to ~~15.89~~18.28 acres of slough channel habitat would experience a change in hydrology from intermittent to perennial, which would have a beneficial effect on special-status fish species that use the slough.

Excavation of the channel entrances would occur at the end of the construction period along the shore of the Sacramento River, and if required, would occur during maintenance of the channel entrance(s). Excavation at this location could disturb or entrain special-status fish species if they are in the river at the time of entrance excavation, and depending on the timing, Chinook salmon redds could be present downstream of the Project area in the Sacramento River. There is also a risk of impact to Sacramento River water quality through the inadvertent release of sediment or hazardous materials associated with construction equipment or herbicide use. These potential impacts to listed fish species would be

significant. Implementation of the avoidance, minimization, and protection measures included in **Mitigation Measures BIO-1** through **BIO-3**, as well as the water quality protection measures included in **Mitigation Measures WQ-1, WQ-2, HAZ-1, and HAZ-2**, would reduce these potential impacts to less than significant. Following completion of construction, the proposed Project would have a beneficial impact on special-status fish species by reducing the scour holes that cause fish stranding and by providing an increase in available salmonid rearing habitat.

Mitigation Measure BIO-1: Implement General Measures to Protect Special-Status Species

The following measures shall be implemented and enforced during all project construction activities to avoid or minimize adverse effects on candidate, sensitive, and special-status species.

- *General measures:* No pets of any kind shall be permitted on the construction sites. No firearms (except for federal, State, or local law enforcement officers and security personnel) would be permitted on the construction site.
- *Fencing:* All sensitive areas to be avoided during construction activities shall be fenced and/or flagged as close to construction limits as feasible.
- *Construction monitoring:* A qualified biologist shall monitor the construction area at project-appropriate intervals to assure Contractor implementation and adherence with all established resource impact avoidance/minimization measures. The amount and duration of monitoring shall depend upon project specifics and shall be based upon consultation with CDFW, USFWS, and permitting entities.
- *Worker awareness training:* Before any construction begins, a qualified biologist and the RCDTC Project Manager shall conduct a mandatory training session for all construction crew personnel. The training shall include a discussion of the sensitive biological resources, including the valley elderberry longhorn beetle and its elderberry host plant, within the Project area and the potential presence of special-status species. Special-status species habitat protection measures (including Best Management Practices, Mitigation Measures, permit requirements, and other site-specific requirements established by the RCDTC Project Manager or agency personnel) shall also be discussed along with the extent of project boundaries to ensure such species are not impacted by project activities. The training and any supporting materials shall include a discussion of penalties for noncompliance. Upon completion of training, construction personnel shall sign a form stating that they have attended the training and understand all the conservation measures. Training shall be conducted in English and other languages, as appropriate. Proof of this instruction (signed forms) shall be kept on file with Contractor and the RCDTC, who shall provide a copy (as requested) to USFWS and permitting entities, along with a copy of the training materials.
- *Litter Control:* A litter control program shall be instituted. The contractor shall provide closed garbage containers for the disposal of all food-related trash items. All garbage shall be removed daily.
- *Delineation of Project boundary:* Project boundaries shall be clearly marked on final project design drawings with work confined within those boundaries. Prior to construction, the Project Contractor and RCDTC Project Manager shall meet on site to agree upon and flag boundaries of sensitive areas, particularly those within riparian areas.

- *Relocation of special-status species:* If a special-status species enters a work area, the Project Contractor shall contact the RCDTC Project Manager for further guidance. In such instances the RCDTC Project Managers shall contact appropriate State and/or federal regulatory agencies for guidance. If a federal or State- listed species or any other special- status species enters the work area, the species shall not be captured or handled without permission from the appropriate agency (State listed – CDFW; Federally listed – USFWS) as conveyed to the Project Contractor by the RCDTC. Construction activities shall cease until it is determined that the species shall not be harmed or that it has left the construction area on its own.

Mitigation Measure BIO-2: Implement Specific Mitigation and Avoidance Measures for Fish

To reduce the potential for impacts to fish species during project implementation, the following measures shall be employed.

- Work windows shall be restricted to October 1 to March 1 for any channel with flowing water. Work in areas separated from the main channel by gravel berms that are naturally present or artificially created may occur outside this window, as long as other environmental work is in compliance with related work widows.
- Heavy equipment operation practices that minimize the potential for injury or death of listed aquatic species’ vulnerable life stages shall include alerting fish to equipment operation in the channel before gravel is placed in watered areas (e.g., slow, deliberate equipment operation and tapping water surface prior to entering in place or newly developed slough channels).
- Work within watered areas shall only occur for up to 12 hours per day to allow a 12-hour window of time for fish to migrate through without noise disturbance.
- In-river work with heavy equipment shall be completed during timing windows designed to have the lowest potential to adversely affect salmonids and sturgeon. Where feasible (i.e. in most side channel areas), the work area shall be separated from the river by gravel berms or other methods to prevent fish from entering the work area.
-
- Any work with the potential to affect listed salmonids shall require consultation with CDFW and/or NMFS. Such work shall also be implemented according to the requirements of all appropriate permits or other authorizations.

Mitigation Measure BIO-3: Implement Specific Protection Measures for Chinook Salmon

Within one week prior to construction, the RCDTC Project Manager or designated qualified biologist shall coordinate with CDFW to determine if salmon are spawning in the Sacramento River at that time. If so, the RCDTC shall obtain real-time aerial or boat redd survey data from CDFW, if available. A qualified biologist shall perform pre-construction surveys the day prior to construction; if redds from listed species are present within 200 feet downstream of the Project area the RCDTC Project Manager or designated qualified biologist shall contact NMFS with an impact minimization plan to be approved by NMFS personnel prior to final approval of project implementation.

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan
Refer to Section 3.10.2 of Hydrology and Water Quality.

Mitigation Measure WQ-2: Conduct Turbidity Monitoring
Refer to Section 3.10.2 of Hydrology and Water Quality.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan
Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan
Refer to Section 3.9.2 of Hazards and Hazardous Materials.

A temperature compliance requirement in the Sacramento River at the RBDD is intended to protect incubating winter-run and spring-run Chinook salmon; all winter-run and spring-run Chinook salmon populations have spawned upstream of the RBDD since the dam gates were raised year-round in 2011. Fall-run Chinook salmon spawn later in the fall when incubating water temperature is no longer an issue. However, if water passing through East Sand Slough and re-entering the river were to contribute to an increase in overall water temperature in the Sacramento River, the effects could be detrimental to fish. Following completion of Project construction, Sacramento River flows would enter East Sand Slough year-round. During the summer season when ambient temperatures are high, there is a potential for water temperatures in the slough to increase. However, there is typically 10,000 to 13,000 cfs of temperature-compliant water⁶ in the Sacramento River in the vicinity of East Sand Slough from May to September and approximately 200 cfs would flow through the channel (representing approximately 1 to 2 percent of the total Sacramento River flow). Flows would be at an average depth of 4 to 5 feet in the slough. Due to the depth and movement of flows in the channel, negligible to minimal water temperature increases are anticipated to occur in the slough. Additionally, water from the slough would be quickly diluted by the much greater volume of water once it re-entered the main Sacramento River flow. Therefore, the proposed Project would have a less than significant impact on Sacramento water temperatures and would not have a detrimental effect on fish.

Special-Status Amphibian Species

The only special-status amphibian species that is likely to occur within the Project area is the western spadefoot. This species is only active aboveground in grassland areas during the migration and breeding season (November 1 to May 31). Staging and spoiling activities would result in the temporary disturbance of up to 9 acres of annual grassland and would have the potential to result in the direct harm or disturbance of this species if implemented during the breeding season when rain events create temporary pools.

⁶ See Section 3.10.1.1 of Hydrology and Water Quality for a description of the temperature compliance requirements.

However, construction activities are not anticipated to occur during this species' breeding season, and implementation of the protection measures included in **Mitigation Measure BIO-1** would further reduce these potential impacts to less than significant. Maintenance activities, if required, would have no impact on this species.

Special-Status Reptile Species

The western pond turtle was the only special-status reptile species identified during biological resources surveys as likely to occur within the Project area. Although none were observed during surveys, western pond turtles could be present in the ponds located within the East Sand Slough channel during channel excavation and along the Sacramento River near the areas proposed for channel entrance excavation at the time of Project construction and, if required, maintenance of the channel entrance(s). Channel excavation has the potential to result in disturbance of up to 0.17 acre of the ponds and up to ~~0.080~~0.34 acre of riverine habitat at the channel entrances. Direct harm, noise disturbance, or impacts to water quality could occur during excavation. Any of these impacts would be potentially significant to the western pond turtle. Implementation of the protection measures included in **Mitigation Measures BIO-1** and **BIO-4**, as well as the water quality protection measures included in **Mitigation Measures WQ-1**, **WQ-2**, **HAZ-1**, and **HAZ-2**, would reduce these potential impacts to less than significant.

Mitigation Measure BIO-4: Implement Specific Protection Measures for the Western Pond Turtle

If a western pond turtle is observed in the Project area during construction activities, the Contractor shall temporarily halt construction until it is determined that the turtle will not be harmed or until the turtle has moved to a safe location outside of the construction limits. The Contractor shall inform the RCDTC Project Manager of such occurrences. If construction is to occur during the nesting season (late June - July), a pre-construction survey for turtles and nest sites shall be conducted by a qualified biologist. This survey shall be conducted within 660 feet of the Project area no more than 2 days prior to the start of construction or restoration activities in suitable habitat. If a pond turtle nest is found, the biologist shall flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, in consultation with CDFW, a no-disturbance buffer zone may be established around the nest until the young have left the nest. If weather conditions prevent implementation of construction for more than 2 days after completion of turtle surveys, resurvey for this species shall be completed.

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan
Refer to Section 3.10.2 of Hydrology and Water Quality.

Mitigation Measure WQ-2: Conduct Turbidity Monitoring
Refer to Section 3.10.2 of Hydrology and Water Quality.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan
Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Special-Status Bird Species

Special-status bird species likely to occur within the Project area include the Swainson's hawk, burrowing owl, white-tailed kited, bald eagle, yellow-breasted chat, bank swallow, and yellow warbler. Numerous raptors protected by the California Fish and Game Code and bird species protected by the Migratory Bird Treaty Act also have the potential to occur within or adjacent to the Project area. In general, construction/maintenance noise and equipment operation within or adjacent to the habitat of these bird species could disturb resting, nesting, or foraging activities, and ground-disturbing activities could result in direct harm or the loss or alteration of habitat. Construction/maintenance activities could also result in the accidental release of fuels, oil, or other contaminants within the habitat of these species. Specifically, construction activities under and adjacent to the Antelope Boulevard/Highway 36 Bridge could disrupt the cliff swallow colony if construction occurs during the nesting season. Although construction activities would be short-term in nature, these impacts would be potentially significant. Implementation of the general protection measures included in **Mitigation Measures BIO-1, BIO-8, HAZ-1, and HAZ-2**, as well as the species-specific protection measures included in **Mitigation Measures BIO-5 through BIO-10**, would reduce potential impacts to less than significant.

Mitigation Measure BIO-5: Implement General Protection Measures for Birds

To reduce the potential for impacts to bird species resulting from project implementation, the following protection measures shall be implemented:

- Nationwide Standard Conservation Measures shall be employed (USFWS 2018b)
- Vegetation removal shall not occur during the peak bird breeding season, typically between March 1 and August 31.
- In order to protect potential nesting habitat, only the minimum number of trees required to satisfy the proposed Project design shall be removed or trimmed during project implementation. Trees larger than 10" in diameter shall not be removed unless retaining such trees shall prevent project implementation or are a safety hazard as determined by the RCDTC Project Manager. If such trees are identified by the Contractor, approval of such removal shall be obtained from the RCDTC Project Manager which shall be based upon guidance provided by appropriate State/federal regulatory agency personnel.
- If construction activity inadvertently results in take of individual birds or their nests, appropriate mitigation shall be determined by the RCDTC Project Manager in coordination with CDFW.
- Vehicle speed limits shall not exceed 15 MPH to avoid striking birds.

Mitigation Measure BIO-6: Conduct Pre-Construction Surveys for Nesting Migratory Bird Treaty Act Species

For migratory birds, a qualified biologist shall conduct a pre-construction survey no more than one week prior to commencement of construction or restoration activities scheduled between March 1 and August 31. The pre-construction survey shall be used to determine if active nests of these species are present in or within 250 feet of where construction activities take place. If an active nest is found, a qualified biologist in consultation with CDFW and/or USFWS shall determine the extent of a No-Treatment Buffer Zone to be established around the nest. If establishing a buffer zone is not feasible, a qualified biologist shall consult with CDFW and/or USFWS for guidance to minimize impacts. If no active nests are identified, no further mitigation is necessary.

Mitigation Measure BIO-7: Conduct Pre-Construction Surveys for Nesting Raptors, including the White-Tailed Kite

A qualified biologist shall conduct a pre-construction surveys in all suitable upland and riparian habitat for common raptors. Surveys shall occur no more than one week prior to commencement of construction or restoration activities scheduled between February 1 and August 31. In addition to areas where project construction will occur, these surveys shall be conducted along proposed access roads and within the equipment staging area and spoil disposal sites. Surveys shall include examination of nests for raptor activity, visual searches for whitewash, listening for calls and any other evidence of nesting raptors within the Project area.

If an active nest is found, a qualified biologist, in consultation with CDFW, shall determine a No-Treatment Buffer to be established around the nest until the young have fledged. In consultation with CDFW, a plan shall be developed to monitor whether construction activity is disturbing the reproductive process and to determine when the young have fledged. If no active nests are identified, no further mitigation is necessary.

Modifications and possible reduction in “No Treatment Buffer” sizes for both Listed and Non-Listed Raptors may be made after consultation by the RCDTC Project Manager with the CDFW and/or USFWS personnel as appropriate.

Mitigation Measure BIO-8: Implement Specific Protection Measures for Swainson’s Hawk

A qualified biologist shall conduct a pre-construction survey of accessible areas within a 0.25-mile radius of the Project area between March 1 and September 15; the required survey radius may be reduced (on a case-by-case basis) if approved in advance by CDFW, but in no case will be less than 500 feet. At least one survey shall be conducted no more than one week prior to the initiation of construction activities. If no active nests are located, no further measures are necessary to avoid impacts to active Swainson’s hawk nests. If active nests are identified, the following measures shall be implemented:

- A no-disturbance buffer zone shall be established around the nest site. The width of the buffer zone shall be determined by a qualified biologist in coordination with CDFW. Determination of the required width of the buffer zone shall consider the distance of the nest site from construction activities, the line of sight from the nest site to construction activities, the existing level of disturbance, and other factors established with CDFW on a case-by-case basis.

- A qualified biologist shall monitor active nests within 500 feet (or the width of the buffer zone) of construction activities. The first monitoring event shall coincide with the initial implementation of construction activities and monitoring shall continue continuously for the duration of construction activities, or any other activities that may impact nesting success, until the young have fledged. If the biologist determines that construction activities are causing the birds to exhibit distress and/or abnormal nesting behavior or reproductive failure (nest abandonment and loss of eggs and/or young) is possible, the biologist shall halt work immediately and notify CDFW. Measures to avoid nest failure shall be implemented in coordination with CDFW and may include halting some or all construction activities until the young have fledged. For monitored nest sites, a monitoring report shall be submitted to CDFW within 2 weeks after termination of monitoring activities.

Mitigation Measure BIO-9: Implement Specific Protection Measures for Burrowing Owls

A qualified biologist shall conduct a pre-construction survey no less than 14 days prior to initiating ground disturbance activities. If positive owl presence is found, the following avoidance and mitigation measures shall be implemented:

- Place visible markers near burrows to ensure that construction equipment or vehicles do not collapse burrows.
- Avoid disturbing occupied burrows during the nesting period, from February 1 through August 31.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- A no-disturbance buffer shall be established surrounding occupied burrows. The width of the buffer shall be established in consultation with the Department and will take into account time of year and level of disturbance in proximity to the burrow site.

Mitigation Measure BIO-10: Implement Specific Protection Measures for the Bald Eagle

A qualified biologist shall conduct a pre-construction survey no more than one week prior to initiating ground disturbance activities. If an active bald eagle nest is found within 0.5 mile of the Project area, the following avoidance and mitigation measures shall be implemented:

- Construction activities located within 0.5 mile of a known bald eagle nest shall occur between September 1 and December 31.
- If construction activities are to occur outside of this period, a 660-foot buffer around the nest would be maintained for a single construction activity visible from the nest and within one mile of the nest (USFWS 2007).
- If established, the construction buffer shall remain in place until after the nesting season, or until the biologist determines that the young have fledged during subsequent surveys.

Special-Status Invertebrate Species

The valley elderberry longhorn beetle is the only special-status invertebrate species likely to occur within the Project area. Channel excavation would not directly affect this species' host plant, the blue elderberry shrub, but construction activities would occur within the vicinity of elderberry shrubs (see **Figure 3-5 Elderberry Shrubs Mapped within and adjacent to the Project Area**). If necessary, channel maintenance may also occur within the vicinity of elderberry shrubs. In addition, construction activities would occur within up to ~~0.21~~0.25 acre of elderberry savanna. If elderberry shrub trimming is required, trimming may remove or destroy valley elderberry longhorn beetle eggs and/or larvae and may reduce the health and vigor of elderberry shrubs. Soil compaction near the roots of these shrubs or dust on their leaves could occur during Project construction. Overspray during the application of herbicides could also occur. These activities could result in a potentially significant impact. However, as described in *Section 2.4 Environmental Commitments*, the Project Area boundary was revised to avoid direct impacts to elderberry shrubs. In addition, implementation of the protection measures included in **Mitigation Measures BIO-1 and BIO-11** and adherence to the herbicide use plan included in **Mitigation Measure HAZ-2** would reduce these potential impacts to less than significant.

Mitigation Measure BIO-11: Implement Specific Protection Measures for Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

The following protection measures (United States Fish and Wildlife Service 2017; United States Bureau of Reclamation 2016) shall be implemented to protect valley elderberry longhorn beetles and their host plant, the elderberry shrub, if elderberry shrubs occur on or within 50 meters (165 feet) of the Project area:

- During Project implementation, no elderberry shrubs shall be removed.
- For activities that have the potential to damage or kill an elderberry shrub (e.g. trenching, paving, spoiling), an avoidance area shall be established at least 6 meters (20 feet) from the elderberry shrub's drip-line.
- As feasible, all Project-related activities that could occur within 50 meters (165 feet) of an elderberry shrub shall be conducted outside of the flight season of the valley elderberry longhorn beetle (March - July).
- To avoid and minimize adverse effects to valley elderberry longhorn beetle during trimming operations, all elderberry shrub trimming activities shall occur between November and February. Such trimming shall avoid the removal of any branches or stems that are ≥ 1 inch in diameter. Measures to address regular and/or large-scale maintenance (trimming) shall be established as required in consultation with USFWS.
- Herbicides shall not be used within the drip-line of the any elderberry shrub. Insecticides shall not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals shall be applied using a backpack sprayer or similar direct application method.
- Temporary stockpiling of excavated material shall occur only in approved construction material staging areas created more than 20 feet from elderberry shrub drip-lines. Excess excavated soil shall be used on site or disposed of at a regional landfill or other appropriate area.

- Mechanical weed removal within the drip-line of the elderberry shrub shall be limited to the season when adult valley elderberry longhorn beetles are not active (August - February) and will avoid damaging the elderberry shrub.
- Construction personnel shall ensure that dust control measures (e.g., watering) are implemented in the vicinity of any elderberry shrub within 100 feet of construction activities. To avoid affecting the valley elderberry longhorn beetle, dirt roads within 100 feet of elderberry shrubs shall be watered at least twice each day when being used by gravel trucks and other project-related vehicles during dry periods.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Special-Status Mammal Species

Special-status mammal species that are likely to occur within the Project area are the western red bat, pallid bat, and Townsend’s big-eared bat. Construction noise has the potential to disrupt the foraging patterns of all three of these species if construction activities were to continue into the evening, but construction activities are scheduled to occur between 7:00 am and 7:00 pm and would not be expected to affect nighttime foraging. If construction were to continue later into the evening under special circumstances, it would not be expected to have a substantial effect on these species because there is suitable foraging habitat adjacent to the Project area that could be used during the temporary construction period.

If the removal or damage of trees that provide suitable bat roosting habitat were to occur during construction or, if required, during channel maintenance, it could result in direct harm to roosting western red bats or pallid bats. Although the removal of only one tree is proposed, excavation of the main channel entrance may require the removal or trimming of additional trees. If trees with roosting western red bats or pallid bats were affected, the impacts would be potentially significant. Where tree removal/trimming is required, implementation of the protection measures included in **Mitigation Measure BIO-12** would reduce potential impacts to the western red bat and pallid bat to less than significant.

Mitigation Measure BIO-12: Implement Protective Measures During Removal of Trees That Provide Suitable Bat Roosting Habitat.

All removal of trees that provide suitable bat roosting (such as trees with deep bark crevices, snags, or holes) shall be conducted between August 31 and October 30, or earlier than October 30 if evening temperatures fall below 45 degrees Fahrenheit and/or more than a half inch of rainfall occurs within 24 hours. These dates correspond to the time period when bats would not be caring for non-volant young and have not yet entered torpor. A qualified biologist shall monitor removal/trimming of trees that provide suitable bat roosting habitat. Tree removal/trimming shall occur over two consecutive days. On the first day in the afternoon, limbs and branches shall be removed using chainsaws only. Limbs with cavities, crevices, or deep bark fissures shall be avoided, and only branches or limbs without those features shall be removed. On the second day, the entire tree shall be removed. Prior to tree removal/trimming, each tree shall be shaken gently and several minutes shall pass before felling

trees or limbs to allow bats time to arouse and leave the tree. The biologist shall search downed vegetation for dead or injured bat species and report any dead or injured special-status bat species to CDFW.

Western red bats are not known to roost in bridges, while Townsend's big-eared bats sometimes roost in bridges and pallid bats frequently roost in bridges (H.T. Harvey & Associates 2004). Bat guano observed under the Antelope Boulevard/Highway 36 Bridge is not indicative of pallid bats, and the carcass of a Brazilian free-tailed bat (*Tadarida brasiliensis*) was found in one of the bridge bents. The location of bat guano found under the Antelope Boulevard/Highway 36 Bridge and the associated structural features of the bridge indicate that some of the bridge bents are used by bats as a day roost. Although bats roosting under the bridge are accustomed to the noise of heavy traffic on Antelope Boulevard, proposed construction activities under and adjacent to the bridge have the potential to result in the short-term loss of day roost use due to disturbance from noise and activity directly under the bridge. The roost would not be modified and would be available for use post-construction. This temporary disruption would be considered a less than significant impact. However, if the bridge is used as a maternity roost, roost abandonment in response to construction activities could result in the death of young, which would be a significant impact. Similarly, although hibernation roosts are not well known in bridge structures (Erickson, Gregg, et al. 2003), if the bridge is used as hibernacula, disturbance resulting in the arousal of hibernating bats would be a significant impact. Implementation of the protection measures included in **Mitigation Measure BIO-1** and **Mitigation Measure BIO-13** would reduce these potential impacts to less than significant.

Mitigation Measure BIO-13: Implement Bat Protection Measures during Construction Activities Under or Within 100 Feet of the Antelope Boulevard/Highway 36 Bridge

Construction activities associated with relocation of the utility lines, bridge protection, and channel excavation under or within 100 feet of the Antelope Boulevard/Highway 36 Bridge shall not occur from April 15 through August 31 to avoid impacts to roosting bats during the bat maternity season (non-volant period for young) or after October 30 (or earlier than October 30 if evening temperatures fall below 45 degrees Fahrenheit and/or more than a half inch of rainfall occurs within 24 hours) to avoid impacts to hibernating bats.

If construction activities must be conducted within 100 feet of the Antelope Boulevard/Highway 36 Bridge during the maternity season, a qualified biologist shall conduct pre-construction surveys for active maternity roosts within 48 hours prior to the start of proposed construction activities. If there is a lapse in construction activities of two weeks or greater, the area shall be resurveyed within 48 hours prior to recommencement of work. If a bat maternity roost is located, appropriate buffers around the roost sites shall be determined in consultation with CDFW and implemented to avoid abandonment of the roost. The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity. No project activity shall commence within the buffer areas until the end of the pupping season (which typically ends August 31) or until a qualified biologist confirms the maternity roost is no longer active.

Special-Status Plant Species

Although none were observed during surveys, twelve special-status plant species have the potential to occur within the Project area due to the presence of suitable habitat. Construction activities within grassland/woodland areas have the potential to adversely affect habitat for the depauperate milk-vetch and Brazilian watermeal. Construction activities, and if required, channel maintenance, within the sandy and cobbly portions of East Sand Slough's channel bed have the potential to adversely affect the habitat of the silky Cryptantha, shield-bracted monkeyflower, and Stony Creek spurge, while activities within areas of the channel that pool have the potential to adversely affect the habitat of the remaining special-status plant species. Adverse effects could result from ground-disturbing activities; the accidental release of fuels, oil, or contaminants; or the accidental introduction of invasive plant species within these habitats. If any of these impacts were to occur, they would be potentially significant. Implementation of the water quality protection measures included in **Mitigation Measures WQ-1, HAZ-1, and HAZ-2**, as well as the preventative measures included in **Mitigation Measure BIO-14**, would reduce these potential impacts to less than significant.

Mitigation Measure BIO-14: Prevent the Introduction of Invasive Plant Species

The Contractor shall implement the following best management practices, to the extent feasible, to prevent the introduction of invasive plant species:

- Construction equipment shall be washed prior to entering the Project area.
- If straw bales or other vegetative materials are used for erosion control, they shall be certified weed free.
- All re-vegetation materials (e.g., mulches, seed mixtures) shall be certified weed free and come from locally adapted native plant materials, to the extent practicable.

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan

Refer to Section 3.10.2 of Hydrology and Water Quality.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Less than Significant. Because riparian habitat is considered to be a sensitive natural community, channel alignments and construction disturbance areas were designed to minimize impacts to riparian habitat, where feasible. During channel excavation, it may not be possible to avoid certain riparian areas. Channel excavation would have the potential to result in the loss of up to ~~0.89~~1.0 acre of riparian scrub and 0.01 acre of cottonwood riparian woodland along the high-flow entrance and main, secondary, and split channels, as well as the loss of up to ~~0.15~~0.18 acre of mixed riparian forest along the main channel entrance. This potential loss of riparian habitat would not have a substantial adverse effect on riparian habitat within the Project area because additional riparian habitat would be created during proposed floodplain planting, and rapid natural recruitment of riparian habitat is anticipated to occur in response to the restored channel hydrology. Therefore, there would be no net loss of riparian habitat and impacts would be less than significant.

Spoiling activities have the potential to permanently impact approximately ~~0.21~~0.25 acre of elderberry savanna, which supports the host plant for the valley elderberry longhorn beetle. However, material would be spoiled outside the dripline of elderberry shrubs and would not adversely affect the shrubs or the beetle. Impacts would be less than significant.

If required, channel maintenance may require the removal of newly-established riparian vegetation. The removal of this vegetation to restore the channel and/or entrances to design grade would be minimal and would not have a substantial adverse effect on riparian habitat in the area. Impacts would be less than significant.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant. See **Figure 3-6 Wetlands and Waters of the United States Delineation Map.** Proposed construction activities have the potential to result in the temporary disturbance of up to 0.04 acre of scrub-shrub wetlands on the edges of the proposed channel excavation area. The use of access roads within the slough has the potential to result in the temporary disturbance of up to ~~0.97~~1.83 acres of riverine - intermittent streambed. However, construction activities would occur in the dry and would be short-term in nature. In addition, the wetland areas could potentially be avoided. These potential temporary impacts would not have a substantial adverse effect on protected wetlands or other waters and would be less than significant.

Channel excavation has the potential to result in permanent impacts to up to ~~0.23~~0.34 acre of riverine - lower perennial where the Sacramento River merges with the entrances of East Sand Slough. Riverine lower perennial would be affected by reconfiguration of the channel entrances, but this reconfiguration would not adversely affect these waters or result in a conversion from riverine to non-riverine. If required, maintenance of the channel entrance(s) would also result in minimal reconfiguration of riverine – lower perennial, but this reconfiguration would not adversely affect these waters.

Channel excavation also has the potential to result in permanent impacts to approximately ~~1620~~ acres of riverine – intermittent streambed, as excavation would result in a hydrologic regime change from intermittent to perennial within the slough. However, this change would not result in a conversion from riverine to non-riverine. In addition, channel excavation has the potential to result in permanent impacts and conversion of up to ~~0.080.13~~ acre of palustrine seasonal wetlands within the secondary channel and up to 0.9 acre of scrub-shrub riparian wetlands and 0.01 acre of forested riparian wetland within the main, secondary, and split channels. Expansion of the hiking trail within the floodplain of the slough has the potential to result in permanent impacts to approximately 0.6 acre of riverine – intermittent streambed. The loss of these wetlands and waters would not be substantial, and post-project changes in the hydrology of the slough from intermittent to perennial would increase the functions and services of the slough and is anticipated to facilitate creation of new wetlands along the channel, resulting in no net loss and a less than significant impact. Potential impacts would be further reduced with implementation of the water quality protection measures included in **Mitigation Measures HAZ-1** and **HAZ-2**.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to Section 3.9.2 of Hazards and Hazardous Materials.

- d) *Would the project 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?*

Less Than Significant with Mitigation Incorporated: Although the construction period would be short-term, would occur when the channel is dry, and would be implemented in one section of the channel at a time, construction activities have the potential to temporarily disrupt wildlife behavior. Construction noise and the movement of construction equipment could interfere with nesting bird species adjacent to the Project area if excavation occurs during the breeding season; discourage waterfowl from using riverine areas adjacent to construction activities; cause salmonids and green sturgeon to avoid the vicinity of the Project area during excavation of the channel entrances; and could alter foraging and movement patterns of resident wildlife species. Depending on the time of year that construction occurs, and the fish and wildlife species present in the Project area at that time, these temporary impacts would result in a potentially significant impact. However, implementation of the general wildlife protection measures and species-specific avoidance and minimization measures included in **Mitigation Measures BIO-1 through BIO-14** would reduce these potential impacts to less than significant.

No long-term Project-related impacts to migratory terrestrial, aquatic, or avian species are anticipated. The purpose of the proposed Project is to create side channel rearing habitat for listed salmonid species. Channel excavation would reduce the scour holes that result in fish stranding and the need for fish rescue and would establish year-round flows in the slough that would provide expanded and enhanced terrestrial and avian species habitat including riparian woodlands and shrub lands. In the long-term, the proposed

Project would facilitate the movement of salmonids through the side channel and would enhance the function of East Sand Slough as a migratory corridor for wildlife, resulting in a beneficial impact.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. No local policies or ordinances protecting biological resources within the Project Area have been established. No local tree preservation policies have been established for eastern Tehama County. Consequently, implementation of the proposed Project would not conflict with any local policies or ordinances protecting biological resources.

f) Would the project 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. There are no formally approved, adopted, or recognized habitat conservation or natural community plans that include the Project area. Implementation of the proposed Project therefore would not conflict with any habitat conservation plans.

3.5 Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.5.1 Regulatory Setting

The proposed Project requires compliance with CEQA as well as the National Historic Preservation Act (NHPA) of 1966, as amended. Both CEQA and the NHPA essentially mandate that government agencies take into consideration the effects of their actions on cultural resources listed on, or eligible for inclusion in, the California Register of Historical Resources (CRHR) (defined as historical resources at 14 CCR § 15064.5[a]) and the National Register of Historic Places (NRHP) (defined as historic properties at 36 CFR § 800.16[l]). A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. While the NRHP and CRHR significance criteria are similar, the former is given precedence in this analysis because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but the reverse is not necessarily true (PRC 5024.1[c]). Therefore, employing the federal standards will be applicable in both federal and state regulatory contexts.

The NRHP criteria for evaluation, which is outlined at 36 CFR Part 60.4, states the following:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in a districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feelings, and association and that:

- a) are associated with events that have made a significant contribution to the broad patterns of our history; or
- b) are associated with the lives of persons significant in our past; or
- c) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- d) have yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be considered eligible for listing on the NRHP, it must not only be shown to have significance under one or more of these four criteria but must also retain sufficient integrity to convey that significance.

3.5.2 Environmental Setting/Affected Environment

3.5.2.1 Cultural Setting

The Project area is in the territory of the Wintuan language family, a branch of the Penutian language. Due to the survey area's proximity to the Sacramento River, it is likely that the region was once occupied by the River Nomlaki, a Wintun group (Kroeber 1976; Sapir and Spier 1943; Ritter 2013). Nomlaki subsistence was based on three main staples: salmon, deer, and acorns, all of which were abundant in the Red Bluff area when in season (Jensen 2005). Economic activities consisted of collecting plant foods, hunting, and fishing (Brown 2011). Besides acorns, other plants obtained by the Nomlaki included tubers and various grass seeds. Those who resided along the river took salmon in weirs and with harpoons (Windmiller and Finger 2013). The dependence on salmon runs and stationary acorn-yielding oak trees required more permanent village sites than seasonal camps, but special-purpose activities and summer

campes did occur. Village locations have not only been found along the edges of the Sacramento River, but also other major drainages such as Red Bank, Reeds, Dibble, and Blue Tent Creeks (Jensen 2005).

At the time of European contact, Nomlaki villages generally housed from 25 to 200 people, and included the chieftain’s house, family homes, a menstrual hut, a dance house, and a sweathouse (Brown 2011). Typically, a village would be located adjacent to a water source, and the chieftain’s, or headman’s, house would face the stream. Smaller structures would serve as the other villager’s homes and would face the headman’s house. The menstrual hut was located at the opposite end of the village, away from the dance house and sweat house. Construction of these structures usually entailed bent saplings tied together and thatched. The dance house was a semi-subterranean structure with a sod roof supported by posts. Prior to European contact, the dance house was relatively small and used for the secret society initiation; after contact, the structure was associated with the Ghost Dance (Goldschmidt 1978; Windmiller and Finger 2013). The dead were generally buried in a round hole in a flexed position (Brown 2011). Deceased individuals were buried immediately after, tied with sinew and wrapped in bear skin, which was a valued possession. All other possessions were burned (Windmiller and Finger 2013).

The River Nomlaki manufactured a variety of implements for trade and for use, including: bows, arrows, spears, elk-hide armor, harpoons, stone and bone knives, throwing sticks, slings, nets, basketry, elk-hide sandals, and clothing fabricated from hides, pelts, and inner bark.

3.5.2.2 Records Search

On April 24, 2017, appropriately trained personnel⁷ from the Department of Anthropology and Archaeological Research Program (ARP) at California State University, Chico (CSUC) performed a records search for the Project area at the Northeast Information Center (NEIC) in Chico, California. The estimated Project area was limited to the immediate channel of East Sand Slough. Search results indicated that there are no cultural resource inventories or site-specific studies that have been conducted adjacent to or within the Project area, and no cultural resources sites have been previously recorded within 100 meters of the Project area

In May 2018, CSUC’s Geographical Information Center informed ARP of additional project reports held by Mendocino National Forest. These reports were disseminated to ARP on June 22, 2018 and represent two projects that are not on record with the NEIC. These cultural inventory reports are shown in **Table 7 Recently Encountered Cultural Inventories in the Vicinity of the Project Area.**

Table 7 Recently Encountered Cultural Inventories in the Vicinity of the Project Area.

Report Number	Project Title/Report Title	Author	Date
---------------	----------------------------	--------	------

⁷ All project supervisory personnel met the Secretary of Interior’s Standards and Guidelines for Archaeology and Historic Preservation (36 CFR 61).

ARR No. 05-08-25-88	Lake Red Bluff Archaeological Reconnaissance Report	Huberland, Amy	1988
MNF-93-2002	Cultural Resources Assessment of the Proposed Tehama Colusa Canal Authority Fish Passage Project	Peak & Associates, Inc	2002

The Lake Red Bluff Report by Huberland is associated with the transfer of land from Reclamation to Mendocino National Forest and the establishment of a seed orchard and a campground facility. The Class III Cultural Survey of 350 acres revealed no cultural resources.

The Peak & Associates survey of lands west of East Sand Slough revealed a single cultural resource along the west bank of the Sacramento River, which is outside of the proposed Project area. The single cultural resource identified was designated PA-02-01, but it was deemed not eligible for NRHP due to the lack of integrity. A single one-story, side-gable shed with a raised platform attached to the east facing side was recorded on the west bank of the Sacramento River and north of Red Bank Creek. The shed lies 500 meters to the west of the closest boundary of the Project area.

3.5.2.3 Cultural Resources Survey

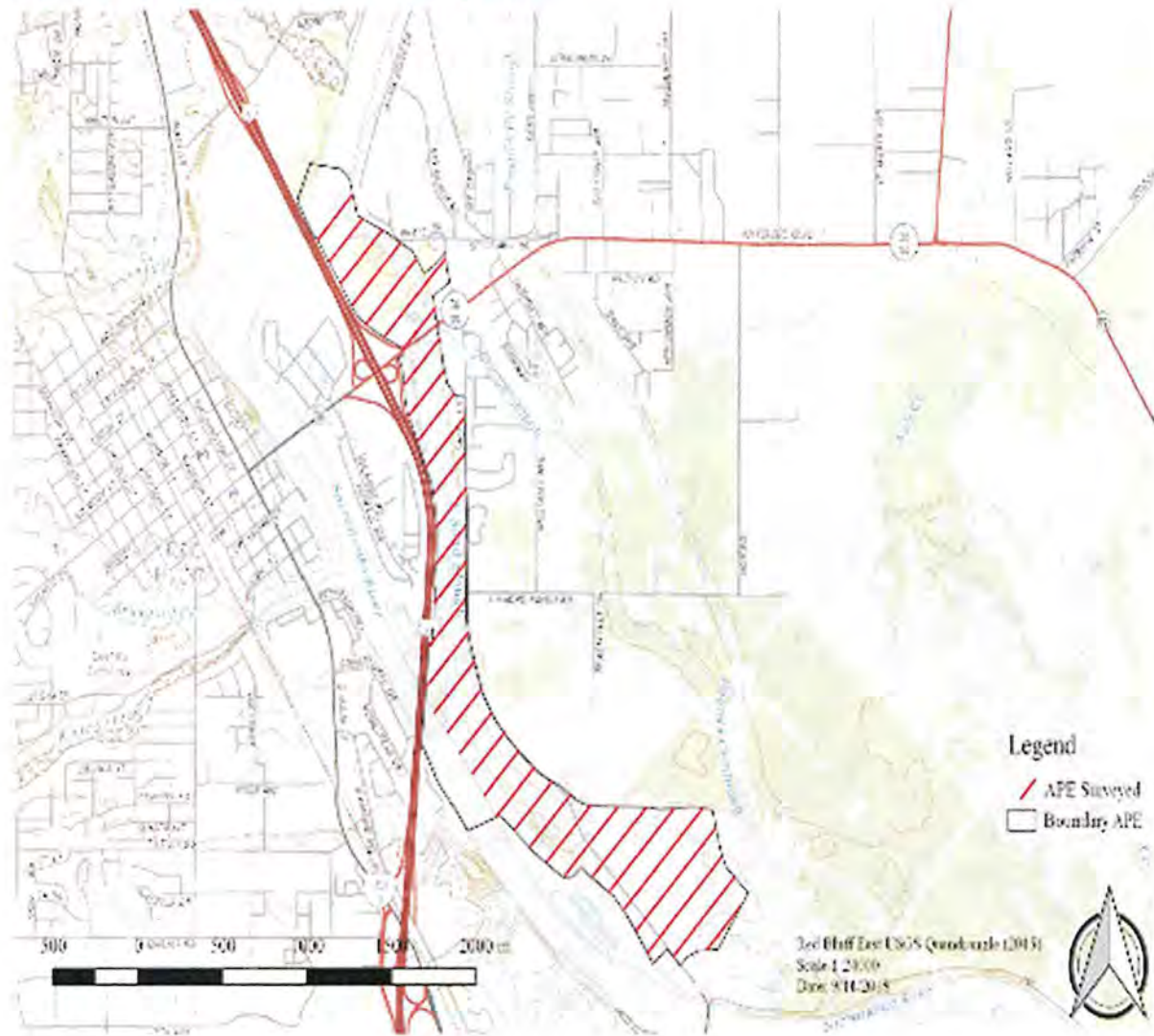
A Cultural Resources survey was performed between June 4th and 8th, 2018. The survey area, which covered 369 acres, was based on a larger initial Project area than what is now proposed (see Figure 3-7 Cultural Resources Survey Area). The Project area boundary that was provided to ARP included portions of the Sacramento River; therefore, some areas of the Project area were submerged at the time of surveys. These areas were designated for biological studies of aquatic plants and wildlife along the waterway and were not included as part of the cultural survey. A subsequent revisit to the Project area on June 24th concluded the cultural resources fieldwork. The field crew performed a pedestrian surface survey maintaining 15-meter spaced transects in order to identify any artifacts, culturally modified faunal or shell features, or structures within the Project area. Special attention was given to areas of high exposure (e.g. clearings or deflated surfaces) as well as ant hills.

The survey of 369 acres revealed a fairly significant presence of homeless encampments located near the intersection of I-5 and the Sacramento River as well as in a wooded area north of Antelope Boulevard. The debris associated with the makeshift camps is present throughout the Project area as well as garbage associated with boating activities. The survey yielded two isolated artifacts and two cultural resources. The two isolated artifacts were pull tab beer cans that were found in the main East Sand Slough channel south of the Antelope Boulevard/Highway 36 Bridge. Pull tab beer cans date from 1965 to 1975. These cans were likely transported from fluvial transport. There were no other historic-aged artifacts found nearby.

The cultural resources survey recorded the three remaining piers associated with two separate bridges on a former section of Belle Mill Road, which were recorded as temporary site numbers ARP18-1 (see Photos 3-15 through 3-17) and ARP18-2 (see Photo 3-18). These bridges connected California Route 99

to the western bank of Sacramento River in Red Bluff. Belle Mill Road served the initial route for California Route 99 that was built by 1920 connecting Los Angeles to Red Bluff. The road gets its name from the historic era mill that began operation in 1869. The demise of Belle Mill Road was tied to two significant federal projects: the Red Bluff Diversion Dam and Interstate 5. The RBDD began construction in 1962 and was completed in 1964. Knowing that water levels were going to rise upstream of the dam, Belle Mill Road would no longer be viable during high water. By 1974, aerial images show that the bridges were no longer present. Nearby bridges crossing Paynes Creek and Samson Slough still remain as crossings for Belle Mill Road and were constructed in 1915.

Figure 3-7: Cultural Resources Survey Area



Although the piers of these two bridges are part of the same road, they represent separate structures. The absence of physical remains of the road bed between the two small bridges led to the recording of these structures as separate sites. Each of the piers measured 22 feet long, 4 feet wide, and 18 feet tall. Capturing exact measurements of the piers was complicated by each of them being surrounded on most sides by standing water. The design of these bridge piers suggests the bridge design is different than the ‘concrete pony/through girder’ bridge of Samson Slough and the ‘through girder bridge’ spanning Paynes Creek (Bridgehunter 2018). Instead, each pier is composed of an estimated 20 twelve-inch wooden piles that were driven into the channel bottom. The footer appears to have been framed in wood with concrete poured into the base frame. The footer measures two inches wider and longer on each side of the pier, and at the base there are multiple milled lumber beams encased in the concrete. The narrower pier sitting atop the footer is 14 feet in height. Rebar is present at the top of the pier, but a cobble and mortar mixture formed the core of the bridge support that had a smoothed concrete finish applied to the exterior. The two

bridge piers on either side of East Sand Slough were intact, but the single pier along the main channel of East Sand Slough, ARP18-2, was collapsed at roughly four feet above the footer (see Photo 3-18). The rest of the pier lies around its original location.

The only additional features associated with the piers are two other posts located just east of the ARP18-1's eastern pier (see Photo 3-19). These posts measure 10 inches in diameter and protrude 4 feet 6 inches and 3 feet 6 inches out of the ground, respectively. Given their proximity to the pier and the similarity in condition to the wooden piles, these are likely contemporaneous with the piers.



Photo 3-15: Cultural Resources Site Number ARP 18-1 Southwest Pier Facing West.



Photo 3-16: Cultural Resources Site Number ARP18-1 Northeast Pier.



Photo 3-17: View of Cultural Resources Site Number ARP18-1 Southwest Pier Facing West.



Photo 3-18: Cultural Resources Site Number ARP18-2 Pier Facing East.



Photo 3-19: Wooden Piles Supporting Cultural Resources Site Number ARP18-1's Southwest Pier.

3.5.2.3.1 Recommendation of Eligibility

The bridge piers within the Project area represent cultural resources that require NRHP Eligibility Evaluation. Based on the aerial photographs from 1938, it is clear that the bridge piers date at least to 1938 or 1915 based upon the period of construction related to the Samson Slough and Paynes Creek bridges located further east along Belle Mill Road. Belle Mill Road was also a prominent artery in Tehama County beginning in 1872 with the construction of the Belle Mill. It served as part of the initial Highway 99 through Red Bluff until the 1960's. By 1958, Red Bluff has built a new bridge spanning the entire East Sand Slough, and Antelope Boulevard became the new route for California Route 99.

The bridge serves as an important part of Red Bluff, Tehama County, and California history, commerce, and transportation, but these qualities do not qualify the site under NRHP Criterion A. These features' historical significance is vital to local and regional history, but they do not qualify as significant national cultural resources. Although the road was built at the behest of Joseph Cone, a significant individual in northern California, this individual does not qualify as a national figure. The construction of the piers does possess unique aspects, but the intentional destruction of the bridges before the 1970's indicates a lack of structural integrity to make ARP18-1 and ARP18-2 eligible under Criterion C. Finally, the destruction of the bridge and the repeated inundation of the Belle Mill Road segment connecting the bridge piers results in a lack of research potential. The cultural significance of Belle Mill Road is still captured by the intact Samson Slough Bridge and Paynes Creek Bridge. Both of these bridges, although different in design, exemplify construction techniques used during the early 20th century along with the importance of this road to Tehama County and the construction of Route 99.

Based on Reclamation's review and consultation with the State Historic Preservation Officer, Reclamation determined that the three bridge pier remnants lack integrity and association and are not eligible for listing in the NRHP under any criterion.

3.5.3 Environmental Consequences

- a) *Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? -and-*
- b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?*

Less Than Significant with Mitigation Incorporated. No historical or archaeological resources as defined in Section 15064.5 were identified within the Project area. However, if proposed Project construction were to result in damage to previously unidentified archaeological or historic resources the impact would be potentially significant. Implementation of the protection measures included in Mitigation Measure CUL-1 would reduce potential impacts to less than significant.

Mitigation Measure CUL-1: Protect Newly Discovered Archeological, Prehistoric, or Historic Resources

If proposed Project construction exposes previously unknown archeological, prehistoric, or historic resources within the Project area the site shall be avoided. Work may continue elsewhere within the Project area. Exposed cultural resources shall be appropriately flagged by the RCDTC Project Manager or a professional archeologist in order to immediately establish a “No Treatment Buffer” of at least 100 feet. Reclamation Cultural Resource staff would be notified and consulted on how to proceed. Reclamation would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13. The provisions of this measure shall apply to all ground-disturbing activities associated with channel excavation, access roads, the equipment staging area, and spoil disposal sites. Work may not continue in the area of the discovery until Reclamation issues a notice to proceed.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant with Mitigation Incorporated. Although unlikely, construction-related ground-disturbing activities have the potential to result in the discovery of, or inadvertent damage to, human remains, which would result in a potentially significant impact. Implementation of the treatment procedures included in **Mitigation Measure CUL-2** would reduce impacts to less than significant.

Mitigation Measure CUL-2: Implement Appropriate Procedures for the Treatment of Human Remains

If during the execution of proposed construction human remains are found, the RCDTC Project Manager, or Contractor after having informed the RCDTC Project Manager of such findings, shall halt work at that location and Reclamation’s Regional Archaeologist shall be notified immediately. Notification shall be followed by a written report within 48 hours. The professional archeologist shall then assess the significance of the remains, process them and immediately notify the Tehama County Coroner pursuant to Health and Human Safety Code Section 7050.5. As required by PRC Section 5097, if the remains are determined by the County coroner to be Native American, the Native American Heritage Commission (NAHC) and Native American groups at the discretion of the professional archaeologist shall be notified within 24 hours of such determination. The professional archaeologist shall adhere to the guidelines of the NAHC in the treatment and disposition of the remains. Findings of significance shall be prepared and submitted to appropriate agencies at the discretion of the professional archaeologist. Findings shall also be recorded (as appropriate) in the Project Files by the RCDTC Project Manager. Project construction may continue in other portions of the Project area. Note that all human remains identified on lands owned by the Federal government are subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001). The procedures for the treatment of human remains on Federal lands are described in the regulations that implement NAGPRA, found at 43 CFR § 10. Project implementation in the vicinity of the discovery shall not resume until Reclamation complies with the 43 CFR § 10 regulations and provides notification to proceed.

3.6 Energy

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
VI. Energy. Would the project:				
a. Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.6.1 Environmental Setting/Affected Environment

The are no existing facilities within the Project area that use energy.

3.6.2 Environmental Consequences

a) Would the project result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant. Temporary energy use in connection with Project construction would entail consumption of diesel fuel and gasoline by construction equipment and by the transportation of earth moving equipment, construction materials, supplies, and construction personnel. If required, channel maintenance may also involve the use of large construction equipment. Per the air quality protection measures established for Project construction (see *Air Quality Section 3.1.2*), all construction equipment would be maintained in proper tune according to manufacturer’s specifications. Maintenance, repair, and tuning reports for equipment would be prepared by equipment contractors and provided when requested to the RCDTC Project Manager. In addition, the use of diesel construction equipment meeting current CARB certification standards for off-road heavy-duty diesel engines would be maximized and unnecessary vehicle idling restricted to five minutes or less. With these measures in place, wasteful, inefficient, or unnecessary use of energy resources is not anticipated, and impacts would be less than significant.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. Through the implementation of the air quality environmental protection measures described above, the Proposed project would not conflict with or obstruct any State or local plans for renewable energy or energy efficiency; therefore, there would be no impact.

3.7 Geology and Soils

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Geology and Soils. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(1994, as updated), creating substantial direct or indirect 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

3.7.1 Environmental Setting/Affected Environment

3.7.1.1 Geology

The Project area is located within the Sacramento Valley, which encompasses the northern portion of the Great Valley Geomorphic Province. The Sacramento Valley is a structural basin containing fluvial, metamorphic, volcanic, and marine sediments. These sediments have been deposited over the last 160 million years, ranging from Jurassic to Holocene in age. Deposits have primarily derived from the easterly Cascade Ranges and the westerly Coastal Ranges. The Project area consists of Holocene-age fluvial deposits underlain by the Pliocene-age Tehama Formation. The Tehama Formation consists of noncontiguous layers of interbedded silt, sand, clay, and gravel (Helley and Harwood 1985). Sediments in the Tehama Formation are a series of fluvial deposits, as evidenced by the presence of poorly sorted materials, lenticular-shaped coarse-bedding, and channels of coarse sediments intermixed within finer-textured bedding. The finer-textured bedding is generally massive, indicating sediment was deposited via streamflow under flood plain conditions (Anderson and Russell 1939). The Tehama formation is subject to weathering and erosion, but at a significantly slower rate than the younger, less consolidated fluvial deposits.

The Red Bluff fault intersects the Project area at depth while trending approximately N50°W. It is a pre-Quaternary fault (older than 1.6 million years) with no surficial expression. There have been no signs of displacement on the fault during the Quaternary period; however, it has not been designated inactive by the California Geological Survey (CGS) (California Geological Survey 2010). The nearest active fault is the Quaternary-aged Corning reverse fault. It lies more than a mile south of the Project area but has shown no evidence of displacement during the Holocene (12,000 years ago to present) (Helley and Harwood 1987).

3.7.1.2 Soils

The Project area, located within the City of Red Bluff and Tehama County, has been principally influenced by the fluvial processes of the Sacramento River and is comprised of unconsolidated, Holocene-age (<12,000 years before present) gravel, sand, and silt deposited by stream and river flows

(Blake et al. 1999). The soils in the East Sand Slough channel and Spoil Areas 1 and 2 are classified as Riverwash (United States Department of Agriculture Web Soil Survey 2014). Riverwash texture is very coarse, mainly composed of gravel with a mixture of coarse sand and finer sediments. It is commonly found in channels along streams and rivers where frequent flooding occurs. This type of soil is dynamic and subject to erosion or reworking in response to flooding events. Slopes in the slough are not as steep as slopes in the main river channel, with little to no runoff and significant drainage. Riverwash is classified as a hydric soil by the Natural Resources Conservation Service (Natural Resource Conservation Service 2018).

3.7.1.3 Paleontological Resources

Paleontological resources are the remains and traces of organic life that have been preserved in the geologic record through some form of fossilization. Paleontological resources can include fossilized bones, shells, plant fragments, footprints, and DNA traces. Certain fossils are limited to specific time-periods and often function as serviceable indices of geologic time.

Significant paleontological resources are known to be present in numerous locations and geologic formations throughout California. These fossils have been designated as unique or unusual, and recognized as important stratigraphic or analytic data. For a fossil to be considered a unique paleontological resource, the fossil must be more than 11,700 years old (Holocene-age). Action that disturbs an area containing such fossils has the potential to adversely affect subsurface paleontological resources.

The Project area is located in Holocene-age Quaternary Alluvium (Qa) that overlies the Pliocene-age Tehama Formation (Helley and Harwood 1985). A review of published geologic maps and paleontological resources indicates that no fossils older than 11,700 have been encountered in the Qa (Murphy et al. 1969; Tehama County 2009).

3.7.2 Environmental Consequences

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. The CGS-issued Alquist-Priolo Fault Map (California Geological Survey 2015a) indicates that East Sand Slough is not located in an Earthquake Fault Zone. Therefore, there would be no impact.

ii) Strong seismic ground shaking?

Less Than Significant. The proposed Project would not result in a substantial increase in visitation to the Project area. According to the most recent CGS Earthquake Shaking Potential for California Map (Branum et al. 2016), the Project area is in a region of low frequency shaking potential. Thus, the Project area would experience low intensity ground shaking and damage from potential earthquakes, and ground rupture due to shaking is highly unlikely (Tehama County 2009). Therefore, impacts would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant. Areas bordering the Sacramento River contain sand layers with low relative densities. This coincides with a high water table leading to continual soil saturation. As a result, there is a high potential for liquefaction during a seismic event. However, the potential for soil liquefaction due to earthquake-induced ground shaking is considered minimal due to the low probability of an earthquake occurring near the Project area (Tehama County 2009). Furthermore, the proposed Project would not cause a significant increase in public visitation. Therefore, this impact would be less than significant.

iv) Landslides?

No Impact. According to the CGS's Landslide Inventory database, the Project area is not susceptible to landslides (California Geological Survey 2015b). Additionally, the Sacramento River Valley is relatively flat with gentle slopes, indicating potential landslides occurrences to be unlikely. Therefore, there would be no impact.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than significant. The Project would require excavating up to 100,000 cubic yards of material from two channels across an approximately 20-acre area. Two spoil locations, designated for excavated channel material, would be restricted to non-sensitive areas. Spoiling in these locations would not disturb riparian vegetation or increase topsoil erosion. Heavy equipment would use existing floodway corridors during excavation, which would minimize the disturbance of topsoil and vegetation. All excavation would be done below the OHWM. Temporary access roads would be restored to pre-existing grade, and staging areas would be reseeded prior to project completion. Temporary soil disturbances from excavation are not anticipated to result in substantial soil erosion or loss of topsoil. In addition, the Project area has not displayed a trend of erosion or deposition during high flow events. It was observed in March 2011 that flows of 30,000 to 50,000 cfs did not contribute to substantial sediment deposition or wide-scale erosion, and hydraulic modeling of the proposed Project conditions indicates shear stresses would be capable of transporting fines, sands, and smaller gravels, and likely would not increase deposition (**Appendix A Hydrology and Hydraulics Report**). Furthermore, a Stormwater Pollution Prevention Plan would be adhered to. Therefore, impacts would be less than significant.

c) Would the project be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

No Impact. The proposed Project would result in restoration of fluvial processes in the Project area, which has the potential to cause minor-to-significant geomorphological changes in the immediate vicinity. As soils experience increased exposure to the river's natural fluvial functions, the river banks may undergo varying degrees of slope failure during high flows or a change in the meander of the river, but at no greater rate than would occur under existing conditions.

Under existing conditions, the Project area is not susceptible to landslides, but is susceptible to flooding (Tehama County 2009). Soil and vegetation disturbance would occur in the channel excavation and spoil areas. Soils would not be imported to the site and onsite dredge disposal would not occur, as this material would be placed in spoil areas as shown on **Figure 1-4 Proposed East Sand Slough Side Channel Project Construction and Access Areas** or hauled offsite to predetermined locations. Excavation would not increase soil instability during flooding events; therefore, there would be no impact.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact. The Project area is comprised of Riverwash soils, which have a low shrink-swell potential. These soils would not inhibit the restoration of rearing habitat, the placement of spoil material, or trail expansion. Therefore, there would be no impact.

e) Would the project 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. Development of septic or wastewater disposal systems are not required for the proposed Project. Therefore, there would be no impact.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. Proposed Project construction activities would occur exclusively in Holocene-age fluvial sediments, which are generally considered to be devoid of significant paleontological resources. Proposed Project construction activities would not encroach below the Holocene-age alluvium into the Tehama Formation. Therefore, significant or unique paleontological resources would not be present throughout the duration of Project construction and there would be no impact.

3.8 Greenhouse Gas Emissions

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.8.1 Environmental Setting/Affected Environment

Climate change is caused, in part, by accumulation in the atmosphere of greenhouse gases (GHGs), which are produced primarily by the burning of fossil fuels for energy. State Law (Health and Safety Code §38505g) defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and hexafluoride. Because GHGs persist and mix in the atmosphere, emissions anywhere in the world can affect the climate everywhere in the world. GHG emissions are typically reported in terms of carbon dioxide equivalents (CO₂e), which is a conversion of all GHGs to an equivalent basis considering their global warming potential compared to CO₂. In 2013, total California GHG emissions were 459.3 million metric tons of CO₂e (California Air Pollution Control Officers Association 2008). This represents a reduction in total GHG emissions from 2012, which had the first emissions increase since 2007.

Baseline conditions within the Project area include GHG emissions from the heavily-travelled I-5, State Route 99E/W, and State Route 36 highway corridors, as well as surface street traffic utilizing City of Red Bluff and Tehama County roads adjacent to the Project area. Current farming and ranching operations and light industry activities within Red Bluff and surrounding portions of Tehama County add to the Project area’s background GHG levels.

3.8.2 Regulatory Setting

This section describes the federal, State, and local regulations related to greenhouse gas emissions and climate change.

3.8.2.1. Federal Regulations Pertaining to GHG Emissions

At the federal level, the United States Environmental Protection Agency (EPA) administers the Clean Air Act (CAA). In 2007, the United States Supreme Court ruled that GHGs are “pollutants” under the CAA. In 2009, the EPA found that six GHGs constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to climate change. These findings serve as a prerequisite to regulations of GHG emissions from motor vehicles, construction equipment, and large stationary emitters of GHGs. On April 1, 2010, the EPA and the National Highway Traffic Safety Administration (NHTSA) established a program to reduce GHG emissions and improve fuel economy standards for new model year 2012-2016 cars and light trucks. On August 9, 2011, the EPA and the NHTSA announced standards to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses.

3.8.2.2 State Regulations Pertaining to GHG Emissions

The State of California has enacted a number of policies and plans to address GHG emissions and climate change. In 2006, AB 32, the Global Warming Solutions Act was passed, which set the overall goals for reducing California’s GHG emissions to 1990 levels by 2020. Executive Orders S-3-05 and B-16-2012 further extend this goal to 80 percent below 1990 levels by 2050. In April 2015 Governor Brown issued EO B-30-15, which established a GHG reduction target of 40 percent below 1990 levels by 2030. CARB has completed rulemakings to implement several GHG emission reduction regulations and continues to investigate the feasibility of implementing additional GHG emission reduction regulations. CARB approved the First Update to the AB 32 Scoping Plan on May 22, 2014 (California Air Pollution Control Officers Association 2008). This update defined climate change priorities for the following five years and sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The update also highlights California’s progress toward meeting the near-term 2020 GHG emission reduction goals and evaluates how to align the State’s longer-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

Senate Bill (SB) 97, which was signed in 2007 and went into effect in 2010, requires that projects estimate the GHG emissions that will result from the project as part of the environmental review process under CEQA. Jurisdictions that have adopted a Qualified GHG Reduction Strategy can streamline the GHG review if the project is shown to be compliant with the strategy by meeting the requirements in CEQA Guidelines Section 15183.5(b). While this Inventory does not constitute a complete Qualified GHG Reduction Strategy, it can be used to support the creation and adoption of such a document. SB 97 also requires the Office of Planning and Research to develop amendments to the CEQA Guidelines that address the analysis and mitigation of GHG emissions. The California Natural Resources Agency adopted the amendments to the CEQA Guidelines in 2010. Key points of these amendments include:

- Lead agencies must analyze the GHG emissions of proposed projects and reach a conclusion regarding the significance of those emissions (see CEQA Guidelines Section 15064.4).

- When a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions (see CEQA Guidelines Section 15126.4[c]).
- Lead agencies may significantly streamline the analysis of GHGs on a project level by using a programmatic GHG emissions-reduction plan that meets certain criteria (see CEQA Guidelines Section 15183.5[b]).

3.8.2.3 Local Efforts and Regulations Pertaining to GHG Emissions

Tehama County lies within the jurisdiction of the TCAPCD. Air Districts have direct and indirect regulatory authority over sources of air pollution and GHGs within their territory and can inform and guide how laws on air pollution and GHGs are applied. They play a critical role in providing support and guidance to jurisdictions, although they do not officially certify Qualified GHG Reduction Strategies. The Tehama County General Plan states that Tehama County will work with the TCAPCD to prepare a Climate Action Plan for the county (Tehama County 2009). The TCAPCD has not yet adopted plan-level guidelines for GHG reduction within Tehama County.

3.8.3 Environmental Consequences

CEQA Guideline § 15064.4 requires a lead agency to make a good-faith effort, based upon scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project, and make a careful judgment to determine the significance of those emissions. The analysis presented in **Table 8 Anticipated Diesel Usage During Proposed Project Construction** and **Table 9 Anticipated Greenhouse Gas Emissions from Transportation of the Construction Workforce** below was conducted in accordance with the GHG analysis requirements found in the CEQA Guidelines and described in recently published technical guidance for CEQA environmental impact studies (ICF Jones and Stokes 2007, California Air Pollution Control Officers Association 2008, and Office of Planning and Research 2008) and calculation procedures developed by DWR.

The GHG emissions from existing operations were not calculated for this analysis as they would continue with or without implementation of the proposed Project. The estimate of the GHG emissions that would result from implementation of all proposed Project components was based upon the anticipated area of disturbance, amount of excavated material, and number of truckloads that would be required during channel excavation (see **Table 2 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature** in *Chapter 2: Description of the Proposed Project*). This estimate of emissions was also based upon the number of hours diesel-fueled equipment would be in operation and gasoline consumption associated with transportation of construction materials (not shown) and the construction workforce during Project construction. In addition, the estimate of emissions was based on the number of days of equipment operation that would be associated with channel maintenance, if required. For the purposes of this evaluation, channel maintenance was assumed to occur intermittently and for a short duration during the lifetime of the Project and was accounted for by adding 5 days use to the dump truck and dozer calculations. Rates of fuel usage are found in **Table 8 Anticipated Diesel Usage During**

Proposed Project Construction and Table 9 Anticipated Greenhouse Gas Emissions from Transportation of the Construction Workforce, respectively.

Table 8 Anticipated Diesel Usage During Proposed Project Construction

Equipment Type	Quantity Of Equipment Units	¹Hourly Fuel Use Per Equipment Unit (In Gallons)	²Total Days Used (All Units)	³Total Operational Hours (All Units)	Total Diesel Usage (In Gallons)	Total CO₂ Equivalent Emissions (Metric Tons)⁴
Self-loading scrapers #623 or equivalent	2	14.64	90	1,440	21,074	219
Excavators #330 or equivalent	3	7.19	90	2,160	15,537	161
Dump trucks 35 Ton capacity	2	12.35	95	1,520	18,773	195
Dozer D6	2	5.54	72.5	1,160	6,428	67
35 Yd ² Loaders #966	2	6.76	90	1,440	9,734	101
Screen Chieftain 1400 gravel sorter	1	3.70	67.5	540	1,998	21
Off-highway water truck (7,000 gallons)	1	12.35	90	720	8,892	92
On-highway water truck (4,000 gallons)	1	12.35	57.5	360	5,681	59
On Highway Dump Truck	50	12.35	90	36,000	444,600	4,620
Totals	64	87.23	87.23	45,340	531,483	5,523
<i>Note: Totals include an additional 5 days of dump truck and dozer use for potential channel maintenance activities.</i>						
<i>¹Estimated Hourly Fuel Usage is based upon California Air Resources Board Off-Road 2007 Emission Inventory data as listed in the California Department of Water Resources GHG Emissions Reduction Plan Consistency Determination Form.</i>						
<i>²Assumes 8 hours per day of equipment operation.</i>						
<i>³Total Diesel Usage in Gallons is calculated as Hourly Fuel Use Per Unit (In Gallons) x Total Operational Hours (All Units).</i>						
<i>⁴Emissions factor based upon World Resources Institute-Mobile combustion CO2 emissions tool, June 2003 Version 1.2</i>						

Table 9 Anticipated Greenhouse Gas Emissions from Transportation of the Construction Workforce

Average Number of Workers per Day	Total Number of Workdays	Average Distance Travelled (round trip)	Total Miles Travelled	*Average Passenger Vehicle Fuel Efficiency	Total Fuel Consumption (gallons of gasoline)	**CO ₂ e/gal Gasoline	Total CO ₂ Equivalent Emissions (metric tons)
20	90	10	18,000	20.8	865.4	0.009	8

* United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]
 ** CO₂e/gal Gasoline factor per California Air Resources Board Off-Road 2007 Emission Inventory data as listed in the California Department of Water Resources GHG Emissions Reduction Plan Consistency Determination Form.

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant. Based upon the calculations shown in **Table 8 Anticipated Diesel Usage During Proposed Project Construction** and **Table 9 Anticipated Greenhouse Gas Emissions from Transportation of the Construction Workforce**, as well as the approximately 1.08 metric tons of CO₂e associated with transportation of construction materials, approximately 5,523 metric tons of CO₂e would be generated by diesel-burning heavy equipment and 8 tons would be generated by gasoline-powered transportation equipment during Project construction. For the purposes of the CEQA analysis, the TCAPCD established a threshold of significance of 900 metric tons of CO₂ or CO₂e per year per the life of an approved project. It is estimated that the proposed Project would remain operational for a minimum of 10 years with channel maintenance, if required. Based upon the estimated total of 5,531.7 metric tons of CO₂e expected to be released during Project construction and a minimum 10-year life span for the overall Project, the average GHG emissions would be 553.1 metric tons of CO₂e per year. Therefore, emissions would be well below the established threshold and would be less than significant.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant. Refer to discussion **a)** above. The proposed Project would restore a side channel, enhance aquatic habitat, and expand environmentally-friendly recreation opportunities. Although the proposed Project would generate short-term GHG emissions during construction and, if required, channel maintenance, the emissions would be below established thresholds and therefore would not obstruct efforts to reduce GHG emissions. Impacts would be less than significant.

3.9 Hazards and Hazardous Materials

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

response plan or emergency
evacuation plan?

- g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

3.9.1 Environmental Setting/Affected Environment

A majority of the Project area is within the city limits of Red Bluff, along with a developed portion of Tehama County. Parcels surrounding the Project area contain residential neighborhoods, large residential parcels, and commercial development at the intersection of Antelope Boulevard and Sale Lane.

The California Department of Forestry and Fire Protection (Cal Fire) has developed a ratings scale for determining the potential for wildland fires. This scale takes into account the type and amount of vegetation (fuel); climate conditions, such as temperature, wind, and humidity; and degree of slope and geographic conditions (topography). The Project area is not located within a fire hazard severity zone (California Department of Forestry and Fire Protection 2019).

Mercy High School, which is approximately a half mile southwest of the main channel on the opposite side of the river, is the nearest school to the Project area. The Red Bluff Municipal Airport is located approximately 2 miles southeast of the East Sand Slough terminus.

Pursuant to Government Code Section 65962.5, the SWRCB GeoTracker (State Water Resources Control Board 2019) and the California Department of Toxic Substances Control EnviroStor (California Department of Toxic Substances Control 2019) online databases were consulted on January 17, 2019, to determine if there are any recorded sites of concern within or near the Project area. No sites of potential concern were identified in the vicinity of the Project area.

3.9.2 Environmental Consequences

- a) *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? -and-***
- b) *Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?***

Less Than Significant with Mitigation Incorporated. A majority of the Project area contains habitat

that is used at various times of the year by aquatic species, including listed salmonids. Various listed avian and terrestrial species inhabit the Project area as well, requiring the protection of water quality and flood channel and riparian habitat conditions.

Construction and maintenance equipment working within the Project area would be fueled with diesel or gasoline. It is possible that a spill could occur while transporting diesel or gasoline to the job site or during equipment fueling operations, or that leaks of equipment fuel and lubricants could occur. If hazardous spills or leaks occurred, the risk of environmental damage to riparian areas, water quality, and other stream zone resources in the Project area would be potentially significant. However, implementation of the Spill Prevention Containment and Countermeasure Plan included in **Mitigation Measure HAZ-1** would reduce these potential impacts to less than significant.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

To reduce potential impacts associated with fuel spills in streams and riparian areas, the contractor shall develop, and the RCDTC Project Manager shall enforce, a **Spill Prevention Containment and Countermeasures Plan (SPCCP)**. The Project Contractor shall assure that spill prevention and cleanup kits are maintained in close proximity to construction areas. Contractor supplied workers and RCDTC personnel involved with Project construction shall be trained in the use of spill containment kits by the RCDTC Project Manager. The Contractor shall ensure that gasoline and lubricants are at no time transported across a live stream other than in the tank of equipment being moved or already applied to such equipment. Only pre-established roads shall be used to move personnel, equipment, and materials into and out of the Project area unless previously approved by the RCDTC Project Manager. The following would also be conditions of the SPCCP:

- Standard precautions shall be employed by construction personnel to prevent the accidental release of fuel, oil, lubricant or other hazardous materials.
- Construction equipment refueling, regular maintenance, and equipment storage shall be restricted to designated staging areas located away from streams and sensitive habitats (at least 50' from waterbodies). The RCDTC Project Manager or Contractor shall inspect refueling areas to verify these sites' adequacy in protecting riparian and terrestrial resources as well as the availability of containment equipment.
- Fuel containment equipment including absorbent sheets and wattles shall be made available by the Project Contractor at all refueling and maintenance areas.
- Major vehicle maintenance and washing shall be conducted off site.
- All spent fluids including motor oil, radiator coolant, or other fluids along with used vehicle batteries shall be collected, stored, and recycled as hazardous waste off site.
- Dry cleanup methods (i.e. absorbent materials, dry sweep, and/or rags) shall be used whenever possible.
- Spilled dry materials shall be swept up immediately.

- Project Contractor personnel shall make daily inspections of all equipment for leaks (e.g. cracked hoses, loose filling caps, stripped drain plugs) of oil, fuel, herbicide and other hazardous materials.
- All leaks found during such inspections shall be repaired prior to use within any portion of the project area.
- External occurrences of fuel, oil, grease and herbicide shall be removed by hand prior to the start of daily operation.
- Inspection reports related to daily inspections shall be submitted to: **Resource Conservation District of Tehama County, Attn: Jon Barrett, 2 Sutter Street Suite D, Red Bluff, CA 96080**. The results of these inspections reports shall be incorporated into the RCDTC project files along with evidence of any repairs required and completed before returning equipment to project work sites.

To accomplish boat ramp restoration and floodplain planting, State- and county-approved herbicides may be used to control non-native grasses and shrubs. Herbicide exposure could occur during the transport, storage, preparation, application, and disposal of herbicides used within the Project area. Exposure of various biological resources, non-target plants, wildlife, adjacent residents, construction workers, and future users of the Project area to these herbicides would be potentially significant. However, implementation of the herbicide application and management measures included in **Mitigation Measure HAZ-2** would reduce potential impacts to less than significant.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

To ensure the proper transport, storage, mixing, loading, application, and disposal of herbicides used within the Project area, the RCDTC Project Manager shall develop and enforce an **Herbicide Use Plan**. The Herbicide Use Plan shall include, but not be limited to, the following measures:

- Landowners and residents shall be informed in writing as to the date when herbicides shall be applied on particular properties. This notification shall provide information regarding the chemicals to be used and Mitigation Measures developed to reduce environmental impacts. The notification shall recommend that all persons and animals stay out of treatment areas for a specified period of time.
- Prior to and during herbicide applications, signs shall be posited along access points to minimize potential exposure by the public.
- All applications of herbicide shall be done by a Qualified Licensed Applicator and under the supervision of a Licensed Pest Control Advisor in accordance with applicable, federal, state, and local laws or guidelines. All applicators shall have been trained to safely handle and apply herbicides per State of California regulations as well as those of the Tehama County Department of Agriculture.
- All workers involved with herbicide applications shall wear appropriate protective clothing and related safety equipment (masks, gloves, etc.) as per the guidelines of the California Department of Industrial Relations Division of Occupational Safety and Health and those of the

manufacturer.

- Clean soap and water shall be readily available on site for the purpose of emergency washing. Wash stations shall be located away from any natural waterway to avoid contamination of waterways and ponds in the area.
- Dependable radios or phone communication shall be available on site to report any emergency that may occur.
- No herbicide applications shall take place when wind velocity is less than two (2) miles per hour or exceeds ten (10) miles per hour or when there is greater than a thirty percent (30%) forecast of rain within six (6) hours of treatments. Wind speeds shall be monitored hourly.
- Herbicide applicators shall avoid spraying wildlife observed in herbicide treatment areas. Areas not sprayed due to the presence of wildlife may be sprayed once wildlife has left the site of application. Those areas suspected of containing occupied nesting or denning habitats shall also be avoided and not treated until wildlife have left the area.
- Herbicide treatments shall occur outside the breeding period of all special-status species. Any special-status wildlife species that may be found during herbicide application shall be moved to a safe location under directives obtained from CDFW. Personnel conducting vegetation treatments or herbicide applications shall search for and relocate special-status species that may be under vegetation prior to any herbicide applications. Personnel involved with the movement of wildlife shall not handle chemicals.
- The RCDTC Project Manager or Contractor (as permitted by the RCDTC Project Manager) shall assure that no mixed herbicides or other chemicals are transported across flowing water at any time. Only unmixed herbicides and related chemicals in their original sealed containers shall be allowed transport over flowing water.
- A suitable stain or dye shall be incorporated into the herbicide prior to application to increase applicator accuracy, avoid missed vegetation and overspray as well as to indicate personal exposure to herbicides.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. There are no existing or proposed schools within one-quarter mile of the Project area. Therefore, there would be no impact.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The Project area is not located on or near a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. Therefore, there would be no impact.

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?

No Impact. Although the Project area is located approximately two miles from the Red Bluff Municipal Airport, the proposed Project would not change the land use designation or construct tall structures within the Project area and would not result in an airport-related safety hazard. Therefore, there would be no impact.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. None of the proposed Project activities would impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Post-project stream flows would not prevent emergency access to the East Sand Slough channel. Therefore, there would be no impact.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Less Than Significant with Mitigation Incorporated. The Project area is not located in a high-risk fire area but is located adjacent to residential and commercial structures. A spark from construction or maintenance equipment in dry conditions could ignite a vegetation fire, resulting in a potentially significant impact. However, the risk of a construction- or maintenance--related fire is low, and implementation of the protection measures included in **Mitigation Measure HAZ-3** would reduce the risk of potential impacts to less than significant. Post-Project, flows within East Sand Slough would provide a year-round source of water, further reducing the risk of wildland fire within the Project area.

Mitigation Measure HAZ-3: Maintain Fire Protection Equipment Onsite during Project Construction

To reduce impacts associated with exposure of people or structures to wildland fires, the RCDTC Project Manager or Project Contractor Representative shall ensure that adequate fire protection equipment is available at work sites. This shall include fire extinguishers attached to all mechanized equipment. Firefighting hand tools shall be made available at all areas where equipment is operated. The RCDTC Project Manager and Project Contractor shall comply with all applicable fire safe standards as found in Public Resources Code Division 4, Chapter 6, (PRC's 4427, 4428, 4429, 4431, 4442, list not all inclusive). Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire. Only appropriately Certified Pesticide Applicators who are trained in wildfire prevention and suppression shall be used in the execution of Project construction. All motorized equipment shall have approved spark arrestors.

3.10 Hydrology and Water Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Hydrology and Water Quality. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(ii) Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off site;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(iii) create or contributes runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(iv) impede or redirect floodflows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.10.1 Environmental Setting/Affected Environment

3.10.1.1 Hydrology

The Hydrology of the Sacramento River at East Sand Slough is influenced by releases from Shasta and Keswick Dams and several tributaries along a 65-miles stretch of river. Major east-side tributaries that flow into the Sacramento River upstream of East Sand Slough include Battle, Bear, Churn, Cow, and Paynes creeks. Major west-side tributaries include Clear and Cottonwood creeks.

In 1960, Reclamation and the California Department of Fish and Game (now the California Department of Fish and Wildlife) entered into a Memorandum of Agreement establishing flow objectives in the Sacramento River. The requirements, which were included in SWRCB Order 90-05 and 91-01, are to maintain minimum releases of 3,250 cfs at Keswick Dam from September through the end of February in all water years, except critically dry years. The orders additionally required Keswick and Shasta dams to be operated to maintain a daily average water temperature of 56° F in the Sacramento River as far downstream as practicable, including to the RBDD, during times when higher temperatures would be detrimental to fish, unless factors beyond Reclamation's reasonable control prevent this. Water releases from Keswick Dam can vary greatly throughout the year with minimum flows observed at 2,750 cubic feet per second (cfs) and maximum flows up to 38,100 cfs. The median flow release from Keswick is approximately 5,630 cfs. Keswick Dam is typically operated to provide a minimum flow of 3,250 cfs for fish.

Floodwaters in the Sacramento River overflow into three sloughs along the east bank that protect the city of Red Bluff from major flooding. Paynes, Samson, and East Sand sloughs start flowing when the Sacramento River is at about 40,000 cfs, 110,000 cfs, and 20,000 cfs, respectively. The FEMA-established 10-, 50-, and 100-year flood event peak discharges for this area are 141,000 cfs, 194,000 cfs, and 220,000 cfs, respectively.

3.10.1.2 Water Quality

The Sacramento River has significant economic and ecological importance, providing water for irrigated agriculture, drinking, and industrial water supplies; fisheries and wildlife habitat; and recreation. These beneficial uses of water are affected by both human-related activities (such as timber harvesting, mining, and polluting point and non-point sources) and natural climatic factors, such as flood and drought.

Water quality in the Project area has been monitored by the DWR Northern Region Office's Water Quality Section for several decades. Since 2008, DWR has conducted quarterly monitoring of physical and chemical water quality parameters for the Sacramento Watershed Coordinated Monitoring Program (SWCMP), under contract with the SWRCBs Surface Water Ambient Monitoring Program. The two SWCMP water quality stations on the mainstem Sacramento River used to characterize existing water quality conditions in the Project reach are the 'Sacramento River at Bend Bridge' and the 'Sacramento

River below Red Bluff stations. The Bend Bridge station is located approximately 11 miles upstream from East Sand Slough's channel entrance. The Red Bluff station is located approximately 1.5 miles downstream from the channel terminus.

Water quality in the Project reach is generally good. Turbidity, a measure of light transmission through the water column and related to suspended sediment conditions, is a constituent of concern for aquatic habitat. From November 2008 through August 2014, measured turbidities ranged from 1.3 nephelometric turbidity units (NTU) to 214 NTU at the Bend Bridge station, with an average of 13.2 NTU. Measured turbidities at the Red Bluff station ranged from 1 NTU to 127 NTU, with an average of 8.9 NTU. The maximum turbidities at both stations occurred during a high flow event on February 23, 2009 and indicate lower turbidity at the downstream station during high flow events (California Department of Water Resources 2017). Measured pH ranged from 6.9 to 8.2 at the Bend Bridge station and ranged from 7.0 to 8.4 at the Red Bluff station (California Department of Water Resources 2017). All pH levels were within the range that is protective of aquatic habitat.

3.10.2 Environmental Consequences

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant with Mitigation Incorporated. Proposed Project construction activities are not anticipated to significantly affect water chemistry constituent levels in the Sacramento River or the Project area. All excavation would occur along the toe of the bank within the OHWM, with the exception of a small portion of the bank just downstream of the Antelope Boulevard/Highway 36 Bridge where the sewer line would be relocated. Approximately 100,000 cubic yards of material would be excavated from the channel within an area totaling about 20 acres. Most of the excavation would occur in the dry, with the final breaching of the upstream channel entrances being the only planned instream work. Instream work associated with breaching the upstream channel entrances during construction or, if required, restoring channel entrance design during maintenance, would likely result in short-term turbidity plumes in the Sacramento River immediately downstream of the construction area, which would be potentially significant. However, any re-suspension and re-deposition of instream sediments is expected to be localized and temporary and would not reach a level that would acutely affect aquatic organisms. In addition, implementation of the water quality protection measures and turbidity monitoring included in **Mitigation Measures WQ-1** and **WQ-2** would protect water quality in the Sacramento River during instream work and would ensure that impacts are less than significant. Impacts would be further reduced with implementation of the Spill Prevention Containment and Countermeasure Plan included in **Mitigation Measure HAZ-1**, the herbicide application and management measures included in **Mitigation Measure HAZ-2**, and compliance with the requirements of the Clean Water Act Section 401 Water Quality Certification, Clean Water Act Section 402 General Construction Activity Stormwater Permit, and Clean Water Act Section 404 Permit for Discharges of Dredged or Fill Material that would be issued for the proposed Project (see **Table 1 Required Permits and Approvals Anticipated for the East Sand Slough Side Channel Project**).

Mitigation Measure WQ-1: Prepare and Implement a Stormwater Pollution Prevention Plan

A stormwater pollution prevention plan (SWPPP) shall be prepared by the Contractor prior to the start of construction activities. BMPs incorporated into the SWPPP shall be site-specific and shall be prepared consistent with the RWQCB field manual. The SWPPP shall include, but not be limited to, the following standard BMPs:

- The construction contractor shall minimize ground disturbance and the disturbance/destruction of existing vegetation. This shall be accomplished, in part, through establishing designated equipment staging areas, ingress and egress corridors, equipment exclusion zones prior to the commencement of any grading operations, and protection of existing trees.
- Equipment and materials shall be staged in designated staging areas.
- Disturbed soils within the Project area shall be stabilized to reduce erosion potential both during and following construction. Finer sediment spoils material shall be hydroseeded. Where larger gravels and cobbles are intermixed with fine sediments, the material shall be rinsed when Project construction is complete. Where appropriate, planting, seeding with native species, and mulching may be used as feasible. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material would be used for such stabilization.

Mitigation Measure WQ-2: Conduct Turbidity Monitoring

Turbidity and settleable solids shall be monitored during instream work to maintain compliance with U.S. Army Corps of Engineers Section 404 and SWRCB 401 permit requirements. If turbidity exceeds permit criteria, construction would be slowed or stopped until turbidity is within permitted levels.

Mitigation Measure HAZ-1: Develop and Implement a Spill Prevention Containment and Countermeasures Plan

Refer to the Hazards and Hazardous Materials Section 3.8.2.

Mitigation Measure HAZ-2: Prepare and Implement an Herbicide Use Plan

Refer to the Hazards and Hazardous Materials Section 3.8.2.

During the summer season when ambient temperatures are high, there is potential for Sacramento River water to exceed the temperature criteria of SWRCB Order 90-05 and 91-01. During this time, a portion of the Sacramento River flow would enter East Sand Slough, travel the length of the slough, and re-enter the river just upstream of the RBDD. There is typically 10,000 to 13,000 cfs of temperature-compliant water in the Sacramento River in the vicinity of East Sand Slough from May to September. Approximately 200 cfs of that flow (representing approximately 1 to 2 percent of the total Sacramento River flow) would enter East Sand Slough at an average depth of 4 to 5 feet in the slough. Due to the depth and movement of flows in the channel, negligible to minimal water temperature increases are anticipated to occur. Additionally, water from the slough would be quickly diluted by the much greater

volume of water once it re-entered the main Sacramento River flow. Therefore, the proposed Project would have a less than significant impact on water temperature in the Sacramento River.

If the Caltrans scour analysis indicates that it is necessary, concrete lining may be applied to the Antelope Boulevard/Highway 36 Bridge H-piles during construction, and may need to be repaired during channel maintenance. Concrete waste management procedures and practices, as described in the proposed Project's Stormwater Pollution Prevention Plan (SWPPP), would be implemented to ensure that concrete waste is properly handled to eliminate the discharge of concrete waste to watercourses. SWPPP best management practices would also be implemented for portable toilets within the staging areas. Implementation of these best management practices would ensure that potential impacts would be less than significant.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Impact. The Project area is located within a designated floodway. The proposed Project does not include groundwater pumping, nor would it interfere with groundwater recharge; therefore, no impact would occur.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) result in substantial erosion or siltation on- or off-site?

Less than Significant. Extension of the pedestrian and biking trail would require the addition of concrete in a portion of the Project area, but the size and location of the trail would not be expected to alter the drainage pattern of the area. The existing boat ramp would be removed, and the area planted with native vegetation, which would reduce the extent of impervious surfaces in this portion of the Project area.

East Sand Slough is a designated floodway that is inundated when the Sacramento River is at about 20,000 cfs and currently exhibits siltation and localized erosion. The proposed Project would slightly alter the drainage pattern by increasing the connectivity between East Sand Slough and the Sacramento River during flows between 5,000 and 20,000 cfs in the Sacramento River as measured at the Bend Bridge gaging station. The additional low-flow connectivity would not result in substantial additional erosion or siltation, resulting in a less than significant impact.

(ii) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?

Less than Significant. The proposed Project would increase the connectivity between East Sand Slough and the Sacramento River during low flows. The proposed Project would not substantially alter the

drainage pattern of the site in a way that would increase the rate of surface runoff or substantially alter the course of the Sacramento River, resulting in a less than significant impact.

(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

No Impact. Construction activities, and maintenance activities if needed, would comply with the requirements of the Clean Water Act Section 401 Water Quality Certification and Clean Water Act Section 402 General Construction Activity Stormwater Permit. The SWPPP best management practices would be implemented during all phases of construction. Post-construction, flows through East Sand Slough would re-enter the Sacramento River and would not affect stormwater drainage systems or contribute to polluted runoff. Therefore, there would be no impact.

(iv) impede or redirect flood flows?

Less than Significant. The proposed Project includes improvements under the Antelope Boulevard/Highway 36 Bridge to ensure the structural integrity of the bridge is not compromised. These improvements include encapsulating the existing H-piles to prevent corrosion from contact with water, constructing guide inlets and outlets to minimize migration of the thalweg of the newly-constructed channel, and potentially lining the channel under the bridge with concrete to prevent scour. The proposed Project also includes constructing a new concrete trail. These improvements would not impede flood flows; therefore, impacts would be less than significant.

The proposed Project also involves lowering the existing East Sand Slough channel to restore connection to the Sacramento River during low-flow periods and modifying the channel entrance(s) to maintain flow in the channel year-round. Under existing conditions, the channel conveys flood flows from the Sacramento River. Once the channel is lowered, it would continue to convey flood flows but would not be expected to redirect flood flows (i.e. result in river capture) because: (1) the gradient of the Sacramento River is greater than that of the slough, which minimizes the likelihood of aggradation resulting from sedimentation in the river; (2) the volume of water in the Sacramento River would be roughly 97 percent greater than the volume in the slough and therefore would not be likely to divert into the slough; (3) modifications to the slough entrance would increase the width of the Sacramento River at that location, which is anticipated to create a depositional zone rather than facilitate erosion; and (4) flows exiting the slough encounter backwater conditions on the Sacramento River during higher flows, which makes the creation of a headcut (a condition that can facilitate river capture) unlikely (see **Appendix A Hydrology and Hydraulics Report**). Therefore, channel excavation would not redirect flood flows and impacts would be less than significant.

d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

No impact. The proposed Project is not located within a tsunami or seiche zone. East Sand Slough is an active flood channel intended to inundate when the Sacramento River reaches a certain stage. The

proposed Project would reconnect East Sand Slough to the Sacramento River at lower flows so that the slough has water in it year-round. This change in hydrology would not increase the risk of the release of pollutants. Therefore, there would be no impact.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The proposed Project has the potential to temporarily increase turbidity in the Sacramento River during excavation of the channel entrances. Post-construction or if required, post-maintenance, the proposed Project would not adversely impact water quality and would not affect groundwater resources. Therefore, no conflict with or obstruction of a water quality control plan or sustainable groundwater management plan would occur and there would be no impact.

3.11 Land Use and Planning

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Land Use and Planning. Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.11.1 Environmental Setting/Affected Environment

Proposed Project construction would occur within and immediately adjacent to East Sand Slough, a natural regularly inundated flood channel that separates the Red Bluff city center from the easterly Antelope area and adjacent developed areas of Tehama County. Portions of the Project area are within Red Bluff city limits, developed areas of Tehama County, and the Mendocino National Forest.

3.11.2 Environmental Consequences

a) *Would the project physically divide an established community?*

No Impact. Proposed Project construction would occur within or immediately adjacent to the East Sand Slough channel and would not divide an established community. Therefore, there would be no impact.

b) *Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

No Impact. The City of Red Bluff, Tehama County, and USFS have approved the incorporation of lands under their jurisdiction into the proposed Project and would execute an access agreement with the RCDTC prior to the start of construction. Temporary access roads and staging areas would be established on undeveloped land. Prior to the use of any private lands for the staging area or for the establishment of temporary transportation routes, an access agreement would be secured from individual landowners. All permanent spoil areas would be established within open areas where no housing occurs or is anticipated to be developed. Project implementation would not conflict with existing land use. Therefore, there would be no impact.

3.12 Mineral Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.12.1 Environmental Setting/Affected Environment

East Sand Slough is an undeveloped side channel to the Sacramento River’s mainstem. The only mineral resources within the Project area are sand and a small amount of gravel. There are no existing sand or gravel extraction operations in the area nor are any proposed for development.

3.12.2 Environmental Consequences

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The proposed Project would entail grading and removal of sand and river sediment within the East Sand Slough channel. As proposed, some of the sand removed from the channel would be spoiled on open sites adjacent to the East Sand Slough channel and thus potentially available for future use. The rest of this material would be made available for immediate use by the project contractor or other interested entity. No long-term impact to local sand supplies or other mineral resources is anticipated as there are no extraction operations within the Project area nor are any anticipated to be developed in the future. There are significant sources of aggregate material similar to what would be removed from East Sand Slough that serve the needs of the Tehama County area. Consequently, no impact to known mineral resources is anticipated.

b) Would the project 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. None of the activities associated with the proposed Project would result in the loss of any locally important mineral resource recovery site. Therefore, there would be no impact.

3.13 Noise

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Noise. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance,	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

or applicable standards of other agencies?

- b) Generation of excessive groundborne vibration or groundborne noise levels?
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

3.13.1 Environmental Setting/Affected Environment

As described in the 2008 Tehama County General Plan, primary sources of noise within the County include highway and local traffic, commercial and industrial uses, airports, and railroad operations. The City of Red Bluff's General Plan Noise Element also indicates that these sources are among the most significant sound-producing features located within the City's limits. A majority of the proposed Project's impact area consists of undeveloped areas such as slough channels and related riparian vegetation. The lower third of the Project area is located adjacent to relatively undeveloped agricultural areas that contain orchards and croplands along with undeveloped oak woodlands and grasslands managed by the Mendocino National Forest. Ambient noise conditions within and around the Project area include high traffic volumes along I-5 (37,500 to 48,500 Average Daily Traffic Per Day), which is located immediately west of the Project area, and Antelope Boulevard (19,100 to 20,500 Average Daily Traffic Per Day). Low traffic volumes are generated along Sale Lane (360 Average Trips Per Day), which is located immediately east of the Project area. This road is the primary access route to subdivisions near Antelope Boulevard, individual home sites along and adjacent to Sale Lane, as well as facilities at the Red Bluff Recreation Area. Although traffic-related noise data has not been collected along Sale Lane (a major collector route), such data has been developed by the Tehama County Public Works Department for the much more heavily-travelled arterial route Bowman Road (approximately 8,029 Average Trips Per Day). This data indicates noise levels of 65 decibels (dB) (Community Noise Equivalent Level) up to 90 feet from the Bowman Road centerline. In comparison, traffic along I-5 generates noise levels of 65 dB up to 479 feet from the centerline. Pursuant to the Tehama County General Plan, acceptable traffic-related noise levels range generally from 60 to 70 dB day-night average sound level (Ldn) depending on the land use. Other sources of noise currently surrounding the Project area include the operation of high-volume commercial establishments such as gas stations, fast food outlets, and motels near the intersection of Sale Lane and Antelope Boulevard, along with commercial agricultural operations adjacent to the Project area's southern end. Acceptable non-transportation noise levels established in the Tehama County General Plan range from 50 to 65 dB equivalent sound level (Leq) during the day.

Sensitive noise receptors near the Project area include residential neighborhoods and individually developed residential lots along the east side of Sale Lane (see **Figure 3-1 Sensitive Receptors Within the Vicinity of the East Sand Slough Side Channel Project Area**). The closest non-residential developed sensitive receptors to the Project area include Mercy High School and Shasta College Tehama Campus located across the Sacramento River Channel approximately 0.5 and one mile west of the Project area, respectively. Berrendos Middle School and Antelope Elementary School are located 2 and 2.5 miles east of the Project area, respectively.

3.13.2 Environmental Consequences

The Noise Element of the Tehama County General Plan recommends the adoption of a County-wide noise control ordinance that would restrict construction activities to certain hours; however, at this time, Tehama County does not have an adopted noise ordinance.

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant. During construction and maintenance of the proposed Project, a temporary increase in noise levels over ambient conditions would be created by heavy equipment and power hand tools. This increase would be minimal, would not be at a level that would substantially increase ambient noise levels, and would only be created during daylight hours. Noise levels for typical construction equipment anticipated to be used for the proposed Project are listed in **Table 10 Typical Construction-Related Noise Levels 50 Feet from the Source**.

Table 10 Typical Construction-Related Noise Levels 50 Feet from the Source

Construction Equipment	Typical Noise Level (decibels) 50 Feet from the Source
Truck	88
Bulldozer	85
Concrete mixer	85
Grader	85
Loader	85
Crane (mobile)	83
Concrete pump	82
Pump	76

Source: Federal Highway Administration 2006

Noise levels shown indicate what the level would be 50 feet away from the source. Vegetation would further attenuate noise levels. Noise-generating activities are anticipated to progress at a rapid pace; consequently, noise-generating equipment would be within a particular location of East Sand Slough for a limited period of time, resulting in very short-term impacts to developed human uses or wildlife behavior. Once all Project construction has been completed, there is the potential for an increase in noise levels within the East Sand Slough Channel, along Sale Lane, and within the Red Bluff Recreation Area related to additional use of these sites by passive outdoor recreationists in response to Project-related recreation enhancement and expansion. However, this potential increase in noise is expected to be minor. No long-term impacts to noise standards established in the Tehama County General Plan are anticipated. Therefore, impacts would be less than significant.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant with Mitigation Incorporated. During Project construction, dozers and other heavy equipment may generate groundborne vibration. Construction activities could temporarily increase vibration levels in the vicinity of the Project area. Actual vibration levels would vary throughout the day depending on the type of construction equipment involved, activities being implemented, and distance between the source of the noise and receptors. Project construction would be implemented with heavy construction equipment operating within a particular portion of East Sand Slough for a relatively short period of time. As a result, construction-related vibration would be temporary but could exceed General Plan standards for non-transportation vibration sources and thus be potentially significant. Implementation of **Mitigation Measure NOISE-1, NOISE-2, and NOISE-3** would ensure that Project-related noise would not exceed acceptable levels, would be limited to daytime hours, and that nearby sensitive receptors would be notified prior to the start of construction, effectively reducing potential impacts to less than significant.

Mitigation Measure NOISE-1: Implement General Noise Protection and Reduction Measures

- Equipment not in use shall not be left idling for more than 5 minutes.
- All noise producing equipment shall be equipped with noise control devices such as mufflers, in accordance with manufacturers' specifications and shall be maintained in proper operating condition.
- Transportation routes shall be coordinated, and equipment arranged to minimize disturbance to noise-sensitive uses.
- The RCDTC Project Manager shall appoint a disturbance coordinator who shall respond to all public complaints.

Mitigation Measure NOISE-2: Limit Period of Operation

All project construction activities entailing the use of mechanical equipment or engines, including mechanical hand tools, shall be conducted between the hours of 7 AM to 7 PM (or as otherwise established in the City or Red Bluff General Plan) when construction activities occur within 500

feet of a residential or other noise-sensitive land uses. Off-site hauling of spoil material shall be limited to weekdays, with the exception of holidays.

Mitigation Measure NOISE-3: Coordinate with Adjacent Residences to Minimize Noise Disturbance

The RCD of Tehama County Project Manager shall work with the Project Contractor and adjacent residents to develop additional reasonable measures to minimize disturbance of occupied residences. Before implementation of construction activities near noise-sensitive receptors, the RCDTC shall provide written notification to potentially affected receptors identifying the type, duration, and frequency of construction operations. Notification materials shall also identify a mechanism for residents to register noise-related complaints with the RCDTC, who shall consider noise-related concerns on a case-by-case basis.

If required, maintenance activities would involve the use of large construction equipment but would not be expected to generate excessive groundborne vibration or noise levels. Maintenance-related noise impacts would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are no private airstrips within or near the Project area. The closest public airport is the Red Bluff Municipal Airport, located approximately two miles west of East Sand Slough. The proposed Project would not expose construction workers in the Project area to excessive airport-related noise levels. Therefore, there would be no impact.

3.14 Population and Housing

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

XIV. Population and Housing. Would the project:

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|

through extension of roads or other infrastructure)?

- b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

3.14.1 Environmental Setting/Affected Environment

The proposed Project is located within a developed portion of the Red Bluff City limits and a developed area of Tehama County. Large lot housing parcels are located on the northeast side of East Sand Slough, north of the Antelope Boulevard/Highway 36 Bridge. South of the bridge structure on the eastside of the Project area are a number of subdivisions and commercial developments (see **Figure 1-1 Proposed East Sand Slough Side Channel Project Location** and **Photo 2-10**).

3.14.2 Environmental Consequences

- a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

No Impact. The proposed Project entails habitat restoration and enhancement, the improvement of passive recreational opportunities, and the expansion of developed recreation infrastructure. No Project-related housing or other growth-inducing infrastructure would be developed. Although it is anticipated that the proposed Project would induce greater use of the entire East Sand Slough area by recreationists, such increased use would be expected to come from residents already using the area and new visitors living in the Red Bluff /Tehama County area. As East Sand Slough becomes more attractive due to improvements in the area's aesthetics and recreation features, some additional use by passing motorists is expected. However, this increased use is not expected to induce population growth within Red Bluff or Tehama County. Therefore, there would be no impact.

- b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

No Impact. All Project construction would be completed within those portions of East Sand Slough that are inundated by yearly flood flows or on undeveloped, publicly-owned grass/oak woodlands. Temporary staging areas and access roads (e.g. Upper Access Road and Middle Access Road) would be located on undeveloped parcels or on sites already containing necessary project implementation infrastructure such

as paved areas that are not zoned for housing (e.g. Lower Access Roads). Similarly, Spoil Areas 1 and 2 would be created on open sites where housing would not be impacted nor created in the future. Consequently, the proposed Project would not displace any existing homes or people, and construction of replacement housing would not be required. Therefore, there would be no impact.

3.15 Public Services

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

XV. Public Services. Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.15.1 Environmental Setting/Affected Environment

The Project area is located within both the city limits of Red Bluff and a developed area of Tehama County. A significant portion of the Project area is under federal jurisdiction and is managed by either the Mendocino National Forest or Reclamation. As a result, services to the area are provided collaboratively between municipal, County, State, and federal agencies, generally under a mutual aid

agreement. Fire protection to the area is provided by the City of Red Bluff Fire Department and Cal Fire/Tehama County Fire Department. Policing within the area of East Sand Slough and the surrounding area north of the Antelope Boulevard/Highway 36 Bridge is generally provided by the City of Red Bluff Police Department. Law enforcement south of the bridge is provided by the Tehama County Sheriff's Office and the USFS law enforcement personnel.

There are no schools within or adjacent to the Project area. The closest educational facilities to the Project area are Mercy High School and Berrendos Middle School and Antelope Elementary School, which are both managed by the Tehama County Department of Education. These schools are located 0.5 to 2.5 and 3 miles from the Project area, respectively.

The only formal existing recreation facilities located within the Project area are part of the Red Bluff Recreation Area managed by the Mendocino National Forest.

3.15.2 Environmental Consequences

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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. The proposed Project construction areas are located within portions of East Sand Slough that are inundated by yearly flood flows and within an upland area containing grasslands and oak woodlands managed by the USFS. Project construction and associated temporary increase in construction-related vehicles on local roads would not interfere with emergency access and would not prevent fire protection or law enforcement personnel from maintaining acceptable service ratios or response times in the vicinity of the Project area. Similarly, the anticipated incremental increase in visitation to the Project area following the enhancement and expansion of recreation facilities would not be expected to increase the need for emergency response to a level that would affect service ratios. Therefore, no new governmental facilities or expansion of existing facilities would be required to maintain these performance objectives and there would be no impact.

3.16 Recreation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.16.1 Environmental Setting/Affected Environment

The East Sand Slough area is used as both a formal and informal recreation area. That portion of the slough north of Antelope Boulevard is owned by a number of public and private landowners and has no formal recreational facilities. The area is, however, used for walking, as a dog park, and for access to a gravel bar located just north of the I-5 Bridge north of Red Bluff. This gravel bar is a popular site for local steelhead anglers during fall months (see **Photo 3-20**).



Photo 3-20: The riffle area north of the I-5 Bridge and immediately offshore of the dry bar is a submerged bar that is a popular spot for steelhead anglers in the fall. The bar can be accessed via East Sand Slough.

The portion of the Project area adjacent to East Sand Slough and south of the Antelope Boulevard/Highway 36 Bridge is managed by the Mendocino National Forest and is referred to as the Red Bluff Recreation Area. The Red Bluff Recreation Area contains numerous trails (see **Photo 3-21** and **Photo 3-22**), an active boat ramp downstream from the RBDD, and two camping areas. The lower portion of East Sand Slough is also used as an unofficial recreation area. This portion of the slough, a walking trail, and the Sacramento River Discovery Center are accessed from a large parking lot that connects to an abandoned boat ramp owned by the USFS.



Photos 3-21 and 3-22: Trail segments of the Mendocino National Forest's Red Bluff Recreation Area within oak woodlands and grasslands south of the Antelope Boulevard/Highway 36 Bridge near the Red Bluff Diversion Dam.

3.16.2 Environmental Consequences

- 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?*

Less Than Significant. During Project construction, portions of the Project area would be inaccessible to recreationists due to safety concerns or would be less desirable for use by recreationists due to nearby construction activities. For these reasons, some recreationists may choose to avoid the Project area and use other local recreation areas during the construction period. Channel maintenance, if required, would have similar effects on recreationists. The potential in-lieu use of other recreation areas would be temporary, would not be expected to occur at a level that would result in the substantial deterioration of other facilities, and would have a less than significant impact on existing recreation facilities.

A component of the proposed Project is the improvement and expansion of natural recreation features throughout the Project area. Among the proposed improvements to natural features within East Sand Slough that are anticipated to promote increased recreational use is the creation of permanently-flowing side channels north and south of the Antelope Boulevard/Highway 36 Bridge. Once these wet areas are created, riparian vegetation (grasses and shrubs) is expected to rapidly develop. As a result, that portion of the slough channel below the bridge, which is currently a barren, sandy channel bottom, is anticipated to become more attractive to recreationists. The development of aquatic and riparian areas is anticipated to increase the diversity of aquatic, terrestrial, and avian species in the Project area, thus further promoting increased recreational use of the Project area in the form of wildlife viewing. The anticipated increased use of existing recreation facilities is an objective of the proposed Project, and the increased use would not be expected to occur at a level that would substantially deteriorate recreation facilities within the Project area. Impacts would be less than significant.

- b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?*

Less Than Significant with Mitigation Incorporated. Improvement and expansion of the Project area's developed recreation infrastructure would include expansion of an existing bike and pedestrian trail and removal/restoration of a boat ramp. This developed infrastructure is anticipated to promote increased recreational use of the Project area and would have potential adverse physical effects on the environment during construction. Potential adverse effects, the level of significance of those effects, and mitigation measures, where required, are included in Sections 3.1 through 3.14, and 3.16 through 3.20 of this document. With implementation of the mitigation measures described in these sections, the environmental impacts resulting from the construction of recreation facilities would be reduced to less than significant.

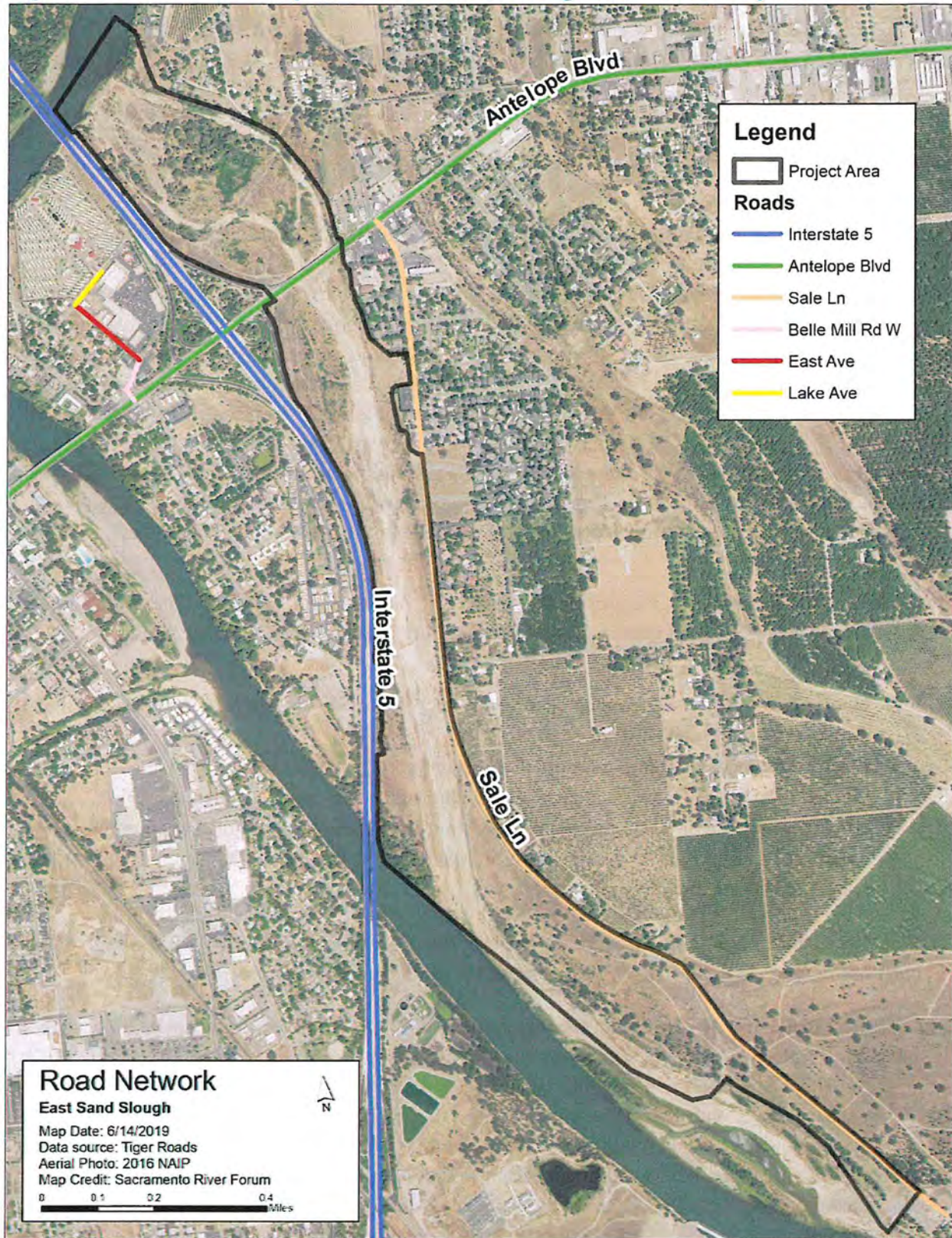
3.17 Transportation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Transportation. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.17.1 Environmental Setting/Affected Environment

The Project Area is surrounded by I-5 to the west, Sale Lane to the east, and the Sacramento River’s mainstem to the north and south (see **Figure 1-1 Proposed East Sand Slough Side Channel Project Location** and **Photo 3-1**). Antelope Boulevard and its bridge divide the Project area. Other than through intermittent bus service, bicycle, or on foot, the Project area and its surroundings are generally accessed by automobile. **Figure 3-8 Road Network Adjacent to the East Sand Slough Side Channel Project Area** show the roads immediately adjacent to and surrounding the Project area.

Figure 3-8: Road Network Adjacent to the East Sand Slough Side Channel Project Area



3.17.2 Environmental Consequences

a) *Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities? -and-*

b) *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision*

No Impact: The circulation system surrounding the Project area would be subject to a short-term increase in traffic along I-5, Antelope Boulevard, and Sale Lane during Project construction. Increases in traffic would occur when heavy equipment is transported to the Project area at the start of construction, when spoil material is hauled offsite, and when heavy equipment is transported out of the Project area following completion of construction. During the anticipated construction period, there would be a minimal increase in traffic on these roads resulting from the daily transportation of construction personnel to and from the Project area. A negligible increase in traffic on these roads would also occur if channel maintenance is required. These temporary increases in traffic would not conflict with any circulation system plans. Similarly, although numerous truck trips would occur along Sale Lane as excavated material is transported from the Project area, this increased activity on the roadway would be temporary and would not conflict with any circulation system plans. Therefore, there would be no impact.

Once construction is completed, the proposed Project's trail improvement and expansion would address and advance the agenda of the **Tehama County Bicycle Plan** including the following goals:

- **Goal 1.0** Develop a continuous countywide bicycle system that is part of the multi-modal regional transportation network.
- **Goal 2.0** Make the existing transportation system more "bicycle-friendly".
- **Goal 4.0** Modify the transportation system to encourage safe and convenient bicycling.
- **Goal 6.0** Integrate bicycle networks with existing and potential recreational opportunities.
- **Goal 7.0** Develop bicycle facilities and programs that will enhance the County's appeal as a recreational destination.

c) *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Less Than Significant with Mitigation Incorporated. The proposed Project would not require changes in road design features or result in permanent changes in road operations. The proposed Project would, however, require the transport of spoil material along Sale Lane. Haul trucks making a left turn from the temporary access roads onto Sale Lane could create a hazard for motorists accessing or leaving the adjacent Sycamore Grove campground and boat ramp and the Sacramento River Discovery Center, and for recreationists accessing portions of the adjacent trail system. Due to the number of truck trips that would be required at a location that normally experiences little traffic, the increased hazard from this construction use would be potentially significant. Implementation of traffic safety measures included in

Mitigation Measure Trans-1 would minimize impacts to motorists and recreationists and would reduce potential impacts to less than significant.

Mitigation Measure Trans-1: Implement Traffic Safety Measures at Haul Truck Road Entrances on Sale Lane

The following measures shall be incorporated at the Sale Lane haul truck road entrance(s) during Project construction:

- The haul truck entrance(s) onto Sale Lane from the middle and/or lower access roads shall be flag controlled using appropriately trained personnel provided by the Project Contractor. A flag person wearing OSHA-approved vests and using the “Stop/Slow” paddle shall be present whenever haul trucks are scheduled to cross.
- Trails adjacent to the haul truck road crossing shall be signed, cautioning users of the equipment in the area.
- The haul truck road entrance areas shall be swept periodically to ensure that rock and soil material do not accumulate on the road surface.

d) Would the project result in inadequate emergency access?

No Impact. None of the proposed Project construction or maintenance disturbance areas would occur within roadways. Activities therefore would not restrict emergency access within the Project area. During construction, haul trucks would make numerous trips along Sale Lane to transport spoil material from the slough. Although these haul truck trips would increase the normal amount of traffic in this location, they would not require the closure of the road and would not result in inadequate emergency access. Therefore, there would be no impact.

3.18 Tribal Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
----------------------	--------------------------------	--	------------------------------	-----------

XVIII. Tribal Cultural Resources.

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.18.1 Environmental Setting/Affected Environment

Pursuant to PRC 21080.3.1(d), prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project, the lead agency shall begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if the California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe.

The NAHC maintains a list of California Native American Tribes and a database of known sacred sites. In September 2017, CSUC ARP staff submitted a sacred lands file request to the NAHC for the

proposed Project and another potential side channel project located upstream from the proposed Project. No sacred lands were identified in the vicinity of the Project area. No tribes have requested formal notification from the RCDTC of proposed projects that occur in the vicinity of the Project area.

As described in *Cultural Resources Section 3.5.2.2*, the only historic resources located within the Project area are three bridge piers that were deemed ineligible for listing on the NRHP.

3.18.2 Environmental Consequences

a) *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:*

i. *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?*

-and-

ii. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

Less Than Significant with Mitigation Incorporated. No resources within the Project area were deemed eligible for listing and no sacred lands were identified. However, it is recognized that not all tribal or cultural resources that are archaeological in nature are visible at the soil surface and there is the potential for uncovering previously unknown resources during proposed Project construction. Such resources may be determined significant pursuant to Public Resources Code Section 5024.1. If Project construction activities were to affect tribal or cultural resources in a manner that would damage their cultural value as a formal Cultural Resources or Tribal Cultural Resource, a significant impact would result. In the unlikely event that Tribal Cultural Resources or Cultural Resources are identified during proposed Project construction, implementation of the protection measures included in **Mitigation Measures CUL-1** and **CUL-2** would reduce potential impacts to less than significant. Implementation of the soil stabilization methods included in **Mitigation Measure WQ-1** would further reduce impacts to potential unknown and unidentified cultural or tribal resources through the control of rain-related soil runoff.

Mitigation Measure CUL-1: Protect Newly Discovered Archeological, Prehistoric, or Historic Resources

Refer to Cultural Resources Section 3.5.3.

Mitigation Measure CUL-2: Implement Appropriate Procedures for the Treatment of Human Remains

Refer to Cultural Resources Section 3.5.3.

3.19 Utilities and Service Systems

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. Utilities and Service Systems. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.19.1 Environmental Setting/Affected Environment

Underground utilities in the Project area include a City of Red Bluff water main that crosses East Sand Slough approximately 0.2 mile upstream of the Antelope Boulevard/Highway 36 Bridge; a City of Red Bluff sewer main crosses East Sand Slough immediately downstream of the Antelope Boulevard/Highway 36 Bridge; a PG&E gas line and electric line cross East Sand Slough approximately 0.75 mile downstream of the Antelope Boulevard/Highway 36 Bridge; and an AT&T telecommunications line located just upstream of the Antelope Boulevard/Highway 36 Bridge.

Aboveground utilities in Project area include electrical lines that cross East Sand Slough approximately 0.15 mile upstream of the Antelope Boulevard/Highway 36 Bridge. The poles supporting these lines are located outside of the Project area boundary.

Waste disposal needs within the vicinity of the Project area are served by the Tehama County Landfill. The landfill is permitted to receive waste types such as agricultural, industrial, construction/demolition, mixed municipal, and green materials.

3.19.2 Environmental Consequences

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?

Less than Significant with Mitigation Incorporated. The proposed Project would not require or result in the construction of new or expanded water, wastewater treatment, or storm water drainage facilities. Proposed construction or maintenance activities would not require the relocation of existing aboveground utility lines that cross East Sand Slough because the lines are suspended high enough over the slough that they would not be at risk of damage from large construction equipment. The proposed Project would, however, require the relocation (lowering) of underground electrical and gas lines, a sewer main, and a telecommunications line. If relocation were to result in an unintended disruption of service for any of these utilities, the disruption would be temporary and would not require the construction of new or expanded utilities. Potential adverse effects related to the relocation of these utilities, the level of significance of those effects, and mitigation measures, where required, are included in **Sections 3.1** through **3.18** of this document. With implementation of the mitigation measures described in the applicable sections, the potential environmental impacts resulting from the relocation of these utilities would be reduced to less than significant.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than Significant. Water for dust control of the East Sand Slough channel material along with other construction needs would be pumped from the Sacramento River pursuant to Reclamation's riparian water rights or obtained from a nearby hydrant using a City-issued meter. If required, floodplain plantings would be irrigated with water pumped from East Sand Slough. Once all Project construction is completed, no water would be used other than that needed to irrigate floodplain plantings. As a result, after a maximum of three years if irrigation of floodplain plantings is needed, there would be no additional Project-related water use. Therefore, impacts to available water supplies would be temporary and less than significant.

c) Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

No Impact. The proposed Project would not require wastewater treatment services. Therefore, there would be no impact.

*d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
-and-*

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The proposed Project would require the disposal of the existing concrete slabs that are located under the Antelope Boulevard/Highway 36 Bridge, material from the decommissioned boat ramp, and portions of the utility line(s) that may need to be replaced during relocation. This solid waste would be disposed of at the Tehama County landfill, which is permitted to receive construction/demolition waste. The amount of solid waste generated by the proposed Project would be minimal, would not exceed capacity or impair the attainment of solid waste reduction goals, and would comply with federal, State, and local statutes related to solid waste. Therefore, there would be no impact.

3.20 Wildfire

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE. Would the project:				
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.20.1 Environmental Setting/Affected Environment

The Project area is located within an active floodway and on valley floor Forest Service lands. The Project area lands are designated as non-very high fire hazard severity zones within a local responsibility area, and there are no State responsibility areas or very high fire hazard severity zones in the vicinity.

3.20.2 Environmental Consequences

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

- a) *Substantially impair an adopted emergency response plan or emergency evacuation plan? and-*
- b) *Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? -and-*
- c) *Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? -and-*
- d) *Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

No Impact. The Project area is not located in or near a state responsibility area or lands classified as very high fire hazard severity zones. Therefore, there would be no impact.

3.21 Mandatory Findings of Significance

XXI. Mandatory Findings of Significance		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a.	Does the project have the potential to substantially 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" meant that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of the other current projects and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.21.1 Regulatory Setting

CEQA Guidelines Section 15065 states that the lead agency shall find that a project may have a significant effect on the environment, and thus require that an environmental impact report be prepared, where there is substantial evidence that checklist items a) through c) may occur. When mitigation measures or project modifications are adopted that would avoid or mitigate a significant effect on the environment, the lead agency need not prepare an environmental impact report.

3.21.2 Environmental Consequences

- a) *Does the project have the potential to substantially 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? -and-*
- b) *Does the project have impacts that are individually limited but cumulatively considerable? (“Cumulatively considerable” meant that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of the other current projects and the effects of probable future projects)? -and-*
- c) *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

Less than Significant with Mitigation Incorporated. The proposed Project would not substantially degrade the quality of the environment, substantially reduce habitat for 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, eliminate important examples of the major periods of California history/prehistory, negatively impact Tribal Cultural Resources, result in cumulatively considerable impacts, or substantially adversely affect human beings. Such a potential does not exist because of the distance of the proposed Project location from similar projects that have been completed along the Sacramento River upstream of the Project area, and because the proposed Project would be implemented in such a manner as to avoid or reduce short-term impacts on sensitive resources through implementation of environmental commitments and specific Mitigation Measures that would protect natural, cultural, and tribal resources. Specifically, mitigation measures would be implemented to reduce or avoid potential impacts to the following resources: air quality, biological resources, cultural resources, hazards and hazardous materials, noise, recreation, transportation, tribal cultural resources, utilities, and water quality. In addition, the proposed Project would result in restoration of side channel and floodplain habitat for fish and other aquatic species and enhance riparian habitat for terrestrial and avian species found within the Sacramento River watershed.

4.0 References Cited

Biological Resources

- Brophy, William B.; Parnell, Dennis R. 1974. Hybridization between *Quercus agrifolia* and *Q. wislizenii* (Fagaceae). *Madrono*. 22(6): 290-302.
- California Department of Fish and Wildlife. 2018. California Natural Diversity Database. Rarefind (online edition), Sacramento, CA. Accessible online at: <https://map.dfg.ca.gov/rarefind>.
- California Department of Fish and Wildlife. 2019. Wildlife Habitats - California Wildlife Habitat Relationships System. Accessed: January 31, 2019. Available online: <https://www.wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>
- eBird. 2019. *eBird: An Online Database of Bird Distribution and Abundance* [web application]. eBird, Ithaca, New York. Available: www.ebird.org. Accessed: January 4, 2019.
- Erickson, Gregg, et al. 2003. Bat and Bridges Technical Bulletin (Hitchhiker Guide to Bat Roosts), California Department of Transportation, Sacramento CA. 143 pp.
2002. H.T. Harvey & Associates. 2004. California Bat Mitigation Techniques, Solutions, and Effectiveness. Prepared for the California Department of Transportation. Project Number 2394-01. December 29. 163 p.
- Hughes, J.M. 1999. Yellow-billed Cuckoo (*Coccyzus americanus*). In *The Birds of North America Online*. Edited by A. Poole. Ithaca, NY: Cornell Lab of Ornithology; Available online: <http://bna.birds.cornell.edu/bna/species/418>
- Laymon, S. A. 1984. Riparian bird community structure and dynamics: Dog Island, Red Bluff, California, Pages 587-597 In R. E. Warner and K. M. Hendrix, California riparian systems: ecology, conservation and productive management. University of California Press, Berkeley.
- Laymon, S.A., and M.D. Halterman. 1989. *A proposed Habitat Management Plan for Yellow-billed Cuckoos in California*. USDA Forest Service Gen. Tech. Rep. PSW-110 p 272-277.
- Lichvar, R., and S. McColley. 2008a. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. United States Army Corps of Engineers. ERDC/CRREL TR-08-12. 84 p.
- Resource Conservation District of Tehama County. 2017. Tehama East and Tehama West Community Wildfire Protection Plan Update. Viewed online at: http://www.battle-creek.net/docs/TehamaEastWildfirePlan/3%20final_2_CWPPupdate2017.pdf. Accessed Aug 16, 2018.
- Shuford, W. D., and Gardali, T., editors. 2008. *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation concern in California. Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

- Small, A. 1994. California birds: their status and distribution. Ibis Publishing Co., Vista, CA.
- Trapp, G. R., G. L., Linck, and E. D. Whisler. 1984. The status of ecological research on the mammal fauna of California's central valley riparian communities. Pages 942- 949 In R. E. Warner and K. Hendrix, eds. California riparian systems: ecology, conservation, and productive management. University of California Press, Berkeley.
- Tehama Resource Conservation District. 2016. Weed Management Plan for East Sand Slough Red Bluff, California 2012-2016. Available online:
<http://www.sacramentoriver.org/forum/index.php?id=library&rec=1249>
- United States Army Corps of Engineers. 1987. Corps of Engineers Wetland Delineation Manual. Wetlands Research Program Technical Report Y-87-1. 143 p. Available at:
<https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf>
- United States Army Corps of Engineers. 2008b. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version2.0). ERDC/EL TR-08-28. 135 p.
- United States Army Corps of Engineers. 2010. Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. ERDC/CRREL TN-10-1. 20 p. Accessible online at:
<https://www.spa.usace.army.mil/Portals/16/docs/civilworks/regulatory/Jurisdiction/OHWM%20Arid%20West%20Datasheet.pdf>
- United States Bureau of Reclamation. 2016. Environmental Assessment Upper Sacramento River Anadromous Fish Habitat Restoration Program. January 2016. Available online:
https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=23758
- United States Fish and Wildlife Service 2007. *National Bald Eagle Management Guidelines*. May 2007.
- United States Fish and Wildlife Service 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28 pp.
- United States Fish and Wildlife Service. 2018a. *IPaC – Information, Planning, and Consultation System* (online edition). Viewed online at: <https://ecos.fws.gov/ipac/>. Accessed: August 1, 2018.
- United States Fish and Wildlife Service. 2018b. *Nationwide Standard Conservation Measures*. Available from:
<https://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>
- United States Geological Survey. 2019. Biodiversity Information Serving Our Nation (BISON). Available online: <https://bison.usgs.gov/>

Cultural Resources

- Bridgehunter.com. 2018. Historic and Notable Bridges of the U.S. Tehama County. Accessible online at: <http://bridgehunter.com/ca/tehama/>

Geology and Soils

- Anderson, C.A., and R.D. Russell. 1939. *Tertiary Formations of Northern Sacramento Valley, California*: California Journal of Mines and Geology, v. 35, no. 3, p. 219-253 (incl. geologic map, scale approx. 1: 63,360).
- Blake, M.C., Jr., D.S. Harwood, E.J. Helley, W.P. Irwin, A.S. Jayko, and D.L. Jones. 1999. *Geologic Map of the Red Bluff 30' x 60' Quadrangle, California*.
- Branum, D., R. Chen, M. Petersen, and C. Wills. 2016. *Earthquake Shaking Potential for California*: California Geological Survey, Map Sheet 48. Revised 2016.
(<https://maps.conservation.ca.gov/cgs/lisi/>).
- California Geological Survey. 2010. *Fault Activity Map of California*
(http://www.conservation.ca.gov/cgs/PublishingImages/FAM_750k_MapRelease_page.jpg).
- California Geological Survey. 2015a. California Earthquake Zones of Required Investigation: Interactive Map. Viewed online at: <https://maps.conservation.ca.gov/cgs/EQZApp/app/>.
- California Geological Survey. 2015b. California Landslide Inventory: Interactive Map. Viewed online at: <https://maps.conservation.ca.gov/cgs/lisi/>.
- Helley, E.J., and D.S. Harwood. 1985. *Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierra Foothills, California*: U.S. Geological Survey Miscellaneous Field Studies Map MF-1790, 5 plates, scale 1: 62,500, 1 pamphlet,
- Helley, E.J., and D.S. Harwood. 1987. *Late Cenozoic Tectonism of the Sacramento Valley, California*. U.S. Geological Survey Professional Paper 1359.
- NewFields. 2011. Red Bluff Diversion Dam Fish Passage Improvement Project: Final Mitigation Habitat of Basis of Design Report, Draft. 122 p, print.
- Murphy MA, Rodda PU, and Morton DM. 1969. Bulletin 192: Geology of the Ono Quadrangle, Shasta and Tehama Counties, California: U.S. Department of Conservation, California Division of Mines and Geology. 26p, viewed online at: <http://pubs.geothermal-library.org/lib/grc/1021089.pdf>
- Tehama County. 2009. Tehama County General Plan Update 2009-2029, p. 4.5-1, viewed online at: http://www.tehamagp.com/documents/final_general_plan/Tehama%20County%20General%20Plan%20March%202009.pdf.
- United States Department of Agriculture, Natural Resources Conservation Service. 2018. Field Indicators of Hydric Soils in the United States. A Guide for Identifying and Delineating Hydric Soils. Available online at: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf

Greenhouse Gas Emissions

California Air Pollution Control Officers Association. 2008. CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. Available online at: <http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA-White-Paper.pdf>

California Air Pollution Control Officers Association. 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Project Subject to the California Environmental Quality Act. Sacramento, California. 87 p. Accessible online at: <http://capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf>

ICF Jones and Stokes. 2007. Evaluation of Greenhouse Gas Emissions and Reduction Strategies Related to Waste Management by Local Government. San Francisco, California. Accessible online at: <https://www3.epa.gov/ttnchie1/conference/ei18/session7/groth.pdf>

Office of Planning and Research. 2008. CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review. 2008 Technical Advisory.

Tehama County. 2009. Tehama County General Plan Update 2009-2029.

Hazards and Hazardous Materials

California Department of Forestry and Fire Protection (CAL FIRE). 2014b. Fire Hazard Severity Zoning. The Fire and Resource Assessment Program. Accessed online at <http://frap.fire.ca.gov> on July 29.

California Department of Toxic Substances Control. 2019. EnviroStor. [Online Database]. Sacramento (CA): California Department of Toxic Substances Control. Viewed online at: <https://www.envirostor.dtsc.ca.gov/public/>. Accessed: January 17, 2019.

State Water Resources Control Board. 2019. GeoTracker. [Online Database]. Sacramento (CA): State Water Resources Control Board. Viewed online at: <https://geotracker.waterboards.ca.gov/>. Accessed: January 17, 2019.

Hydrology and Water Quality

California Department of Water Resources. 2017. Summary Report for the Sacramento Watershed Coordinated Monitoring Program: Baseline Data Assessment Report (November 2008 – August 2014). SWRCB Agreement 11-166-150. December. 84 p. Accessible online at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Integrated-Regional-Water-Management/Files/Summary-Report-for-the-Sacramento-Watershed-Coordinated-Monitoring-Program-Baseline-Data-Assesment.pdf>

Noise

Federal Highway Administration. 2006. Construction Noise Handbook. Accessible online at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00.cfm

5.0 List of Preparers and Contributors

Resource Conservation District of Tehama County 2 Sutter Street Suite D Red Bluff, CA 96080		
Name	Title	Role
Jon Barret	Program Manager	Reviewer
Tom McCubbins	CEQA Projects Manager	Document Preparation, CEQA Compliance, Lead Author
United States Bureau of Reclamation Bay Delta Office 801 I Street, Suite 140 Sacramento, CA 95814		
Name	Title	Role
Luke Davis	Natural Resource Specialist	Project Description, Reviewer
John Hannon	Fisheries Biologist	Reviewer
Jenna Paul, M.S., P.E.	Civil Engineer	Hydrology
Amy Barnes	Archaeologist	Reviewer
California Department of Water Resources 2440 Main Street Red Bluff, CA 96080		
Name	Title	Role
Barbara Castro	Environmental Scientist	Botanical Resources
Michelle Dooley	Senior Engineering Geologist	Geology and Soils
Ian Espinoza	Engineering Geologist	Geology and Soils
Seth Lawrence	Senior Engineer	Project Description, Hydrology
Amy Lyons	Senior Environmental Scientist (Specialist)	Lead Editor/Reviewer, CEQA Compliance
Evan MacKinnon	Environmental Scientist	Botanical Resources
Scott McReynolds	Senior Environmental Scientist (Supervisor)	Water Quality
Nancy Snodgrass	Water Resources Engineer	Project Description, Hydrology
Geographical Information Center		

Northstate Planning and Development Collective California State University, Chico 35 Main Street, Suite 132 Chico, CA 95928		
Name	Title	Role
Susan Strachan	Project Manager	Reviewer
Sacramento River Forum 2440 Main Street Red Bluff, CA 96080		
Name	Title	Role
Harmony Gugino	Project Manager	Reviewer
Robert Irwin	Biologist	Biological Resources
River Partners 580 Vallombrosa Avenue Chico, CA 95926		
Name	Title	Role
Michael Rogner	Biologist	Avian Resources
Archeological Research Program Department of Anthropology California State University, Chico Chico, CA 95926		
Name	Title	Role
Dr. Rachel Hensler	Archaeology Laboratory Coordinator	Cultural Resources, Tribal Cultural Resources
Dr. Matthew O'Brien	Director	Cultural Resources, Tribal Cultural Resources
Northeast Center of the California Historical Resource Information System California State University, Chico Chico, CA 95929		
Name	Title	Role
Amy Huberland	Assistant Coordinator	Cultural Resources, Tribal Cultural Resources