

Biological Resources Evaluation

North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

Tehama and Shasta Counties, California
January 2019



Prepared for:



Red Bluff Fish and Wildlife Office
10590 Tyler Road
Red Bluff, CA 96080

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- C. Faunal Species Observed Within or Near the Study Area**
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INTRODUCTION

Tehama Environmental Solutions, Inc. (TES) conducted this Biological Resources Evaluation (BRE) for the U.S. Fish and Wildlife Service (USFWS) for the proposed North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project (project). The purpose of this document is to identify and address potential impacts to special-status faunal species and rare natural communities that may be located within the proposed study area, or be affected by the proposed project. This BRE does not address potential impacts to botanical resources which were addressed in a separate report prepared by another firm (Dittes and Guardino Consulting 2018).

Proposed Project

The purpose of the proposed project is to modify two fish passage barriers on North Fork Battle Creek to allow three federally listed salmonid species access to optimal habitat that will be made available through another restoration project. The two barriers are composed of large boulders and have been documented as complete barriers to upstream salmonid fish migration.

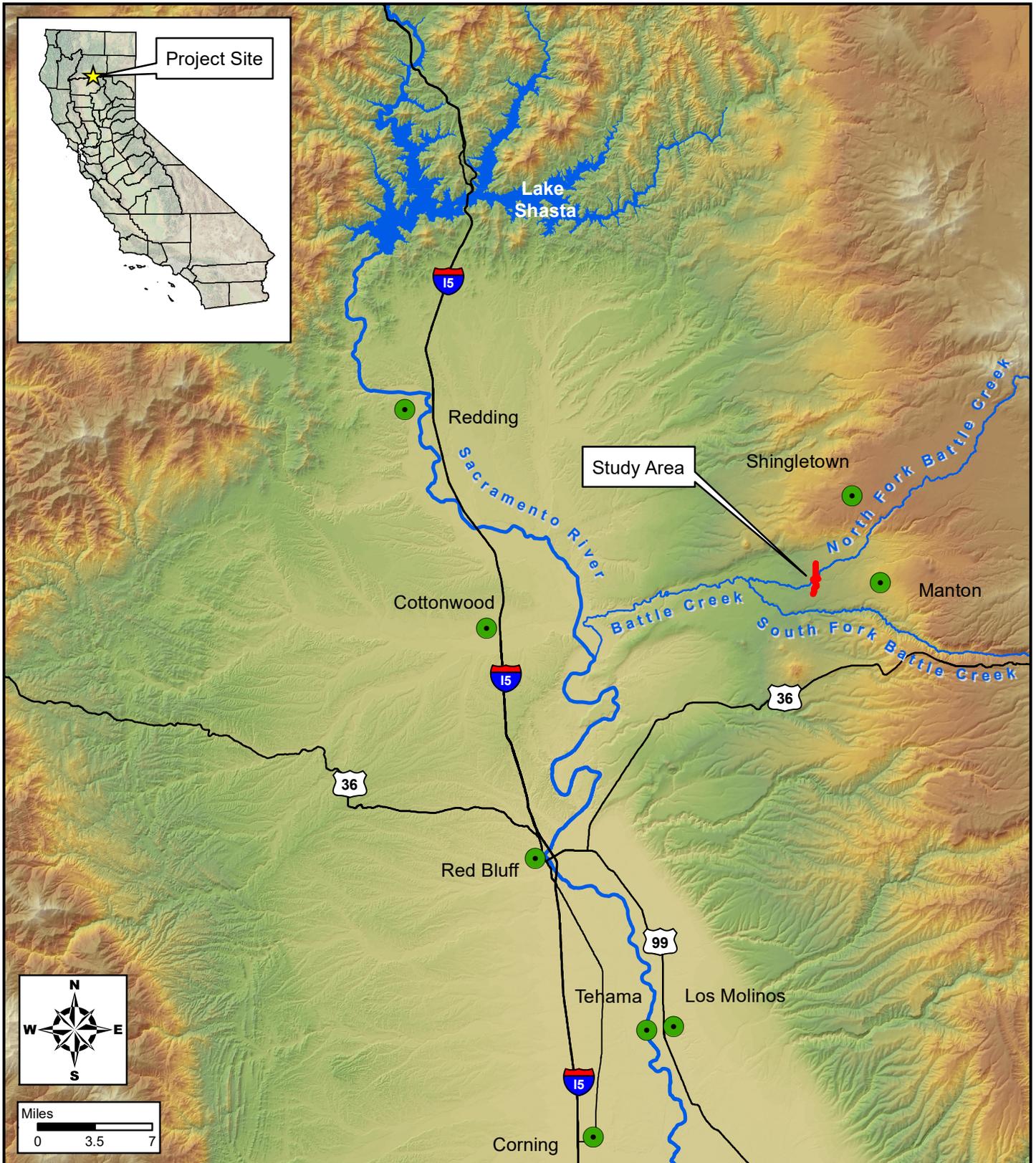
The project is being implemented by the USFWS in cooperation with the private landowners and the project Technical Advisory Committee (TAC). The TAC includes representatives from USFWS, National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), Central Valley Regional Water Quality Control Board (RWQCB), U.S. Army Corps of Engineers (Corps) and several private consulting firms.

The project includes fragmenting and / or removing the boulder jumbles and minor regrading of the stream channel. The work will be conducted using a crane and / or skyline yarding system. Approximately 190 cubic yards of boulders and a minor amount of bedrock will be removed at the lower barrier site. Approximately 720 cubic yards of boulders and potentially some bedrock will be removed at the upper barrier site. Most of the generated spoils will be placed upland and / or hauled off-site and the remaining portion will be reused to construct the new regraded channel. The anticipated modifications should reduce channel velocity and vertical drops while increasing existing pools and creating some new pools.

A temporary dewatering system will be installed to bypass stream flows around the sites during construction. The dewatering system will include coffer dams, sandbags, water-filled bladders and a gravity-fed pipe around the entire work areas (Michael Love & Associates 2017). Some existing trees within the project footprint will be removed and / or limbed. The sites will be revegetated following the completion of construction activities.

Study Area Location

The study area is located within Eagle Canyon on the North Fork Battle Creek and Digger Creek, at approximately 15 river miles upstream of the confluence with the Sacramento River, west of Manton, in Shasta and Tehama Counties, California (Figure 1). Specifically, the study area is located in Sections 24, 25, and 36, Township 30 North, Range 1 West, Mount Diablo Base and Meridian; within the 7.5-minute United States Geological Survey (USGS) Shingletown quadrangle map (Figure 2). The study area includes the potential work areas for the two barrier modification sites including potential staging areas and access roads (Figure 3).

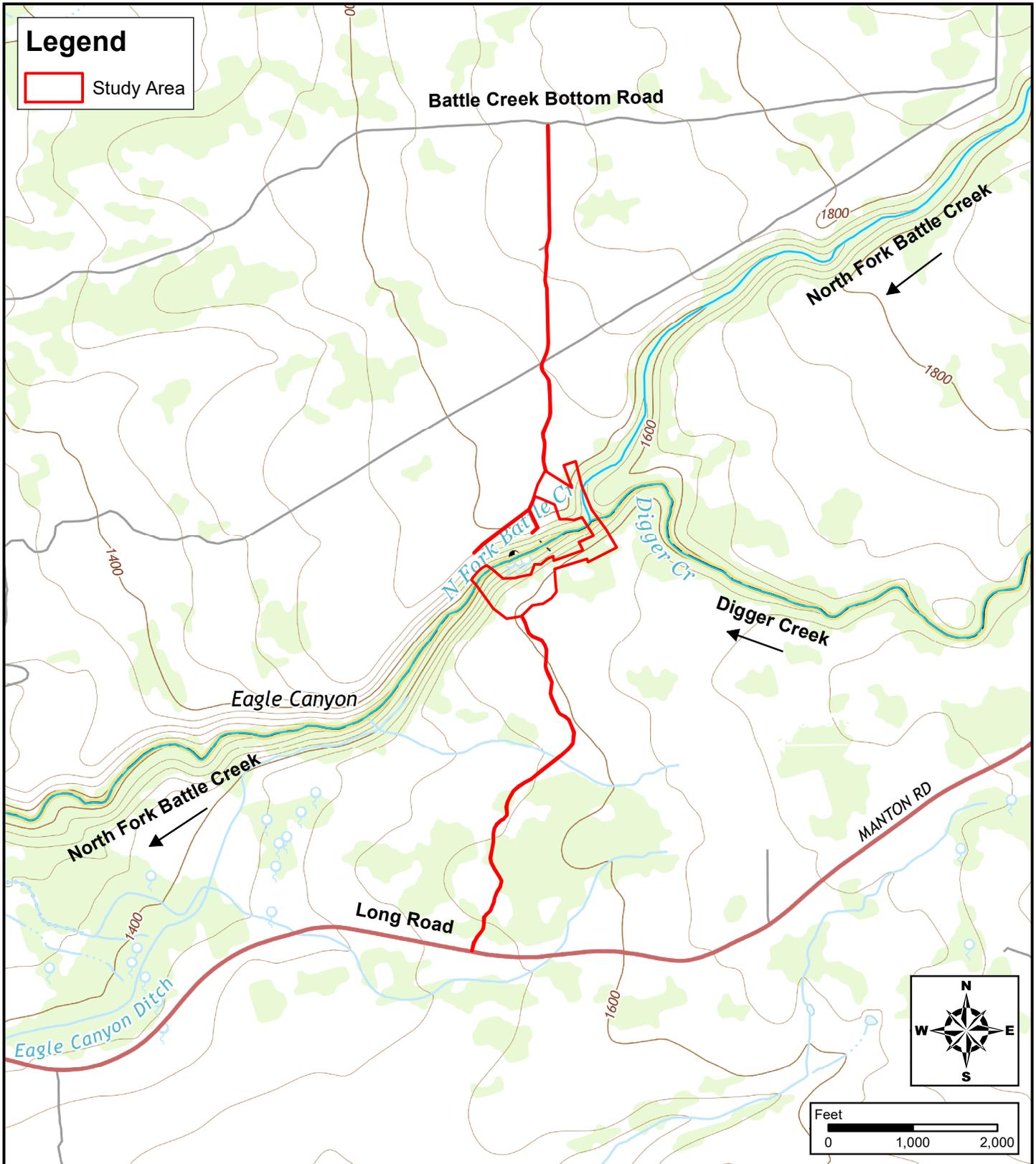


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FIGURE 1
 Site Vicinity Map

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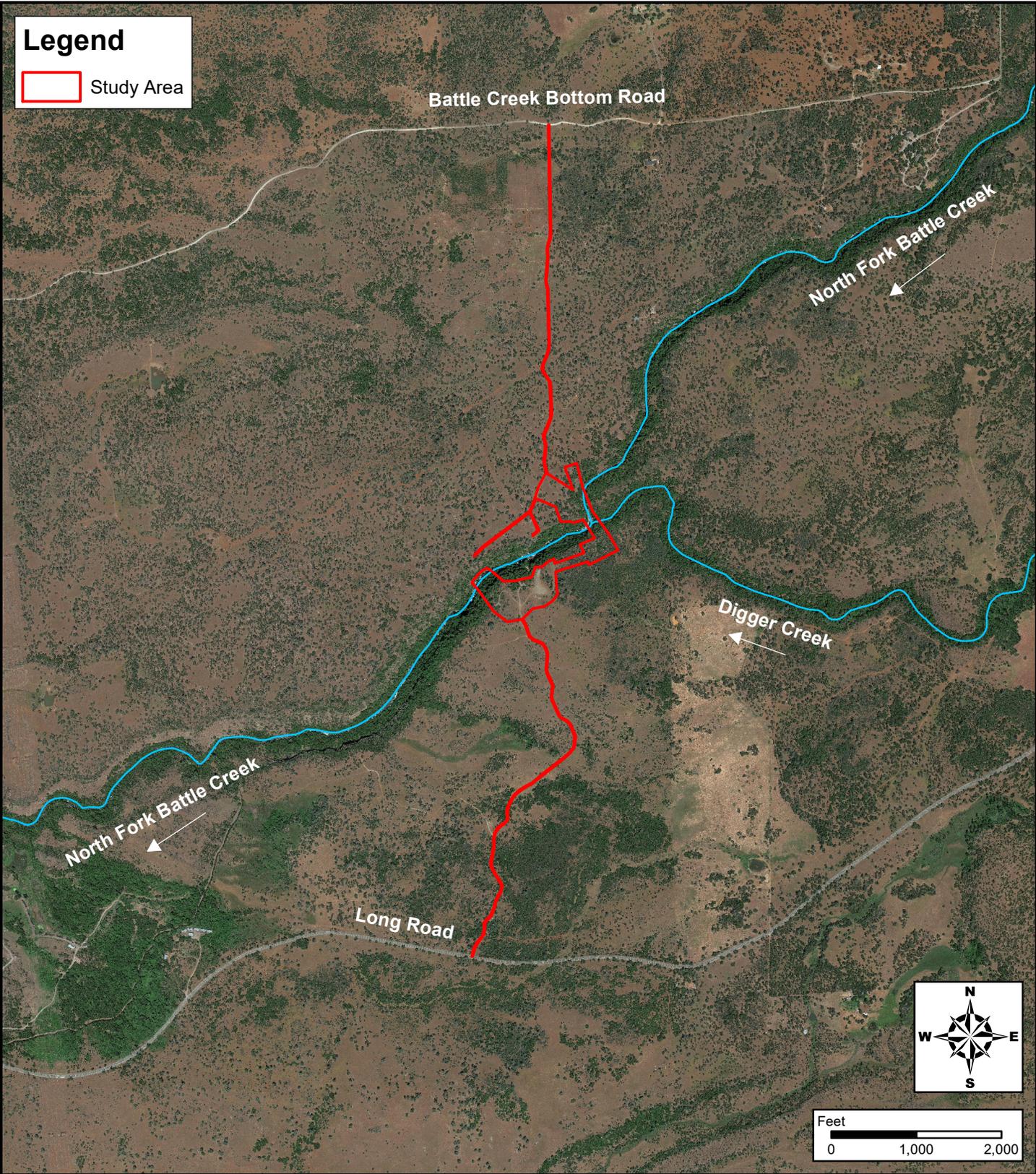
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FIGURE 2
 Site Location Map

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Legend

 Study Area



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FIGURE 3
Site Aerial Photo

ENVIRONMENTAL SETTING

General Site Characteristics

The study area is located in the foothills of the southernmost extent of the Cascade Range, west of Manton, California. North Fork Battle Creek and Digger Creek serve as the boundary between Shasta and Tehama Counties. Digger Creek is a tributary to North Fork Battle Creek, which is a tributary to Battle Creek, a tributary to the Sacramento River. The site is comprised of terrain which is generally gradually sloping with vertical slopes and varying aspects associated with a perennial creek, which is the main drainage. The site has a general western aspect and drains to the southwest. The elevation of the study area ranges from approximately 1,600 feet above mean sea level near the upper barrier site above the canyon, to 1,490 feet above mean sea level at the bottom of the canyon near the lower barrier site.

Land Use

The study area is located on private lands. Pacific Gas & Electric (PG&E) operates the Eagle Canyon diversion near the study area, which is used to divert water for hydroelectric power generation. The remainder of the study area is primarily used as rangeland for livestock grazing.

Hydrology

Battle Creek is an approximately 47-mile-long perennial stream flowing generally west, originating from the western-facing slopes of Mount Lassen and eventually flowing into the Sacramento River near the town of Cottonwood, California. The Battle Creek watershed includes a total area of 370 square miles and drains from east to west. Downstream of the Eagle Canyon diversion, the creek flows for about fifteen river miles before reaching the Sacramento River. Digger Creek, a 19-mile-long tributary, flows into North Fork Battle Creek just downstream of the upper barrier site.

Battle Creek exhibits a unique hydrology from the volcanic nature of the drainage. Seasonal precipitation percolates through the volcanic strata and emerges throughout the watershed as cold springs year-round. This can be seen on the south bank of Battle Creek at Eagle Canyon, where water actively seeps out of the canyon wall and into the creek below.

The Eagle Canyon diversion, located between the upper and lower barrier sites, diverts water into a series of flumes and tunnels that travel through the study area, and are owned by PG&E. Water diversion is managed under a 1999 memorandum of understanding between NMFS, U.S. Bureau of Reclamation, USFWS, CDFW and PG&E, which outlines the minimum in-stream flow requirements below various diversion dams (Michael Love and Associates 2017). The minimum in-stream flow requirements vary by month and range from 35-46 cubic feet per second (cfs).

Soils

Eight different soil map units occur within the study area according to the local soil surveys (U.S. Department of Agriculture–Soil Conservation Service et al. 1967, U.S. Department of Agriculture–Soil Conservation Service et al. 1974). The eight identified map units are listed below:

Guenoc stony loam, 10 to 30 percent slopes (GsD)

These soils occur on the foothills east of the Sacramento River. They are formed in material weathered from volcanic and metamorphic rocks. The soil is well-drained, with moderately slow permeability and medium to rapid runoff. The taxonomy of the map unit is fine, kaolinitic, thermic, Typic Rhodoxeralfs (Natural Resources Conservation Service 2018).

Guenoc very stony loam, 0 to 30 percent slopes (GsD)

These soils occur on the foothills east of the Sacramento River. They are formed in material weathered from volcanic and metamorphic rocks. The soil is well-drained, with moderately slow permeability and medium to rapid runoff. Andesite bedrock occurs at a depth of 30 to 40 inches. The taxonomy of the map unit is fine, kaolinitic, thermic, Typic Rhodoxeralfs (Natural Resources Conservation Service 2018).

Guenoc very rocky loam, 0 to 30 percent slopes (GuD)

These soils occur on the foothills east of the Sacramento River. They are formed in material weathered from volcanic and metamorphic rock. The soil is well-drained, with moderately slow permeability and slow to rapid runoff. Andesite bedrock occurs at a depth of 20 to 30 inches. The taxonomy of the map unit is fine, kaolinitic, thermic, Typic Rhodoxeralfs (Natural Resources Conservation Service 2018).

Inks cobbly loam, 3 to 30 percent slopes (IcD)

These soils are located on rounded hills east of the Sacramento River. They are formed in material from weakly consolidated volcanic rock, particularly andesite and basalt. The soil is well-drained, with medium runoff and moderate permeability. The taxonomy of the map unit is loamy-skeletal, mixed, superactive, thermic, shallow Ultic Argixerolls (Natural Resources Conservation Service 2018).

Rockland (RtF)

This land type is located on very steep slopes or on sloping lava flows that consist of more than 50 percent exposed rock. The series is not classified taxonomically by higher categories in the soil survey.

Rockland (RxF)

This land type is located on uplands of mountainous areas. Rockland consists of shale, sandstone, conglomerate, limestone, greenstone, quartz diorite, andesite, basalt, rhyolite, schist, gneiss, serpentine, or peridotite rock outcrops and covers 25 to 90 percent of the surface. The series is not classified taxonomically by higher categories in the soil survey.

Toomes very rocky loam, 0 to 50 percent slopes (TcE)

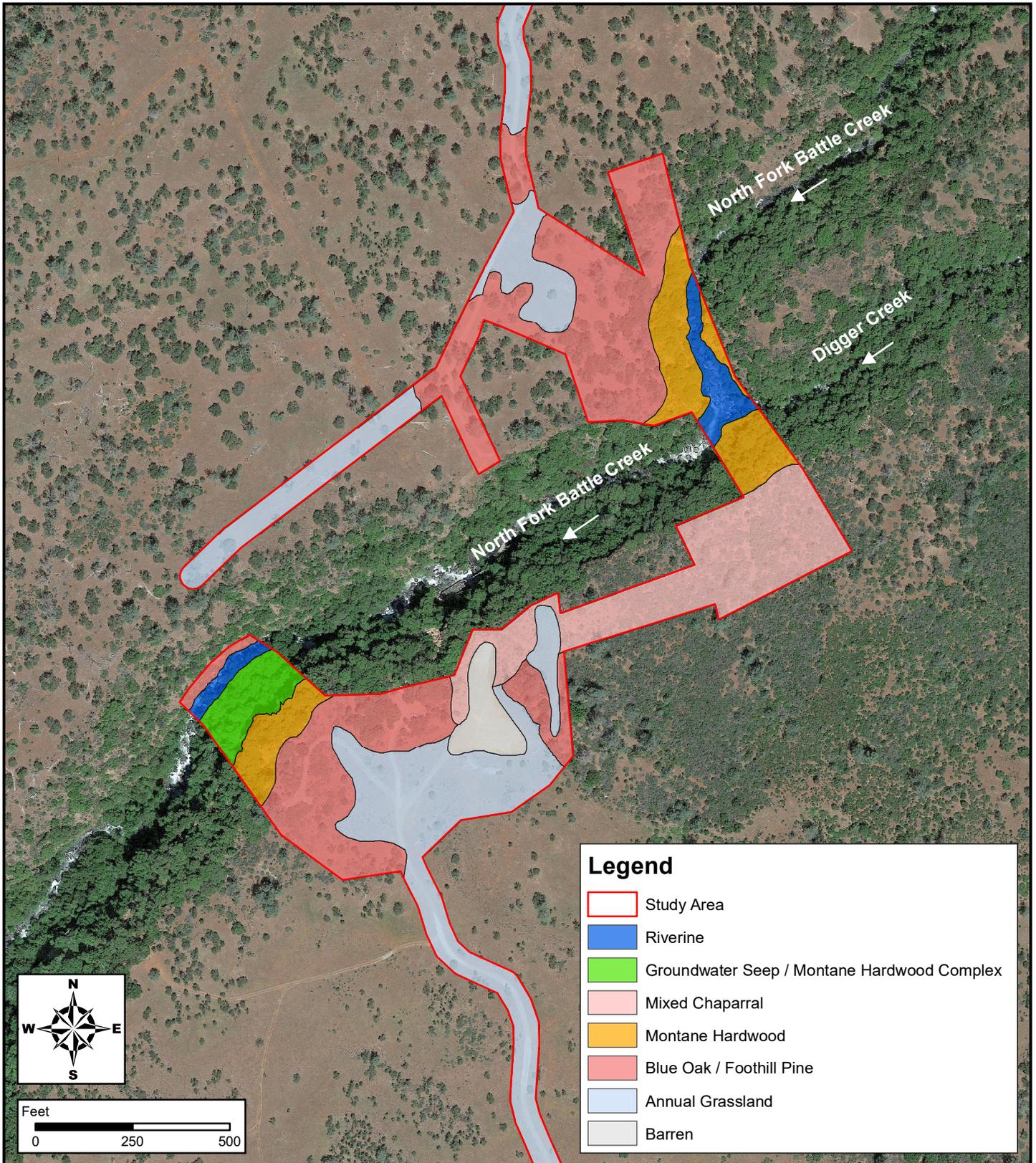
These soils are located east of the Sacramento River formed in material derived from volcanic rock. They are underlain by tuff breccia. The soil is somewhat excessively drained, with moderate permeability and medium to rapid runoff. Bedrock exists at a depth of four to ten inches. The taxonomy of the map unit is loamy, mixed, thermic, lithic Ruptic-xerorthentic Xerochrepts (Natural Resources Conservation Service 2018).

Toomes very rocky silt loam, 1 to 10 percent slopes (TkB)

These soils are located east of the Sacramento River and formed in material derived from volcanic rock. They are underlain by tuff breccia. The soil is well-drained, with moderate permeability and medium runoff. The taxonomy of the map unit is loamy, mixed, thermic, lithic Ruptic-xerorthentic Xerochrepts (Natural Resources Conservation Service 2018).

Vegetation / Plant Communities

Six habitat types generally occur within the study area (Figure 4) as defined by the California Wildlife-Habitat Relationships classification system (Mayer and Laudenslayer 1988). The habitat types include: Blue Oak-Foothill Pine, Mixed Chaparral, Annual Grassland, Barren, Riverine and Montane Hardwood.



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FIGURE 4
 California Wildlife-
 Habitat Relationships Map

Blue Oak-Foothill Pine

Blue oak-foothill pine habitat occurs on the upland flats of the study area. The habitat is dominated by blue oak (*Quercus douglasii*), foothill pine (*Pinus sabiniana*) and interior live oak (*Quercus wislizenii*) in the tree layer. There is no shrub layer in the majority of blue oak woodland, however buckbrush (*Ceanothus cuneatus*) and western juniper (*Juniperis occidentalis*) occur in areas. The herbaceous vegetation, when present, tends to be primarily annual grasses and forbs.

Mixed Chaparral

Mixed chaparral habitat occurs on the upland flats of the study area and is dominated by buckbrush, with little to no tree component. Flannelbush (*Fremontodendron californicum*), California yerba-santa (*Eriodictyon californicum*), white-leaved manzanita (*Arctostaphylos viscida ssp. viscida*) and birch-leaved mountain mahogany (*Cercocarpus betuloides*) are present in areas. Herbaceous vegetation is typically sparse, if present, and is composed primarily of annual grasses and forbs.

Annual Grassland

Annual grassland habitat occurs on the upland flats and along portions of the access roads. The habitat is dominated by non-native annual grasses and forbs. Dominants vary by location but include such species as soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), slender wild oats (*Avena barbata*), annual ryegrass (*Festuca perennis*) and medusahead (*Elymus caput-medusae*). Scattered native grasses include small fescue (*Festuca microstachys*), California oniongrass (*Melica californica*) and one-sided bluegrass (*Poa secunda ssp. secunda*).

Barren

Barren areas are present on the south upland terrace associated with past construction and maintenance activities at the Eagle Canyon diversion. This area has been cleared of vegetation and covered with rock and is nearly devoid of vegetation due to recurring disturbance.

Riverine

Riverine habitat is present within the channels of North Fork Battle Creek and Digger Creek. The creek channel is primarily devoid of vegetation, but the exposed barren rock along both banks of the stream occasionally supports scattered woody and herbaceous species such as willows (*Salix spp.*), Oregon ash (*Fraxinus latifolia*), white alder (*Alnus rhombifolia*), Himalayan blackberry (*Rubus armeniacus*), California blackberry (*Rubus ursinus*) and Indian rhubarb (*Darmera peltata*).

Montane Hardwood

Montane hardwood habitat is present on the slopes within the North Fork Battle Creek and Digger Creek canyon. Canyon live oak (*Quercus chrysolepis*) and bay laurel (*Umbellularia californica*) dominate the tree overstory providing approximately 90 percent canopy coverage. Other tree species include blue oak and big-leaf maple (*Acer macrophyllum*), along with an occasional nutmeg (*Torreya californica*), incense cedar (*Calocedrus decurrens*) and ponderosa pine (*Pinus ponderosa*). Shrubs include poison oak (*Toxicodendron diversilobum*), California buckeye (*Aesculus californica*), buckbrush, birch-leaved mountain mahogany and an occasional blue elderberry (*Sambucus nigra var. caerulea*). Montane hardwood species also dominate an area mapped as groundwater seep / montane hardwood complex along the south canyon wall. This area differs from the remaining montane hardwood areas in that perennial groundwater seeps from the canyon walls. Additional woody species include edible fig (*Ficus carica*), spicebush (*Calycanthus occidentalis*), white alder, Himalayan blackberry, California blackberry and California grape (*Vitis californica*). Additional herbaceous species, when present, include seep monkeyflower (*Mimulus guttatus*), willowherb (*Epilobium sp.*) and ferns.

METHODS

Data Base Records Searches

Prior to the initiation of field studies, a records search of the California Natural Diversity Data Base (CNDDDB) (California Department of Fish and Wildlife 2018a) was conducted to determine if any special-status animals, or rare natural communities had previously been documented within the study area, or in the vicinity of the study area. The query was conducted using the USGS Shingletown 7.5' quadrangle, in which the project is located, along with the eight adjoining quadrangles (Manton, Dales, Inskip Hill, Finley Butte, Clough Gulch, Inwood, Hagan Gulch and Tuscan Buttes NE). In addition, species lists for the study area were requested from the USFWS and the NMFS.

Based on the results of the CNDDDB search (Appendix A), the USFWS and NMFS species lists and TES's additional knowledge of the site and local area, a list of potentially occurring special-status species and natural communities was developed for the project and is included as Appendix B. For the purposes of this evaluation, special-status species are defined as:

1. Those species listed by USFWS or NMFS as Endangered, Threatened, Proposed as Endangered or Threatened, Candidate to become Proposed or Species of Concern.
2. Those species listed by CDFW as Endangered, Threatened, Candidate for listing as Endangered or Threatened, Species of Special Concern or Fully Protected.

Special-status designations for faunal species are depicted in Appendix B. Designations were based on the most recent version of the special animals list (California Department of Fish and Wildlife 2018b).

Wildlife / Fisheries Survey

A biological survey was conducted on April 1, 2018 by Mr. Jeff Souza, TES Principal Biologist; May 30, 2018 and June 23, 2018 by Mr. Souza and Ms. Lorin Mills, TES Environmental Scientist; and on August 15, 2018 and August 22, 2018 by Mr. Souza and Mr. Brandon Vidrio, TES Biologist. The study area included the entire project footprint, as well as a varying surrounding buffer area. The surveys were conducted by walking and / or driving portions of the study area that were accessible and recording direct wildlife observations. Observations were made using the unaided eye, binoculars and identification of vocalizations. Other methods included observations of animal tracks, scat and bird feathers. No protocol-level wildlife or fisheries surveys were conducted.

In addition, to survey for bat species, two Pettersson DX-500 full spectrum, ultrasound, acoustical recording devices were deployed at four different locations in order to sample montane hardwood and chaparral habitats. A total of 19 detector-nights (one detector for one night) were sampled during the nights of May 30 and 31, 2018, June 1, 2 and 20, 2018, and August 15, 16, 17, 18, 19, 20 and 21, 2018. The survey was performed at a time of year that was favorable for detection of all bat species that could potentially occur at the site. The sampling occurred from approximately twenty minutes after sunset to twenty minutes before sunrise. Once recorded, the potential bat calls were then analyzed using SonoBat™ 4.2 software to identify calls to the species level. Individual calls were then manually vetted by Mr. Souza to arrive at the final species list included in Appendix C.

Natural Communities

CDFW has recognized a number of rare, threatened, or unique natural communities that need protection. As part of the biological field surveys, potential rare natural communities were identified and documented.

RESULTS

California Natural Diversity Data Base Records Search

The results of the CNDDDB search indicate that two special-status animal species have previously been recorded within the study area boundary including Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead (*Oncorhynchus mykiss irideus*). Spring-run Chinook salmon is state and federally listed as Threatened, and Steelhead is federally listed as Threatened.

A total of 16 additional special-status animal species occurrences have previously been documented in the larger surrounding nine USGS quadrangle search area. Of the 16 special-status animal species, six are state and / or federally listed as Threatened or Endangered including the tricolored blackbird (*Agelaius tricolor*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California wolverine (*Gulo gulo*), bald eagle (*Haliaeetus leucocephalus*), vernal pool tadpole shrimp (*Lepidurus packardii*) and least Bell's vireo (*Vireo bellii pusillus*).

One candidate species has previously been documented in the nine-quadrangle search area. The foothill yellow-legged frog (*Rana boylei*) is a state candidate for listing as Threatened. One unique natural community, the Northern Interior Cypress Forest, has also previously been documented in the nine-quadrangle search area.

Wildlife / Fisheries Survey

Several special-status animal species were observed during the 2018 field surveys. A list of all faunal species observed during site surveys is included in Appendix C.

Three species designated as CDFW Species of Special Concern were observed during site surveys. These included the American white pelican (*Pelecanus erythrorhynchos*), Vaux's swift (*Chaetura vauxi*) and black swift (*Cypseloides niger*). One juvenile salmonid, likely a rainbow trout / steelhead, was observed in North Fork Battle Creek. One sculpin, likely a riffle sculpin (*Cottus gulosus*), was also observed in North Fork Battle Creek.

Natural Communities

One instream habitat found within the study area could potentially be classified as a CNDDDB rare instream natural community, the Central Valley Drainage Spring-Run Chinook Stream. No terrestrial habitats that would likely be classified as CNDDDB rare natural communities were observed in the study area during the 2018 field surveys.

EVALUATION

Several species, identified through the nine-quadrangle CNDDDB data query and TES's professional knowledge of the local area, were eliminated from further evaluation in this report due to the lack of habitat within, or near the study area and / or due to the fact that the project lies outside of the species known range (see Appendix B). Those species not eliminated are described below, along with an evaluation of potential impacts to the species from the proposed project.

Amphibians and Reptiles

Western Pond Turtle (*Emys marmorata*)

The western pond turtle is designated as a CDFW Species of Special Concern. Population declines are attributed to impacts to nesting habitat, nest and juvenile predation by non-native aquatic species, human-induced predator population increases and historic human overexploitation (Jennings and Hayes 1994). This species inhabits quiet waters of ponds, lakes, streams, etc., where there are rocks or logs for basking and safe underwater retreat areas (Stebbins 1972). They are closely tied to water except when females move overland to lay eggs or when either sex may move overland to upland sites to overwinter. They may overwinter on land or in water but are thought to be more likely to overwinter in water when inhabiting pond habitats. Egg-laying typically occurs in May and June but can occur from late April to early August, while overwintering generally begins in October or November (Jennings and Hayes 1994). Hatchlings are thought to overwinter in the nest and emerge to migrate to aquatic habitats the following spring (Jennings and Hayes 1994).

Western pond turtles were not observed in North Fork Battle Creek during previous surveys (Jones and Stokes 2001), or within the study area during TES surveys. They may have been detected upstream of Eagle Canyon Dam during surveys conducted for a fish passage construction project (P. Herrera pers. comm.). While only marginal habitat is present within the study area due to the shaded nature of the canyon, based on the fact that western pond turtles may have been detected during prior field surveys, this species may potentially occur within the study area. **Potentially significant impacts could occur if western pond turtles were present within the study area and were harmed or killed by project construction activities.**

Western Spadefoot (*Spea hammondi*)

The western spadefoot is designated as a CDFW Species of Special Concern. Population declines are attributed to habitat conversion, introduction of non-native predators including fish, bullfrogs and crayfish; road construction, environmental pollution and exposure to activities that produce low frequency noise and vibration (U.S. Fish and Wildlife Service 2005). This species primarily inhabits grassland habitats but can occasionally occur in valley-foothill hardwood woodlands (Zeiner et al. 1988). Adults spend most of the year in underground burrows and initiate surface movements to breed in response to early fall rains. They require temporary rain pools that persist for a minimum of three weeks in order for the larvae to metamorphose successfully (Jennings and Hayes 1994). Breeding and egg-laying typically occur from late winter to the end of March (Zeiner et al. 1988). They forage on a variety of insects, worms and other invertebrates (U.S. Fish and Wildlife Service 2005).

The study area is adjacent to the northern end of the geographical distribution for this species. Western spadefoot may breed within the study area, if pools develop and hold water for at least 3 weeks. It is not likely that the western spadefoot will be impacted by this project if they are present, as all project work will avoid such habitat and will be conducted within the existing roads and staging areas. Baseline conditions in the access roads within the study area include regular vehicle and equipment use for ranching, Eagle Canyon Diversion Dam and fish screen maintenance operations and other uses. **No significant impacts to western spadefoots are anticipated as a result of the proposed project.**

Birds

Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird is currently designated as a state candidate for listing as Endangered and a CDFW Species of Special Concern. Reported potential threats to the species include water diversion, land conversion and heavy predation by mammals, corvids and black-crowned night herons (Riparian Habitat Joint Venture 2004). This species constructs nests of mud and plant material in dense cattails or tules and thickets of willow, blackberry, wild rose and herbs (Zeiner et al. 1990a). Nesting is highly colonial and usually located in wetlands or in dense vegetation near open water (Riparian Habitat Joint Venture 2004). Nesting areas must generally be large enough to support approximately 50 pairs (Zeiner et al. 1990a). Tricolored blackbirds forage on seeds and insects in croplands, grasslands, flooded areas and edges of ponds (Zeiner et al. 1990a).

The study area lacks sufficient breeding habitat for tricolored blackbird due to the lack of wetlands with dense vegetation of a sufficient size. Potential foraging habitat is present within the study area. Tricolored blackbirds were not observed within the study area during TES site surveys. This species may forage within the site if breeding colonies are located in the general area, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **No significant impacts to tricolored blackbirds are anticipated as a result of the proposed project.**

Grasshopper Sparrow (*Ammodramus savannarum*)

The grasshopper sparrow is a CDFW Species of Special Concern. Reported potential threats to the species include urbanization, expansion of vineyards and fire suppression, if these lead to grassland conversion (Shuford and Gardali 2008). The grasshopper sparrow is more likely to be found in large tracts of habitat than in small ones. Minimum area requirements are approximately 100 hectares (247 acres) in Maine and 30 hectares (74 acres) in Illinois. In general, grasshopper sparrows in California prefer short to middle-height, moderately open grasslands with scattered shrubs (Shuford and Gardali 2008). The breeding season for this species extends from mid-March to August. This species builds nests domed with grasses and forbs with a side entrance, in a slight depression in the ground, hidden at the base of an overhanging clump of grasses or forbs, with the rim approximately level to the ground (Shuford and Gardali 2008). The grasshopper sparrow diet is roughly 63 percent animal matter (mainly grasshoppers) and 37 percent vegetable (plants / seeds), and they forage primarily on the ground (bare ground is critical microhabitat for effective foraging) or from low vegetation (Shuford and Gardali 2008).

Grasshopper sparrows may nest within the study area within suitable habitat such as the grasslands located adjacent to the access haul roads and within the staging areas. Potential foraging habitat is present in open grasslands within the study area and the species may forage if nesting near the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. The species was not observed during TES site surveys. **Potentially significant impacts could occur if grasshopper sparrows were nesting within or near the study area and were disturbed by project construction activities.**

Golden Eagle (*Aquila chrysaetos*)

The golden eagle is designated as a Fully Protected Species under the California Fish and Game Code and is protected by the Bald and Golden Eagle Protection Act. This species has declined near human population centers (Remsen 1978). The loss and alteration of grasslands, shooting, and human disturbance at nest sites are reported to have contributed to the decline of the species (Remsen 1978). The golden eagle is a permanent resident throughout California, except in the center of the Central Valley, although it winters in this area (Zeiner et al. 1990a). Golden eagles typically inhabit rolling foothills,

mountainous areas, sage-juniper flats, and deserts (Zeiner et al. 1990a). It breeds from late January through August, peaking from March through July, and nests on cliffs and in large trees near open areas. Golden eagles often maintain alternative nest sites and old nests are often reused (Zeiner et al. 1990a). The golden eagle needs open areas for hunting and their diet consists mostly of lagomorphs and rodents, but also includes other mammals, reptiles, birds and some carrion (Zeiner et al. 1990a).

Golden eagles may nest within the study area due to suitable nesting habitat in the form of cliffs within the canyon. No nesting activity is known to exist in the general area however the potential still exists for new nesting territories to become established. Golden eagles were observed in Eagle Canyon during prior surveys (Jones and Stokes 2001) and construction monitoring (P. Herrera pers. comm.). This species may forage within the study area, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **Potentially significant impacts could occur if golden eagles were nesting within or near the study area and were disturbed by project construction activities.**

Long-eared Owl (*Asio otus*)

The long-eared owl is designated as a Species of Special Concern by CDFW. Declines in long-eared owl populations have been attributed to destruction of lowland riparian woodland habitats, however other unknown factors such as automobile collisions and human harassment may also be contributing factors (Remsen 1978). This species nests and roosts in riparian, live oak or other thickets with small, densely-canopied trees, and primarily hunts in open areas for rodents, as well as birds, smaller owls and other vertebrates (Zeiner et al. 1990a). Breeding occurs from early March to late July (Zeiner et al. 1990a).

Long-eared owls may nest in the riparian areas or dense upland woodlands within and near the study area. This species was not observed during TES site surveys. The species may forage within the site if nesting or roosting in the general area, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities, and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if long-eared owls were nesting within, or near the study area and were disturbed by project construction activities.**

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a CDFW Species of Special Concern. Population declines are attributed to conversion of grassland to agriculture, other habitat destruction and poisoning of ground squirrels (Remsen 1978). Collisions with automobiles may also be a significant cause of mortality. Burrowing owls are yearlong residents of open, dry grassland, desert habitats and open shrub stages of pinyon-juniper and ponderosa pine habitats. This species eats mostly insects, small mammals, reptiles, birds and carrion. They use ground squirrel burrows or other burrows for roosting and nesting cover, or they may dig their own burrow in soft soil.

Burrowing owls are not likely to nest within, or immediately near the study area due to the fact that the study area is outside of the known breeding range of the species. The species may winter within the study area in grasslands located adjacent to the access haul roads and within the staging areas. No burrowing owls or potential burrows were observed during site surveys. **Potentially significant impacts could occur if burrowing owls were wintering within, or near the study area and were disturbed by project construction activities.**

Vaux's Swift (*Chaetura vauxi*)

The Vaux's swift is designated as a CDFW Species of Special Concern. Threats to this species are not well-documented but losses of suitable nesting trees due to timber harvest may be a concern. This species nests inside large hollow trees in redwood, Douglas fir and other conifer habitats (Zeiner et al. 1990a).

Breeding occurs from early May to mid-August and often occurs in large colonies (Zeiner et al. 1990a). They feed exclusively on flying insects and forage widely during long-distance high-elevation flights over varying terrain, but prefer to forage over rivers and lakes.

Vaux's swifts are not likely to nest within, or immediately near the study area due to the fact that the study area is well outside of the known breeding range of the species, and due to a lack of potential nesting habitat. Vaux's swifts were observed foraging during TES site surveys. The species may forage within the site during spring and fall migrations, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **No significant impacts to Vaux's swifts are anticipated as a result of the proposed project.**

Northern Harrier (*Circus cyaneus*)

The northern harrier is a CDFW Species of Special Concern. Reported threats to the species include destruction of marsh habitat, burning and plowing of nesting areas and grazing in grassland nesting habitat (Remsen 1978, Zeiner et al. 1990a). This species nests from April to September on the ground in emergent wetlands, grasslands, agricultural fields or on sagebrush flats (Zeiner et al. 1990a). They forage in open areas consuming small mammals, birds, frogs, small reptiles, crustaceans, insects and rarely, fish (Zeiner et al. 1990a).

Northern harriers are not likely to nest within the study area due to the fact that the study area is located outside of the known breeding range. Potential winter foraging habitat occurs such as within the grasslands located adjacent to the access haul roads and within the staging areas, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. Northern harriers were not observed during TES site surveys. **No significant impacts to northern harriers are anticipated as a result of the proposed project.**

Black Swift (*Cypseloides niger*)

The black swift is designated as a CDFW Species of Special Concern. Threats to this species are unclear but may include human disturbance of nesting activities due to rock climbing (Remsen 1978). Black swifts construct mud and plant material nests in moist crevices on sea cliffs or adjacent to, or behind waterfalls (Zeiner et al. 1990a). Nesting occurs in small colonies from early June to late August (Zeiner et al. 1990a). They feed exclusively on flying insects and forage widely during long-distance flights.

Black swifts are not likely to nest within, or immediately near the study area due to the fact that the study area is well outside of the known breeding range of the species, and due to a lack of potential nesting habitat. Black swifts were observed during TES site surveys. The species may forage within the site during spring and fall migrations, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally and the temporary nature of the project construction activities. **No significant impacts to black swifts are anticipated as a result of the proposed project.**

White-tailed Kite (*Elanus caeruleus*)

The white-tailed kite is designated as a Fully Protected species under the California Fish and Game Code. The species has extended its range and increased in numbers in recent decades (Zeiner et al. 1990a). They are rarely found away from agricultural areas and nest from February to October near the tops of trees in dense oak, willow or other tree stands, near open foraging areas (Zeiner et al. 1990a). They forage on small mammals and occasionally on birds, insects, reptiles and amphibians in undisturbed open grasslands, meadows, farmlands and emergent wetlands (Zeiner et al. 1990a).

Potential nesting habitat is present within the study area. White-tailed kites were not observed during TES site surveys. Potential foraging habitat is present in open grasslands near the study area and the species may forage if nesting near the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **Potentially significant impacts could occur if white-tailed kites were nesting within, or near the study area and were disturbed during project construction activities.**

Little Willow Flycatcher (*Empidonax traillii brewsteri*)

The little willow flycatcher, a subspecies of the willow flycatcher, was listed by the State of California as Endangered in 1991. The little willow flycatcher was once a common breeder in Central Valley riparian habitats but nesting appears now to be restricted to upper elevations. Reported potential threats to the species include riparian habitat loss, livestock grazing and nest parasitism by brown-headed cowbirds (*Molothrus ater*) (California Department of Fish and Game 2005). They nest in dense willow thickets in upper elevations near rivers, streams and lakes (Zeiner et al. 1990a).

The little willow flycatcher is not likely to nest within the study area due to the low elevation of the site. Little willow flycatchers were observed during prior site surveys (Jones and Stokes 2001) and construction monitoring (P. Herrera pers. comm.) but did not appear to nest at the site. They were not observed during TES site surveys. The species may forage within the study area during spring and fall migrations, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **No significant impacts to little willow flycatchers are anticipated as a result of the proposed project.**

American Peregrine Falcon (*Falco peregrinus anatum*)

The American peregrine falcon is designated as a Fully Protected species under the California Fish and Game Code. The species was previously listed as Endangered by the State of California and was delisted in 2009. The species was originally listed as Endangered by USFWS and was delisted in 1999. Declines in population associated with this species are attributed primarily to dichlorodiphenyltrichloroethane (DDT) contamination (Zeiner et al. 1990a). Riparian areas and coastal and inland wetlands are important habitats year-long, especially in non-breeding seasons. They require protected cliffs and ledges for cover. They breed near wetlands, lakes, rivers or other waters, and nest on cliff ledges, human structures and occasionally, in cavities in large snags and old nests from other raptors. The peregrine falcon feeds primarily on birds including ducks, and also takes mammals and fish.

Peregrine falcons may nest within the study area due to suitable nesting habitat in the form of cliffs within the canyon. No nesting activity is known to exist in the general area however the potential still exists for new nesting territories to become established. This species may forage within the study area, however impacts to foraging activities would not generally be considered significant due to the fact that foraging habitat is not limited regionally, and due to the temporary nature of the project construction activities. Peregrine falcons were not observed during TES site surveys. **Potentially significant impacts could occur if American peregrine falcons were nesting within or near the study area and were disturbed by project construction activities.**

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle was listed as Endangered by the State of California in 1971, and is designated as a Fully Protected species under the California Fish and Game Code and is protected by the Bald and Golden Eagle Protection Act. The species was originally listed as Endangered by USFWS in 1967, was downlisted to Threatened in 1995 and was delisted in 2007. Past declines in bald eagle populations are attributed to the effects of DDT, lead shot and habitat disturbance, however in California, the number of

territories has increased and the species range has expanded (California Department of Fish and Game 2005). Recovery efforts have focused on the protection of nesting areas and restrictions on the use of DDT. The bald eagle is a large bird of prey that winters throughout California. They nest in the upper canopy of large trees normally in mountain and foothill habitats near rivers, streams and reservoirs. They forage opportunistically on fish and waterfowl but also prey on other small animals and eat carrion (California Department of Fish and Game 2005).

Potential nesting habitat is present in North Fork Battle Creek. Bald eagle nesting activity is not known to occur in the general area, however potential still exists for new nesting territories to be established. Bald eagles were observed during prior site surveys (Jones and Stokes 2001) and construction monitoring (P. Herrera pers. comm.). Foraging habitat is present within the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. The purpose of the proposed project is to improve passage conditions for migrating native adult and juvenile fish, which may benefit bald eagles if fish populations increase as a result of the project. **However, potentially significant impacts could occur if bald eagles were nesting within or near the study area and were disturbed by project construction activities.**

Yellow-breasted Chat (*Icteria virens*)

The yellow-breasted chat is designated as a CDFW Species of Special Concern. Threats to the species include destruction of riparian habitat and nest parasitism by brown-headed cowbirds (Remsen 1978). Yellow-breasted chats are neotropical migrant songbirds that nest in dense shrubs along streams and rivers and require dense, brushy thickets and tangles near water for cover. They nest from early May to early August with peak nesting activity in June, and forage on insects, spiders, berries and other fruit (Zeiner et al. 1990a).

Potential nesting habitat is present within the study area in riparian habitats and dense understory vegetation within the canyon. Yellow-breasted chats were not observed during TES site surveys. Foraging habitat is present within the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **Potentially significant impacts could occur if yellow-breasted chats were nesting within, or near the study area and were disturbed during project construction activities.**

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is a CDFW Species of Special Concern. Potential threats and reasons for population declines are not well-documented for this species although habitat loss, on breeding and wintering grounds as well as along migratory routes, is a major threat to the species. Loggerhead shrikes construct nests in dense foliage in trees or shrubs in areas with open habitat and scattered shrubs, trees, or other perches. They are found primarily in valley foothill hardwood, hardwood-conifer and riparian habitats as well as pinyon-juniper, juniper and desert riparian Joshua tree habitats (Zeiner et al. 1990a). Nesting occurs from March into May, with young becoming independent in July and August (Zeiner et al. 1990a). They feed primarily on large insects but also take small birds, mammals, amphibians, reptiles, fish, carrion and other invertebrates (Zeiner et al. 1990a).

Potential nesting habitat is present in tree and shrub habitats within the study area. No loggerhead shrikes were observed within the study area during TES field surveys. Potential foraging habitat is present within the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **Potentially significant impacts could occur if loggerhead shrikes**

were nesting within, or near the study area and were disturbed during project construction activities.

American White Pelican (*Pelecanus erythrorhynchos*)

The American white pelican is a CDFW Species of Special Concern. Threats to this species include human disturbance, pesticide use and degradation of breeding habitat. Natural predators include gulls, coyotes and colony interactions. They are found on large lakes and estuaries in the Central Valley and coastal slopes. Pelicans rest during the day and roost at night, along edges of water, on beaches, sandbars, or old driftwood, but never in trees. They are a monogamous, colonial nester in groups of a few to several hundred pairs. They begin nest construction in March or April and begin egg-laying in April (Shuford and Gardali 2008). Young pelicans are independent by September (Zeiner et al. 1990a).

American white pelicans are not likely to nest within the study area due to a lack of suitable nesting habitat. During site surveys, this species was observed flying at high elevations over the study area by TES. Marginal foraging habitat is present and they may forage in the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **No significant impacts to American white pelicans are anticipated as a result of the proposed project.**

Bank Swallow (*Riparia riparia*)

The bank swallow was listed as Threatened by the State of California in 1989. Bank swallow declines have been attributed to the elimination of nesting habitat due to channelization of rivers and flood control projects, particularly rip-rapping of natural stream banks (California Department of Fish and Game 2005). Recovery efforts are focused on preserving habitat and restoring naturally meandering riverine ecosystems (California Department of Fish and Game 2005). The bank swallow is a neotropical migrant species that winters in South America. They are a colonial nesting species that burrows into fine-textured vertical stream banks to construct their nests from early May through July (Zeiner et al. 1990a). Most of California's remaining populations nest along the upper Sacramento River in areas where natural stream meander still occurs. They forage by hawking insects during flight, feeding primarily over water and riparian areas.

It is not likely that bank swallows would nest within the study area due to the lack of suitable habitat (vertical stream banks with suitable soil texture for burrowing). No bank swallows were observed during TES site surveys. Potential foraging habitat is present within the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **No significant impacts to bank swallows are anticipated as a result of the proposed project.**

Yellow Warbler (*Setophaga petechia*)

The yellow warbler is designated as a CDFW Species of Special Concern. Threats to the species include destruction of riparian habitat and nest parasitism by brown-headed cowbirds (Remsen 1978). Numbers of breeding pairs have declined dramatically in recent decades in lowland areas. Yellow warblers are neotropical migrant songbirds that nest in riparian woodlands as well as in montane chaparral and in the shrubby understory of ponderosa pine and mixed conifer forests (Zeiner et al. 1990a, Shuford and Gardali 2008). They nest from mid-April into early August, with peak nesting activity in June, and eat insects, spiders and occasionally berries (Zeiner et al. 1990a).

Potential nesting habitat is present in riparian areas within the study area. No yellow warblers were observed during TES site surveys. Foraging habitat is present within the study area, however impacts to foraging activities would generally not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. **Potentially**

significant impacts could occur if yellow warblers were nesting within the vicinity of the study area and were disturbed during project construction activities.

Other Nesting Raptors

Nesting habitat exists within, and near the study area for several other raptor species (hawks, falcons and owls) that are not identified as special-status species, but are protected under several sections of the California Fish and Game Code. Several raptor species were observed during TES site surveys (Appendix C). Several nests were observed within, or in the vicinity of the study area that could potentially serve as raptor nests. A number of additional raptor species, while not observed, may potentially nest within, or near the study area. **Potentially significant impacts could occur if active raptor nests were present within the vicinity of the study area and project construction activities destroyed active nests or caused nests to be abandoned.**

Other Nesting Migratory Birds

Nesting habitat exists within the study area for a number of migratory bird species that are not identified as special-status species, but are protected under the federal Migratory Bird Treaty Act and / or under several sections of the California Fish and Game Code (California Department of Fish and Wildlife and California Attorney General 2018). **Potentially significant impacts could occur if active migratory bird nests were destroyed during project construction activities or caused nesting migratory birds to abandon active nests.**

Fish

Riffle Sculpin (*Cottus gulosus*)

The riffle sculpin is designated as a CDFW Species of Special Concern. It is reported that the riffle sculpin faces numerous threats from dams, agricultural runoff, urbanization mining and logging (Moyle et al. 2015). Both adult and young riffle sculpin have poor dispersal abilities (Moyle et al. 2015). Larvae do not move far after hatching and this greatly reduces their ability to quickly recolonize areas (Moyle et al. 2015). They are found in isolated watersheds in the Central Valley and the central coast. In the Sacramento River drainage, they are found in Putah Creek, a west-side tributary and in most of the east-side tributaries, from the American River north to the upper Sacramento and McCloud rivers. Riffle sculpin are found exclusively in permanent coldwater streams. This species spawns at the end of their second year, in February, March and April (Moyle et al. 2015). Adults spawn under rocks in swift riffles or inside cavities in submerged logs. Riffle sculpin feed mainly on benthic invertebrates, primarily active insect larvae.

Riffle sculpin are known to be present in the project reach of Eagle Canyon (R. Battaro pers. comm.). An unknown sculpin, likely a riffle sculpin, was observed in North Fork Battle Creek during TES site surveys. The purpose of the proposed project is to improve passage conditions for migrating native adult and juvenile fish, which may benefit riffle sculpin. **However, potentially significant impacts could occur if riffle sculpin were present within the study area and were harmed or killed by construction activities.**

Central Valley Steelhead (*Oncorhynchus mykiss*)

The Central Valley steelhead Distinct Population Segment (DPS) was listed as Threatened by NMFS on May 18, 1998 and February 6, 2006. Critical Habitat (CH) was designated by NMFS on September 2, 2005. Essential Fish Habitat (EFH) has not been designated by NMFS. Population declines are attributed to blockage from upstream habitats, entrainment from unscreened diversions, hatchery practices and degraded habitat conditions due to water development and land use practices. Steelhead are generally distributed from southern California to the Aleutian Islands. In the Central Valley, naturally producing populations only occur in the Sacramento River and its tributaries. Steelhead stocks in the Central Valley

are considered winter-run steelhead (McEwan and Jackson 1996). Central Valley steelhead adult migration occurs from October through February. Spawning occurs from December through April in streams with cool, year-round, well-oxygenated water. Incubation generally occurs from December through April. Emigration occurs in the spring and early summer as one-year-old fish.

The study area is located in the currently designated CH for Central Valley steelhead. Rainbow trout are known to occur within the study area (Whitton et al. 2010) and, from a regulatory perspective, are assumed to be Central Valley steelhead. A juvenile salmonid, likely a rainbow trout, was observed in North Fork Battle Creek during TES site surveys. The purpose of the proposed project is to improve passage conditions for migrating native adult and juvenile fish, including Central Valley steelhead. **However, potentially significant impacts could occur if Central Valley steelhead were present within the study area and were harmed or killed by project construction activities.**

Central Valley Spring-run Chinook Salmon (*Oncorhynchus tshawytscha*)

The Central Valley spring-run Chinook salmon was listed as Threatened by the State of California on February 5, 1999. NMFS listed the Central Valley spring-run Chinook salmon Evolutionary Significant Unit (ESU) as Threatened on September 16, 1999. CH was designated by NMFS on January 2, 2005. EFH was designated for Pacific salmon, which includes this ESU, by NMFS on June 28, 2005. Population declines are attributed primarily to altered stream flows and blocked access to upper elevation headwaters due to dams. Spring-run Chinook salmon are thought, by some, to once have been the most abundant run of salmon in the Central Valley. This race once migrated into the headwaters of tributaries to the Sacramento and San Joaquin Rivers. They now only exist in the mainstem and a few tributaries to the Sacramento River. Central Valley spring-run Chinook salmon adult migration occurs in the Sacramento River from late March to September. The fish overwinter in coldwater habitats and then spawn from August to October with peak spawning occurring in September. Incubation occurs from mid-August to mid-March with rearing and emigration occurring from mid-August through April.

Potential habitat is present within the study area for one or more life stages of spring-run Chinook salmon. Central Valley spring-run Chinook salmon are known to occur approximately 0.25 miles downstream from the study area (Whitton et al. 2010), however the downstream natural barrier is considered a total barrier to upstream migration. The study area is located in the currently designated CH and EFH for Central Valley spring-run Chinook salmon. Spring-run were not observed during site surveys, however intensive fish surveys were not conducted. The purpose of the proposed project is to improve passage conditions for migrating native adult and juvenile fish, including Central Valley spring-run Chinook salmon. **However, potentially significant impacts could occur if Central Valley spring-run Chinook salmon were present within, or downstream in the vicinity of the study area, and were harmed or killed by construction activities.**

Invertebrates

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

The vernal pool fairy shrimp was listed as Threatened by USFWS on September 19, 1994. CH was initially designated on August 6, 2003. Additional CH was designated on February 10, 2006. Population declines are attributed to destruction and degradation of vernal pool habitats. Vernal pool fairy shrimp occur exclusively in vernal pool and vernal pool-like habitats. Although the species has been collected from larger pools, it generally tends to occur in smaller pools less than 0.05 acres and is typically found in pools with low to moderate salinity or total dissolved solids (U.S. Fish and Wildlife Service 2005). Vernal pool fairy shrimp eggs, or cysts, remain dormant in the soil when the pools are dry and several separate hatches can occur in a single wet season. Adults can reach sexual maturity in as few as 18 days at optimal water temperatures and feed on algae, bacteria, protozoa, rotifers and detritus (U.S. Fish and Wildlife Service 2005).

Vernal Pool Fairy Shrimp were not observed within the study area during surveys, however full protocol-level surveys were not conducted. Potential habitat is present in seasonal wetlands and seasonally wet depressions adjacent to the south access road and staging areas. **Potentially significant impacts could occur if project construction activities harmed or killed vernal pool fairy shrimp or negatively impacted habitat for this species.**

Vernal Pool Tadpole Shrimp (*Lepidurus packardii*)

The vernal pool tadpole shrimp was listed as Endangered by USFWS on September 19, 1994. CH was initially designated on August 6, 2003. Additional CH was designated on February 10, 2006. Population declines are attributed to destruction and degradation of vernal pool habitats. Vernal pool tadpole shrimp occur in a wide variety of ephemeral habitats and have been collected in pools ranging in size from 6.5 square feet to 88 acres (U.S. Fish and Wildlife Service 2005). Vernal pool tadpole shrimp eggs, or cysts, remain dormant in the soil when the pools are dry and hatch in as few as four days after winter rains fill the vernal habitats (U.S. Fish and Wildlife Service 2005). Adults reach sexual maturity in three to four weeks and females can deposit as many as six clutches of eggs in a single wet season (U.S. Fish and Wildlife Service 2005). They feed on organic debris and living organisms such as fairy shrimp and other invertebrates (U.S. Fish and Wildlife Service 2007).

Vernal pool tadpole shrimp were not observed within the study area during surveys, however full protocol-level surveys were not conducted. Potential habitat is present in seasonal wetlands and seasonally wet depressions adjacent to the south access road and staging areas. **Potentially significant impacts could occur if project construction activities harmed or killed vernal pool tadpole shrimp or negatively impacted habitat for this species.**

Mammals

Pallid Bat (*Antrozous pallidus*)

The pallid bat is designated as a CDFW Species of Special Concern. Threats to the species include destruction and disturbance of roosting sites which include caves, crevices, mines, and occasionally, hollow trees and buildings (Zeiner et al. 1990b). This species is most common in open, dry areas near rocky sites for roosting in a wide variety of habitats including grasslands, shrublands, woodlands and forests from sea level up through mixed conifer forests (Zeiner et al. 1990b). Females give birth in the early summer in nursery colony roosts and the young are not weaned until the fall. Pallid bats feed on large arthropods including scorpions, cicadas, katydids, beetles, crickets, grasshoppers, praying mantids and moths (Bolster et al. 1998).

Pallid bats may roost in hollow trees or rock crevices within or near the study area. This species was not detected during TES acoustical site surveys. Pallid bats may forage within the study area if roosting habitat is located in the general vicinity, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities, and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if pallid bat roosting habitat was disturbed as a result of project construction activities.**

Ringtail (*Bassariscus astutus*)

The ringtail is designated as a Fully Protected species under the California Fish and Game Code. Threats to the species include urbanization and loss and degradation of riparian communities (Williams 1986). This medium-sized carnivore inhabits forests and shrublands in close association with riparian habitats or rocky areas. They are usually found within 0.6 miles of permanent water (Zeiner et al. 1990b) in low to middle elevations. Ringtails den and nest in hollow trees, snags, cavities in rocks, abandoned burrows

and human structures. Ringtails primarily feed on rodents and rabbits and also birds and eggs, reptiles, invertebrates, fruits, nuts and some carrion.

Ringtails may den in riparian and upland habitats within the study area. No ringtails were observed during TES site surveys, however they are seldom observed without the use of specialized survey methods due to their strongly nocturnal nature. This species is likely to forage within the site, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if ringtails were denning within the project area and were harmed or killed during project construction activities.**

Gray Wolf (*Canis lupus*)

The gray wolf was listed by USFWS as Endangered in 1978. CH was designated by USFWS on March 9, 1978. This species was listed by the State of California as Endangered in 2014. Threats to this species include food availability, strife within packs, disease and accidental or intentional killing by people (U.S. Fish and Wildlife Service 2016, California Department of Fish and Game 2011). This carnivore is regarded as a habitat generalist due to the fact that gray wolves move long distances and require large home ranges (Paquet and Carbyn 2003). Habitat use is strongly influenced by availability and abundance of prey, topography, snow conditions and occurrence of livestock, roads and humans (Paquet and Carbyn 2003). Wolves den in mostly south-facing burrow systems, hollow logs, spaces between roots of trees, caves or crevices in rocks, excavations in snow and in very shallow surface dens, usually near permanent water (Paquet and Carbyn 2003). Wolves primarily feed on ungulates, however beavers, hares and other smaller mammals may supplement their diets depending on the availability and vulnerability of ungulates (Paquet and Carbyn 2003).

One gray wolf was detected in Tehama County in 2011, 2012 and 2013 (California Department of Fish and Wildlife 2018c). No known denning sites are located within or near the study area. Gray wolves were not observed during TES site surveys. While wolves could potentially travel to, or near the study area, there is an extremely low likelihood of occurrence within the study area at any one time due to the very low density of wolves in California and the extremely large areas that wolves are known to travel during dispersal. **No significant impacts to gray wolves are anticipated as a result of the proposed project.**

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

The Townsend's big-eared bat is listed as a CDFW Special Species of Concern. The main threat to this species is loss of roosting sites due to human disturbance, mine closure and renewed mining in abandoned mines. Townsend's big-eared bats occur in a variety of habitats but are more common in mesic sites (Williams 1986). Roosting sites include caves, lava tubes, mine tunnels and large hollow trees, as well as other human-made structures such as buildings, bridges and water diversion tunnels. Roosting sites are extremely sensitive to human disturbance and can be abandoned due to a single human visit (Zeiner et al. 1990b), however in some instances this species can become habituated to reoccurring and predictable human activity (California Department of Fish and Wildlife 2013). Females give birth from May to July in nursery colony roosts and the young are generally weaned by August. Townsend's big-eared bats feed primarily on large moths but also take small numbers of other insects (Bolster et al. 1998).

Townsend's big-eared bats are not likely to roost within the study area due to a lack of suitable habitat. The water diversion tunnels within the study area have waterfalls at the entrances, which make it unlikely that they would be used as roosting habitat by bats. This species was not detected within the study area during TES acoustical site surveys however, they are difficult to detect acoustically. Townsend's big-eared bats may forage within the study area if roosting habitat is located in the general vicinity, however impacts to foraging activities would typically not be considered significant due to the fact that foraging

habitat is not limited regionally, the temporary nature of the project construction activities, and the fact that this species typically forages at night when construction activities would not normally occur. **No significant impacts to Townsend's big-eared bats are anticipated as a result of the proposed project.**

Spotted Bat (*Euderma maculatum*)

The spotted bat is a CDFW Species of Special Concern. This species is considered one of the rarest mammals in North America but the reasons for population declines are not well documented (Zeiner et al. 1990b). The spotted bat is a solitary species and forages late at night, principally for moths. They roost in rock crevices, cliffs, caves and buildings with cliffs providing optimal habitat. The spotted bat forages over water and along washes (Zeiner et al. 1990b). Occupied habitats range from arid deserts and grasslands to mixed conifer forests (Zeiner et al. 1990b).

Spotted bats may roost within the study area in suitable habitat (rock crevices). Spotted bats were not detected during TES acoustical site surveys. Spotted bats may forage within the study area if roosting habitat is located in the general vicinity, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities, and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if spotted bats roosting habitat was disturbed as a result of project construction activities.**

Western Mastiff Bat (*Eumops perotis*)

The western mastiff bat is a CDFW Species of Special Concern. Reasons for decline of this species are attributed to extensive loss of habitat, cultivation of foraging habitat and use of insecticides (Williams 1986). The species is non-migratory and day-roosts alone or in small colonies in crevices in rock outcrops, cliffs, trees and tall buildings. Nursery roosts described as tight rock crevices approximately three feet deep and two inches wide or crevices in buildings. They occupy semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands and chaparral (Zeiner et al. 1990b). Night roosts are seldom used due to their prolonged foraging period. They feed primarily on hymenopteran insects (Zeiner et al. 1990b). When roosting in rock crevices, western mastiff bats need vertical faces to drop off from to take flight.

Western mastiff bats may roost within the study area in suitable habitat (rock crevices). Western mastiff bats were not detected during TES acoustical site surveys. Western mastiff bats may forage within the study area if roosting habitat is located in the general vicinity, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if western mastiff bat roosting habitat was disturbed as a result of project construction activities.**

Western Red Bat (*Lasiurus blossevillii*)

The western red bat is designated as a CDFW Species of Special Concern. Potential threats to this species include loss of riparian habitat from habitat conversions and fatalities from wind turbines. Their roosting habitat includes forests and woodlands, ranging from sea level to mixed conifer forests. They roost in foliage near edge habitats adjacent to streams, fields or urban areas in trees (Zeiner et al. 1990b). The western red bat hibernates in the winter and is generally considered a solitary species. They feed over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. They are nocturnal and feed primarily on insects such as moths, crickets, beetles and cicadas. Breeding occurs in August and September and, after delayed fertilization, females give birth between late May and early July.

Western red bats may roost within the study area in suitable habitat (riparian vegetation). This species was not detected within the study area during TES acoustical site surveys. Impacts to western red bats could occur if a maternal roost was located in vegetation impacted by project activities. Western red bats may forage within the study area if roosting habitat is located in the general vicinity, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally, the temporary nature of the project construction activities and the fact that this species typically forages at night when construction activities would not normally occur. **Potentially significant impacts could occur if western red bat maternity roosts were disturbed as a result of project vegetation clearing.**

Northern California Fisher (*Pekania pennanti*)

The northern California fisher ESU is designated by CDFW as a Species of Special Concern. Threats to this species include fragmentation of forested habitat and loss of structural complexity, riparian habitat and late-seral trees. In the western U.S. this medium-sized carnivore inhabits areas with high canopy closure, typically late-successional coniferous forest, without frequent, deep fluffy snow (Bolster et al. 1998) but also may select younger age forest characteristics for foraging (California Department of Fish and Game 2010). They rest and den in protected cavities and brush piles. They are found from near sea level to over 11,000 feet in elevation (Williams 1986). Fishers are generally more common in areas of low human density and low human disturbance (Ruggiero et al. 1994). Natal denning occurs in the spring, in cavities near the tops of live trees and snags (Bolster et al. 1998). They prey on a variety of small and medium-sized mammals and birds as well as carrion (Bolster et al. 1998).

There is a low likelihood that fishers would den within the study area due to the low elevation of the site. Fishers may forage within the study area in the winter if they move downslope, however impacts to foraging activities would typically not be considered significant due to the fact that foraging habitat is not limited regionally and due to the temporary nature of the project construction activities. No fishers were observed during TES site surveys. **No significant impacts to the northern California fisher are anticipated as a result of project construction activities.**

Natural Communities

The stream habitats within the study area will be positively affected by the removal of the natural barriers improving anadromous fish migration conditions and potentially restoring upstream population of several anadromous fish populations. The purpose of the project is to improve fish passage conditions to provide access to stream habitats that are not currently accessible due to the presence of the barriers. Decomposing anadromous fish carcasses would contribute to increased productivity of upstream freshwater and riparian habitats from nutrient transfer.

A wetland delineation was conducted (Tehama Environmental Solutions 2018) within the study area which identified and mapped several wetlands and other aquatic features that may be jurisdictional under Sections 404 and 401 of the Clean Water Act and / or Section 1600 of the California Fish and Game Code. Potential impacts to these potentially jurisdictional features will be addressed during the regulatory permit / authorization processes.

CONCLUSIONS AND RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

Listed and Candidate Species

Based on the results found in Appendix B, eight federally and / or state listed or candidate animal species have the potential to occur within the study area, including tricolored blackbird, little willow flycatcher,

bald eagle, bank swallow, Central Valley steelhead, Central Valley spring-run Chinook salmon, vernal pool fairy shrimp and vernal pool tadpole shrimp.

Of these eight species, five may be potentially significantly impacted by the project including bald eagle, Central Valley steelhead, Central Valley spring-run Chinook salmon, vernal pool fairy shrimp and vernal pool tadpole shrimp. Recommended avoidance and minimization measures are provided for these five species below.

Bald Eagle

- ❖ Any tree removal, vegetation clearing, or the onset of potentially disturbing construction activities should occur between September 1 and January 1 (outside of the nesting season for raptors with potential to occur within, or in the vicinity of the project site).
- ❖ If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the nesting season, a raptor nesting survey of the construction area and adjacent suitable habitat should be conducted by a qualified biologist no more than ten days prior to the initiation of the onset of these activities or as appropriate survey protocols require. If active raptor nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities should be suspended until a qualified biologist, in consultation with CDFW and / or USFWS can establish an appropriate protective buffer area to minimize impacts to the nesting raptors. No construction activities should commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active.
- ❖ Construction activities shall occur continuously (not including weekends) until the end of the nesting season to discourage avian species from initiating nesting. If construction activities cease for more than ten (10) consecutive days (including weekends), all construction activities shall cease until CDFW can be consulted to determine if a subsequent nesting bird survey must be performed.

Central Valley Steelhead and Central Valley Spring-run Chinook Salmon

- ❖ NMFS shall be consulted to 1) develop appropriate avoidance and minimization measures, and 2) determine whether an Endangered Species Act Section 7 take permit will be required for the project.
- ❖ Construction outside of the stream channel could start as early as July 1, based upon permits receipt, permit conditions, and / or consultation terms and conditions. For fisheries protection, instream work will occur between July 1 and September 30. Instream work could start sooner if CDFW, in coordination with NMFS determines that adult spring-run Chinook salmon are no longer present based on environmental conditions, proper installation of an exclusionary weir and real-time passage data. Instream work could be extended to October 14, if environmental conditions, which will preclude juvenile steelhead and spring-run Chinook salmon emigration or adult steelhead / fall-run Chinook salmon immigration, are expected to persist. Instream work outside of the July 1 to September 30 work window must be approved by CDFW and NMFS on a case-by-case basis with details on how take will be avoided and / or minimized. For work within the channel and banks, fish rescue efforts (herding fish, netting / seining, electrofishing, etc.) will be required prior to the onset of any dewatering of the area. Dewatering will be coordinated with CDFW to ensure that adequate staff are available, and onsite during dewatering efforts.

- ❖ All construction debris (concrete, metal, etc.) from the fish passage improvement-related construction activities shall be removed from the active stream channel post-construction.
- ❖ Prior to construction, exclusionary fish netting or other CDFW approved exclusionary structure and / or other mechanism(s) shall be installed upstream and / or downstream of the construction area as determined by CDFW. USFWS, in coordination and consultation with NMFS and CDFW, will ensure that qualified fish biologists are onsite to implement fish rescue operations through the use of herding, seining and / or electrofishing, etc., if necessary. Best professional determination will be used to decide which method(s) of rescue and location of exclusionary structure and / or other mechanism(s) is most appropriate. Biologists will first try to haze and herd fish out of the fish exclusion area. If fish biologists determine that the use of electrofishing is necessary for the efficient and successful removal of fish, the NMFS electrofishing guidelines (National Marine Fisheries Service 2000) will be strictly followed. The fish rescue team will be comprised of fishery biologists with professional experience using seines and electrofishing equipment.
- ❖ Adequate erosion and pollution control measures shall be taken to ensure that sediment, turbidity, petroleum products or other harmful chemicals do not enter Battle Creek as a result of construction activities. Standard Best Management Practices (BMPs) shall be incorporated into the project designs.
- ❖ BMPs will be developed and implemented to ensure that wet concrete does not enter Battle Creek during construction.
- ❖ All water pumps used during construction shall be screened to meet CDFW and NMFS criteria, unless deemed unnecessary by CDFW and NMFS (i.e. if water was being diverted from an off-channel pool). The refueling of pumps will occur away from the wetted area / channel. If pumps are using fuel, they will be outfitted with a spill kit.
- ❖ All dewatering and rewatering activities will be conducted slowly, in order to minimize disturbance to fish and will be carefully coordinated with CDFW.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

- ❖ The USFWS shall be consulted to 1) develop appropriate avoidance and minimization measures, and 2) determine whether an Endangered Species Act Section 7 take permit will be required for the project.
- ❖ Project activities should avoid impacts to seasonal wetlands or other large branchiopod (fairy shrimp, tadpole shrimp) habitats, to the extent possible.
- ❖ High-visibility fencing should be installed in areas where equipment will be working near any large branchiopod (fairy shrimp, tadpole shrimp) habitat that is not to be disturbed.
- ❖ No road grading or road improvements should be allowed in or near large branchiopod habitats that are not to be disturbed.
- ❖ All transporters of potentially hazardous materials (fuel, oil, cement, etc.) will be notified as to the presence of potential large branchiopod habitats and be required to inspect their vehicles prior to entry and exit of these areas, to prevent accidental discharge.

- ❖ All vehicular traffic will be restricted to stay within the designated work boundaries. The work boundaries will be flagged or fenced and identified on construction drawings to limit equipment and personnel to the minimum area necessary to perform the project work and minimize impacts to wetland habitat.

Species of Special Concern, Fully Protected Species and Other Protected Species

A total of sixteen additional species designated by CDFW as Species of Special Concern or Fully Protected could potentially be significantly impacted by the proposed project. In addition, potentially significant impacts could occur to other species protected under the Migratory Bird Treaty Act and several sections of the California Fish and Game Code. Recommended avoidance and minimization measures are provided for these sixteen species below.

Western Pond Turtle

- ❖ Prior to work in aquatic habitats, water bodies shall be surveyed by a qualified biologist to determine if any western pond turtles are present. If any individuals of these species are found, a qualified and permitted biologist shall determine and implement appropriate relocation procedures, in coordination with CDFW. The site shall be checked daily by trained construction workers prior to work commencing, including underneath vehicles and equipment that will be used. If special-status species are found, they will be moved by a qualified and permitted biologist to an area of safety out of harm's way.

Golden Eagle, Long-eared Owl, White-tailed Kite and American Peregrine Falcon

- ❖ The avoidance and minimization measures identified for bald eagle will adequately mitigate for any potential impacts to the golden eagle, long-eared owl, white-tailed kite and American peregrine falcon.

Burrowing Owl

- ❖ Within ten (10) calendar days prior to the onset of potentially disturbing construction activities, a burrowing owl burrow survey of the construction area and adjacent suitable habitat should be conducted by a qualified biologist. If active burrowing owl burrows are found to be present, the onset of potentially disturbing construction activities should be suspended until a qualified biologist, in consultation with CDFW, can establish an appropriate protective buffer area to minimize impacts to the roosting birds. No construction activities should commence within the buffer area until the qualified biologist determines that the burrow is no longer active.

Grasshopper Sparrow, Yellow-breasted Chat, Loggerhead Shrike and Yellow Warbler

- ❖ Any tree removal, vegetation clearing, or the onset of potentially disturbing construction activities should occur between August 1 and March 1 (outside of the nesting season for these species). Note: Also see measure for the bald eagle.
- ❖ If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the nesting season, a nesting survey of the construction area and adjacent suitable habitat should be conducted by a qualified biologist no more than ten days prior to the initiation of the onset of these activities. If active migratory bird nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities should be suspended until a qualified biologist, in consultation with CDFW, can establish an appropriate protective buffer area to minimize impacts to the nesting birds. No construction activities should commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active.

- ❖ Construction activities shall occur continuously (not including weekends) until the end of the nesting season to discourage avian species from initiating nesting. If construction activities cease for more than ten (10) consecutive days (including weekends), all construction activities shall cease until CDFW can be consulted to determine if a subsequent nesting bird survey must be performed.

Other Nesting Raptors

- ❖ The avoidance and minimization measures identified for bald eagles will adequately mitigate for any potential impacts to other nesting raptors. Nests are not to be disturbed or removed as a result of construction activities per CDFW.

Other Nesting Migratory Birds

- ❖ The avoidance and minimization measures identified for grasshopper sparrow, yellow-breasted chat, loggerhead shrike and yellow warbler will adequately mitigate for any potential impacts to other nesting migratory birds. Nests are not to be disturbed or removed as a result of construction activities per CDFW.

Riffle Sculpin

- ❖ The avoidance and minimization measures identified for the Central Valley steelhead and Central Valley spring-run Chinook salmon will adequately mitigate for any potential impacts to the riffle sculpin.

Pacific Lamprey

- ❖ While Pacific lamprey are not expected to occur within the project site, all reasonable measures will be taken to minimize impacts to lamprey, including spending more time at the area as it becomes dewatered (and they are moving out of the mud, chasing the water as it recedes), and possibly electroshocking.

Pallid Bat, Spotted Bat and Western Mastiff Bat

- ❖ Prior to any vegetation removal or disturbance to rock cliffs with cracks, a survey shall be conducted by a qualified biologist to ensure that bats are not roosting in the area to be removed / disturbed.
- ❖ If bats are found to be roosting within the area to be removed / disturbed, these activities shall be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to minimize impacts to this species.

Western Red Bat

- ❖ All vegetation clearing within potential western red bat roosting habitat (woody riparian habitat), shall occur between August 31 and May 1, in order to minimize the likelihood of injuring or killing juvenile bats during the period when they are still unable to fly.

Ringtail

- ❖ Potential ringtail denning habitat exists within the project area in the form of hollow trees and rock talus. Prior to construction, a biologist will inspect the project site for signs of denning.
- ❖ If ringtails are found to be denning, construction activities will be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to protect ringtail.

Natural Communities

The following avoidance and minimization measures are recommended in order to avoid potentially significant impacts of the proposed project on rare natural communities:

Streamside Vegetation

- ❖ Disturbing streamside woody vegetation that is present within the study area associated with Battle Creek and Digger Creek shall be avoided, where possible. For vegetation that cannot be avoided, appropriate avoidance and minimization measures will need to be developed during the environmental permit processes with CDFW, NMFS and other regulatory agencies.
- ❖ All disturbed streamside woody vegetation shall be revegetated following the completion of construction activities.

Wetlands and Other Waters of the U.S. / State

- ❖ Because construction of the site requires that disturbance occur, and / or fill material be placed within wetlands or other waters of the U.S., a Clean Water Act Section 404 permit will likely be required from the Corps. In addition, a Clean Water Act Section 401 Certification will likely be required from the RWQCB.

General Measures

The following avoidance and minimization measures are recommended in order to avoid potentially significant impacts of the proposed project on all special-status species and their associated habitats:

- ❖ A construction worker education program shall be implemented for all personnel onsite that includes an explanation of all special-status animal species with the potential to occur, including identification, avoidance measures, and federal and state laws that protect the species. This shall include, at a minimum, those special-status species analyzed in this document.
- ❖ Appropriate measures will be used to avoid the spread of Aquatic Invasive Species such as Zebra / Quagga mussels, New Zealand mudsnails and Chytrid Fungus to and from the project area according to the current CDFW *Aquatic Invasive Species Disinfection / Decontamination Protocols (Northern Region)* and the current USFWS *Red Bluff Fish and Wildlife Office Anadromous Fish Restoration Program Hazard Analysis Critical Control Point Plan*.

With incorporation of these avoidance and minimization measures, no significant impacts to state and / or federally listed animal species, special-status animal species or rare natural communities are expected to occur as a result of the proposed project. A “may affect, not likely to adversely affect” determination is anticipated for the vernal pool fairy shrimp and vernal pool tadpole shrimp. This will be addressed as part of the consultation with USFWS under Section 7 of the Endangered Species Act.

An unavoidable “may affect, likely to adversely affect” determination is anticipated for Central Valley steelhead and Central Valley spring-run Chinook salmon. A “not likely to adversely modify” determination is anticipated for Central Valley steelhead and Central Valley spring-run Chinook salmon CH. A “not likely to eliminate or significantly diminish or disrupt” determination is anticipated for EFH for “Pacific Salmon”. This will be addressed as part of the consultation with NMFS under the existing Programmatic Biological Opinion issued by NMFS for the National Oceanic and Atmospheric Administration Restoration Center’s Program to Facilitate Implementation of Restoration Projects in the Central Valley of California (NMFS 2018).

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APPENDIX A

CNNDB Search Results

APPENDIX A
CNDDDB Records Search Results
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	USGS 7.5' QUADRANGLE								
		CLGU	INWO	HAGU	TUBU	SHIN	MANT	DALE	INHI	FIBU
FAUNAL SPECIES										
Northern Goshawk	<i>Accipiter gentilis</i>						X			
Tricolored Blackbird	<i>Agelaius tricolor</i>	X								
Southern Long-toed Salamander	<i>Ambystoma macrodactylum sigillatum</i>			X			X			
Blennosperma Vernal Pool Andrenid Bee	<i>Andrena blennospermatis</i>							X		
Pallid Bat	<i>Antrozous pallidus</i>							X		
Burrowing Owl	<i>Athene cunicularia</i>							X		
Western Bumble Bee	<i>Bombus occidentalis</i>			X						
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	X							X	
Western Pond Turtle	<i>Emys marmorata</i>	X				X		X		X
Pacific Lamprey	<i>Entosphenus tridentatus</i>	X								
Spotted Bat	<i>Euderma maculatum</i>									X
American Peregrine Falcon	<i>Falco peregrinus anatum</i>									X
California Wolverine	<i>Gulo gulo</i>						X			
Bald Eagle	<i>Haliaeetus leucocephalus</i>			X			X			
Hoary Bat	<i>Lasiurus cinereus</i>		X					X		
Vernal Pool Tadpole Shrimp	<i>Lepidurus packardi</i>				X			X		
California Linderiella	<i>Linderiella occidentallis</i>				X			X		

APPENDIX A
CNDDDB Records Search Results
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	USGS 7.5' QUADRANGLE								
		CLGU	INWO	HAGU	TUBU	SHIN	MANT	DALE	INHI	FIBU
Klamath Sideband	<i>Monadenia churchi</i>								X	X
Steelhead – Central Valley DPS	<i>Oncorhynchus mykiss irideus</i>	X	X	X	X	X				X
Chinook Salmon - Central Valley Spring-run ESU	<i>Oncorhynchus tshawytscha</i>			X		X	X			X
Osprey	<i>Pandion haliaetus</i>		X	X			X			
Fisher - West Coast DPS	<i>Pekania pennanti</i>			X						
Foothill Yellow-legged Frog	<i>Rana boylei</i>	X			X	X	X	X	X	X
Least Bell's Vireo	<i>Vireo bellii pusillus</i>							X		
NATURAL COMMUNITIES										
Northern Interior Cypress Forest		X			X	X			X	
LEGEND:										
CLGU = Clough Gulch			TUBU = Tuscan Buttes NE			DALE = Dales				
INWO = Inwood			SHIN = Shingletown			INHI = Inskip Hill				
HAGU = Hagaman Gulch			MANT = Manton			FIBU = Finley Butte				

APPENDIX B

Potentially Occurring Special-status Species

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES Common Name (<i>Scientific Name</i>)	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Federal	State		
AMPHIBIANS & REPTILES				
Southern Long-toed Salamander (<i>Ambystoma macrodactylum sigillatum</i>)	---	CSC	Breeds in ponds. Adults are found in uplands under rocks, logs or in burrows.	Not likely to occur. The study area lacks suitable breeding habitat. Not observed during TES site surveys.
Western Pond Turtle (<i>Emys marmorata</i>)	---	CSC	In or near aquatic habitats in slow-moving water. Often associated with basking substrate (e.g. logs, large rocks, etc.) Use adjacent uplands to nest and overwinter.	May occur. May have been observed upstream of Eagle Canyon Dam (P. Herrera pers. comm.) Not observed during TES site surveys.
Foothill Yellow-legged Frog (<i>Rana boylei</i>)	---	CT / CSC	In or near rocky streams in a variety of habitats. Rarely encountered far from permanent water.	Low likelihood of occurrence. Potential habitat is present within the study area. Known to occur in the main stem (J. Souza pers. comm.) and the South Fork (L. Earley pers. comm.) of Battle Creek but not observed during numerous fisheries surveys in the North Fork of Battle Creek (L. Earley pers. comm.). Not observed during construction monitoring at Eagle Canyon Dam (P. Herrera pers. comm.). Not observed during TES site surveys.
California Red-legged Frog (<i>Rana draytonii</i>)	T	CSC	Slow-moving or pooled aquatic habitats with overhanging vegetation.	Not likely to occur. Suitable habitat not present and the study area is well outside of the current known range of the species. Not observed during TES site surveys, however protocol-level surveys were not conducted.
Western Spadefoot (<i>Spea hammondi</i>)	---	CSC	Grasslands, and occasionally, valley-foothill hardwood woodlands with shallow temporary pools for breeding.	May occur. Potential breeding habitat present within, and near the study area in seasonal wetlands. Not observed during TES site surveys, however targeted surveys were not conducted.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
BIRDS				
Northern Goshawk (<i>Accipiter gentilis</i>)	---	CSC	Dense mature conifer and deciduous forest interspersed with open spaces and riparian areas. Nests on north-facing slopes with high tree canopy cover near water.	Not likely to occur. The study area lacks suitable breeding or foraging habitat. Not observed during TES site surveys.
Tricolored Blackbird (<i>Agelaius tricolor</i>)	---	CE / CSC	Breeds colonially in tall emergent vegetation or sometimes in tall, upland herbaceous vegetation in areas large enough to support approximately 50 pairs. Forages in grasslands and agricultural lands.	May occur. Not likely to nest within the study area, due to a lack of suitable nesting habitat of sufficient size. May forage within the study area if nesting in the general area. Not observed during TES site surveys.
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	---	CSC	Uses short- to mid-height moderately open grasslands with scattered shrubs and tall forbs. Ground nesting in depressions near the base of overhanging grass or forb clumps.	May occur. Potential nesting and foraging habitat present in grasslands within and near the study area. Not observed during TES site surveys.
Golden Eagle (<i>Aquila chrysaetos</i>)	---	FP	Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Generally inhabit more open country.	May occur. Observed during prior surveys upstream of the study area (Jones and Stokes 2001). Potential nesting habitat is present within the study area, however no nests were observed during surveys. May forage within the study area if nesting in the general area or during the winter. Not observed during TES site surveys.
Short-eared Owl (<i>Asio flammeus</i>)	---	CSC	Uses open areas with few trees including grasslands, prairies, dunes, meadows, irrigated areas and emergent wetlands. Nests in open country supporting rodents and herbaceous cover sufficient to conceal ground nests.	Not likely to occur. The study area is outside of the current known range of the species. Not observed during TES site surveys.
Long-eared Owl (<i>Asio otus</i>)	---	CSC	Riparian, live oak or conifer thickets with small, densely canopied trees used for roosting and nesting. Generally, forages in open areas.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
Burrowing Owl (<i>Athene cunicularia</i>)	---	CSC	Uses open grasslands, deserts or scrublands. Nests in small mammal burrows, pipes, culverts or nesting boxes. Species is gregarious.	May occur. Not likely to nest due to the fact that the study area is outside of the known breeding range for the species. May occur within the study area during the winter. No potential burrows observed during TES site surveys.
Swainson's Hawk (<i>Buteo swainsoni</i>)	---	T	Open desert, grassland or cropland containing scattered large trees, small groves or riparian woodlands. Nests in scattered trees, small groves, sparsely vegetated flatlands or in riparian woodlands.	Not likely to occur. The study area is outside the known range for the species. Not observed during TES site surveys.
Vaux's Swift (<i>Chaetura vauxi</i>)	---	CSC	Nests in large hollow trees and snags in redwood, Douglas fir and other conifer habitats. Often nests in large colonies. Forages widely but prefers rivers and lakes.	Known to occur. Observed during TES site surveys. Not likely to nest due to the fact that the study area is well outside of the known breeding range for the species and due to a lack of suitable nesting habitat. May forage within the study area during spring and fall migration.
Northern Harrier (<i>Circus cyaneus</i>)	---	CSC	Nests and forages in a variety of open habitats such as grasslands, rangelands, agricultural lands, meadows and emergent wetlands that provide adequate vegetative cover, prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. Nests on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas.	May occur. Not likely to nest due to the fact that the study area is outside of the known breeding range for the species. May forage within the study area during the winter. Not observed during TES site surveys.
Western Yellow-billed Cuckoo (<i>Coccyzus americanus occidentalis</i>)	T	E	Dense deciduous riparian cover, especially willow with low-level understory foliage, near slow-moving water with high humidity, utilizes riparian forests and adjacent orchards for foraging. Requires large habitat patch sizes, greater than or equal to seven acres in size for nesting.	Not likely to occur. The study area is well outside of the current known range of the species. Not observed during TES site surveys.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
Black Swift (<i>Cypseloides niger</i>)	---	CSC	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above surf. Forages widely.	Known to occur. Observed during TES site surveys. Not likely to nest due to the fact that the study area is well outside of the known breeding range for the species and due to a lack of suitable nesting habitat. May forage within the study area during spring and fall migration.
White-tailed Kite (<i>Elanus leucurus</i>)	---	FP	Nests in dense tree stands near open foraging areas. Forages in open grassland and agricultural areas.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.
Little Willow Flycatcher (<i>Empidonax traillii brewsteri</i>)	---	E	Nests in upper elevation riparian and wet meadow habitats.	Known to occur. Observed during previous site surveys (Jones and Stokes 2001). Not likely to nest due to the fact that the study area is outside of the known breeding range. May forage within the study area during spring and fall migration. Not observed by TES during site surveys.
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	D	D / FP	Riparian areas, coastal and inland wetlands are important habitats. Breeds mostly in woodland, forest and coastal habitats on cliff ledges, occasionally in snag cavities and in other used raptor nests.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	D	E / FP	Nests in large trees with open branchwork, usually near permanent water including rivers, streams and lakes / reservoirs. Forages over large bodies of water with abundant fish.	Known to occur. Observed during construction monitoring at Eagle Canyon Dam (P. Herrera pers. comm.). Low likelihood of nesting within the study area due to the lack of existing nests. May forage within the study area if nesting in the general area. Not observed during TES site surveys.
Yellow-breasted Chat (<i>Icteria virens</i>)	---	CSC	Nests in dense shrubs along streams and rivers.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	---	CSC	Prefers open habitats with scattered trees, shrubs, posts, fences and other perches. Found primarily in valley-foothill and desert habitats.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	---	CSC	Rests in day and roosts at night along edge of water, on beaches, sandbars, or old driftwood, but never in trees. Nests at large freshwater and saltwater lakes, usually on small islands or remote dikes.	Known to occur. Observed flying at high elevations over the project site during TES site surveys. Not likely to nest due to the fact that the study area is well outside of the known breeding range for the species and due to a lack of suitable nesting habitat. Marginal foraging habitat present within the study area.
Bank Swallow (<i>Riparia riparia</i>)	---	T	Nests in excavated burrows in fine-textured vertical stream banks.	May occur. Not likely to nest within the study area due to a lack of suitable nesting habitat. May forage within the study area if nesting in the general area. Not observed during TES site surveys.
Yellow Warbler (<i>Setophaga petechia</i>)	---	CSC	Nests in riparian habitats, montane chaparral and open conifer forests with substantial amounts of brush.	May occur. Potential nesting and foraging habitat present within the study area. Not observed during TES site surveys.
California Spotted Owl (<i>Strix occidentalis occidentalis</i>)	---	CSC	Occurs in mature second growth and late-successional forest, uses dense multi-layered canopy cover for nest and roost selection	Not likely to occur. The study area is outside of known range of the species. Not observed during prior northern spotted owl protocol-level surveys (Jones and Stokes 2002). Not observed during TES site surveys however protocol-level surveys were not conducted.
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	E	E	Nests in understory vegetation in dense willow-dominated riparian habitats with well-developed understory. High and low shrub layers are used for foraging. Usually nests in willows but may also use wild rose and coast live oak.	Not likely to occur. The study area is well outside the current known range of the species. Not observed during TES site surveys.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (Scientific Name)	Federal		
FISH				
Riffle Sculpin (<i>Cottus gulosus</i>)	---	CSC	Found exclusively in permanent coldwater streams where riffles and rocky substrates predominate. Prefer shallow fast-flowing waters.	Known to occur. Adults and juveniles are known to occur within the study area (R. Bottaro pers. comm.). Unknown sculpin observed during TES site surveys, likely riffle sculpin, however intensive fish surveys were not conducted.
Pacific Lamprey (<i>Entosphenus tridentatus</i>)	---	CSC	Occupies habitat downstream of impassable dams in Sacramento River tributaries primarily on the valley floor and foothills. Adults spawn in gravelly riffles in river tributary streams. Ammocoetes (young) use soft stream sediments.	Not likely to occur. Not observed during numerous fisheries surveys within the study area reach of North Fork of Battle Creek (R. Bottaro pers. comm.). Not observed during TES site surveys, however intensive fish surveys were not conducted.
Delta Smelt (<i>Hypomesus transpacificus</i>)	T	E	Uses estuaries and the freshwater edge of the mixing zone at the saltwater-freshwater interface.	Not likely to occur. The study area is well outside the current known range of the species. Not observed during TES site surveys, however intensive fish surveys were not conducted.
River Lamprey (<i>Lampetra ayresi</i>)	---	CSC	Adults spawn in gravelly riffles in river tributary streams. Ammocoetes (young) use silty backwaters and eddies.	Not likely to occur. The study area is outside of the current range for this species. Known to occur in the Sacramento River but is rarely observed in tributaries, and only near the river (R. Bottaro pers. comm.). Not observed during site surveys, however intensive fish surveys were not conducted.
Hardhead (<i>Mylopharodon conocephalus</i>)	---	CSC	Low to mid-elevation streams up to 4,900 feet in elevation in the Sacramento drainage. Also present in the San Joaquin River and Russian River. Clear, deep pools with sand, gravel, and boulder substrate. Slow water velocity. Not found where exotic centrarchids predominate.	Not likely to occur. Not detected in the North Fork Battle Creek during USFWS snorkeling and electrofishing surveys (R. Bottaro pers. comm.) Not observed during TES site surveys, however intensive fish surveys were not conducted.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
Central Valley Steelhead (<i>Oncorhynchus mykiss</i>)	T	---	Spawns in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	Known to occur. Rainbow trout / steelhead observed during USFWS snorkeling and electrofishing surveys (Whitton et al. 2010). Unknown juvenile salmonid observed during TES site surveys, likely rainbow trout / steelhead, however intensive fish surveys were not conducted.
Central Valley Fall- / Late Fall-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	SC	CSC	Spawns in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	Not likely to occur. Not observed during numerous fisheries surveys within the study area reach of North Fork of Battle Creek (R. Bottaro pers. comm.). Not observed during TES site surveys, however intensive fish surveys were not conducted.
Central Valley Spring-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	T	T	Spawns in the late summer / early fall in cool, clear water with clean spawning gravel in the Sacramento River and some tributaries.	Known to occur in the vicinity of the study area. Known to occur approximately 0.25 miles downstream of the study area (L. Earley pers. comm.). Not observed during TES site surveys, however intensive fish surveys were not conducted.
Sacramento River Winter-run Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	E	E	Spawns in the summer in cool, clear water with clean spawning gravel, almost exclusively in the main-stem of the Sacramento River.	Not likely to occur within the study area. May occur in the future downstream of the study area due to a reintroduction program in Battle Creek (L. Earley pers. comm.). Not observed during TES site surveys, however intensive fish surveys were not conducted.
INVERTEBRATES				
Conservancy Fairy Shrimp (<i>Branchinecta conservatio</i>)	E	---	Vernal pool and vernal pool-like habitats. Tends to be associated with large, turbid vernal pool and vernal playas.	Not likely to occur. The study area is well outside of the known range of the species. Not observed during TES site surveys, however protocol-level surveys were not conducted.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
Vernal Pool Fairy Shrimp (<i>Branchinecta lynchi</i>)	T	---	Vernal pool and vernal pool-like habitats.	May occur. Potential habitat is present in seasonal wetlands adjacent to, and within the south staging areas and access haul road. Not observed during TES site surveys, however protocol-level surveys were not conducted.
Valley Elderberry Longhorn Beetle (<i>Desmocerus californicus dimorphus</i>)	T	---	Elderberry shrubs with stems 1 inch or greater in diameter.	Not likely to occur. The study area is outside of the current known range of the species. Not observed during TES site surveys, however protocol-level surveys were not conducted.
Vernal Pool Tadpole Shrimp (<i>Lepidurus packardi</i>)	E	---	Vernal pool and ephemeral wetland habitats.	May occur. Potential habitat is present in seasonal wetlands adjacent to, and within the south staging areas and access haul road. Not observed during TES site surveys, however protocol-level surveys were not conducted.
MAMMALS				
Pallid Bat (<i>Antrozous pallidus</i>)	---	CSC	Uses a wide variety of habitats including grassland, shrubland, woodland and forest. Roosts in caves, mines, crevices, hollow trees and buildings.	May occur. Roosting and foraging habitat is present within the study area. Not detected during TES acoustical site surveys.
Ringtail (<i>Bassariscus astutus</i>)	---	FP	Riparian habitats and forest and shrub habitats near rocky areas or riparian areas from low to middle elevations.	May occur. Potential denning and foraging habitat present within the study area. Not observed during TES site surveys.
Gray Wolf (<i>Canis lupus</i>)	E	E	Uses a variety of habitats including temperate forests, mountains, tundra, taiga and grasslands.	Low likelihood of occurrence. Potential denning and foraging habitat present within the study area, however there is an extremely low likelihood of occurrence due to the very low density of wolves in California and the extremely large territory wolves occupy. Not observed during TES site surveys.

APPENDIX B
Potentially-occurring Special-status Species
North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
	Common Name (<i>Scientific Name</i>)	Federal		
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	---	CSC	Roosts in caves, mines, tunnels, buildings and in large hollow trees. Very sensitive to human disturbance; however, in some instances it can become habituated to reoccurring and predictable human activity.	May occur. Not likely to roost within the study area due to a lack of preferred roosting habitat. May forage within the study area if roosting in the general vicinity. Not detected during TES acoustical site surveys, however this species is difficult to detect acoustically.
Spotted Bat (<i>Euderma maculatum</i>)	---	CSC	Prefers to roost in rock crevices on cliffs but occasionally roosts in caves and buildings. Forages over water in a variety of habitats.	May occur. Potential roosting and foraging habitat is present within the study area. Not detected during TES acoustical site surveys.
Western Mastiff Bat (<i>Eumops perotis californicus</i>)	---	CSC	Roosts in crevices of cliff faces, high buildings, trees and tunnels. Occurs in open arid to semi-arid habitats with abundant roost sites.	May occur. Potential roosting and foraging habitat is present within the study area. Not detected during TES acoustical site surveys.
California Wolverine (<i>Gulo gulo</i>)	---	T / FP	Found in mixed conifer, red fir, and lodgepole habitats, and probably use subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats montane riparian habitats. Hunt in more open areas, using dense cover for resting and reproduction.	Not likely to occur. The study area lacks suitable habitat and is outside the elevation range of the species. Not detected during TES site surveys.
Western Red Bat (<i>Lasiurus blossevillii</i>)	---	CSC	Roosts primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.	May occur. Potential roosting and foraging habitat is present within the study area. Not detected during TES acoustical site surveys.
Northern California Fisher (<i>Pekania pennanti</i>)	---	CSC	Large areas of mature, dense coniferous forest and riparian forest stands with snags and high percent canopy cover.	Low to moderate likelihood of occurrence. The study area lacks preferred confer habitat, however animals may migrate downslope from coniferous habitat and occupy the study area, particularly during winter months.

LEGEND:

E = Endangered
T = Threatened

CE = Candidate for listing as Endangered

CT = Candidate for listing as Threatened

PE = Proposed for listing as Endangered

PT = Proposed for listing as Threatened

D = Delisted

PD = Proposed for Delisting

CSC = California Species of Special Concern

FP = California Fully Protected

SC = NMFS Species of Concern

APPENDIX C

Faunal Species Observed Within or Near the Study Area

APPENDIX C

Faunal Species Observed Within or Near the Project Site North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
AMPHIBIANS & REPTILES			
Pacific Chorus Frog	<i>Pseudacris regilla</i>		
Rough-skinned Newt	<i>Taricha granulosa</i>		
Southern Alligator Lizard	<i>Elgaria multicarinata</i>		
Western Fence Lizard	<i>Sceloporus occidentalis</i>		
BIRDS			
Acorn Woodpecker	<i>Melanerpes formicivorus</i>		
American Crow	<i>Corvus brachyrhynchos</i>		
American Dipper	<i>Cinclus mexicanus</i>		
American Kestrel	<i>Falco sparverius</i>		
American White Pelican	<i>Pelecanus erythrorhynchos</i>		CSC
Anna's Hummingbird	<i>Calypte anna</i>		
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>		
Belted Kingfisher	<i>Ceryle alcyon</i>		
Bewick's Wren	<i>Thryomanes bewickii</i>		
Black Swift	<i>Cypseloides niger</i>		CSC
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>		
Blue-gray Gnatcatcher	<i>Poliptila caerulea</i>		
Bushtit	<i>Psaltriparus minimus</i>		
California Scrub-Jay	<i>Aphelocoma californica</i>		
California Quail	<i>Callipepla californica</i>		
California Towhee	<i>Pipilo crissalis</i>		
Canyon Wren	<i>Catherpes mexicanus</i>		
Common Raven	<i>Corvus corax</i>		
Downy Woodpecker	<i>Picoides pubescens</i>		
European Starling*	<i>Sturnus vulgaris</i>		
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>		
Great Blue Heron	<i>Ardea herodias</i>		
Great Egret	<i>Casmerodius albus</i>		
House Wren	<i>Troglodytes aedon</i>		
Lark Sparrow	<i>Chondestes grammacus</i>		
Lesser Goldfinch	<i>Spinus psaltria</i>		
Lewis's Woodpecker	<i>Melanerpes lewis</i>		
Mallard	<i>Anas platyrhynchos</i>		
Mourning Dove	<i>Zenaida macroura</i>		
Northern Flicker	<i>Colaptes auratus</i>		
Northern Pigmy-Owl	<i>Glaucidium gnoma</i>		
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		
Nuttall's Woodpecker	<i>Picoides nuttallii</i>		
Oak Titmouse	<i>Parus inornatus</i>		
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>		
Phainopepla	<i>Phainopepla nitens</i>		
Red-tailed Hawk	<i>Buteo jamaicensis</i>		
Spotted Towhee	<i>Pipilo maculatus</i>		

APPENDIX C

Faunal Species Observed Within or Near the Project Site North Fork Battle Creek Barrier Modification and Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
Turkey Vulture	<i>Cathartes aura</i>		
Vaux's Swift	<i>Chaetura vauxi</i>		CSC
Western Bluebird	<i>Sialia mexicana</i>		
Western Meadowlark	<i>Sturnella neglecta</i>		
Western Tanager	<i>Piranga ludoviciana</i>		
White-breasted Nuthatch	<i>Sitta carolinensis</i>		
Wild Turkey*	<i>Meleagris gallopavo</i>		
Wrentit	<i>Chamaea fasciata</i>		
FISH			
unknown Salmonid (juvenile)	<i>Oncorhynchus sp.</i>		
unknown Sculpin	<i>Cottus sp.</i>		
MAMMALS			
Big Brown Bat	<i>Eptesicus fuscus</i>		
Black Bear (scat)	<i>Ursus americanus</i>		
Black-tailed Jackrabbit	<i>Lepus californicus</i>		
Bobcat	<i>Lynx rufus</i>		
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>		
California Bat	<i>Myotis californicus</i>		
California Ground Squirrel	<i>Spermophilus beecheyi</i>		
Canyon Bat	<i>Parastrellus hesperus</i>		
Little Brown Bat	<i>Myotis lucifugus</i>		
Mule Deer (Black-tailed Deer)	<i>Odocoileus hemionus</i>		
Silver-haired Bat	<i>Lasionycteris noctivagans</i>		
Striped Skunk	<i>Mephitis mephitis</i>		
Western Gray Squirrel	<i>Sciurus griseus</i>		
Yuma Bat	<i>Myotis yumanensis</i>		
LEGEND:			
E = Endangered		CSC = California Species of Special Concern	
T = Threatened		FP = California Fully Protected	
CE = Candidate for listing as Endangered		SC = NMFS Species of Concern	
CT = Candidate for listing as Threatened		D = Delisted	
PE = Proposed for listing as Endangered		PD = Proposed for Delisting	
PT = Proposed for listing as Threatened		* = Non-native Species	

APPENDIX D

Site Photos



Photo 1. View of uplands near Eagle Canyon illustrating an example of Mixed Chaparral habitat in the foreground, with Blue Oak / Foothill Pine habitat in the background, looking north. Photo date: August 22, 2018.



Photo 2. View of uplands near Eagle Canyon illustrating an example of Annual Grassland habitat in the foreground and Blue Oak / Foothill Pine habitat in the background, looking north. Photo date: August 22, 2018.



Photo 3. View of Barren habitat, looking southeast. Photo date: August 22, 2018.

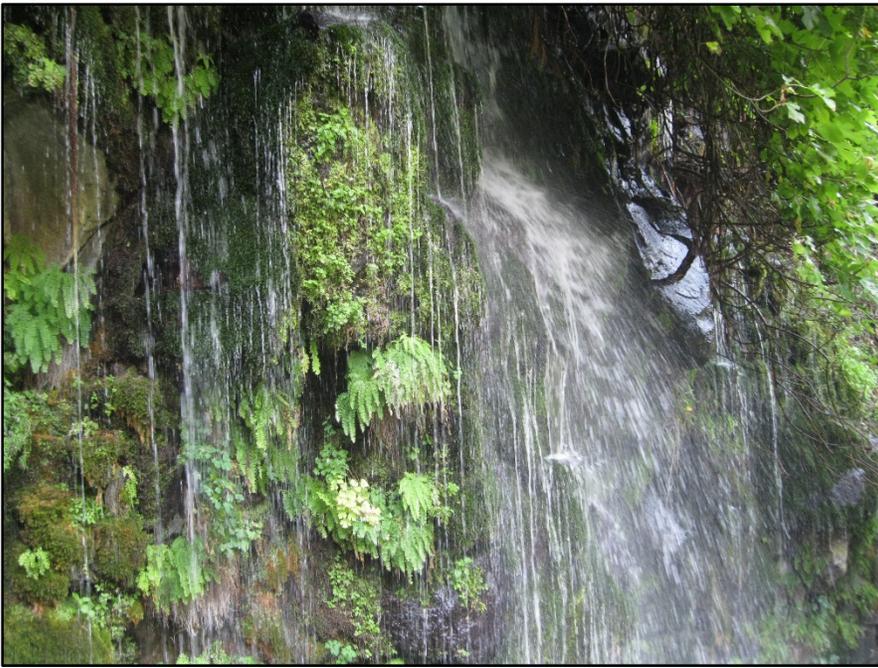


Photo 4. View of the Groundwater Seep / Montane Hardwood Complex habitat, looking southwest. Photo date: June 29, 2018.



Photo 5. View of Riverine habitat (North Fork Battle Creek) and Montane Hardwood habitat, looking northeast, at the lower barrier. Photo date: August 22, 2018.



Photo 6. View of Montane Hardwood habitat, looking south. Photo date: May 30, 2018.