RECLAMATION

*Managing Water in the West*

Environmental Assessment

# East Sand Slough Side Channel Project

**U.S. Department of the Interior**
**Bureau of Reclamation**
**Interior Region 10 · California-Great Basin**

**January 2020**

# Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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# List of Acronyms and Abbreviations

| | |
|---|---|
| BA | Biological Assessment |
| CA | California |
| CAA | Clean Air Act |
| CAAQS | California Ambient Air Quality Standards |
| CCAA | California Clean Air Act |
| CDFW | California Department of Fish and Wildlife |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CNDDB | California Natural Diversity Database |
| Corps | US Army Corps of Engineers |
| CVFPB | Central Valley Flood Protection Board |
| CVPIA | Central Valley Project Improvement Act |
| CWA | Clean Water Act |
| DOI | Department of the Interior |
| DWR | Department of Water Resources |
| EA | Environmental Assessment |
| EO | Executive Order |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| OHWM | Ordinary High Water Mark |
| Quad | Quadrangle |
| RBDD | Red Bluff Diversion Dam |
| Reclamation | Bureau of Reclamation |
| RM | River mile |
| RWQCB | Regional Water Quality Control Board |
| SHPO | State Historic Preservation Officer |
| SLC | State Lands Commission |
| SRRT | Sacramento River Restoration Team |
| SWRCB | State Water Resources Control Board |
| USFWS | Fish and Wildlife Service |

# Section 1 Introduction

In conformance with the National Environmental Policy Act, 42 U.S.C. § 4431 et seq. (NEPA), as amended, the Bureau of Reclamation (Reclamation) has prepared this Environmental Assessment (EA) to evaluate and disclose potential environmental impacts associated with implementation of the East Sand Slough Side Channel Project (Proposed Action).

This EA describes the existing environmental resources in the project area, evaluates the impacts of the No Action and Proposed Action alternatives on the resources, and proposes measures to avoid, minimize, or mitigate any adverse impacts. This EA was prepared in accordance with NEPA, Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500-1508), and Department of the Interior Regulations (43 CFR Part 46).

## 1.1 Background

The Central Valley Project Improvement Act (CVPIA), section 3406 (b)(13) directs the Department of the Interior (DOI) 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, bank protection projects, and other actions that have reduced the availability of spawning gravel and rearing habitat in the Upper Sacramento River from Keswick Dam to Red Bluff Diversion Dam (RBDD), and in the American and Stanislaus Rivers downstream from the Nimbus and Goodwin Dams, respectively." This CVPIA program may include preventive measures, such as re-establishment of meander belts and limitations on future bank protection activities, in order to avoid further losses of instream and riparian habitat. The CVPIA Sacramento River Restoration Team (SRRT) is an interagency group with members including the 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 is a salmonid rearing habitat restoration project.

The Proposed Action 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). 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.

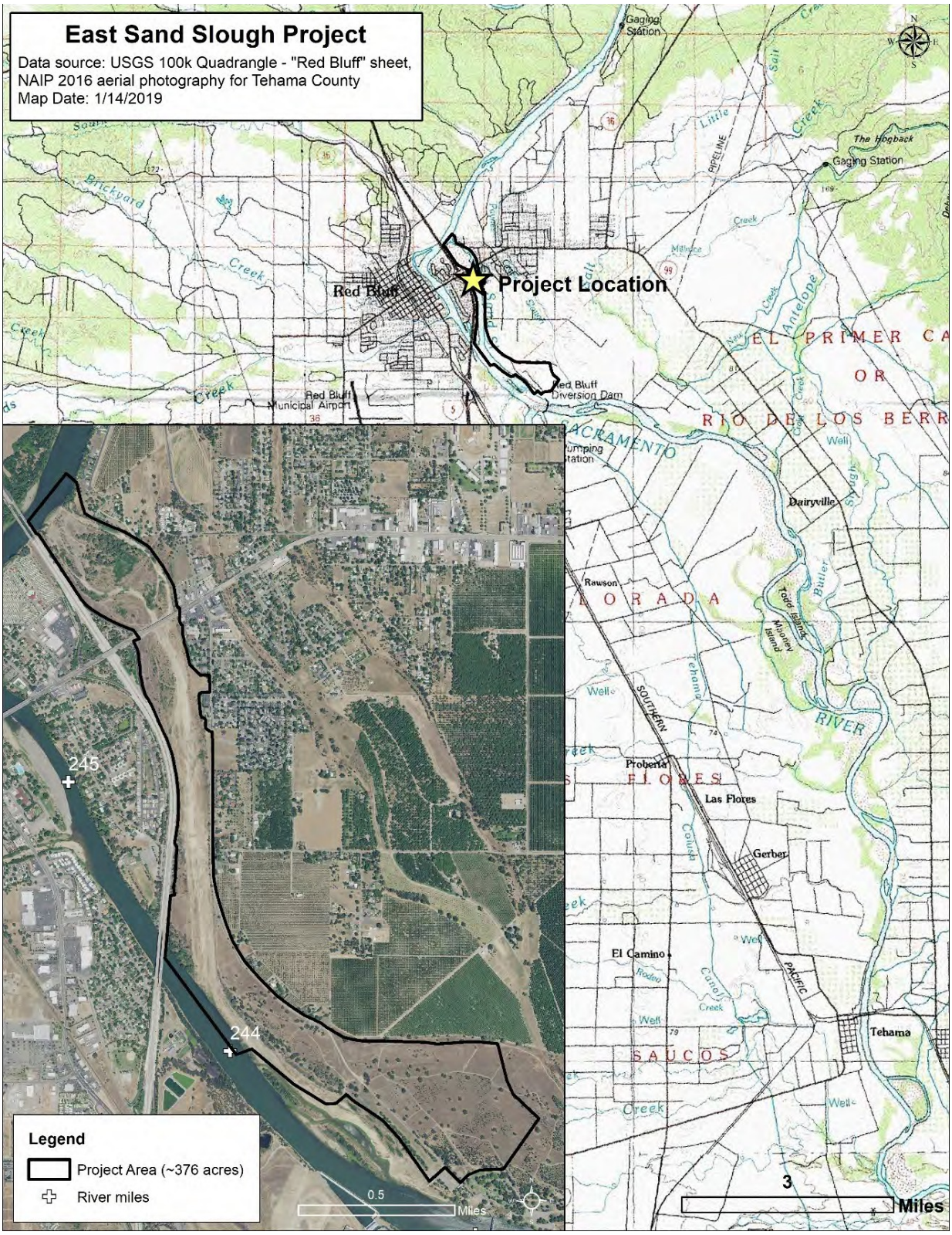


**Figure 1. Proposed East Sand Slough Side Channel Project Location**

## 1.2 Need for the Proposal

The need for the Proposed Action derives from the declines of naturally spawned salmonid stocks due in part to loss of spawning and rearing habitat through curtailment of gravel recruitment due to blockage of the river channel by dams and the alteration in flow patterns.

## 1.3 Previous Environmental Documents

The Proposed Action underwent previous environmental review and regulatory compliance under the California Environmental Quality Act (CEQA). An Initial Study and Proposed Mitigated Negative Declaration (IS/MND) was prepared and certified in July 3, 2019. The IS/MND evaluated the following resources: aesthetics, agriculture and forest resources, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and service systems, wildfire, and mandatory findings of significance (RCDTC IS). Reclamation reviewed the IS/MND and found the analysis sufficiently considered potential effects to the environment for the resources analyzed, and hereby incorporated that analysis by reference. However, Reclamation determined that further analysis was needed for Cultural Resources, Indian Trust Assets, Indian Sacred Sites, Environmental Justice and Agencies/Persons Consulted. The IS/MND and its associated mitigation measures is available on the RCDTC websites.

# Section 2 Alternatives Including the Proposed Action

This EA considers two possible alternatives: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential impacts to the human environment that would result from implementation of the Proposed Action.

Identification of the reasonable range of alternatives for this EA was based upon consideration of the need to increase and improve salmon and steelhead spawning and rearing habitat in the project area.

## 2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not develop side channels in the Proposed Action area, nor conduct riparian native planting. Spawning and rearing habitat restoration would not occur in this reach of the Sacramento River,

leaving the reach in a deteriorated condition as spawning and rearing habitat for salmonids. Further declines in habitat quality would be likely.

## 2.2 Proposed Action Alternative

Reclamation proposes to conduct a salmonid spawning and rearing habitat restoration project on the Sacramento River at East Sand Slough in Red Bluff, California. This is an ongoing program in compliance with the CVPIA, Section 3406(b)(13), and the proposed project consists of side channel restoration and channel entrance maintenance.

**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 **IS/MND, Appendix D 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.

*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 1 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 1 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature**

| Channel Feature | Area of Disturbance (acres) | Estimated Amount of Excavated Mate (cubic yards) | Number of Truckloa |
|---|---|---|---|
| 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 Chanr | 10.6 | 47,000 | 2,350 |
| **TOTAL** | **18.2** | **87,500** | **4,375** |

* Assuming 20 cubic yards per truckload.

**Figure 2 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.

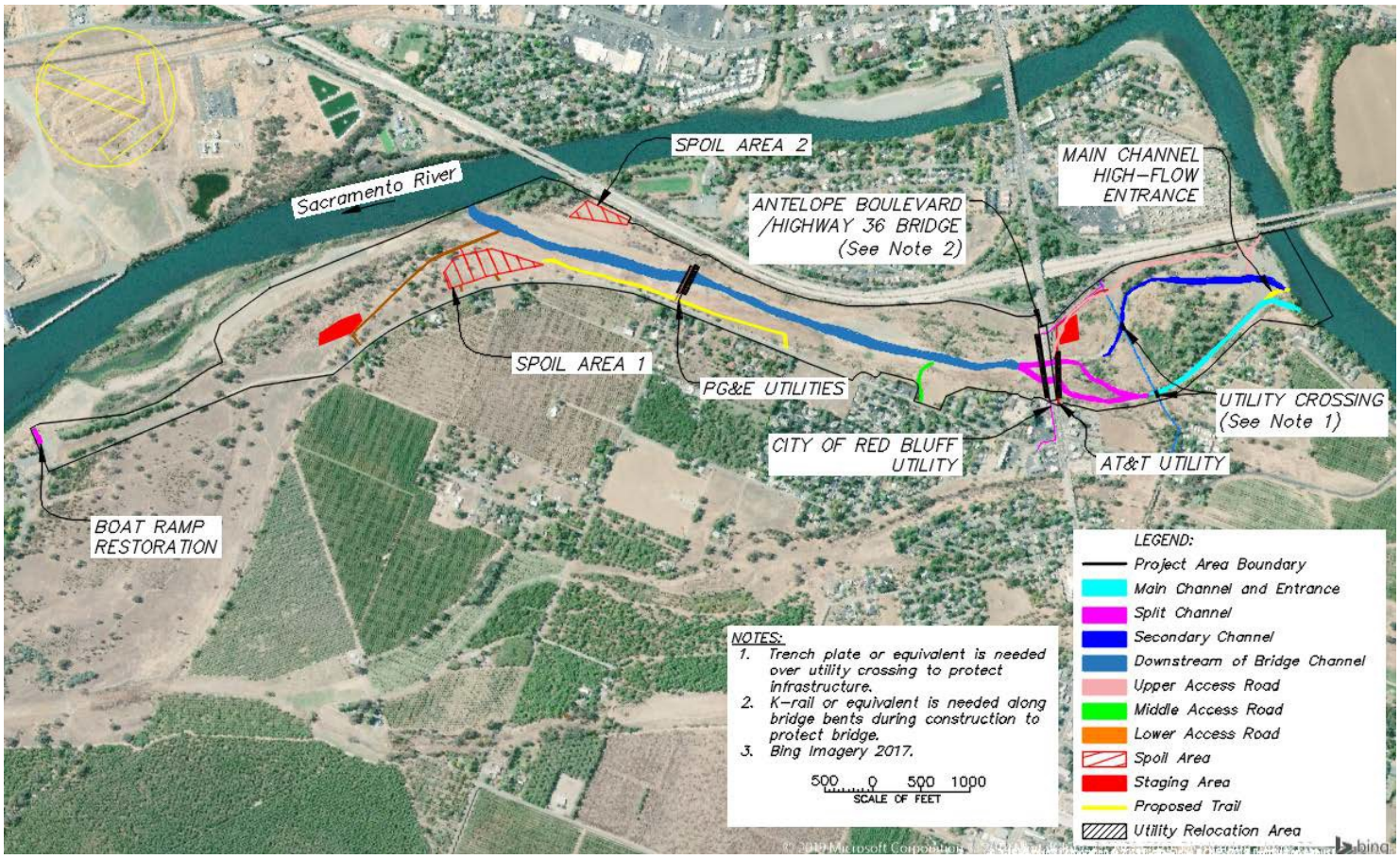


**Figure 2 Proposed East Sand Slough Side Channel Project Construction and Access Areas**

*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.

*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.**

*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 historic-era 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 2-5: Existing historic-era bridge pier.**

**Photo 2-6: Demolished car in main channel.**

*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 2-7: 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.**

*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 2-8: Panoramic view of East Sand Slough, north of the Antelope Boulevard/Highway 36 Bridge, looking west. Interstate (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.**

*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. Maintenance requirements for the channels and guide banks are discussed below in the *Channel Maintenance* section.

*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 2-9** and **Photo 2-10**). 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 2-11**). 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 2-10: Southern end of East Sand Slough adjacent to the Sacramento River's mainstem, 5/24/17**

**Photo 2-11: East Sand Slough main channel downstream south of the Antelope Boulevard/Highway 36 Bridge.**

*Materials Sorting*

An estimated 87,500 cubic yards of material would be excavated during construction (see **Table 1 Excavation Area, Quantity, and Associated Truckloads for Each Channel Feature**). For the purposes of the environmental impact analysis (see IS/MND, 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.

### *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 3 East Sand Slough Side Channel Project Overview** and described below.

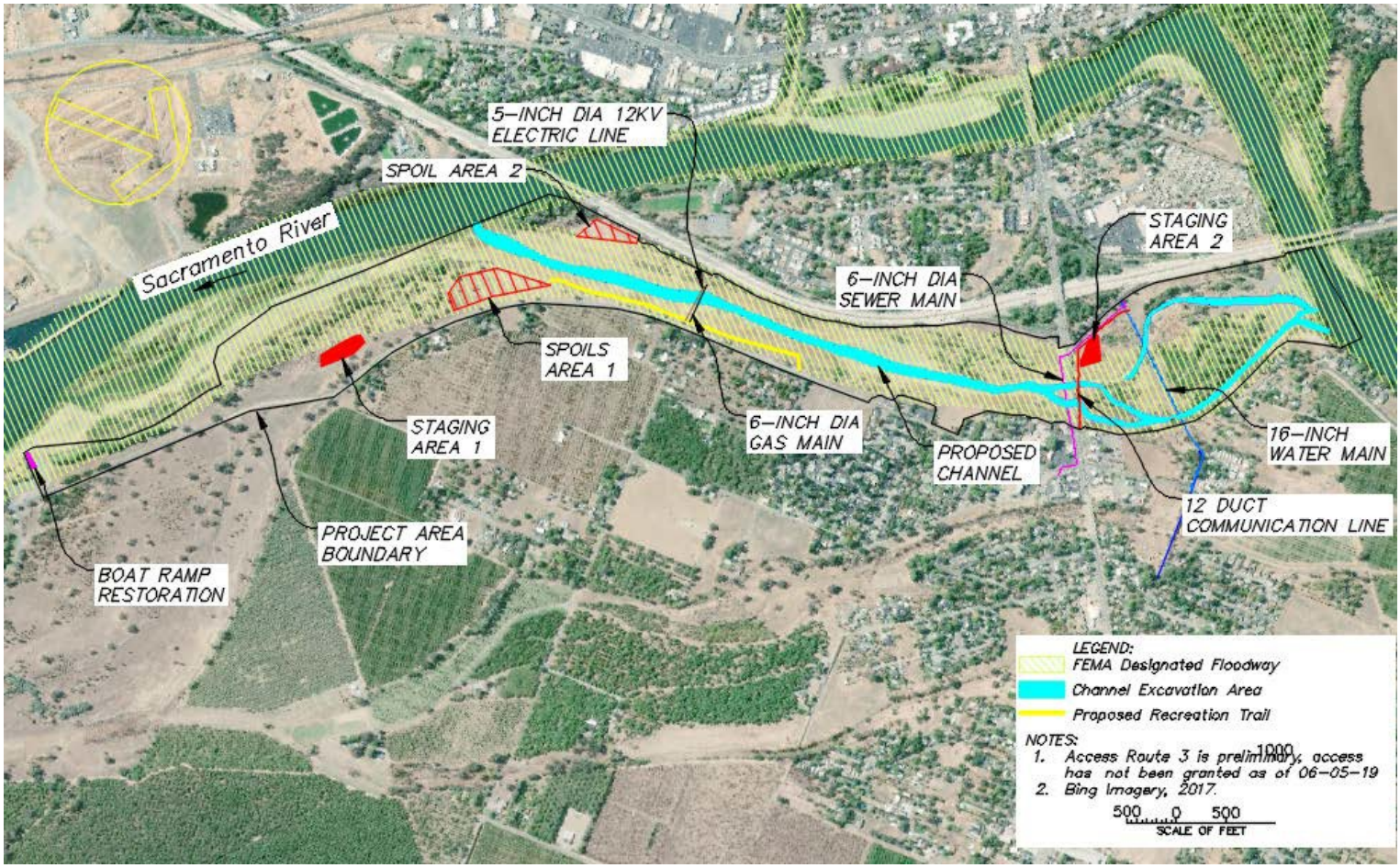


**Figure 3 East Sand Slough Side Channel Project Overview**

### *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.

### *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.

*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 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.

*Telecommunications Line*

An AT&T 12-duct telecommunications line crosses East Sand Slough upstream of the Antelope Boulevard/Highway 36 Bridge (see **Figure 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.

*Staging Areas*

Two areas have been identified for staging. Staging Area 1 (see **Figure 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.

*Spoil Areas*

Two spoil areas would be developed on lands managed by USFS (see **Figure 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 2-12**).

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 2-12: Example of dense vegetation that quickly develops along channel banks within the East Sand Slough.**

*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 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 the previous section, *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.

*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.

*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 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 1 and March 1 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 1. 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.

*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 1 and March 1 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.

**Recreation Enhancement and Expansion**

The construction details associated with the Recreation Enhancement and Expansions component are described below. The actions described in this section are funded separately through RCDTC funds, and not Reclamation CVPIA specific funding. The actions described in this section may occur, subject to funding availability.

*Trail Expansion*

As shown in **Figure 4 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.

### *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 5 Proposed Boat Ramp Restoration**).

### *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.


**Figure 4: Proposed Trail Expansion Route**


Aerial Imagery: Google Earth 6/27/2018

**Figure 5: Proposed Boat Ramp Restoration**

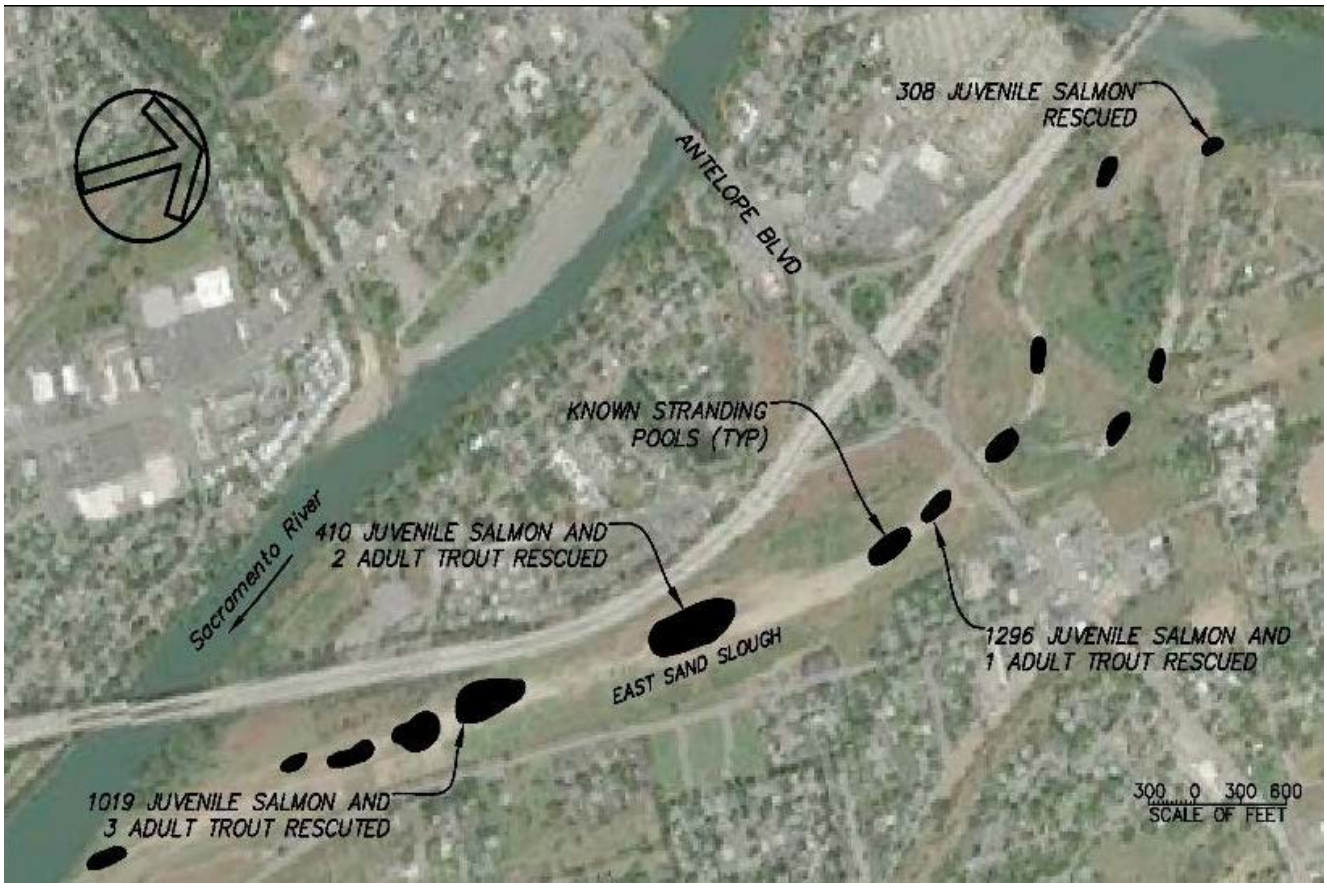


**Figure 6: Known Fish Stranding Pools in East Sand Slough**

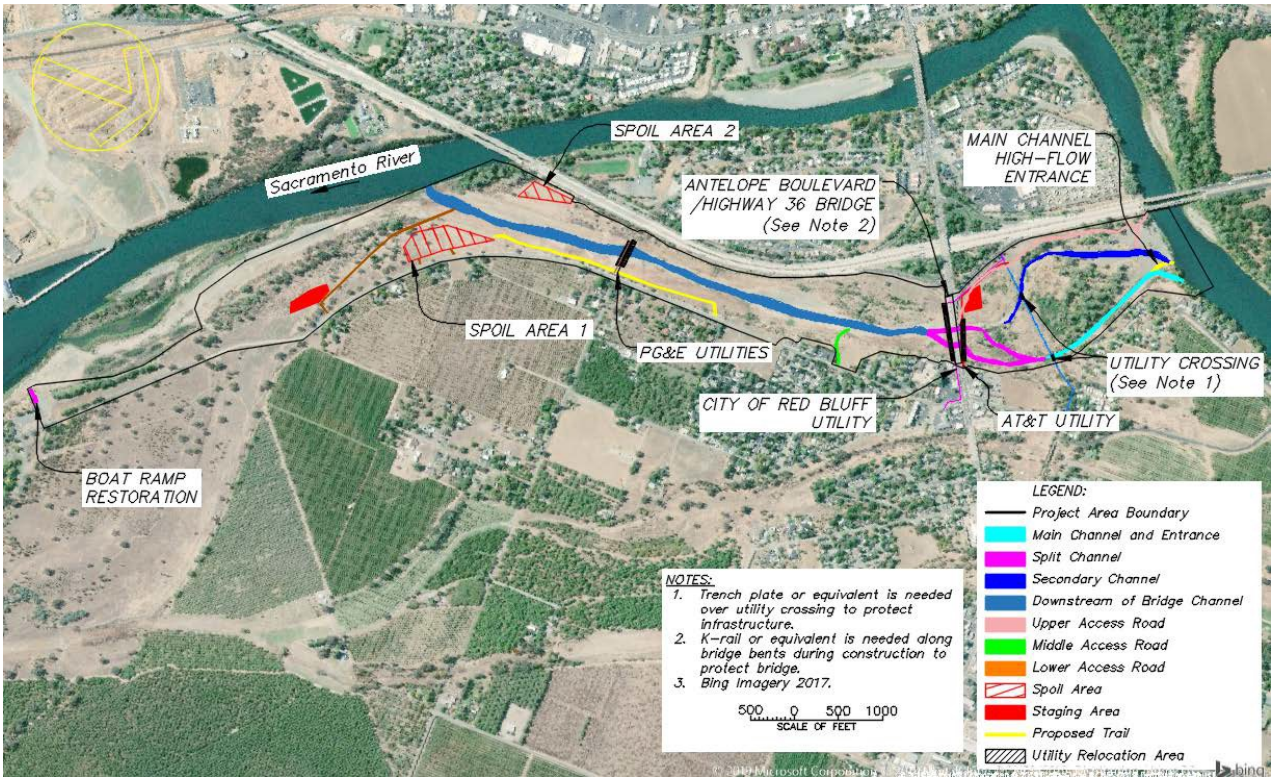


**Figure 7: Proposed East Sand Slough Side Channel Project Construction and Access Areas**

# Section 3 Affected Environment and Environmental Consequences

Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of Native American Indian sacred sites, Indian Trust Assets, and Environmental Justice when preparing environmental documentation. Impacts to these resources were considered and found to be minor or absent. Brief explanations for their elimination from further consideration are provided below.

Indian Trust Assets (ITAs): ITAs are legal interests in assets that are held in trust by the U.S. for federally recognized Indian tribes or individuals. There are no Indian reservations, Rancherias or allotments in the project area. The nearest ITA is a public land allotment (a parcel of land or real estate holding that may or may not be affiliated with a particular tribe or is in the process of being recorded) which is approximately 11.5 miles north of the project site. The Proposed Action does not have a potential to affect ITAs.

Indian Sacred Sites: Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an

appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, and Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There are no identified Indian Sacred Sites within the Proposed Action area; therefore this project would not inhibit use or access to any Indian Sacred Sites.

Environmental Justice: Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental impacts, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. During site development a transient population was present within the Proposed Action area. The Proposed Action would coordinate with landowners, city officials and law enforcement to ensure appropriate engagement with displaced populations and not result in any adverse human health or environmental impacts to minority or low-income populations.

## 3.1 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, Reclamation would not develop side channels in the Proposed Action area. If the project is not implemented, spawning and rearing habitat restoration would not occur in this specific reach of the Sacramento River, leaving the reach in a deteriorated condition as spawning and rearing habitat for salmonids. Further declines in habitat quality would be likely.

## 3.2 Environmental Consequences of the Proposed Action

According to the IS/MND, the Proposed Action would not have significant impacts on the environment because mitigation measures would be implemented to reduce impacts to less-than significant levels. The IS/MND identified air quality, biological resources, hazards and hazardous materials, hydrology and water quality, noise, recreation, transportation, tribal cultural resources, and utilities and service systems effects that would be less than significant with mitigation (RCDTC 2019). These are further described below. There were no significant and unavoidable impacts associated with the Proposed Action (RCDTC 2019).

*Air Quality*

The Proposed Action has the potential to temporarily affect ambient air quality by generating criteria pollutant emissions during the operation of construction vehicles and equipment.

*Biological Resources*

The Proposed Action has the potential to have a substantial adverse effect on any species identified as a candidate, sensitive, or special-status species in local or regional plan, policies, or regulations. These specific species are referenced in the Environmental Consequences Section 3.4.2 in the IS/MND (RCDTC).

The Proposed Action has the potential to have a substantive adverse effect on state or federally protected wetlands through impacts by excavation of side channels and use of access roads.

The Proposed Action has the potential to interfere substantially with the movement of native resident or migratory fish or wildlife species or with migratory wildlife corridors, or impede the use of native wildlife nursery sites through construction activities, such as noise and timing of implementation.

*Hazards and Hazardous Materials*

The Proposed Action has the potential to create a significant hazard to the public or environment through the routine transport, use or disposal of hazardous materials, as well as accidental conditions involving the release of hazardous materials. Construction and maintenance equipment would be fueled with diesel or gasoline and it is possible that a spill could occur.

The Proposed Action has the potential to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Construction equipment has the potential to spark and with dry conditions could ignite a vegetation fire.

*Hydrology and Water Quality*

The Proposed Action has the potential to violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Construction work may result in short-term turbidity plumes in the Sacramento River downstream of the construction area.

*Noise*

The Proposed Action has the potential to result in generation of excessive groundborne vibration or groundborne noise levels. During construction, dozers and other heavy equipment may generate groundborne vibration.

*Recreation*

The Proposed Action has the potential to expand recreation facilities, which might have an adverse physical effect on the environment. Expansion of an existing bike and pedestrian trail and removal/restoration of a boat ramp have the potential to cause adverse effects.

*Transportation*

The Proposed Action has the potential to substantially increase hazards due to a geometric design feature or incompatible uses. The transportation of spoil material along Sale Lane could create a hazard for motorists accessing or leaving the adjacent recreation areas.

*Tribal Cultural Resources*

The Proposed Action has the potential to cause a substantial change in the significance of a tribal cultural resource. No resources within the Project area were deemed eligible for listing in the National Register of Historic Places and no sacred lands were identified. However, it is recognized that not all tribal or cultural resources are visible at the soil surface and there is potential for uncovering previously unknown resources during construction.

*Utilities and Service Systems*

The Proposed Action would require the relocation (lowering) of underground electrical and gas lines, a sewer main, and a telecommunications line, which has the potential to cause significant environmental effects.

Additionally, the Proposed Action would result in multiple environmental benefits. Recreating the historical side channels in the Proposed Action area would allow for year-round flow, creating juvenile salmonid rearing habitat and eliminating stranding pools. Boat ramp restoration, trail expansion, and riparian planting would allow for improved recreation access within the project area.

### 3.2.1 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Title 54 USC § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA), and its implementing regulations found at 36 CFR Part 800, is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Resources are historic properties if they are on or eligible for inclusion in the National Register.

The Section 106 process is in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that area of potential effects, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The Proposed Action, to conduct a salmonid spawning and rearing habitat restoration project on the Sacramento River at East Sand Slough in Red Bluff, is the type of action that has the potential to cause effects to historic properties pursuant to 36 CFR §800.3 of the Section 106 implementing regulations. The use of Federal appropriations for the proposed restoration project requires compliance with Title 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800. As a result of this determination, Reclamation implemented the steps in the Section 106 process as outlined at §800.3 to §800.6. Additionally, the U.S. Army Corps of Engineers, which has a permitting action related to this project, designated Reclamation as the lead Federal agency for NHPA Section 106 compliance for this undertaking.

In an effort to identify historic properties in the APE, a review was conducted of Reclamation's project records, internal records of cultural resources surveys, sites, and project data. Additionally, the CSU Chico Archaeological Research Program conducted a cultural resources investigation for the larger restoration project, which includes the APE for this undertaking. One cultural resource, bridge piers associated with a segment of Belle Mill Road (Site ARP17-1), is located within the APE north of the Antelope Boulevard Bridge. This cultural resource was determined not eligible for inclusion on the National Register in consultation with the State Historic Preservation Officer (SHPO) in January 2019.

Pursuant to the regulations at 36 CFR § 800.3(f)(2), Reclamation identified the Enterprise Rancheria of Maidu Indians, Greenville Rancheria of Maidu Indians, Redding Rancheria, and Paskenta Band of Nomlaki Indians as Indian tribes who might attach religious and cultural significance to historic properties within the APE. Reclamation sent letters on July 10, 2019 to invite the participation of these tribes in the Section 106 process pursuant to 36 CFR § 800.4(a)(4). Reclamation also sent a letter to the Tasman Koyom Indian Foundation, which is identified as a Native American organization likely to have knowledge or concerns with cultural resources in the area, requesting their assistance in identifying historic properties which may be affected by the proposed undertaking pursuant to 36 CFR § 800.4(a)(3). Reclamation contacted these Indian tribes and Native American organizations on July 22, 2019 via phone and email to inquire if there were any specific concerns regarding cultural resources, including sites of religious and cultural significance or sacred sites, related to this project.

The Paskenta Band of Nomlaki Indians responded on July 23, 2019 to comment that it "would be good that construction personnel be advised of protocols if items may be found during construction." No other specific concerns were identified by this Tribe. To date, no historic properties have been identified through consultation with these Indian tribes and Native American organizations. If Native American concerns are subsequently raised, Reclamation will work to address them. In consideration of Tribal consultation, Reclamation will include cultural resources sensitivity training in the pre-construction briefings.

Reclamation entered into consultation with the SHPO on August 5, 2019, notifying them regarding a finding of "no affect" to historic properties pursuant to 36 CFR § 800.4(d)(1). SHPO responded on September 4, 2019 with no objections to Reclamations' findings and determination.

As mentioned previously, the Proposed Action is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a). A records search, a cultural resources survey, and Tribal consultation identified one historic-era cultural resource, the Belle Mill Road bridge piers, within the APE. Since this cultural resource was determined not eligible for inclusion on the National Register in consultation with the SHPO in January 2019, Reclamation finds no historic properties affected for this undertaking pursuant to 36 CFR § 800.4(d)(1). Consequently, there will be no significant effect to cultural resources as a result of the Proposed Action. In consideration of Tribal consultation, Reclamation will include cultural resources sensitivity training in the pre-construction briefings.

## 3.3 Cumulative Effects

The cumulative effects of implementation of reasonably foreseeable projects and the alternatives as compared to conditions under the No Action Alternative and the Proposed Action are discussed below. Cumulative effects are impacts on the environment that result from the incremental impacts of an alternative when added to other past, present, and reasonably foreseeable future actions of Federal, state, or local agencies or individual entities or persons (40 CFR 1508.7). Such impacts can result from individually minor, but collectively significant, actions taking place over time (40 CFR 1508.8). Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the project area.

The IS/MND evaluated cumulative effects and determined there would be no impact. The Proposed Action would have no effects to Indian Trust Assets, Indian Sacred sites, or minority or low income populations. Therefore, there are no adverse effects associated with implementing the Proposed Action and no cumulative effects to consider.

# Section 4 Consultation & Coordination

Several Federal laws, permits, licenses and policy requirements have directed or guided the NEPA analysis and decision making process included in this EA.

## 4.0 Agencies and Persons Consulted

Reclamation consulted and coordinated with the SHPO, pursuant to 54 USC § 306108, commonly known as Section 106 of the NHPA, and its implementing regulation found at 36 CFR Part 800. Reclamation will also consult with USFWS and NMFS under Section 7 of the ESA.

## 4.1 Public Review Period

The EA/IS was made available for public comment on August 5, 2019. Reclamation did not receive comments on the proposed action and, therefore, additional NEPA analysis was not warranted.

## 4.2 Federal Laws, Regulations, and Policies

### Title 54 U.S.C. § 306108, Commonly Known as Section 106 of the National Historic Preservation Act

Title 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (formerly 16 U.S.C. 470 et seq.), requires Federal agencies to consider the effects of their undertakings on historic properties, properties determined eligible for inclusion in the National Register, and to afford the Advisory Council on Historic Preservation an opportunity to comment. Compliance with Section 106 follows a series of steps, identified in its implementing regulations found at 36 CFR Part 800, that include identifying consulting and interested parties, identifying historic properties within the area of potential effect, and assessing effects on any identified historic properties, through consultations with the California SHPO, Indian tribes and other consulting parties.

Reclamation entered into consultation with the SHPO on August 5, 2019, notifying them regarding a finding of "no affect" to historic properties pursuant to 36 CFR § 800.4(d)(1). SHPO responded on September 4, 2019 with no objections to Reclamations' findings and determination (Appendix A).

### Section 7 of the Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies to ensure that discretionary federal actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation will seek concurrence from NMFS and USFWS per Section 7 of the ESA and will adhere to any additional site specific measures that result from that consultation.

### Section 401 of the Clean Water Act

Reclamation must obtain a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB). This declaration states that any discharge complies with all applicable effluent limitations and water quality standards. Reclamation intends to submit appropriate Section 401 applications to the RWQCB.

### Section 404 of the Clean Water Act

Reclamation completed a Waters of the United States Delineation in 2018. Subject to U.S. Army Corps of Engineers (Corps) verification, within the currently mapped sites in project area, there are approximately 136.18 acres of potential waters of the United States, which includes 33.43 acres of wetlands and 102.75 acres of other waters within the Proposed Action area.

Reclamation intends to submit appropriate Section 404 applications to the Corps.

### Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act applies to the Sacramento River from the mouth of the river to Keswick Dam, including the project area. The Sacramento River was designated by the Corps as a navigable river based on the procedure described in 33 CFR Part 329. Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits the building of structures, excavation, or fill that modifies the course, location, condition or capacity of a channel of any navigable river in the U.S., unless the work has been recommended by the Corps. Section 10 jurisdiction would extend laterally over the entire water surface and bed of the navigable water body, which includes all the land and waters below the ordinary high water mark (OHWM). Navigation would not be impacted by the side channel restoration and navigation in the main channel of the Sacramento River would not be affected by the project.

### Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990 established the protection of wetlands and riparian systems as the official policy of the federal government. It requires all federal agencies to consider wetland protection as an important part of their policies and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Consultation with the Corps regarding Section 404 compliance has taken place. Any measures implemented to protect and restore wetlands as part of the 404 permitting process will likely be sufficient to satisfy compliance with EO 11990.

### Executive Order 11988: Flood Plain Management

EO 11988 requires Reclamation to regulate development in floodplains and preserve the floodplains' natural and beneficial values. Measures to comply with EO 11988 have been integrated into the Proposed Action.

### Executive Order 11312: Invasive Species

EO 11312 (February 3, 1999) directs all federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. The Proposed Action includes measures to comply with EO 11312, such as physical removal of plant seed and parts from equipment, inspections prior to arrival at the construction area, and ensuring that 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 practical. The Proposed Action also involves the removal of invasive plants by herbicide application and a replanting of native riparian vegetation.

## 4.3 State and Local Laws, Regulations, and Policies

### California State Lands Commission Lease

The project involves work affecting the Sacramento River. The land under the river is owned by the State Lands Commission (SLC). Reclamation coordinated with the SLC and it was determined that a lease was not needed for the Proposed Action.

# Section 5 References

Barnes, Amy J. Cultural Resources Investigation for the East Sand Slough Side Channel Project, Tehama County, California. Report #18-NCAO-108 on file at the Bureau of Reclamation, Mid-Pacific Regional Office, Sacramento, California.

DOI. [Department of the Interior]. 1999. Central Valley Project Improvement Act, Final Programmatic Environmental Impact Statement. US Department of the Interior, Bureau of Reclamation and US Fish and Wildlife Service. Sacramento, CA.

Resource Conservation District of Tehama County. East Sand Slough Side Channel Project, Initial Study/Mitigated Negative Declaration. August, 2019.