

RECLAMATION

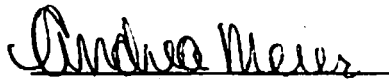
Managing Water in the West

Finding of No Significant Impact

Upper San Joaquin River Basin Storage Investigation Geotechnical Field Exploration at River Mile 274

FONSI 14-19-MP

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Date: 8/1/2014

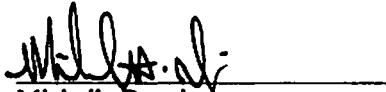
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U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region

August 2014

Background

In accordance with Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA), as amended, the Bureau of Reclamation (Reclamation) has prepared an Environmental Assessment (EA) for geotechnical work, including rock core drilling, at the left abutment, right abutment, and diversion tunnel areas of the proposed Temperance Flat Dam. The information collected will be used to determine if geologic conditions at RM 274 are suitable to construct a dam and the analysis included in the final feasibility report being prepared for the Upper San Joaquin River Basin Storage Investigation (USJRBSI). The EA is dated August 2014 and is attached and incorporated by reference.

Alternatives Including Proposed Action

No Action Alternative

Under the No Action Alternative, Reclamation would not proceed with any of the geotechnical activities at the proposed Temperance Flat Dam site at RM 274 and diversion tunnel. As a result, the lack of sufficient information about the technical feasibility of the proposed dam site, dam design, and dam cost estimate would increase the potential for changing the dam location and design, and increasing the cost of the dam.

Proposed Action

Work will occur from August through December 2014. A maximum of six drill holes on the left and right abutment of the proposed Temperance Flat dam site and one drill hole at the proposed diversion tunnel are proposed to characterize the subsurface geologic conditions and to collect rock core samples. Due to the inaccessibility of these drill hole locations by vehicle, a helicopter will be required to airlift the drill rig and equipment in and out of each site. Daily access to the drill sites near the edge of the lake would be via boat from Millerton Reservoir South Shore State Recreation Area (SRA) to a footpath leading to the individual drill sites. The boat would be docked each night at the SRA and used to shuttle personnel and hand tools. All-terrain vehicles (ATVs) will be used to access two drill hole locations on the upper left abutment by utilizing an existing State Parks maintenance and fire road. Access to the diversion tunnel drill site will be from Sky Harbor Road.

The information gathered will be analyzed and displayed in the final feasibility report being prepared for the USJRBSI.

Findings

In accordance with NEPA, the Mid-Pacific Regional Office of Reclamation has found that the approval of the proposed action is not a major federal action that will significantly affect the quality of the human environment. Consequently, an environmental impact statement is not required.

The following are the reasons why the impacts from the proposed action are not significant:

- There proposed action will not affect historic properties.
- The proposed action will not affect Indian Sacred Sites.
- There are no Indian Trust Assets in or near the proposed work area.
- There are no low-income or minority communities in or near the proposed work area. The proposed activity will also not have significant, adverse effects on Indian Tribes as their interests are often interrelated to impacts on the natural or physical environment.
- The proposed action will not affect water quality.
- The proposed action will generate less than the *de minimis* levels of criteria air pollutants, set by the San Joaquin Valley Unified Air Pollution Control District.
- The proposed action would occur in the late summer and fall when the bald eagle nest on the left abutment is inactive and a majority of the migratory birds have left their nests. Training will be provided to the drill crew and other field staff on bald eagles and golden eagles, including awareness training on helicopter conflicts with raptors.
- The proposed action is not likely to adversely affect valley elderberry longhorn beetle and California tiger salamander. Reclamation received a memorandum concurring with our determination from the U.S. Fish and Wildlife Service and will implement the avoidance and minimization measures provided.
- The proposed action will have short-term and minor adverse effects to recreation in the Millerton Lake State Recreation Area. Part of the San Joaquin River Trail will be closed temporarily to allow personnel and equipment to be brought in to the drill sites at the left abutment. The trail will reopen once the work is complete.
- Helicopter flights may generate adverse noise and distracting visuals for residents living around the lake and recreationists. This effect will be short-term and minor.
- Lake levels are forecasted to decline dramatically at Millerton Lake this year due to the drought. Reclamation's forecasting indicates that there will be enough distance between the boat and barge used for the proposed action and any recreational traffic or law enforcement vessels to pass in the river gorge.
- The proposed action will not have significant cumulative effects on the human environment with other actions, past, present, or future actions.

RECLAMATION

Managing Water in the West

Environmental Assessment

Upper San Joaquin River Basin Storage Investigation Geotechnical Field Exploration at River Mile 274

Fresno County and Madera County, California



**U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Regional Office
Sacramento, CA**

August 2014

Mission Statements

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

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

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Acronyms and Abbreviations

AF	acre-feet
APE	area of potential effect
BGEPA	Bald and Golden Eagle Protection Act
CAAQS	California Ambient Air Quality Standards
CRLF	California red-legged frog (<i>Rana draytonii</i>)
CTS	California tiger salamander (<i>Ambystoma californiense</i>)
DFW	California Department of Fish & Wildlife
EA	Environmental Assessment
Leopard lizard	Blunt-nosed leopard lizard (<i>Gambelia sila</i>)
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NO _x	nitrogen oxides
O ₃	ozone
Owl's clover	Fleshy owl's clover (<i>Castilleja campestris</i> ssp. <i>succulenta</i>)
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
ROG	reactive organic gases
SHPO	State Historic Preservation Officer
SJRRP	San Joaquin River Restoration Program
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
USFWS	U.S. Fish and Wildlife Service
USJRBSI	Upper San Joaquin River Basin Storage Investigation
VELB	valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)
VOC	volatile organic compounds

Section 1 Introduction

This Environmental Assessment (EA) has been prepared to examine the potential direct, indirect, and cumulative impacts to the affected environment from the Upper San Joaquin River Basin Storage Investigation (USJRBSI) Geotechnical Field Exploration activities (activity). The project area is located along the San Joaquin River above Friant Dam, in Sections 25, 26, and 35 of Township 10 South, Range 21 East, MDB&M, in Fresno and Madera Counties (see Figure 1).

1.1 Purpose of the project

The purpose of the geological field exploration is to collect feasibility-level data for the Upper San Joaquin River Basin Storage Investigation. Field exploration efforts will be focused at the proposed Temperance Flat Dam alignment at RM 274 and along the diversion tunnel alignment. The information collected will be used to determine if geologic conditions at RM 274 are suitable to construct Temperance Flat Dam.

Section 2 Proposed Action and Alternatives

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not proceed with any of the geotechnical activities at the proposed Temperance Flat Dam site at RM 274 and diversion tunnel.

2.2 Proposed Action

Drilling will occur at three different locations associated with the siting of Temperance Flat Dam at RM 274, including the left abutment, right abutment, and diversion tunnel for the proposed dam. A maximum of six drill holes on the left and right abutment of the proposed Temperance Flat dam site are proposed to characterize the subsurface geologic conditions and to collect rock core samples. Due to the inaccessibility of these drill hole locations by vehicle, a helicopter will be required to airlift the drill rig and equipment in and out of each site. Daily access to the drill sites would be via boat from Millerton Reservoir South Shore State Recreation Area (SRA) to a footpath leading to the individual drill sites. The boat would be docked each night at the SRA and used to shuttle personnel and hand tools. All-terrain vehicles (ATVs) will be used to access two drill hole locations on the upper left abutment by utilizing an existing State Parks maintenance and fire road.

Drilling equipment would be hauled by truck to a flat, paved, open area near the left abutment of Friant Dam to be used as a staging area for the helicopter airlift. From the staging area, drilling equipment would be airlifted to the drill sites by helicopter.

A maximum of eight helicopter airlifts will be required to move the drill rig and equipment to and from each drill hole location. Depending on the lifting capacity of the helicopter, each airlift will consist of several (15 to 20) separate flights to transport equipment to each drill hole location. Each of the eight helicopter airlifts, which are comprised of multiple flights, will require one day apiece to complete, for a total of eight days of helicopter activity on the project. The helicopter airlift does not require that the helicopter land. A 100 to 150-foot-long static line with lifting hooks are used to “pick and drop” the individual loads from the staging area to the drilling sites. Upon completion of drill holes the equipment would be airlifted from the final drill site back to the staging area and hauled out by truck. All drill holes will be completed as groundwater observation wells with locking standpipes or flush-mounted surface vaults.

A single drill hole (TH-14-1) will be completed at the proposed diversion tunnel outlet site. Access to the drill hole is via Sky Harbor Road from Friant Road. Sky Harbor Road is a two-lane paved roadway. The drill hole will be completed using a diamond core rock drilling method. Reclamation personnel will conduct geophysical logging which involves the deployment of probes that measure various physical properties of the borehole and collects continuous or point data that can be graphically displayed in a geophysical log. Information will be collected on rock lithology and fractures, permeability and porosity, and water quality. Following geophysical logging, the drill hole will be completed as a groundwater observation well with a transducer.

Reclamation personnel will also perform remote imaging of the reservoir bottom along the proposed main dam and cofferdam alignments to identify depth and thickness of reservoir sediments and estimate the average size of boulder-size material and topographic variation.

Helicopter staging will occur in a paved area near the left abutment of Friant Dam in Reclamation’s management zone. Reclamation will launch their boat from the low water level boat launch facility at a dock provided by California State Parks at Millerton Lake.

2.2.1 Schedule

Drilling will be conducted between August 2014 and December 2014.

Figure 1. Vicinity map

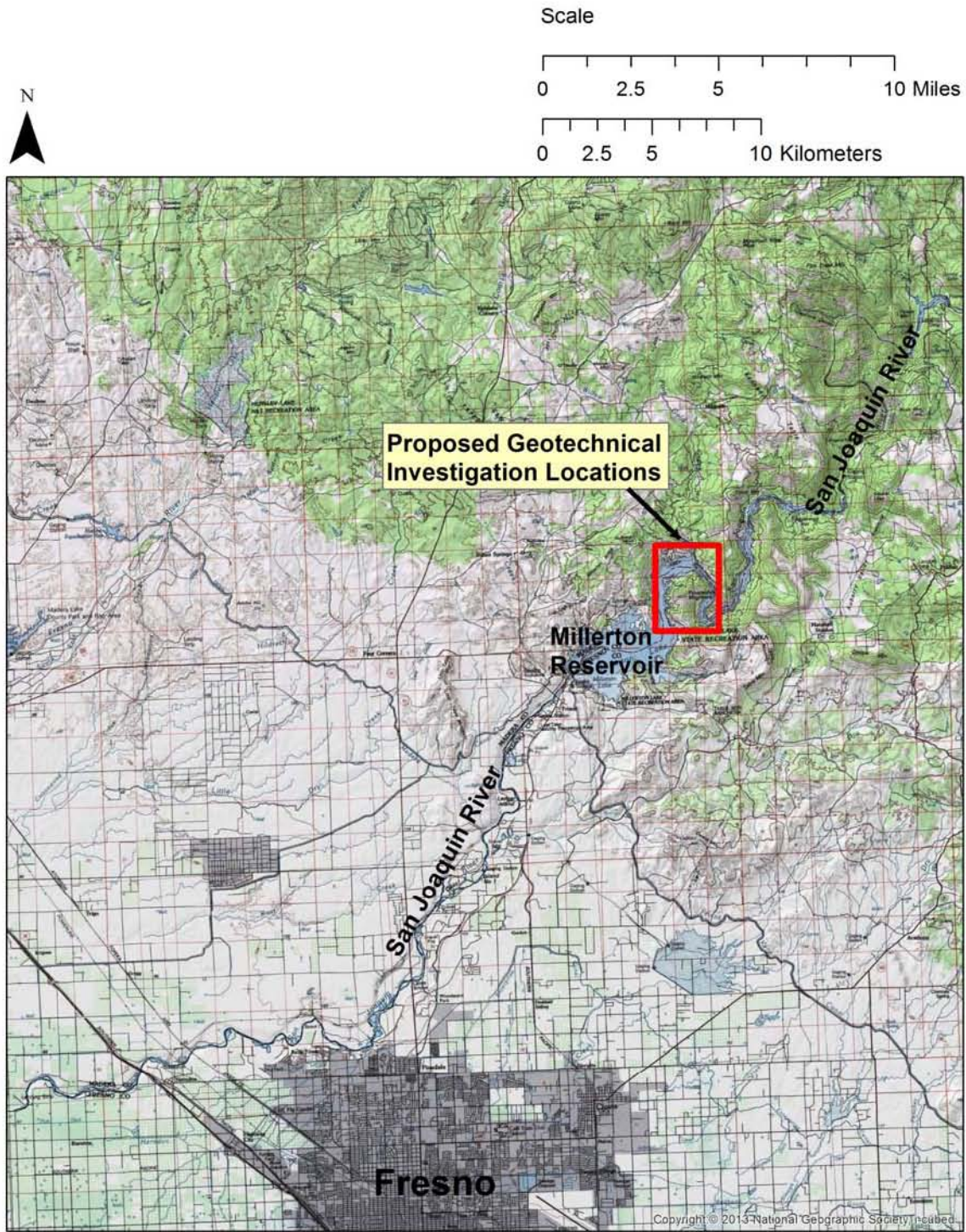
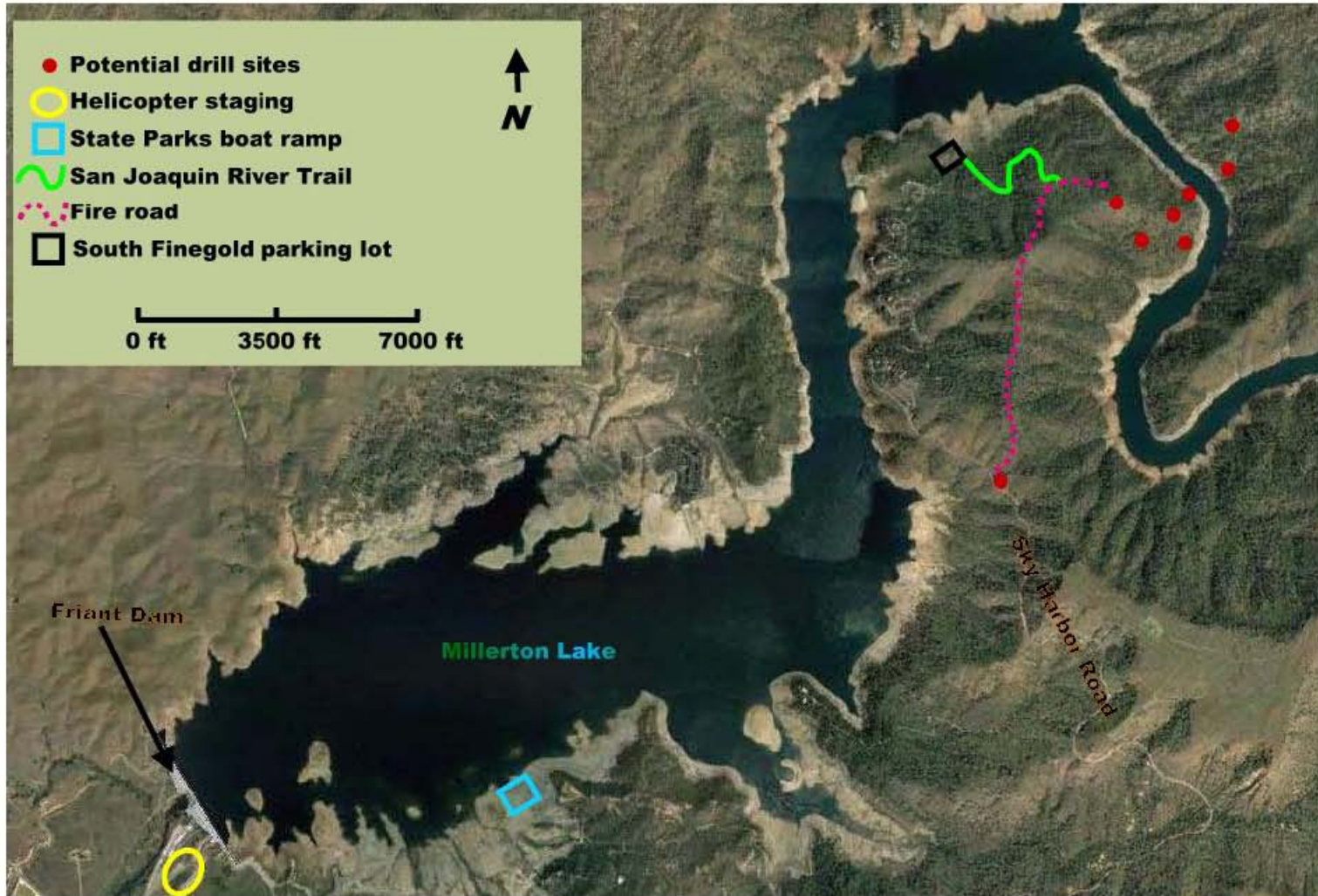


Figure 2. Access routes, staging and drill hole locations



2.2.2 Environmental commitments

The following environmental commitments will be implemented as a part of the Proposed Action in order to avoid and minimize adverse effects:

- 1) A USFWS-approved biologist will be available to monitor all drilling activities and the proposed work to ensure compliance with avoidance and minimization measures of the proposed project. The biological monitor will assist all work crew and drilling personnel in compliance with all conservation measures and guidelines. The biological monitor will be on-site whenever drilling locations are changed or initiated, and whenever a groundbreaking activity takes place. The biological monitor will be responsible for supervising the implementation and maintenance of the avoidance and minimization measures as described, and is expected to make periodic inspections to verify the compliance with, and implementation of those measures. The biological monitor will be available on-call when not on-site whenever work is being done, and will have the authority to stop work if a federally-listed species is encountered within the active work area.
- 2) Biological resources awareness training will be provided in-person by a natural resources specialist at the field briefing for the geotechnical crew that will cover identification of elderberry shrubs (including during flower, fruiting, and dormant periods), VELB, CTS, golden eagle and bald eagle. The biological monitor will conduct environmental awareness training for all individuals that will be working on the proposed project before any work begins. The education program will briefly cover threatened and endangered species and any of their habitats that may be encountered during the proposed project. Awareness training will cover all restrictions and guidelines that must be followed by crews to avoid or minimize impacts to threatened and endangered species and their habitat. Upon completion of training, crews will sign a form stating that they attended the training and understand all the field personnel conservation and protection measures.
- 3) All equipment left on-site overnight will be inspected before use to ensure no federally-listed species are present. If a listed species is found, the biological monitor and the USFWS will be notified and the individual animal will be allowed to disperse on its own accord.
- 4) Drilling and survey activities will occur between August 12, 2014, and December 15, 2014, to avoid disturbance of nesting bald eagles.

- 5) Orange construction fencing will be installed between project activities, including vehicle access, and elderberry shrubs that will be encroached within 20 feet of their drip-line. All shrubs within 100 feet of project activities will be flagged for avoidance.
- 6) Vehicles, including pickups and all-terrain vehicles (ATVs) will be limited to 10 miles per hour on unpaved roads and when performing overland travel. All off-road vehicle use will be kept to a minimum.
- 7) Drilling activities will be limited to between sunrise and sunset only.
- 8) Drilling activities will not occur within 24 hours of a rain event and following a site inspection by the biological monitor.
- 9) All trash will be stored in an enclosed container removed from the work site daily.
- 10) Drill holes will be covered the same day as drilling.
- 11) No domestic pets will be allowed on the work site.
- 12) If a federally-listed species is encountered on the work site, all drilling activities will immediately cease and the USFWS will be consulted.
- 13) Work at the left abutment within 660 feet radius of an identified bald eagle nest will be conducted between September 1 and December 31 to avoid harm and harassment of the birds.
- 14) A Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared prior to the proposed work and implemented if fuel, oil, or other fluids are spilled. The drill rigs used would be thoroughly serviced prior to starting drilling operations. Any oil or hydraulic fluid leaks would be repaired. Absorbent pads and oil booms will be available at the drilling sites in case of an oil or hydraulic fluid leak as a part of the SPCCP.
- 15) A Fire Prevention and Suppression Plan will be prepared prior to the proposed work and implemented in the instance that the proposed drilling work sparks a fire. Onsite firefighting equipment will include hand tools (axes, fire rakes, and shovels), 5 gallon water pump backpacks, high pressure water pump and hose (powered by drill), 5 pound fire extinguishers, a 10 pound fire extinguisher, and approximately 100 gallons of water onsite.

Section 3 Affected Environment

The area that would be affected by the proposed action includes parts of Millerton Lake State Recreation Area and the Reclamation management zone below Friant Dam. The low-water boat ramp at the Millerton Reservoir South Shore State Recreation Area (SRA), exposed due to drought conditions, will be used as the boat launch point for the duration of the work. The boat ramp and parking area are paved.

Marine access will be along Millerton Reservoir from the boat launch facility to RM 274 where the boat will be beached and anchored so that the drill crew personnel and equipment can be unloaded. There is steep topography, deep water, and loose rocks in the river canyon at RM 274.

The right abutment drill sites are located on a steep slope above the San Joaquin River gorge with shallow soils of decomposed granite and organic material with granite outcroppings. The right abutment is in an area characterized as live oak woodland. Vegetation along the right abutment includes gray pines, live oaks, elderberries, buckeye (*Aesculus californica*), poison oak (*Toxicodendron diversilobum*), various native herbs such as Coulter's jewelflower (*Caulanthus coulteri*), lacepod (*Thysanocarpus curvipes*), woodland star (*Lithophragma bolanderi*) and non-native grasses.

The area around the left abutment is foothill pine oak woodland, dominated primarily by gray pines and to a lesser extent oaks, with large gaps between trees that expose the slopes to full sun. The vegetation community differs along the San Joaquin River Trail used to access the left abutment drill sites. Vegetation along the trail includes poison oak, buckeye, elderberries, miner's lettuce (*Claytonia perfoliata*), Chinese houses (*Collinsia heterophylla*), live oaks, gray pines, fiddleneck, and non-native grasses. The left abutment receives afternoon sun and has burned in the last ten years, making its plant community composition slightly different than that of the right abutment.

The diversion tunnel drill site overlooks Millerton Lake. It is located immediately east of Sky Harbor Road in a turnout comprised mainly of fill material. Vegetation in the area is sparse and comprised mainly of oak trees and non-native grasses.

Section 4 Environmental Consequences

4.1 No Action Alternative

The No Action Alternative would consist of Reclamation not proceeding with the geotechnical survey activities. Under the No Action Alternative, there would be no change to existing conditions and current trends of the affected environment.

4.2 Proposed Action

4.2.1 Cultural resources

The proposed action involves the drilling of six geotechnical units, two (2) on the right abutment and four (4) on the left abutment using and a seventh geotechnical unit immediately adjacent Sky View Harbor Road. This proposed action constitutes an undertaking as defined by Section 301(7) of the National Historic Preservation Act (NHPA) (16 U.S.C. 470 as amended) initiating Section 106 of that act and the Section 106 implementing regulations at 36 CFR Part 800. Reclamation coordinated and consulted with several Indian tribes in the area on the potential to effect sites of religious and cultural significance that could potentially be eligible for inclusion in the National Register of Historic Places (National Register). These efforts, including records review and physical inventories of the project area failed to identify any cultural resources. In consultation with the California State Historic Preservation Officer (SHPO) Reclamation found that the proposed undertaking would result in no historic properties (or cultural resources eligible for inclusion in the National Register) affected pursuant to § 800.4(d)(1). Because no cultural identified during Reclamation identification efforts and given the finding made in consultation with the SHPO and other consulting parties, the proposed action will result in no impact to cultural resources. The SHPO concurred with Reclamations finding of effect on July, 25, 2014. Consultation correspondence is in Appendix D.

4.2.2 Indian Sacred Sites

Sacred Sites as addressed in Executive Order 13007 (24 May 1996) establishes that Federal agencies are responsible for allowing American Indian religious practitioners access to and ceremonial usage of sacred American Indian sites on federal land. The agency will keep the locations of such sites confidential and will avoid adversely affecting the integrity of these sites. Reclamation sent letters to local Indian tribes on multiple occasions asking for their assistance in identifying sacred sites as outline in EO 13007. Additionally, Reclamation met several Indian tribes to discuss many topics relating to the project, including issues that potentially relate to Indian sacred sites. No Indian sacred sites were identified through this process. Because no

sacred sites have been identified as part of these efforts, the proposed action will have no impact on Indian sacred sites.

4.2.2 Indian Trust Assets

The proposed action does not have a potential to impact Indian Trust Assets. The nearest Indian Trust Asset is Table Mountain Rancheria, approximately 3 miles south of the project location. A copy of the Indian Trust Asset coordination materials can be found in Appendix C.

4.2.3 Environmental Justice

No permanent changes in communities or practices would result from the proposed activity. The action will temporarily affect residents that live along the shore of Millerton Lake (see sections 4.2.10 Recreation, 4.2.11 Noise and Visual Resources, and 4.2.12 Cumulative Effects). Homes along the shore of Millerton Lake often sell between \$300,000 and \$600,000 (Realtor.com, 2014) and median incomes for residents around the lake average approximately \$86,700 per year where California's median income is approximately \$61,400, indicating that the community around Millerton Lake would not constitute a low-income community. Based on U.S. Census 2010 Demographic Profile Data for Friant, California, only 15% of the individuals living in vicinity of Millerton Lake are non-white. The affected community in this area does not meet CEQ's 50% threshold to be considered a minority community. Thus the proposed action would not have disproportionately negative impacts on low-income or minority communities.

Executive Order 12898 requires federal agencies to look at disproportionate effects to Indian Tribes or Native Americans in addition to low-income and minority communities.

Approximately 2.8% of the population living in the vicinity of Millerton Lake is Native American and there are multiple sacred sites and cultural resources in the vicinity of the proposed work. However, Reclamation, in consultation with the tribes, has determined that the proposed geotechnical work would not affect these resources. Therefore, the proposed activity would not have significant, adverse effects on Indian Tribes as they are interrelated to impacts on the natural or physical environment.

4.2.4 Water quality

All drill sites are in upland areas. Therefore, the proposed action will not require temporary construction access or dewatering in waters of the US. Since this action would not result in a discharge of fill material into waters of the U.S., a Clean Water Act Section 401 Water Quality Certification and Section 404 permit from the U.S. Army Corps of Engineers are not required to perform the work.

4.2.5 Air quality

The action area is located within the San Joaquin Valley Air Basin (SJVAB), which is regulated by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAB has reached National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for criteria pollutants of concern except for ozone (O₃), inhalable particulate matter 10 microns

in diameter (PM₁₀), and particulate matter less than 2.5 microns in diameter (PM_{2.5}). As a result, the emissions of most concern are O₃ (which includes precursors such as volatile organic compounds (VOC) and nitrogen oxides (NO_x)), PM₁₀, and PM_{2.5} (which includes precursors such as sulfur dioxide, nitrogen dioxide, and ammonia). Table 1 shows the attainment status and *de minimis* threshold for general conformity for the criteria pollutants of most concern.

Table 1. SJVAB Attainment Status and *De Minimis* Thresholds for Federal Conformity Determinations

Pollutant	Attainment Status ^a	(tons/year)
VOC (O ₃ precursor)	Nonattainment (Extreme) (8 hr) ^d	10 ^b
NO _x (O ₃ precursor)	Nonattainment (Extreme) (8 hr) ^d	10 ^b
PM ₁₀	Nonattainment (CAAQS) Attainment (NAAQS)	100
PM _{2.5}	Nonattainment	100

^a Source: <http://www.arb.ca.gov/desig/adm/adm.htm>
^b 40 CFR 93.153 ^c SJVAPCD Threshold
^d The SJVAB is designated as Extreme for O₃ NAAQS: <http://www.epa.gov/airquality/ozonepollution/designations/2008standards/final/region9f.htm>

A *de minimis* threshold is the minimum threshold that if exceeded, requires that a conformity determination be performed. A conformity determination is the outcome of the process where a federal agency works with the State, tribal, and local governments in a maintenance or non-attainment area to ensure that federal actions conform to the air quality attainment strategies established in the applicable state or tribal implementation plan.

Activity emissions would vary from day to day and by activity, depending on the timing and intensity of the activity, and wind speed and direction. Generally, air quality impacts from the Proposed Action would be localized in nature and decrease with distance.

The geotechnical work would result in the temporary emissions of fugitive dust and vehicle combustion pollutants, including:

- Work truck emissions
- Generator emissions
- Boat emissions
- Helicopter emissions
- Helicopter downdraft disturbance
- ATV emissions
- Travel on unpaved trails and roads

Emissions from the proposed activity were estimated using the 2013 California Emissions Estimator Model (version 2013.2.1) for reactive organic gases (ROG)¹, NO_x, PM₁₀, and PM_{2.5}. Estimated emissions were based on a prior project description which included additional drilling work on the Madera County side of the San Joaquin River Gorge. Since the activity footprint has been reduced since the model was run, the emissions calculations results in Table 2 are an overestimate of emissions from the proposed activity. The model was not run again because the proposed activity has been estimated to emit less than the *de minimis* threshold for NO_x and ROG/VOC as O₃ precursors, PM_{2.5} and PM₁₀; therefore, a federal general conformity analysis is not required.

Table 2. Estimated Project Emissions^a

Pollutant	Unmitigated (tons/year)	Mitigated (tons/year)
ROG/VOC	0.1623	0.1622
NO _x	1.4997	1.4979
PM ₁₀	6.2106	3.1532
PM _{2.5}	0.6975	0.3916
Carbon dioxide equivalents	126.2194	126.0770

^a Source: CalEEMod Version 2013.2.1

4.2.6 Bald eagles, golden eagles, and migratory birds

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA). Bald eagles hunt for waterbirds and fish along lakes and reservoirs while golden eagles tend to hunt for prey in upland areas, along cliff faces and open spaces occupied by favored prey species such as marmots, rabbits and ground squirrels (Seattle Audubon Society, 2014).

An active bald eagle nest is located in a grey pine at the left abutment of the proposed Temperance Flat Dam near drill hole DH-14-204. The pair of bald eagles nesting at RM 274 uses Millerton Reservoir for foraging. In order to avoid take of the bald eagle nest or individuals, Reclamation will avoid flying directly over the nest with the helicopter. Reclamation will limit work that is within 660 feet of the nest to the time of the year when the nest is expected to be inactive (September 1 to December 31).

Two or more golden eagles forage around Millerton Reservoir and are known to nest in an area on a rock outcropping that overlooks Millerton Lake, between 1 and 2 miles west of the drilling sites. Helicopter flights and other activities will be located several thousand feet away from the nest site and would occur outside the golden eagle nesting season.

Dead vegetation such as tree limbs on the ground and low hanging tree limbs may need to be trimmed, cut up, and moved away from drill sites to allow materials to be transported in by helicopter, to stage the drilling activities, and for fire prevention. Since vegetation trimming will

¹ The term “volatile organic compounds” are synonymous with “reactive organic gases” for the purposes of this document since both terms refer to hydrocarbon compounds that contribute to ozone formation.

occur in late summer, the work is not expected to result in an effect to tree or shrub nesting migratory birds.

There is a potential that the helicopter may encounter raptors, gulls, ducks, and other large birds while making trips with equipment over Millerton Lake. Wildlife strikes in the United States with helicopters happen several times a year with 1044 reported strikes by civilian helicopters between 1990 and 2011 (Washburn, Cisar, & DeVault, 2013) and 2,511 strikes by military helicopters between 1979 and 2011 (Chow, 2014). Raptors, including red-tailed hawks, turkey vultures, and other species account for nearly 20% of those reported helicopter wildlife strikes, or 25 strikes reported each year. Half of reported strikes occur while helicopters were en route to their destinations versus fixed-winged aircraft which typically encounter birds on takeoff and landing. Guidance on how to avoid bird strikes with this type of activity is limited, but Bird Strike Avoidance recommended practices by the Helicopter Safety Advisory Conference suggests reducing speeds and increasing diligence by pilots. As a means of minimizing the potential for a helicopter strike with any bird, Reclamation will incorporate information about bird strikes in its biological resources awareness training for the geotechnical crew (see section 2.2.2).

4.2.7 Federally listed threatened and endangered species

4.2.7.1 Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)(VELB)

VELB are endemic to valley oak woodlands along the margins of streams and drainages of the lower Sacramento and lower San Joaquin valleys where its host plant, the blue elderberry grows (USFWS, 1984). They are federally listed as a threatened species. VELB are wood borers that are dependent on the elderberry for its lifecycle. Adult beetles feed on elderberry nectar, flowers, and foliage and are generally active March through June. Females lay their eggs on leaves or stems of the living elderberry shrubs and larvae hatch in a few days, boring into stems an inch or wider in diameter. The larvae feed on the pith material of the stems to complete their development, emerging a year or two later as adults by boring a hole where they initially entered the stem as larvae. VELB use of elderberries have been linked to shrub locations and size with VELB exit holes more common in shrubs in riparian areas than non-riparian scrub habitat types and more exit holes in larger shrubs (Endangered and Threatened Wildlife and Plants, 2012).

VELB are known to be present in the vicinity of the proposed activity. The California Natural Diversity Database (CNDDB) has one recorded occurrence of VELB two miles southeast of the proposed Temperance Flat Dam site.

There are 4 elderberry shrubs or shrub clusters with multiple stems over 1-inch in diameter within 100 feet of the San Joaquin River Trail that will be used to access the drill sites at the left abutment and on the hill slope near the drill site on the right abutment. There are no elderberry

shrubs present in the vicinity of the drill site at the proposed diversion tunnel. All shrubs documented are assumed by Reclamation to have VELB present. Shrubs one hundred (100) feet or more from proposed activities are not considered to be affected by the proposed activities (Conservation Guidelines for the Valley Elderberry Longhorn Beetle, 1999).

The geotechnical activities will result in temporary adverse effects to 4 elderberry shrubs, including temporary vibration, noise effects, and exposure to dusting and equipment emissions. Avoidance and minimization measures for the elderberries along the San Joaquin River Trail have been incorporated in the environmental commitments for the proposed activity that would reduce effects to elderberry shrubs, the host plant for VELB (see section 2.2.2). Therefore this action may affect, but is not likely to adversely affect VELB.

4.2.7.2 California tiger salamander (*Ambystoma californiense*)(CTS)

The California tiger salamander is a large terrestrial salamander reaching up to 8 inches in length that is stocky with a broad, rounded snout. CTS are federally listed as threatened. CTS are found in grassland and foothill areas below 2000 feet near breeding habitat including pools or ponds that dry out during the year. Adult salamanders find refuge during dry summer months in burrows constructed by squirrels or other mammals (USFWS, 2009). CTS can migrate up to one mile to suitable breeding habitat (Determination of Threatened Status for the California Tiger Salamander, 2004).

Suitable estivation habitat for CTS in the form of ground squirrel burrows is common near the proposed dam site and diversion tunnel site. Several intermittent and perennial stock ponds are within the migration distance of CTS from the drilling activities at the right abutment. An intermittent or ephemeral pond (likely a vernal pool) that may be suitable breeding habitat for CTS is located 3,800 feet southeast of the diversion tunnel drill site. There is designated critical habitat for CTS south and west of the proposed activity below Friant Dam, indicating that CTS may be in the vicinity of the proposed action.

The environmental commitments in section 2.2.2 will be implemented as a part of the project to avoid and minimize affects to CTS. The proposed drilling activities would occur during the late summer season when CTS is inactive. Overland travel will be minimized to the extent needed only to access a drill site, turnaround, and exit back to the existing access roads. No activities would occur in or within 200 feet of suitable breeding habitat. Drill holes will be covered the same day to minimize entrapment of wildlife including CTS. Work would not occur within 24 of a rain event when CTS would be expected to be active. A biological monitor will ensure that the work areas are clear of CTS after a rain event and inform the crew that they may return to work. Therefore this action may affect, but is not likely to adversely affect CTS.

4.2.7.3 California red-legged frog (Rana draytonii)(CRLF)

CRLF is endemic to California and Baja California, occurring in areas from sea level to approximately 5,000 feet in elevation. It is the largest native frog in the western United States. CRLF is federally listed as threatened. Breeding season for the CRLF typically runs from November through April with egg laying in February or March in ponds with emergent vegetation, twigs, or other suitable substrate materials to attach eggs. CRLF metamorphose between July through September with some tadpoles delaying metamorphosis until the following March or April. Adult frogs are nocturnal. The extent of suitable habitat may be affected by the amount of rainfall, including seasonal fluctuations with wet season habitat being more expansive than dry season or dry year habitat. Due to suitable habitat variability, population sizes of CRLF can vary widely from year to year. Standing bodies of fresh water, slow moving streams, pools within streams, or other ephemeral to perennial water bodies that hold water for a minimum of 20 weeks of the year is considered suitable breeding habitat. CRLF can disperse as far as 2.2 miles to suitable breeding habitat. Dispersal habitat for the frog consists of upland and riparian habitat contiguous with breeding and non-breeding aquatic habitats (Revised Designation of Critical Habitat for California Red-Legged Frog, 2010).

CRLF is not known to occur within 5 miles of the proposed geotechnical exploration activities based on a search of the CNDDDB. Several potentially suitable non-breeding and breeding aquatic habitats in the form of ephemeral to intermittent ponds and perennial ponds are within 2.2 miles of the proposed activity but due to the lack of drainages and steep topography in the area, it is unlikely to be considered suitable dispersal habitat for CRLF. Therefore the proposed activity would have no effect on CRLF.

4.2.7.4 Blunt-nosed leopard lizard (Gambelia sila)(leopard lizard)

Blunt-nosed leopard lizards are endemic to the San Joaquin Valley. Leopard lizard is federally listed as endangered. They inhabit open, sparsely vegetated areas of low relief such as non-native grasslands in the San Joaquin Valley floor and surrounding foothills up to an elevation of 2,400 feet (USFWS, 2010c).

There are no indications that blunt-nosed leopard lizards occur in the vicinity of the proposed activity based on an evaluation of occurrences in the CNDDDB.

The proposed activity would have no effect on blunt-nosed leopard lizard.

4.2.8 Recreation

The use of ATVs along the San Joaquin River Trail may create a public safety issue for the recreational users. Reclamation has coordinated with State Parks to temporarily close the San Joaquin River Trail when drilling is occurring at the left abutment to prevent conflicts between

the ATVs and trail users. The public will be alerted to the closure of the trail with signs posted at the gated entrance to the trail at the parking lot at the end of Sky Harbor Road. The trail would open to full access after 3 to 4 months when the work is complete. Restricted access to the public park trail during drilling at the left abutment would be short-term and minor. At the end of the activity, the trail would be reopened to public use.

As an alternative to using the San Joaquin River Trail, State Parks has identified a fire road that Reclamation could use to bypass a large portion of the trail. The fire road is located off Sky Harbor Road and follows the ridge along Pincushion Mountain. Use of the fire road would not require the full closure of the San Joaquin River Trail. Use of the fire road would likely have no effect or only short-term minor effects on recreational access to the trail area.

4.2.9 Noise and visual resources

Helicopter activities would result in distracting noise and visual disturbances periodically throughout the day for recreational users at Millerton Lake and residents who live around the lake. These effects would be short-term and minor.

4.2.10 Navigation

The barge that would be used to transport the equipment to the drill sites near the river would be 8 feet by 10 feet in size and towed behind a boat. In the present low water conditions, there is more than 300 feet of clearance between the banks of the river gorge at RM 274 to allow recreational watercraft to travel through the area at normal speeds when Reclamation's boat is beached to unload materials and the work crew. Generally, 200 feet is recommended for safe clearance around obstacles and hazards when boating (California Department of Boating and Waterways, 2014). Due to drought conditions the water level in the gorge may drop and reduce the distance across the river gorge between the dam abutments. The lowest projected surface water elevation during the scheduled work is approximately 464 feet (pers. comm., Greg Mongano, July 16, 2014). At this elevation, the river channel would be 230 feet wide, providing a safe distance between recreational watercraft and the boat and barge. Therefore the activity would not affect navigation in the river gorge.

4.2.11 Cumulative effects

According to CEQ regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions*. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Past actions. Reclamation has performed similar geotechnical work and non-destructive survey work previously along the San Joaquin River related to the USJRBSI. In 2006, similar geotechnical drilling work was performed at RM 279. An environmental assessment was prepared for the 2006 drilling work. Between 2005 and 2013, non-destructive biological surveys were conducted in the San Joaquin River Gorge by Reclamation and State Parks, including data collection for wetlands, botanical resources, wildlife habitat, fish habitat, and cave resources. These surveys were performed by foot with the aid of a helicopter and boat. Most non-destructive biological resources surveys, including these, were categorically exempt from NEPA.

Present actions. There are several daily aerial and boating activities occurring at Millerton Lake that are similar to those being taken by Reclamation for this activity. The Fresno County Sheriff performs an aerial patrol of Millerton Lake daily with a helicopter. The proposed activity would add 20 trips per day by helicopter over Millerton Lake to the single fly over by the county sheriff. The additional helicopter activities would result in minor periodic visual and noise disruptions or distractions for recreational users and residents during the day, several days a week, which would occur intermittently between August and December.

Boating on Millerton Lake occurs year round with watercraft passing by RM 274 multiple times a day. Boating traffic is highest during the peak recreational season between Memorial Day and Labor Day weekends each year. Days where the boating activity would be expected to be the greatest during the proposed activity would August 29, 30, 31 and September 1 this year which is Labor Day weekend. Work on the proposed activity is not currently scheduled on those days. However if circumstances change and work is conducted on Labor Day weekend, the effect on recreational traffic flow at the boat ramp with the addition of two tow vehicles and two boat trailers at the boat ramp parking lot and a boat towing a small barge on the water would be minor.

Future actions. The results from the proposed geotechnical survey work will be incorporated into the feasibility analysis that would be used to support the authorization and construction of Temperance Flat Dam. Temperance Flat Dam, if built, would be located at River Mile 274 and have a total storage capacity of approximately 1.26 million acre-feet. The effects of Temperance Flat Dam on the human environment will be evaluated in the Draft Environmental Impact Statement for the Upper San Joaquin River Basin Storage Investigation, which is currently in preparation and scheduled for publication in September or October 2014.

Section 5 Consultation and Coordination

5.1 Agencies and Groups Consulted

Reclamation consulted and coordinated with the following agencies and groups in preparation of the EA or sections of this EA:

- Sierra Foothill Conservancy
- U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office
 - Migratory Bird Program
 - San Joaquin Valley Division
- Bureau of Land Management
- California State Parks
 - Office of Historic Preservation
 - Millerton Lake State Recreation Area
- Native American Heritage Commission
- Big Sandy Rancheria
- Cold Springs Rancheria
- North Fork Rancheria
- Picayune Rancheria
- Table Mountain Rancheria
- Tule River Indian Tribe
- Santa Rosa Rancheria

5.2 Endangered Species Act (16 USC § 1531 et seq.)

Reclamation requested concurrence from the U.S. Fish and Wildlife Service, Sacramento Office (USFWS) that the proposed action was not likely to adversely affect VELB and CTS and would have no effect on CRLF and the blunt nosed leopard lizard, on July 14, 2014. Concurrence by the USFWS on Reclamation's determinations was made on July 31, 2014. A copy of the consultation memorandum and concurrence memorandum is in Appendix A.

5.3 National Historic Preservation Act (16 USC § 470 et seq.)

Reclamation initiated coordination with Indian tribes on March 28, 2014 requesting their participation in the Section 106 Process as consulting parties. On April 15, 2014, Reclamation received a letter from Table Mountain Rancheria requesting consulting party status. Reclamation responded on May 27, 2014 recognizing the Table Mountain Rancheria as a consulting party under Section 106. Reclamation entered into consultation with the SHPO on July 7, 2014 seeking their concurrence on the agencies finding that the proposed undertaking would result in no effect to historic properties pursuant to 36 CFR § 800.4(d)(1). In addition, pursuant to 36 CFR Part 800.4(d)(1), Reclamation notified the Table Mountain Rancheria of its finding.

5.4 Indian Sacred Sites (Executive Order 13007)

Pursuant to Executive Order 13007, Reclamation requested the identification of Indian sacred sites on March 17, 2014 and again May 27, 2014. Additionally, Reclamation representatives personally met with representatives from the Table Mountain Rancheria, the North Fork

Rancheria, and the Big Sandy Rancheria to discuss the project and requesting in those meetings that if there were any concerns to sacred sites that that could be affected by the project, please make those concerns known. No Indian sacred sites were identified.

5.5 Bald and Golden Eagle Protection Act (16 USC § 668 et seq.)

Reclamation has coordinated with the U.S. Fish and Wildlife Service Migratory Bird Program office in Sacramento on this action's potential impact on a known bald eagle nest at RM 274 and foraging habitat for the golden eagle and bald eagle. The USFWS said that a take permit would not be required for our activity if we followed avoidance measures related to work scheduling and avoided direct disturbance of the bald eagle nest (pers. comm. Heather Beeler, May 2, 2014 and Rob Doster, April 18, 2014). The USFWS did not believe that the activity would result in effects to golden eagle. For drill holes less than 660 feet from the nest, Reclamation would work between September 1 and December 31 to avoid disturbance of the nest. Work can occur prior to September if a biological monitor is present to assess whether there is disturbance of nesting behavior. Reclamation would avoid flying directly over the nest when using a helicopter to bring in supplies and equipment.

Section 6 References

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Appendix A
Endangered Species Act Coordination



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

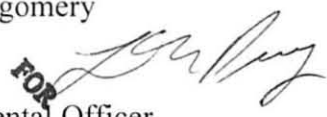
IN REPLY REFER TO:

MP-152
ENV-7.00

JUL 14 2014

MEMORANDUM

To: Field Supervisor, Sacramento Fish and Wildlife Office
U. S. Fish and Wildlife Service
Attn: Rocky Montgomery

From: Anastasia T. Leigh 
Regional Environmental Officer

Subject: Request for Concurrence for the Proposed Upper San Joaquin River Basin Storage Investigation (USJRBSI) Geotechnical Field Exploration at River Mile (RM) 274

Pursuant to Section 7 of the Endangered Species Act (16 U.S.C. § 1536) the Bureau of Reclamation requests written concurrence from the U.S. Fish and Wildlife Service that the proposed action is not likely to adversely affect valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and blunt-nosed leopard lizard (*Gambelia sila*). The attached biological evaluation provides our analysis of species potentially affected by the proposed action and provides the information necessary for the U.S. Fish and Wildlife Service to concur with Reclamation's determination.

Reclamation originally initiated formal consultation on this action in May 2014, but under management direction, has removed geotechnical work at the aggregate quarry site from the activity description. We are requesting to withdraw our May 12, 2014, request for formal consultation since current plans only include activities related to the dam abutment and diversion tunnel testing.

If you have any questions or need further clarification please contact Ms. Andrea Meier, Natural Resources Specialist, at 916-978-5041 or ameier@usbr.gov.

Attachment

cc: MP-200 (GMongano)
MP-700 (MDenning)
(w/att)



United States Department of the Interior



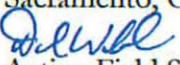
In Reply Refer to:
FF08ESMF00-
2014-I-0500

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

JUL 31 2014

Memorandum

To: Anastasia T. Leigh, Bureau of Reclamation, Mid-Pacific Regional Office
Sacramento, California

From: 
Acting Field Supervisor, Sacramento Fish and Wildlife Office
Sacramento, California

Subject: Informal Consultation on the Proposed Upper San Joaquin River Basin Storage Investigation Geotechnical Field Exploration Project at River Mile 274, Fresno and Madera Counties, California

This is in response to your July 14, 2014 memorandum requesting concurrence with the U. S. Bureau of Reclamation's (Reclamation) determination that the proposed Upper San Joaquin River Basin Storage Investigation (USJRBSI) geotechnical field exploration project at river mile (RM) 274 (proposed project) is not likely to adversely affect federally-listed species. Your request was received by the U. S. Fish and Wildlife Service (Service) on July 15, 2014. At issue are the effects of the proposed project on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB), and the Central California distinct population segment (DPS) of the California tiger salamander (*Ambystoma californiense*). Your memorandum of July 14, 2014, included California red-legged frog (*Rana draytonii*) and blunt-nosed leopard lizard (*Gambelia sila*) as species that may be present in the action area of the proposed project. After review by the Service and Reclamation it was determined that the proposed project will have no effect on the California red-legged frog and the blunt-nosed leopard lizard, because it is reasonably likely that the species would not be present in the proposed project action area. This determination was verified on July 17, 2014, by electronic mail from Reclamation to the Service. The proposed project is not located within critical habitat of either of the VELB or California tiger salamander; therefore, none will be affected. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The Service used the following to review your request: 1) your July 14, 2014, memorandum requesting concurrence; 2) your July 2014 biological evaluation for the proposed project; 3) your electronic mails of July 17 and July 29, 2014; and 4) other information on file at the Service. Reclamation had initially requested formal consultation on the proposed project on May 12, 2014;

however, your current memorandum withdrew that request, modifying the project description and the determination of effects.

Project Description

The purpose of the geological field exploration is to collect feasibility-level data for the USJRBSI at the proposed dam abutments and diversion tunnel alignment at RM 274 on the San Joaquin River. Reclamation proposes to drill six holes for the dam abutments and one hole for the proposed diversion tunnel structure in order to gather needed geotechnical data for feasibility analysis (Tables 1 and 2).

Table 1. Dam Abutments Drill Hole Locations

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Dam Axis Right Abutment</i>				
DH-14-201	2261912.0720'	6378372.1790'	863	Well
DH-14-202	2261063.4415'	6378273.0490'	649	Well
<i>Dam Axis Left Abutment</i>				
DH-14-203	2260573.0344'	6377526.7104'	659	Well
DH-14-204	2260344.0427'	6377091.9555'	884	Well
DH-14-205	2259813.8884'	6376517.9375'	936	Well
DH-14-206	2259819.8788'	6377156.8260'	717	Well
* California State Plane Coordinate System NAD83, Zone 4; Vertical Datum NAVD88. Coordinates and elevations are approximate, exact locations will be determined at site based on field conditions.				

Table 2. Diversion Tunnel Drill Hole Location

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Diversion Tunnel</i>				
TH-14-1	2264285.2759'	6379909.5224'	1147	Well

The following activities apply to areas labeled DH-14-201 through DH-14-206. These actions are necessary to characterize the subsurface geologic conditions and collect rock core samples from the dam footprint.

- A helicopter will be used to transport all equipment and supplies to and from each drill hole location. The helicopter will perform up to 7 airlifts to move equipment to and from the 6 proposed drill hole locations. Each airlift will be comprised of up to 19 separate picks, all performed during the same airlift day. All-terrain vehicles (ATVs) will be used to access the upper two drill hole locations on the left abutment using the San Joaquin River Trail or fire road. To access the right abutment and lower drill holes of the left abutment, the crew will hike up the river gorge from a boat.

- Up to 6 drill holes will be advanced with diamond coring drilling methods to sample foundation rock units.
- Core samples will be packaged and removed with the completion of each drill hole.
- Drill hole DH-14-201 through DH-14-206 will be completed as groundwater observation wells with 24-inch diameter blank PVC in the upper 10 feet of the drill hole. The drill hole will be left open below that depth.

The following description applies to drill hole TH-14-1 at the proposed diversion tunnel.

- Access to the drill hole associated with the diversion tunnel will be via the two-lane, paved Sky Harbor Road.
- A drill hole will be advanced using the diamond core rock drilling method to sample the rock units.
- Core samples will be packaged and removed with the completion of each drill hole.
- Before the drill hole is converted to a groundwater monitoring well, down hole geophysical logging will be performed.
- Following geophysical logging, the drill hole will be completed as a groundwater observation well with a pressure transducer.

Helicopter staging: A parking lot on the left abutment of Friant Dam will provide a staging area for the helicopter operations.

Boat launch and docking: Daily access to the drill sites at the lower left and right abutments will be via boat from Millerton Reservoir South Shore State Recreation Area (SRA). The boat will be docked each night at the SRA and used to shuttle personnel and hand tools.

Diversion tunnel drill site: Access to the drill site at the proposed diversion tunnel is unrestricted. It is located immediately east of Sky Harbor Road in a turnout comprised mainly of fill material. Vegetation in the area is sparse and comprised mainly of oak trees and non-native grasses.

Dam right abutment: Access to the proposed dam's right abutment is unrestricted, but there are no roads to access the site. Access to the drill holes along the right abutment will be by boating in and hiking up from the river gorge (DH-14-201 and DH-14-202). The right abutment drill sites are located on a steep slope above the San Joaquin River.

Dam left abutment: Access to the site is unrestricted, DH-14-204 and DH-14-205 will be accessed by ATVs from either the designated San Joaquin River Trail or by use of an existing fire road. Access to the fire road is restricted by a barbwire gate off Sky Harbor Boulevard. DH-14-203 and DH-14-206 will be accessed by hiking up from a boat.

There are 4 elderberry shrubs or shrub clusters with multiple stems over 1-inch in diameter within 100 feet of access routes and on slopes of the proposed left and right abutment of the dam. There are no elderberries within 100 feet of the proposed drill sites. The proposed project will occur outside of the adult VELB active season which is during the spring. The potential effects would be limited to four shrubs in the form of increased vehicle traffic related to accessing the drill sites.

Table 3. Effected Elderberry Shrubs

Shrub ID#	Stems $\geq 1''$	Effecting Activity	Distance to Shrub Drip-line (feet)	Effects
Eldbry 8	12	Access San Joaquin River Trail to left abutment	8	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 9	7	Access San Joaquin River Trail to left abutment	29	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 10	9	Access San Joaquin River Trail to left abutment	22	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 11	8	Access San Joaquin River Trail to left abutment	10	Temporary vibration and noise effects; exposure to dusting and ATV emissions.

The proposed project is within the range of the Central California DPS of the California tiger salamander, although not within what is considered optimal habitat for the species. There are rodent burrows present and a potential breeding pond about 0.75 mile to the southeast of the diversion tunnel drill site.

Avoidance and Minimization Measures

Reclamation proposes the following conservation measures to avoid and minimize impacts by the proposed project:

- A Service-approved biologist will be available to monitor all drilling activities and the proposed work to ensure compliance with avoidance and minimization measures of the proposed project. The biological monitor will assist all work crew and drilling personnel in compliance with all conservation measures and guidelines. The biological monitor will be on-site whenever drilling locations are changed or initiated, and whenever a groundbreaking activity takes place. The biological monitor will be responsible for supervising the implementation and maintenance of the avoidance and minimization measures described, and is expected to make periodic inspections to verify the compliance with, and implementation of those measures. The biological monitor will be available on-call when not on-site whenever work is being done, and will have the authority to stop work if a federally-listed species is encountered within the active work area.

- The biological monitor will conduct environmental awareness training for all individuals that will be working on the proposed project before any work begins. The education program will briefly cover threatened and endangered species and any of their habitats that may be encountered during the proposed project. Awareness training will cover all restrictions and guidelines that must be followed by crews to avoid or minimize impacts to threatened and endangered species and their habitat. Upon completion of training, crews will sign a form stating that they attended the training and understand all the field personnel conservation and protection measures.
- All equipment left on-site overnight will be inspected before use to ensure no federally-listed species are present. If a listed species is found, the biological monitor and the Service will be notified and the individual animal will be allowed to disperse on its own accord.
- Drilling and survey activities will occur between August 12, 2014, and December 15, 2014.
- Vehicles will be limited to 10 miles per hour on unpaved roads and overland travel.
- All off-road vehicle use will be avoided as much as possible.
- Orange construction fencing will be installed between project activities, including vehicle access, and elderberry shrubs that will be encroached within 20 feet of their drip-line. All shrubs within 100 feet of project activities will be flagged for avoidance.
- All trash will be removed from the work site daily.
- Drilling activities will be limited to between sunrise and sunset only.
- No domestic pets will be allowed on the work site.
- If a federally-listed species is encountered on the work site, all drilling activities will immediately cease and the Service will be consulted.
- Drilling activities will not occur within 24 hours of a rain event and following a site inspection by the biological monitor.
- Drill holes will be covered at the end of each the work day to prevent any animals from falling into the drill hole.
- All supplies and equipment will be inspected before use in order to ensure that no federally-listed species are present and potentially could be harmed or entrapped.
- A Spill Prevention Control and Countermeasure Plan will be prepared prior to the proposed work.
- A Fire Prevention and Suppression Plan will be prepared prior to the proposed action.

After reviewing the information provided, including on-site habitat, the potential for federally-listed species to be found at the proposed project sites, and the proposed conservation measures described in the request, we concur with your determination that the proposed project, as described, is not likely to adversely affect the VELB or Central California DPS of the California tiger salamander.

This concurrence is provided specific to this action area, and for the proposed project action only as described within your July 14, 2014, memorandum and biological evaluation.

This concludes our review of your proposed project and no further coordination with us under the Act is necessary at this time. Please note, however, that this memorandum does not authorize take of listed species. Section 9 of the Act prohibits the "take" (e.g., harm, harass, pursue, injure, kill) of federally-listed wildlife species. Therefore, unless new information reveals effects of the proposed project that may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed project, no further action pursuant to the Act is necessary.

If you have any questions regarding this response, please contact Mark Littlefield, Branch Chief, Watershed Planning Branch, or Rocky Montgomery, Senior Biologist, Watershed Planning Branch at the letterhead address or (916) 414-6600.

cc:

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RECLAMATION

Managing Water in the West

Biological Evaluation

Upper San Joaquin River Basin Storage Investigation Geotechnical Field Exploration at RM 274

Fresno County and Madera County



U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
Sacramento, California

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List of Attachments

Attachment 1: U.S. Fish and Wildlife Service Office Federal Endangered and Threatened Species that Occur in or may be Affected by Proposed Projects in the Millerton Lake West and Millerton Lake East USGS 7.5-Minute Quads

Attachment 2: Site photos taken April 8 through April 10, 2014

Attachment 3: Designated Critical Habitat Near the Proposed Action

1. Introduction and Activity Description

The purpose of this biological evaluation is to review the Upper San Joaquin River Basin Storage Investigation Geotechnical Field Exploration at RM 274 in sufficient detail to determine to what extent the proposed action may affect any of the threatened, endangered, proposed, or sensitive species and designated or proposed critical habitats that may be present in the vicinity of the action. The following information is provided to comply with the statutory requirements to use the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitat by federal actions. This biological assessment is prepared in accordance with the legal requirements in the regulations implementing Section 7 of the Endangered Species Act (50 CFR 402; 16 U.S.C. 1536(c)).

Reclamation originally initiated formal consultation on this action in May 2014, but under management direction, has removed geotechnical work at the aggregate quarry site from the activity description. This biological evaluation (BE) covers geotechnical activities around the proposed Temperance Flat Dam abutments on the Madera County and Fresno County side of River Mile 274 on the San Joaquin River and at the proposed diversion tunnel alignment. The geotechnical work is described in more detail in sections 1.d through 1.g of this BE.

Reclamation has determined that the proposed action *may affect, but is not likely to adversely affect* the following species, and is therefore requesting written concurrence on these affects. Species listed in the vicinity of the proposed action that are not likely to be adversely affected by the proposed action, are:

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) – threatened
- California tiger salamander (*Ambystoma californiense*) (CTS) – threatened
- California red-legged frog (*Rana draytonii*) (CRLF) – threatened
- Blunt-nosed leopard lizard (*Gambelia sila*) – endangered

Species listed in the vicinity of the proposed action area that are likely to have no effect from the proposed action because suitable habitat does not exist in or near the work areas, include:

- Hartweg's golden sunburst (*Pseudobahia bahiifolia*) – endangered
- Fleshy owl's clover (*Castilleja campestris* ssp. *succulenta*) (owl's clover) – threatened
- Delta smelt (*Hypomesus transpacificus*) (smelt) - threatened
- Central Valley steelhead (*Oncorhynchus mykiss*) (steelhead) – threatened
- Conservancy fair shrimp (*Branchinecta conservation*) – endangered

- Vernal pool fairy shrimp (*Branchinecta lynchi*) – threatened
- Vernal pool tadpole shrimp (*Lepidurus packardi*) – endangered
- Fresno kangaroo rat (*Dipodomys nitratoides exilis*) – endangered
- San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*) – threatened

The U.S. Fish and Wildlife Service Office Federal Endangered and Threatened Species that Occur in or may be Affected by Proposed Projects in the Millerton Lake West and Millerton Lake East USGS 7.5-Minute Quads (Attachment 1) was used to develop the list above. It was generated using The U.S. Fish and Wildlife Service (USFWS), Sacramento Fish and Wildlife Office Database: http://www.fws.gov/sacramento/es/spp_list.htm, on April 16, 2014.

The proposed activity is not within designated or proposed critical habitat for the species listed above. Therefore there would be no effect to critical habitat.

1.a Agency proposing the action

The Bureau of Reclamation (Reclamation), Mid-Pacific Region, is the federal agency proposing the action and lead agency for Section 7(a)(2) compliance.

1.b Authority

Reclamation is operating under the authority of the Califed Bay-Delta Authorization Act (PL 108-361) which authorized a planning and feasibility study for Upper San Joaquin River storage in Fresno and Madera Counties.

1.c Interrelated and interdependent actions

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification or “associated with” the proposed action. An interdependent activity is an activity that has no independent utility apart from the action under consultation or “because of” the proposed action. The proposed activity in this biological evaluation is interrelated with the proposed Temperance Flat Dam at River Mile 274 on the San Joaquin River. The results of the geotechnical field exploration by Reclamation’s geology group will be used to complete the feasibility report that would support a decision to construct Temperance Flat Dam.

1.d Purpose of the action

The purpose of the geological field exploration is to collect feasibility-level data for the Upper San Joaquin River Basin Storage Investigation at the proposed dam abutments and diversion tunnel alignment.

1.e Location of the action

The geotechnical drill holes and associated access routes are located along the San Joaquin River above Friant Dam, in Sections 25, 26, and 35 of Township 10 South, Range 21 East, MDB&M, in Fresno and Madera Counties. The work areas can be seen in the southeast corner of the Millerton Lake West, Calif., 7.5' USGS quadrangle.

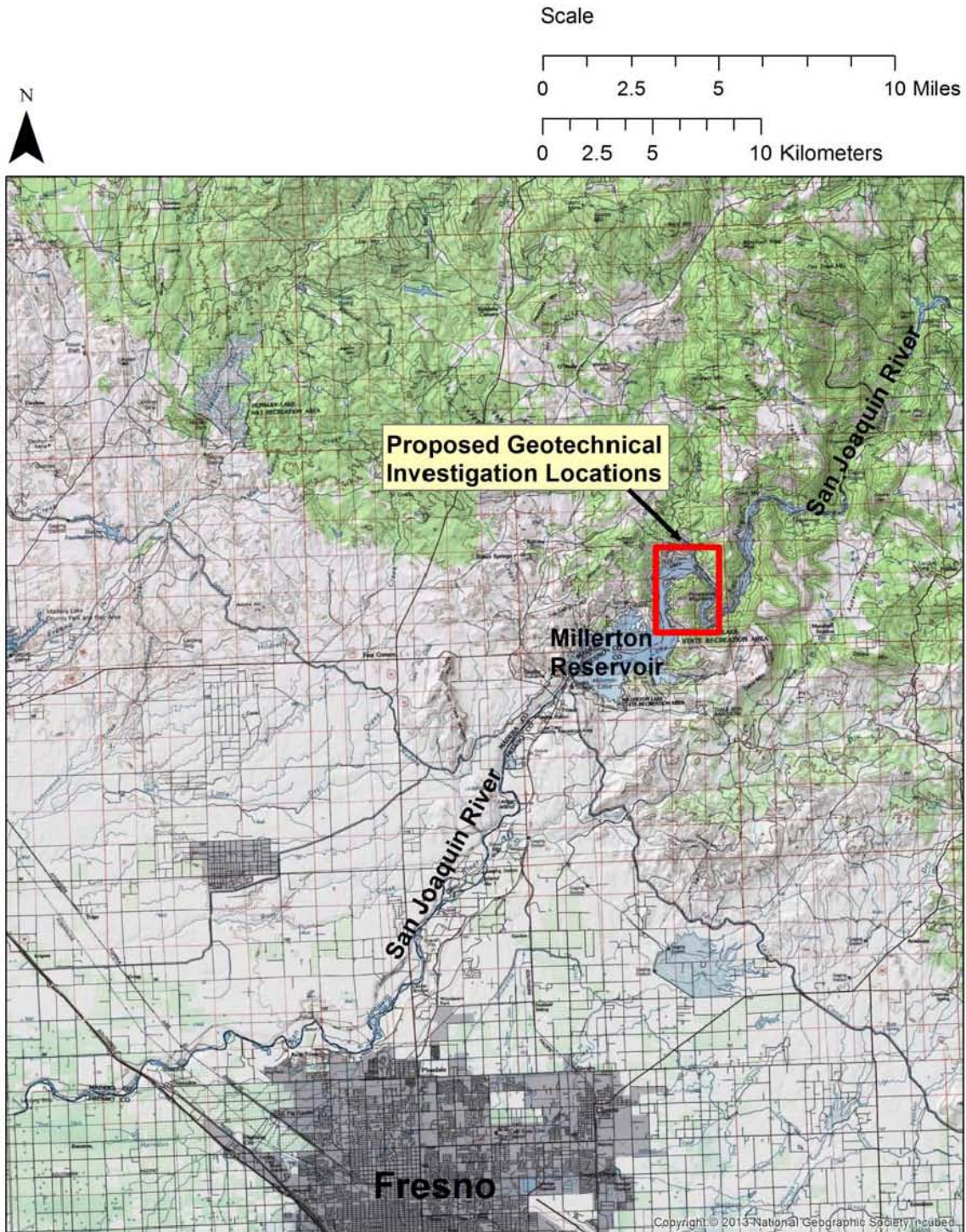
Table 1. Dam Abutments Drill Hole Locations

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Dam Axis Right Abutment</i>				
DH-14-201	2261912.0720'	6378372.1790'	863	Well
DH-14-202	2261063.4415'	6378273.0490'	649	Well
<i>Dam Axis Left Abutment</i>				
DH-14-203	2260573.0344'	6377526.7104'	659	Well
DH-14-204	2260344.0427'	6377091.9555'	884	Well
DH-14-205	2259813.8884'	6376517.9375'	936	Well
DH-14-206	2259819.8788'	6377156.8260'	717	Well
* California State Plane Coordinate System NAD83, Zone 4; Vertical Datum NAVD88. Coordinates and elevations are approximate, exact locations will be determined at site based on field conditions.				

Table 2. Diversion Tunnel Drill Hole Location

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Diversion Tunnel</i>				
TH-14-1	2264285.2759'	6379909.5224'	1147	Well

Figure 1. Vicinity Map



1.f Materials and Methods

Drill holes at the proposed dam site. The following description applies to areas labeled DH-14-201 through DH-14-206. Purpose: To characterize the subsurface geologic conditions and collect rock core samples from the dam footprint.

- All-terrain vehicles (ATVs) will be used to access the left abutment from the San Joaquin River trail or fire road with support from a helicopter. To access the right abutment and lower drill holes of the left abutment, the crew will hike up the river gorge from a barge or boat and be met with support from a helicopter. For work with helicopter support, 10 to 20 trips to drop materials to each site as well as an equal number of return trips would be needed.
- Up to 6 drill holes will be advanced with NQ3 drilling methods to sample foundation rock units.
- Information will be gathered on soil/rock, based on Reclamation's Engineering Geology Field Manual.
- Core samples will be packaged and delivered to the Technical Service Center (TSC) laboratory in Denver for material testing.
- Drill hole DH-14-201 through DH-14-204 will be completed as groundwater observation wells with 1-inch diameter blank and slotted PVC with a screen at the bottom
- Drill hole 5 and 6 (DH-14-205 and DH-14-206) will be backfilled with bentonite and cuttings.

Drill hole at the proposed diversion tunnel and geophysical borehole logging. The following description applies to TH-14-1. Purpose: Characterize subsurface geologic conditions, soil materials, and rock properties in the area of the proposed diversion tunnel.

- Access to the drill hole associated with the diversion tunnel will be by driving up Sky Harbor Road from Friant Road. Sky Harbor Road is a two-lane paved roadway.
- A drill hole will be made using the HQ3 diamond core rock drilling method similar to those described above to sample the rock units.
- Information on the soil and rock will be gathered based on Reclamation's Engineering Geology Field Manual.
- Core samples will be packaged and delivered to the TSC laboratory for material testing
- Before the drill hole is converted to a groundwater monitoring well, the TSC Seismotectonics and Geophysics Group will conduct geophysical logging which involves the deployment of probes that measure various physical properties of the borehole and collects continuous or point data that can be graphically displayed in a geophysical log. Information will be collected on rock lithology and fractures, permeability and porosity, and water quality.

- Following geophysical logging, the drill hole will be completed as a groundwater observation well with a transducer.

Geologic mapping. Purpose: Characterize site conditions at the dam and cofferdam foundation footprints, foundation area, batch plant area, and staging area.

- Map contact between the quartz-diorite and schist upstream of the dam alignment.
- If rock samples are collected, sample locations will be shown on the geologic map.

Remote imaging Millerton Reservoir at dam foundations. Purpose: Observe the reservoir bottom below the main dam and cofferdam footprints to identify depth and thickness of reservoir sediments and estimate the average size of boulder-size material and topographic variation. Conduct remote imaging and review existing data to observe the reservoir bottom below the main dam and coffer dam footprints, and at the diversion tunnel inlet and outlet areas with the goals of identifying the depth and thickness of reservoir sediments, maximum and average size of boulder size material, topographic variations, etc.

1.g Action area description

Helicopter staging. A large, secure, paved area (parking lot) on the left abutment of Friant Dam will provide a mostly dust-free staging area for the helicopter operations. Individual loads will be secured, separated and sequenced for transport upon arrival of the helicopter. Each helicopter load will weigh less than 2000 pounds.

Boat launch and docking. Daily access to the drill sites at the lower left abutment and right abutment would be via boat from Millerton Reservoir South Shore State Recreation Area (SRA). The boat would be docked each night at the SRA and used to shuttle personnel and hand tools.

Diversion tunnel drill site. To access the diversion tunnel drill site from the intersection of Friant Road and Sky Harbor Road, travel 3.30 miles north (geodesic distance of 2.38 miles) to a pullout with a cattle ramp along the left side of the road. Access to the drill site at the proposed diversion tunnel is unrestricted. The diversion tunnel drill site overlooks Millerton Lake. It is located immediately east of Sky Harbor Road in a turnout comprised mainly of fill material. Vegetation in the area is sparse and comprised mainly of oak trees and non-native grasses.

Dam right abutment. Access to the proposed dam's right abutment is unrestricted, but as the area is undeveloped, there are no roads to access the site. Access to the drill holes along the right abutment can be obtained by boating in and hiking up from the river gorge. The right abutment drill sites are located on a steep slope above the San Joaquin River gorge with shallow soils of decomposed granite and organic material with granite outcroppings. The right abutment is in an

area characterized as live oak woodland. Vegetation along the east abutment includes gray pines, live oaks, elderberries, buckeye (*Aesculus californica*), poison oak (*Toxicodendron diversilobum*), various native herbs such as Coulter's jewelflower (*Caulanthus coulteri*), lacepod (*Thysanocarpus curvipes*), woodland star (*Lithophragma bolanderi*) and non-native grasses.

Dam left abutment. Access to the drill holes along the left abutment can be obtained by hiking along the San Joaquin River Trail or hiking up from the river gorge. Access to the site is unrestricted, but requires going off the designated San Joaquin River Trail. The left abutment receives afternoon sun and has burned in the last ten years, making its plant community composition slightly different than that of the right abutment. The area around the left abutment is foothill pine oak woodland, dominated primarily by gray pines and to a lesser extent oaks, with large gaps between trees that expose the slopes to full sun. The vegetation community differs along the San Joaquin River Trail used to access the left abutment drill sites. Vegetation along the trail includes poison oak, buckeye, elderberries, miner's lettuce (*Claytonia perforliata*), Chinese houses (*Collinsia heterophylla*), live oaks, gray pines, fiddleneck, and non-native grasses.

Access to the fire road is restricted via a barbwire gate of Sky Harbor Boulevard, just north of the drill site for the diversion tunnel. Coordination with State Parks is required to access the fire road. The fire road runs along the ridge of Pincushion Mountain from Sky Harbor Boulevard, north-northeast to the San Joaquin River Trail. Vegetation along the fire road is foothill pine oak woodland, dominated primarily by gray pines and blue oaks with an understory of non-native grasses.

Reclamation will access the left abutment drill sites using ATVs using either the San Joaquin River Trail directly or will use the fire road to reach the drill sites. Utilizing the fire road would minimize recreation conflicts since using the San Joaquin River Trail will require shutting the trail temporarily.

Figure 2. Drilling Activity Locations

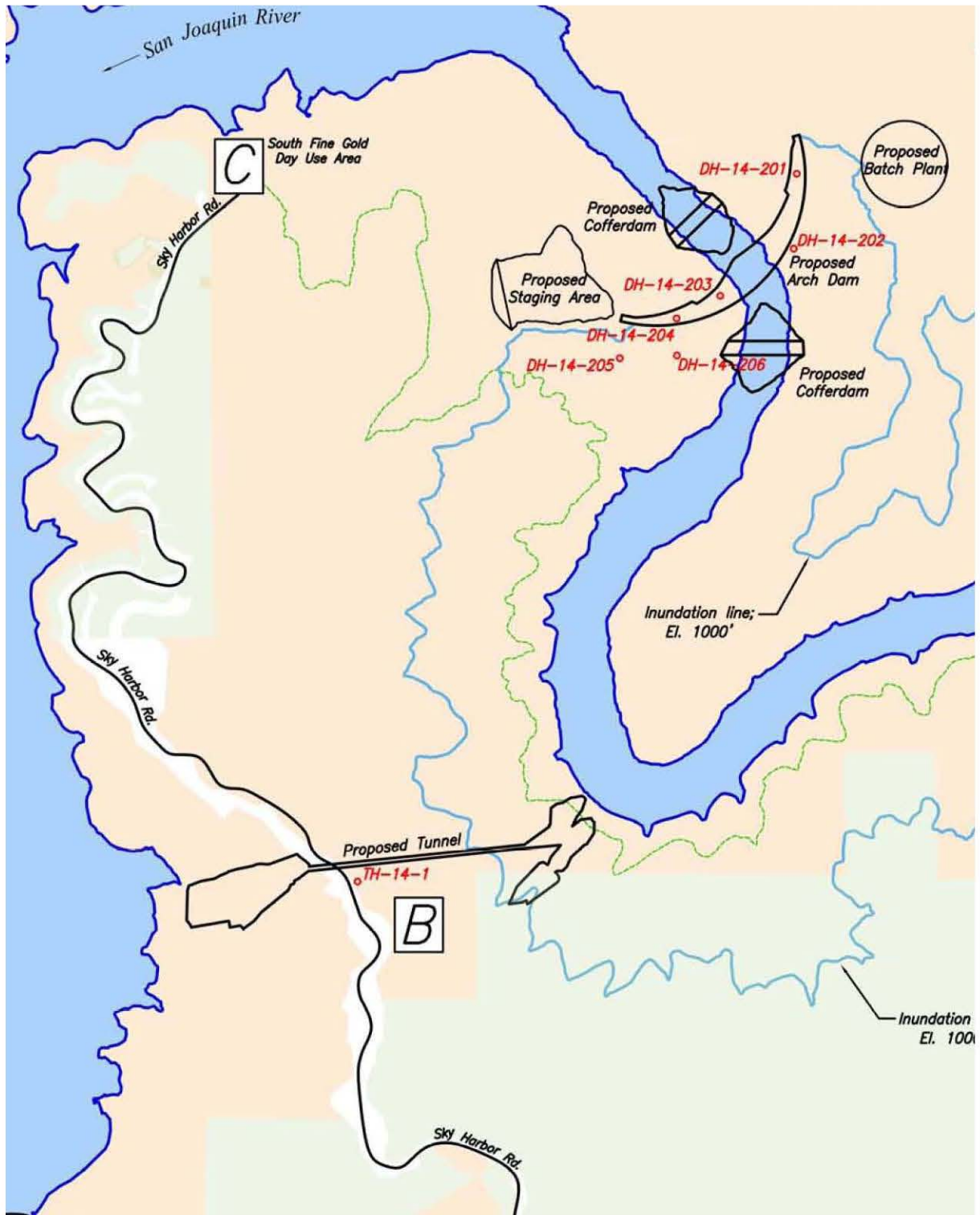
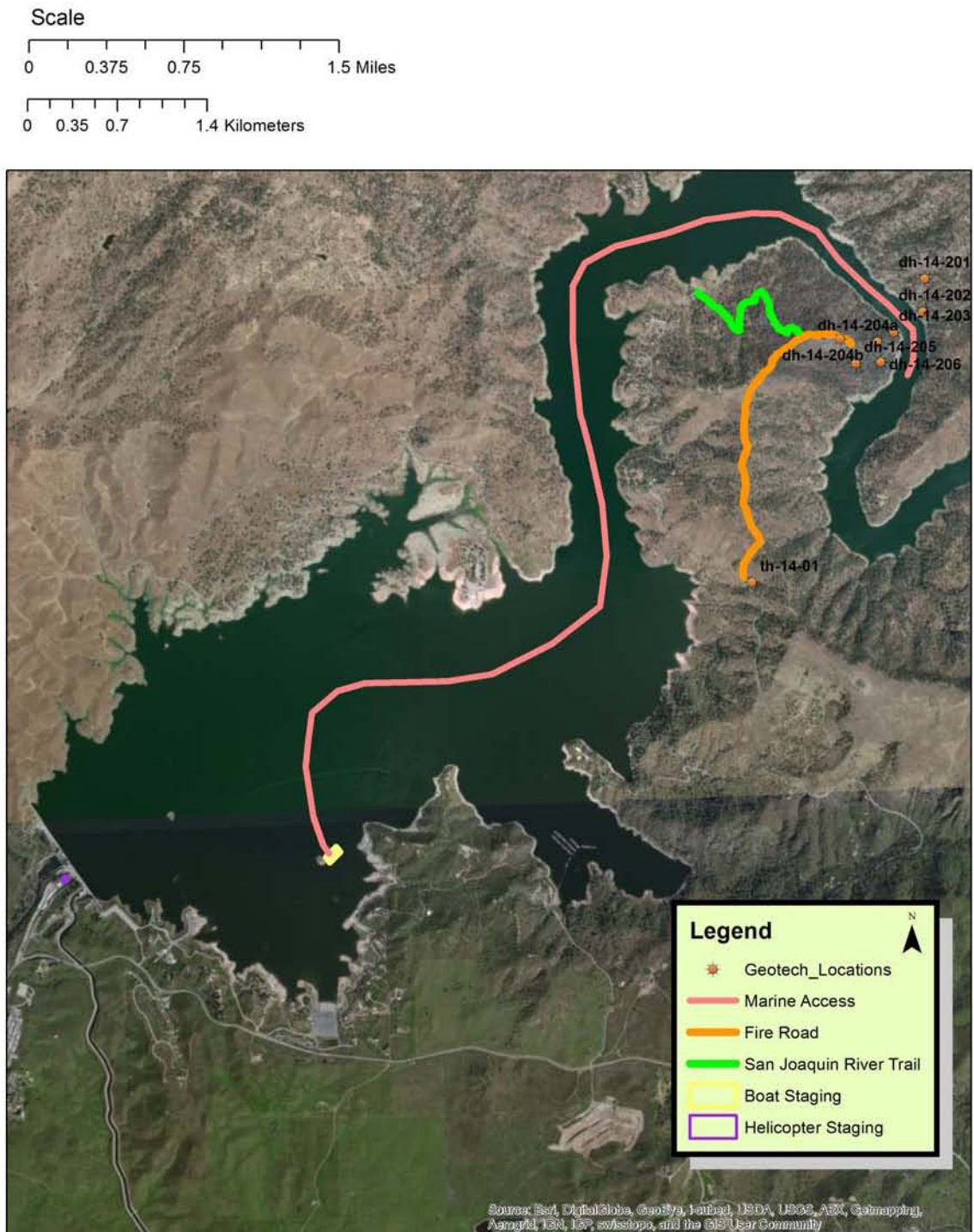


Figure 3. Access Routes to Drilling Locations and Helicopter Staging



1.h Schedule and duration

Drilling and non-destructive survey activities will be completed after between August 15, 2014 and December 31, 2014.

1.i Environmental commitments

- 1) Biological resources awareness training will be provided in-person by a natural resources specialist at the field briefing for the geotechnical crew that will cover identification of elderberry shrubs (including during flower, fruiting, and dormant periods), VELB, CTS, CRLF, and blunt-nosed leopard lizard.
- 2) Where possible, elderberry shrubs that are within 100 feet of access routes, drill holes, or trenches, will be avoided by keeping equipment on the designated access roads and work areas.
- 3) Vehicles, including pickups and all-terrain vehicles (ATVs) will be limited to 10 miles per hour on unpaved roads and when performing overland travel.
- 4) Drilling activities will not occur within 48 hours of a rain event in order to avoid CTS and CRLF that could be migrating through work areas.
- 5) Drill holes will be covered or backfilled the same day as drilling to avoid impacts to the public and wildlife.
- 6) Work will be conducted in the late summer and fall to avoid encounters with CTS and CRLF.
- 7) Work at the left abutment within 660 feet radius of an identified bald eagle nest will be conducted between September 1 and December 31 to avoid take of the bald eagle nest nearby.
- 8) A Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared prior to the proposed work and implemented if fuel, oil, or other fluids are spilled. The drill rigs used would be thoroughly serviced prior to starting drilling operations. Any oil or hydraulic fluid leaks would be repaired. Absorbent pads and oil booms will be available at the drilling sites in case of an oil or hydraulic fluid leak as a part of the SPCCP.
- 9) A Fire Prevention and Suppression Plan will be prepared prior to the proposed work and implemented in the instance that the proposed drilling work sparks a fire. Onsite firefighting equipment will include hand tools (axes, fire rakes, and shovels), 5 gallon water pump backpacks, high pressure water pump and hose (powered by drill), 5 pound fire extinguishers, a 10 pound fire extinguisher, and approximately 100 gallons of water onsite.

2. Needed permits, consultations and authorizations

2.a National Environmental Policy Act (NEPA)

Based on the activity's potential effect on recreation, VELB, bald eagle, and sacred sites, Reclamation determined that the activity is not categorically excluded from further NEPA review. Reclamation is in the process of completing an environmental assessment for the proposed activity.

2.b Clean Water Act (CWA)

Overland travel has been designed to avoid waters of the U.S. Upland access routes along the San Joaquin River Trail and the fire road to not require road improvements. Materials needed to accomplish the drilling at the dam abutments will be air lifted in by helicopter and will not require heavy equipment such as a drill rig or water truck. Therefore, a CWA Section 401 Water Quality Certification from the Central Valley Regional Water Quality Control Board and CWA Section 404 permit from the Sacramento District Corps of Engineers are not required. Since the activity is not a construction activity greater than 1 acre in size, a Stormwater Pollution Prevention Plan is not required to comply with CWA Section 402 and the State of California's Construction General Permit.

2.c National Historic Preservation Act

Reclamation has conducted pedestrian surveys, a records search of the area, and is currently consulting with federally-recognized tribes in the area on the presence of cultural resources.

2.d Executive Order 13007 – Indian Sacred Sites

Reclamation is currently consulting with federally-recognized tribes in the area on the presence of sacred sites in and near the drill sites, trench sites or near the access roads. Potential sacred sites have been preliminarily identified and Reclamation is in the process of meeting with tribal representatives to determine their concerns and if effects could be avoided or minimized.

2.e Indian Trust Assets

The proposed action does not have a potential to impact Indian Trust Assets. The nearest Indian Trust Asset is Table Mountain Rancheria, approximately 3 miles south of the geotechnical locations.

2.f Bald and Golden Eagle Protection Act

Reclamation has coordinated with the U.S. Fish and Wildlife Service Migratory Bird Program office in Sacramento on this action's potential impact on a known bald eagle nest at RM 274 and foraging habitat for the golden eagle and bald eagle. The Service said that a take permit would not be required for our activity if we followed avoidance measures related to work scheduling and avoiding direct disturbance of the bald eagle nest (pers. comm. Heather Beeler, May 2, 2014). The Service did not believe that the activity would result in effects to golden eagle. For drill holes less than 660 feet from the nest, Reclamation would work between September 1 and December 31 to avoid disturbance of the nest. Reclamation would avoid flying directly over the nest when using a helicopter to bring in supplies and equipment.

2.g Clean Air Act

Reclamation anticipates that impacts to air quality from equipment emissions and fugitive emission from the proposed activity will be *de minimis* and not exceed federal, state, or local air quality standards. Reclamation will include an air quality analysis in the EA to demonstrate that the activity would not exceed *de minimis* thresholds.

3. Species that may be affected

3.a. Valley elderberry longhorn beetle

3.a.1 Habitat requirements for VELB

VELB are endemic to valley oak woodlands along the margins of streams and drainages of the lower Sacramento and lower San Joaquin valleys where its host plant, the blue elderberry grows (USFWS, 1984). VELB are wood borers that are dependent on the elderberry for its lifecycle. Adult beetles feed on elderberry nectar, flowers, and foliage and are generally active March through June. Females lay their eggs on leaves or stems of the living elderberry shrubs and larvae hatch in a few days, boring into stems an inch or wider in diameter. The larvae feed on the pith material of the stems to complete their development, emerging a year or two later as adults

by boring a hole where they initially entered the stem as larvae. VELB use of elderberries have been linked to shrub locations and size with VELB exit holes more common in shrubs in riparian areas than non-riparian scrub habitat types and more exit holes in larger shrubs (Endangered and Threatened Wildlife and Plants, 2012).

3.a.2 Presence or likelihood of presence of VELB in the work area

VELB are known to be present in the vicinity of the proposed activity. The California Natural Diversity Database (CNDDDB) has one recorded occurrence of VELB two miles southeast of the proposed Temperance Flat Dam site. The observation of VELB at Latitude 37.01330, Longitude -119.59691, was made by the Sierra Foothill Conservancy on April 5, 1995.

There are 5 elderberry shrubs or shrub clusters with multiple stems over 1-inch in diameter within 100 feet of access routes and on slopes of the proposed left and right abutment of the dam. There are no elderberries within 100 feet of the proposed drill sites. All shrubs documented are assumed by Reclamation to have VELB present. Shrubs one hundred (100) feet or more from proposed activities are not considered to be affected by the proposed activities (Conservation Guidelines for the Valley Elderberry Longhorn Beetle, 1999).

Table 3 describes each shrub or shrub cluster identified along access routes, including approximate stem counts and sizes, distance from proposed activities and adverse effects that may result to the shrubs. Figure 4 illustrates the elderberry locations and their proximity to proposed drilling sites and access routes. Figure 5 are photos illustrating the growth characteristics of two of the shrubs documented along the San Joaquin River Trail.

3.a.3 Effects of the proposed action on the species

The geotechnical activities will result in temporary adverse effects to four (4) elderberry shrubs, including temporary vibration, noise effects, and exposure to dusting and equipment emissions related to ATV travel to and from the drill sites. Reclamation may alternatively use the fire road but the decision is dependent on the preference of the drill crew in terms of ease of access and staging.

3.a.4 Cumulative effects and effects from other actions

The primary mode of access to the drill sites for State Parks and the public is by bicycle and foot along the San Joaquin River Trail. Trail use by bikes or foot traffic can cause minor dusting effects. Annual trail maintenance including recontouring, scraping, or other improvements by State Parks may cause some dusting effects.

The proposed action could involve the use of up to five (5) ATVs, each making one round trip per day up the San Joaquin River Trail up to 7 days a week for four months. When added to these baseline conditions, the proposed action that includes environmental commitments such as speed limitations, should not add appreciably to the cumulative effects of dusting.

The elderberries along the San Joaquin River Trail are in a secluded area and are not exposed to regular vibration, noise, or equipment emissions. Therefore there would be no cumulative effect from this action's temporary noise, vibration, and equipment emissions on the elderberry shrubs.

Table 3. Elderberry Shrub Characteristics and Effects to Shrubs Near Proposed Activities

Shrub ID	Total stems at ground	Stems 1”+ at ground	Nearest activity ID	Distance to shrub dripline	Effect description
Eldbry 7	32	19	DH-14-201	211 ft	No effect.
Eldbry 8	35	12	Access trail to left abutment	8 ft	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 9	7	7	Access trail to left abutment	29 ft	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 10	12	9	Access trail to left abutment	22 ft	Temporary vibration and noise effects; exposure to dusting and ATV emissions.
Eldbry 11	28	8	Access trail to left abutment	10 ft	Temporary vibration and noise effects; exposure to dusting and ATV emissions.

3.a.5 Avoidance, minimization and mitigation

Reclamation will provide biological resources awareness training, keep equipment on designated roads and in designated work areas, and limit the speeds of pickups and ATVs to 10 miles per hour on unpaved roads, trails, and when performing overland travel. Reclamation has included these measures as part of the activity description in section 1.i.

Figure 4. Elderberries in the Vicinity of the Right and Left Abutment

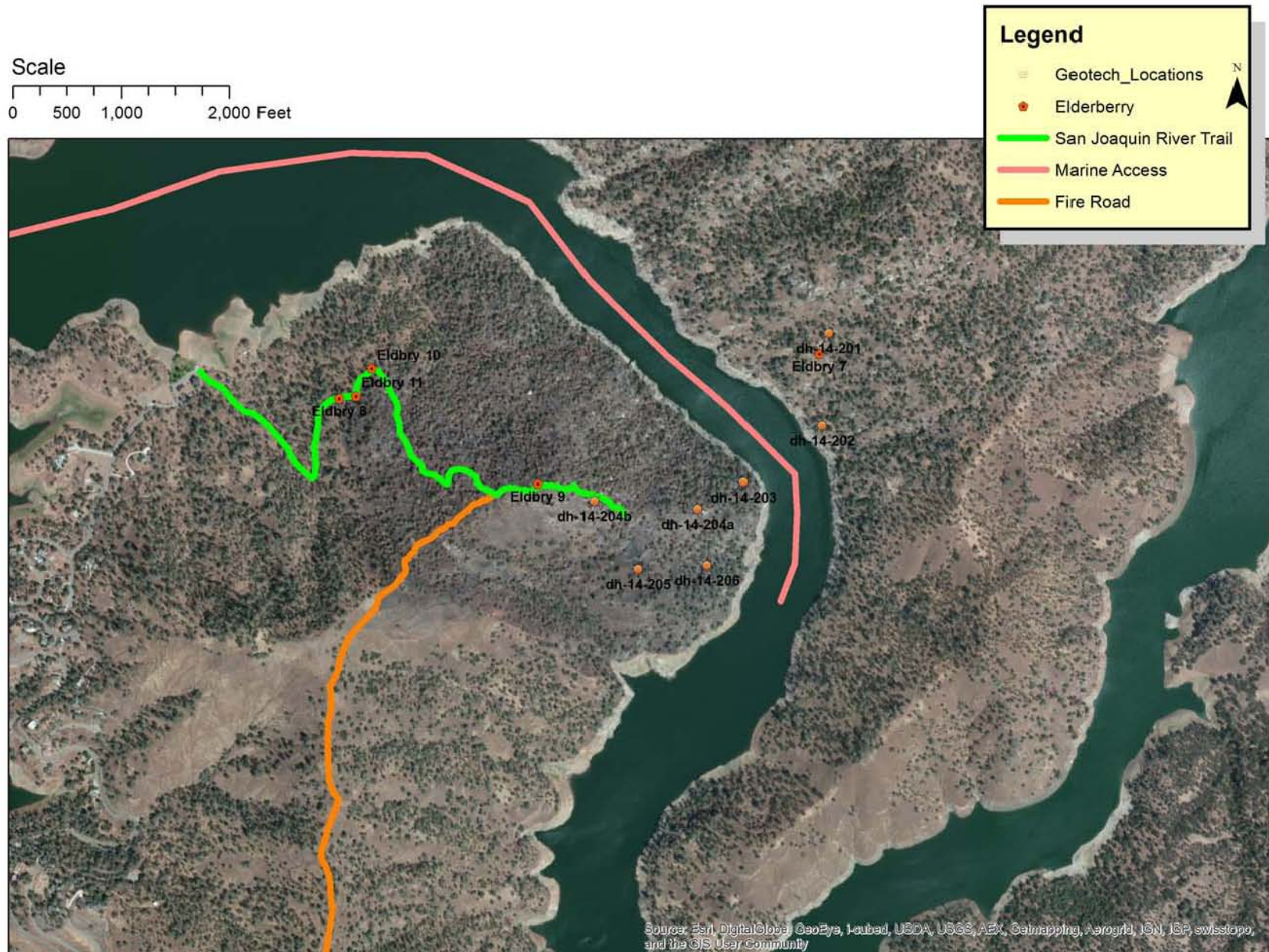


Figure 5. Elderberry Shrub Photos



Eldbry 7



Eldbry 11

3.b California tiger salamander

3.b.1 Habitat requirements

The California tiger salamander is a large terrestrial salamander reaching up to 8 inches in length, and is a large, stocky, terrestrial salamander with a broad, rounded snout. CTS are found in grassland and foothill areas below 2000 feet near breeding habitat including pools or ponds that dry out during the year. Adult salamanders find refuge during dry summer months in burrows constructed by squirrels or other mammals (USFWS, 2009). CTS can migrate up to one mile to suitable breeding habitat (Determination of Threatened Status for the California Tiger Salamander, 2004).

Suitable estivation habitat for CTS in the form of ground squirrel burrows is common in the areas near the dam site and diversion tunnel site. An intermittent or ephemeral pond (likely a vernal pool) that may be suitable breeding habitat for CTS is located 3,800 feet southeast of the diversion tunnel drill site.

There is designated critical habitat for CTS south and west of the proposed activity below Friant Dam (Attachment 3), indicating that CTS may be in the vicinity of the proposed action.

3.b.3 Effects of the proposed action on the species

The environmental commitments in section 1.i will be implemented as a part of the geotechnical activity to avoid and minimize affects to CTS during Phase 1. The proposed drilling activities would occur during the late summer season when CTS is inactive. Overland travel will be minimized to the extent needed only to access a drill site, turnaround, and exit back to the existing access roads. No activities would occur in or within 200 feet of suitable breeding habitat. Drill holes will be filled or capped as groundwater monitoring wells and trenches backfilled the same day to minimize entrapment of wildlife including CTS. Work would not occur within 48 hours of a rain event when CTS would be expected to be active.

3.b.4 Cumulative effects and effects from other actions

The existing open space land uses are compatible with maintaining suitable habitat for CTS in the areas affected by this proposed action and would not contribute to cumulative adverse effects to CTS.

3.b.5 Avoidance, minimization and mitigation

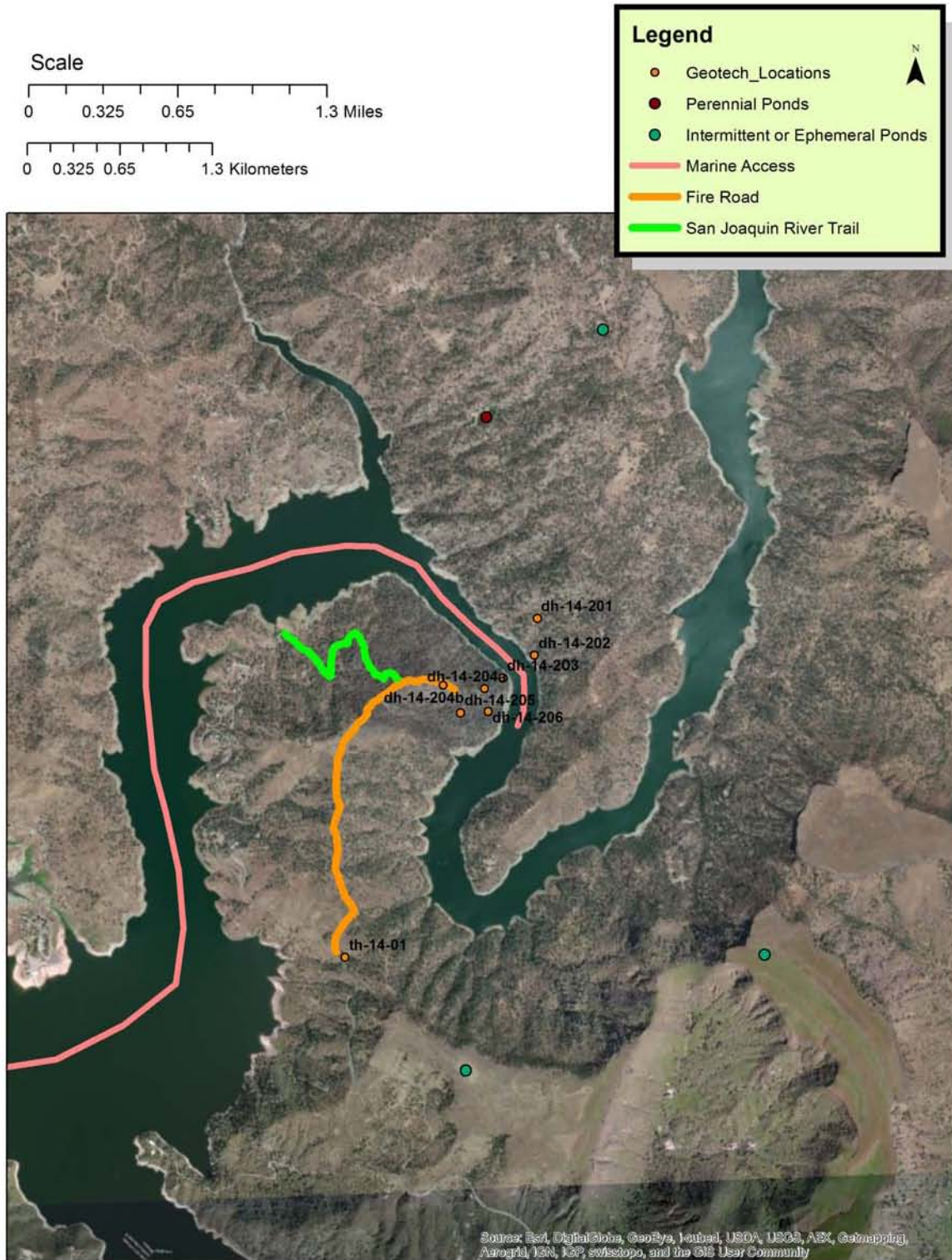
For applicable avoidance and minimization measures, see Section 3.b.3.

3.c California red-legged frog

3.c.1 Habitat requirements

CRLF is endemic to California and Baja California, occurring in areas from sea level to approximately 5,000 feet in elevation. It is the largest native frog in the western United States. Breeding season for the CRLF typically runs from November through April with egg laying in February or March in ponds with emergent vegetation, twigs, or other suitable materials. CRLF

Figure 6. Pond Features within 2.2-Miles of Proposed Activities



metamorphose between July through September with some tadpoles delaying metamorphosis until the following March or April. Adult frogs are nocturnal. The extent of suitable habitat may be affected by the amount of rainfall, including seasonal fluctuations with wet season habitat being more expansive than dry season or dry year habitat. Due to suitable habitat variability, population sizes of CRLF can vary widely from year to year. Standing bodies of fresh water, slow moving streams, pools within streams, or other ephemeral to perennial water bodies that hold water for a minimum of 20 weeks of the year is considered suitable breeding habitat. CRLF can disperse as far as 2.2 miles to suitable breeding habitat. Dispersal habitat for the frog consists of upland and riparian habitat contiguous with breeding and non-breeding aquatic habitats (Revised Designation of Critical Habitat for California Red-Legged Frog, 2010).

3.c.2 Presence or likelihood of presence in the work area

CRLF is not known to occur within 5 miles of the proposed geotechnical exploration activities based on a search of the CNDDDB. Several potentially suitable non-breeding and breeding aquatic habitats in the form of ephemeral to intermittent ponds and perennial ponds are within 2.2 miles of the proposed activity. Therefore the area may be considered suitable dispersal habitat for CRLF.

3.c.3 Effects of the proposed action on the species

Environmental commitments will be implemented as a part of the geotechnical activity to avoid and minimize affects to CRLF. The proposed drilling activities would occur during the late summer season when CRLF are unlikely to be far from non-breeding aquatic habitat. Overland travel will be minimized to the extent needed only to access a drill site, turnaround, and exit back to the existing access roads. No activities would occur in or within 200 feet of suitable breeding habitat. Drill holes will be filled or capped as groundwater monitoring wells the same day to minimize entrapment of wildlife including CRLF. Work would not occur within 48 hours of a rain event when CRLF would be expected to be active in their dispersal habitat. The action may affect but is not likely to adversely affect CRLF.

3.c.4 Cumulative effects and effects from interrelated actions

The existing open space land uses are compatible with maintaining suitable habitat for CRLF in the areas affected by this proposed action and would not contribute to cumulative adverse effects to CRLF.

3.c.5 Avoidance, minimization and mitigation

For applicable avoidance and minimization measures, see Section 3.c.3.

3.e Blunt-nosed leopard lizard

3.e.1 Habitat requirements

Blunt-nosed leopard lizards are endemic to the San Joaquin Valley. They inhabit open, sparsely vegetated areas of low relief such as non-native grasslands in the San Joaquin Valley floor and surrounding foothills up to an elevation of 2,400 feet (USFWS, 2010c).

3.e.2 Presence or likelihood of presence in the work area

Suitable habitat for the blunt-nosed leopard lizard may exist along the fire road, an area consisting mainly of open non-native grassland. However, there are no indications that blunt-nosed leopard lizards occur in the vicinity of the proposed activity based on an evaluation of occurrences in the CNDDDB.

3.e.3 Effects of the proposed action on the species

Reduced vehicle speeds, limiting access during drilling activities, capping drill holes, and worker education will be implemented to avoid and minimize impacts to the blunt-nosed leopard lizard, if present.

The proposed activity may affect, but is not likely to adversely affect blunt-nosed leopard lizard.

3.e.4 Cumulative effects and effects from interrelated actions

The existing open space land uses are compatible with maintaining suitable habitat for blunt-nosed leopard lizard in the areas affected by this proposed action and would not contribute to cumulative adverse effects to the lizard.

3.e.5 Avoidance, minimization and mitigation

For applicable avoidance and minimization measures, see Section 3.e.3.

4. Species that will not be effected by the proposed action

The following are unlikely to occur in the area affected by the proposed action due to a lack of suitable habitat: delta smelt (*Hipomesus transpacificus*), Central Valley steelhead (*Oncorhynchus mykiss*), Conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), Fresno kangaroo rat (*Dipodomys nitratooides exilis*), San Joaquin kit fox (*Vulpes macrotis mutica*), fleshy owl's clover (*Castilleja campestris* ssp. *succulenta*), and Hartweg's golden sunburst (*Pseudobahia bahiifolia*).

Friant Dam is a barrier to passage by delta smelt and Central Valley steelhead. The proposed activity will not result in affects to flows released from Friant Dam that may affect downstream populations of delta smelt or Central Valley steelhead.

Suitable vernal pool habitat for vernal pool invertebrates is not present in the activity area despite the presence of designated critical habitat within 5 miles of the proposed activity (Attachment 3). Therefore the proposed activity will not result in affects to Conservancy fairy shrimp, vernal pool fairy shrimp, or vernal pool tadpole shrimp.

The Fresno kangaroo rat is found in areas with elevated grassy patches on alkali plains or in grassy terrain with scattered alkali patches with easily dug friable soils (USFWS, 2010a). Since no such conditions exist near the proposed activity, it is unlikely that Fresno kangaroo rat is in the vicinity and could be affected by the proposed activity.

San Joaquin kit fox are found in areas with arid adapted plant species like desert scrub with short vegetative structure on open, level, sandy ground that is stone-free up to depths of about 3 to 4.5 feet deep (USFWS, 2010b). Bedrock in the activity area is shallow and in some areas no more than a few inches to a few feet below the surface. Tree and shrub cover are high as well, making the proposed activity area unsuitable for San Joaquin kit fox. Therefore San Joaquin kit fox is not likely to be present in the area and will not be affected by the proposed activity.

Hartweg's golden sunbursts are found on loam or sandy loam soils below an elevation of 460 feet (USFWS, 2007). The proposed activity will be conducted at elevations above 650 feet. The recorded occurrences of sunburst occur below Friant Dam are at elevations less than 460 feet. It is unlikely that sunbursts are in the area affected by the proposed activity. Therefore, the proposed activity would have no effect Hartweg's golden sunburst.

Fleshy owl's clover populations are concentrated in Merced County around Yosemite Lake, in southern Madera County, northern Fresno County, areas near Cooperstown in Stanislaus County, and in the "tabletop" mountains near Millerton Lake in Fresno and Madera Counties. Fleshy owl's clover occurs in Northern Claypan and Northern Hardpan vernal pools within annual grassland communities (USFWS, 2006) The areas affected by the proposed activity are primarily convex and comprised mainly of Northern Volcanic Mudflow and Northern Basalt Flow with impervious bedrock of volcanic origin and are different from concave or Mima mound landscapes in low-land Northern Claypan or Hardpan vernal pool habitats. There are no wetland areas affected by the proposed action. Therefore, the proposed activity would have no effect on fleshy owl's clover.

California Natural Diversity Database Map
redacted at the request of the California
Department of Fish and Wildlife.

5. References

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United States Department of the Interior



FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



April 16, 2014

Document Number: 140416102032

Andrea Meier
Bureau of Reclamation
2800 Cottage Way MP-152
Sacramento, CA 95825

Subject: Species List for USJRBSI Geotechnical Field Exploration at RM 274

Dear: Ms. Meier

We are sending this official species list in response to your April 16, 2014 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 15, 2014.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found http://www.fws.gov/sacramento/es/Branch-Contacts/es_branch-contacts.htm.

Endangered Species Division

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested**

Document Number: 140416102032

Current as of: April 16, 2014

Quad Lists

Listed Species

Invertebrates

- Branchinecta conservatio*
Conservancy fairy shrimp (E)
- Branchinecta lynchi*
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)
- Desmocerus californicus dimorphus*
valley elderberry longhorn beetle (T)
- Lepidurus packardii*
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

- Hypomesus transpacificus*
delta smelt (T)
- Oncorhynchus mykiss*
Central Valley steelhead (T) (NMFS)

Amphibians

- Ambystoma californiense*
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)
- Rana draytonii*
California red-legged frog (T)

Reptiles

- Gambelia (=Crotaphytus) sila*
blunt-nosed leopard lizard (E)

Mammals

- Dipodomys nitratooides exilis*
Fresno kangaroo rat (E)
- Vulpes macrotis mutica*
San Joaquin kit fox (E)

Plants

- Castilleja campestris ssp. succulenta*
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)
- Orcuttia inaequalis*
Critical habitat, San Joaquin Valley Orcutt grass (X)
San Joaquin Valley Orcutt grass (T)

- Pseudobahia bahiifolia*
Hartweg's golden sunburst (E)

Hartweg's golden sunburst (E)

Quads Containing Listed, Proposed or Candidate Species:

MILLERTON LAKE WEST (398C)

MILLERTON LAKE EAST (398D)

County Lists

Fresno County

Listed Species

Invertebrates

Branchinecta conservatio

Conservancy fairy shrimp (E)

Branchinecta longiantenna

longhorn fairy shrimp (E)

Branchinecta lynchi

Critical habitat, vernal pool fairy shrimp (X)

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Lepidurus packardii

Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Fish

Gila bicolor snyderi

Owens tui chub (E)

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus (=Salmo) clarki henshawi

Lahontan cutthroat trout (T)

Oncorhynchus (=Salmo) clarki seleniris

Paiute cutthroat trout (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Critical habitat, CA tiger salamander, central population (X)

Rana draytonii

California red-legged frog (T)

Critical habitat, California red-legged frog (X)

Rana muscosa
Mountain yellow legged frog (PX)

Rana sierrae
Mountain yellow legged frog (PX)

Reptiles

Gambelia (=Crotaphytus) sila
blunt-nosed leopard lizard (E)

Thamnophis gigas
giant garter snake (T)

Birds

Gymnogyps californianus
California condor (E)

Mammals

Dipodomys ingens
giant kangaroo rat (E)

Dipodomys nitratooides exilis
Critical habitat, Fresno kangaroo rat (X)
Fresno kangaroo rat (E)

Dipodomys nitratooides nitratooides
Tipton kangaroo rat (E)

Ovis canadensis californiana
Sierra Nevada (=California) bighorn sheep (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Calyptridium pulchellum
Mariposa pussy-paws (T)

Camissonia benitensis
San Benito evening-primrose (T)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Caulanthus californicus
California jewelflower (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Monolopia congdonii (=Lembertia congdonii)
San Joaquin woolly-threads (E)

Orcuttia inaequalis
Critical habitat, San Joaquin Valley Orcutt grass (X)
San Joaquin Valley Orcutt grass (T)

Orcuttia pilosa
Critical habitat, hairy Orcutt grass (X)
hairy Orcutt grass (E)

Pseudobahia bahiifolia
Hartweg's golden sunburst (E)

Pseudobahia peirsonii
San Joaquin adobe sunburst (T)

Sidalcea keckii
Critical habitat, Keck's checker-mallow (X)
Keck's checker-mallow (=checkerbloom) (E)

Tuctoria greenei
Greene's tuctoria (=Orcutt grass) (E)

Proposed Species

Amphibians

Anaxyrus canorus
Yosemite toad (PX)

Candidate Species

Amphibians

Bufo canorus
Yosemite toad (C)

Rana muscosa
mountain yellow-legged frog (C)

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Mammals

Martes pennanti
fisher (C)

Madera County

Listed Species

Invertebrates

Branchinecta conservatio

Branchinecta conservatio

Conservancy fairy shrimp (E)
 Critical habitat, Conservancy fairy shrimp (X)

Branchinecta longiantenna

longhorn fairy shrimp (E)

Branchinecta lynchi

Critical habitat, vernal pool fairy shrimp (X)
 vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Lepidurus packardii

Critical habitat, vernal pool tadpole shrimp (X)
 vernal pool tadpole shrimp (E)

Fish

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus (=Salmo) clarki henshawi

Lahontan cutthroat trout (T)

Oncorhynchus (=Salmo) clarki seleniris

Paiute cutthroat trout (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)
 Critical habitat, CA tiger salamander, central population (X)

Rana draytonii

California red-legged frog (T)

Rana sierrae

Mountain yellow legged frog (PX)

Reptiles

Gambelia (=Crotaphytus) sila

blunt-nosed leopard lizard (E)

Thamnophis gigas

giant garter snake (T)

Mammals

Dipodomys ingens

giant kangaroo rat (E)

giant kangaroo rat (E)

Dipodomys nitratooides exilis
Fresno kangaroo rat (E)

Ovis canadensis californiana
Sierra Nevada (=California) bighorn sheep (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

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Mariposa pussy-paws (T)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

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California jewelflower (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Orcuttia inaequalis
Critical habitat, San Joaquin Valley Orcutt grass (X)
San Joaquin Valley Orcutt grass (T)

Orcuttia pilosa
Critical habitat, hairy Orcutt grass (X)
hairy Orcutt grass (E)

Pseudobahia bahiifolia
Hartweg's golden sunburst (E)

Tuctoria greenei
Critical habitat, Greene's tuctoria (=Orcutt grass) (X)
Greene's tuctoria (=Orcutt grass) (E)

Proposed Species

Amphibians

Anaxyrus canorus
Yosemite toad (PX)

Candidate Species

Amphibians

Bufo canorus
Yosemite toad (C)

Rana muscosa
mountain yellow-legged frog (C)

mountain yellow-legged frog (C)

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Mammals

Martes pennanti
fisher (C)

Key:

- (E) *Endangered* - Listed as being in danger of extinction.
- (T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
- (P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat* - Area essential to the conservation of a species.
- (PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
- (C) *Candidate* - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting](#)

[Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts.

[More info](#)

Wetlands

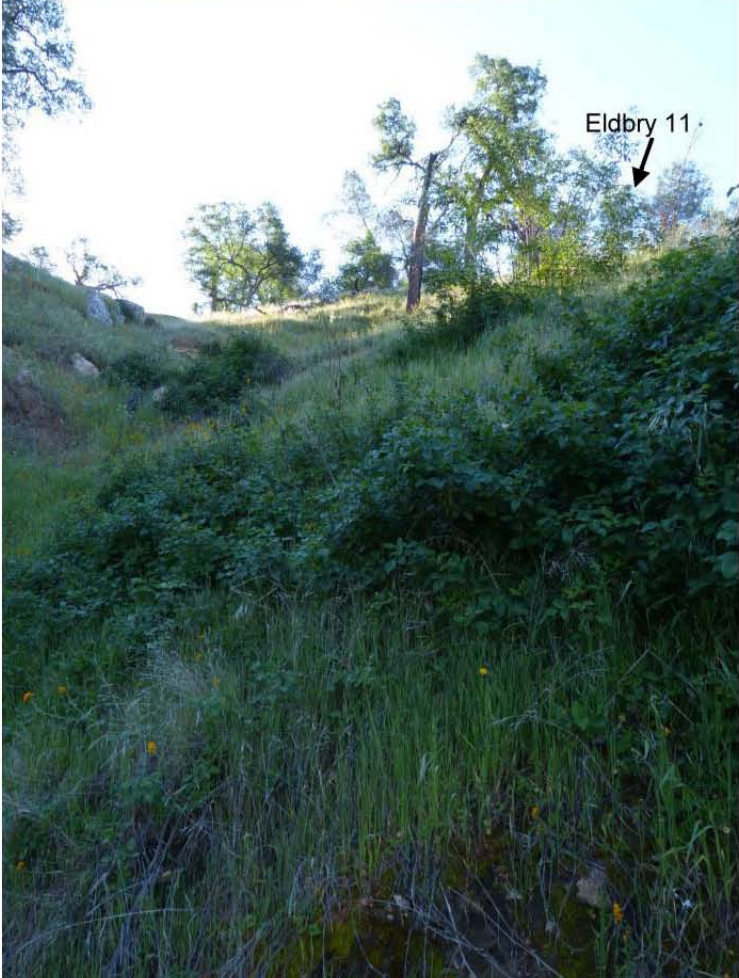
If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 15, 2014.









San Joaquin River Trail



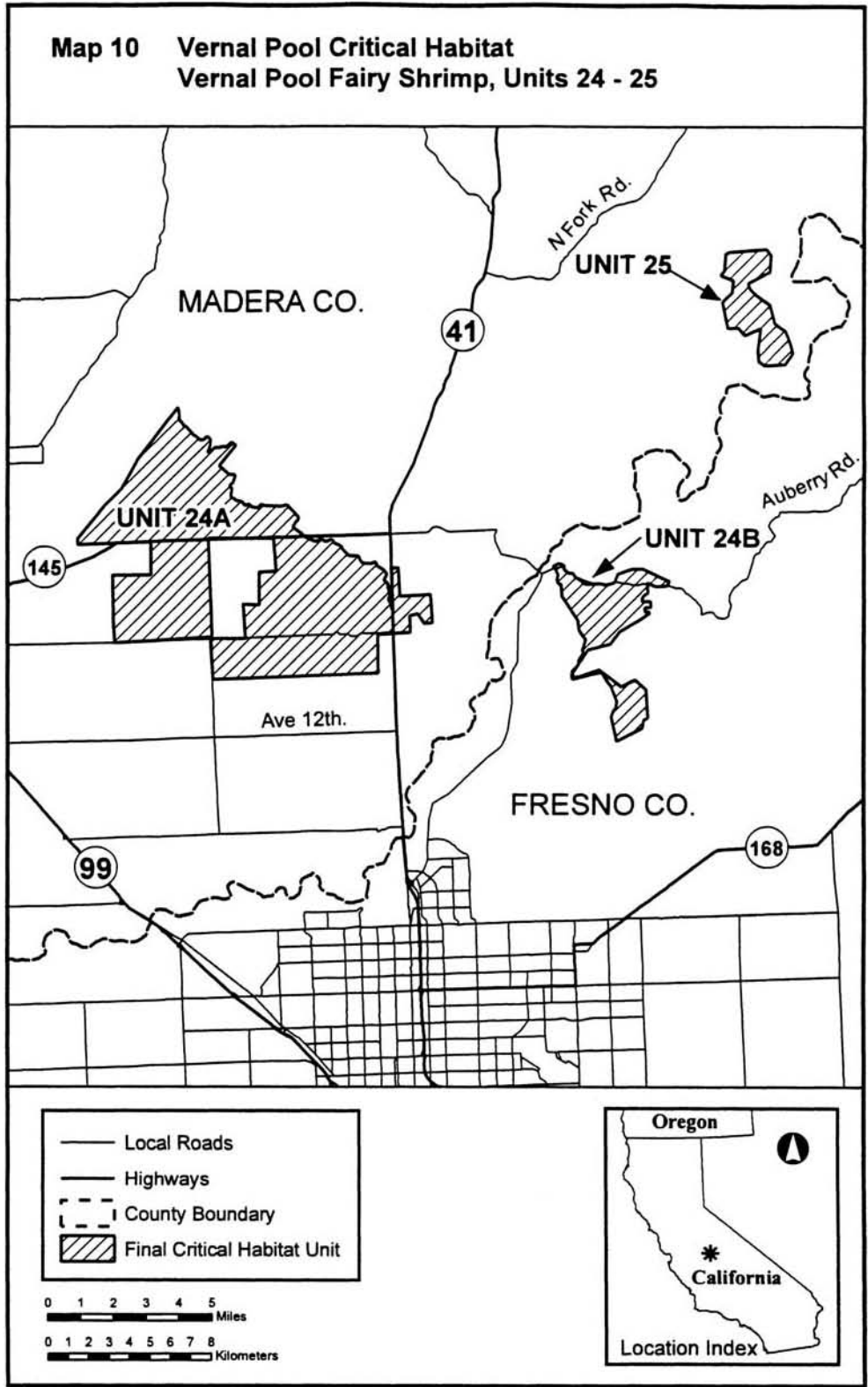


Designated Critical Habitat in the Vicinity of the USJRBSI Geotechnical FER

California Tiger Salamander Designated Critical Habitat Near the Proposed Activity



Vernal Pool Designated Critical Habitat Near Proposed Activity



Appendix B
Bald and Golden Eagle Protection Act Coordination

Conversation Record

May 2, 2014

I called Heather Beeler at the USFWS Migratory Bird Program. She was available to talk so we went over the USJ FER drilling activities. She said she concurred with Rob Doster overall, but then made some additional requests for avoidance. She said for the closest drill hole, working after Aug 31 would avoid the nest.

For drill holes within 660 ft, we could work prior to Aug 31 with a biological monitor. The monitor would guide work or issue a stoppage if work disturbed the nest or eagles. For drill holes farther than 660 feet, she did not seem to think ~~additional~~ measures to avoid effects would be required or that we would have to wait until after August 31 to begin work in those areas. I told her I appreciated her response and feedback. She said to call her or Rob at any time if we had questions.

Based on the measures above, Heather said we did not need a take permit for the USJ FER.

Andrea Meier 5/2/14

Addendum: Heather also said we should avoid flying the helicopter directly over the nest.
AM

Conversation Record

Friday April 18, 2014

Rob Doster, Migratory Bird Program USFWS
(916) 414-6721

I left a voicemail for Rob Doster on Wednesday regarding the geotech FER for Temperance Flat Dam. I explained the work, equipment, timing and proximity of activities to the active bald eagle nest. He called back on Friday and I reiterated the info I left in the voicemail. He said that for the drill sites near the nest, our minimization measure to conduct work after August 31 and before Jan 1 would be enough to actually avoid the nest since the birds would be "dispersed around the reservoir at that time," and that the activity would not keep them from foraging, etc. He said I should call Heather Beebe, the final word on the matter as she was the Migratory Bird Program eagle expert. Rob gave me her phone number (916) 414-6551. Rob then informed me that Heather's take on the situation may be different than his. I said I appreciated his time and would call Heather when I got off the phone with him.

Andrea Merri



Meier, Andrea <ameier@usbr.gov>

USJRBSI: geotechnical drilling and bald eagle nest at Millerton Reservoir

1 message

Meier, Andrea <ameier@usbr.gov>

Fri, Apr 18, 2014 at 10:52 AM

To: Heather Beeler <heather_beeler@fws.gov>

Good morning,

I left you a voicemail yesterday regarding Reclamation's proposed geotechnical drilling activities at the Temperance Flat dam site on the San Joaquin River. The geotechnical work is being done to analyze feasibility of constructing Temperance Flat dam at river mile 274 and will be incorporated in the final Feasibility Report for the Upper San Joaquin River Basin Storage Investigation.

There is an active bald eagle nest within 414 feet (horizontal distance) of the nearest drill hole DH-14-204a. DH-14-204a is within line of sight of the nest. Work at DH-14-204a and three other sites within line of sight of the nest (DH-14-204b, DH-14-205, and DH-14-206) would occur after August 31 when eaglets will have fledged. Equipment and supplies will be brought in with the geotech crew on ATVs along the San Joaquin River Trail and drilling support would be provided by a helicopter due to the steep topography and lack of access for heavy vehicles.

Work at DH-14-203 is 200 feet in elevation below the nest and is not in line of sight of the nest because of topography and vegetation. Work on drill hole 203 is proposed to begin sometime before August 31

Other at the dam's proposed right abutment across the river gorge are 1800 to 2350 feet away. Drilling at these locations (DH-14-201, DH-14-202) will be accomplished with helicopter support. Work on 201 and 202 would occur prior to August 31.

Attached is a map of the geotechnical activities in proximity to the bald eagle nest.

The question we're grappling with is whether the activities would result in take of the nest or if we can say we are avoiding the nest by scheduling activities after August 31 that are within line of sight within 200 meters (660 feet) away?

I am on leave Monday and Tuesday, so feel free to correspond with me via email. I will be checking email regularly.

Thank you and have a good weekend.

—

Andrea Meier, Natural Resources Specialist
Bureau of Reclamation, Mid-Pacific Region
Division of Environmental Affairs
Environmental Compliance & Conservation Branch (MP-152)
2800 Cottage Way
Sacramento, California 95825-1898
(916) 978-5041

 Bald eagle FWS map.pdf
3825K

Appendix C
Indian Trust Assets Information

Re: ITA request: Upper San Joaquin Geotechnical Field Exploration RM 274

1 message

RIVERA, PATRICIA <privera@usbr.gov>
To: "Meier, Andrea" <ameier@usbr.gov>

Tue, Apr 15, 2014 at 4:03 PM

Andrea,

I reviewed the proposed action to drill holes and excavate test pits in order to characterize geologic conditions at the proposed Temperance Flat dam site at river mile 274 and associated quarry and diversion tunnel.

The Field Exploration Request (FER), provides additional details about the proposed geotechnical investigation and a map of where they would occur. Access to the quarry would be obtained via a private road from Pebble Beach Drive. The private road will need improvements in order to make it passable by the drill rig. Access to the drill holes at the right abutment (eastern) dam site would be gotten from hiking up from the river gorge from a barge or boat. Access to the drill holes at the left abutment would be gotten from ATVs driven along the San Joaquin River trail and by helicopter. Access to the diversion tunnel drill site would be gotten by driving up Sky Harbor Road, an existing 2-lane paved road. Many of the drill holes will remain in place as water monitoring wells. Trenches will be backfilled the same day

The proposed action does not have a potential to impact Indian Trust Assets. The nearest Indian Trust Asset is Table Mountain Rancheria, approximately 3 miles South of the project location.

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Appendix D
Cultural Resources Coordination

To: Sharon McHale, Project Manager, Nichole Johnson, Project Manager, MP-700, Geology Files, MP-230

From: Trenton Lewis, Geologist, MP-230

Subject: Scope of Work for Proposed 2014 Upper San Joaquin River Basin Storage Investigation (USJRBSI) at RM 274

INTRODUCTION AND BACKGROUND

The U.S. Bureau of Reclamation is planning feasibility-level geologic investigations at a proposed dam site on the Upper San Joaquin River. The investigations are scheduled to begin in the summer of 2014 as part of the Upper San Joaquin River Basin Storage Investigation Project (USJRBSI), implemented to provide additional storage capacity for the San Joaquin River watershed.

As requested in the Field Exploration Request, issued by the Technical Service Center (TSC) and dated March 21, 2014, geologic drilling, test pits and mapping are necessary to gather additional feasibility design data for use in evaluating feasibility designs and cost estimates for the proposed dam site at RM 274.

Objectives include: 1) obtain geologic and geotechnical data on bedrock conditions along the proposed dam axis and at the proposed diversion tunnel outlet 2) evaluate soil materials and rock properties at the proposed quarry borrow area 3) develop new/update existing geologic maps and cross sections of the RM 274 dam site, coffer dams, tunnel alignment, quarry area, batch plant area, staging area, haul road alignments.

The proposed dam site is located upstream of Friant Dam on Millerton Reservoir about 25 miles northeast of Fresno, California, and is referred to by river mile (RM) as RM 274. Location maps (Figures 1 and 2) of the proposed dam site, diversion tunnel, quarry borrow area, batch plant area, staging area, and haul road alignments with exploration locations are included at the end of this memorandum.

U.S. Bureau of Reclamation employees will perform drilling, test pit excavation and geologic mapping. Performance of the work will comply with all pertinent federal and state regulations and standards.

Right of entry, cultural and environmental permitting, equipment mobilization and access, contract preparation and discussions with personnel from Reclamation, the State of California Department of Parks and Recreation (State Parks), and private landholders has been initiated. A site visit to determine field logistics and to conduct cultural and environmental permitting was completed April 8 to 11, 2014. Environmental compliance documents are scheduled to be complete in 2014.

GEOLOGIC FIELD INVESTIGATIONS FOR RM 274

The geologic field investigation program includes geologic mapping, drilling at the RM 274 dam site and diversion tunnel outlet, along with drilling and test pit excavation in the quarry borrow area. As currently planned a maximum total of 12 drill holes (DH) and 6 test pits are proposed for 2014 as follows.

Field Program (12 Total Drill Holes and 6 Total Test Pits)

- 6 drill holes at RM 274 Dam Axis
 - Right Abutment DH-14-201 and DH-14-202 **AND**
 - Left Abutment DH-14-203, DH-14-204, DH-14-205 and DH-14-206

- 5 drill holes at Quarry Borrow Area
 - BH-14-1 through BH-14-5

- 1 drill hole at outlet side of Diversion Tunnel
 - TH-14-1

- 6 Test Pits at Quarry Borrow Area
 - QTP-14-1 through -6

RM 274 DAM SITE

As discussed above, the drilling program at RM 274 consists of a total of six drill holes to be completed along the proposed dam axis. Due to the inaccessibility of these drill hole locations by vehicle, a helicopter will be required to airlift the drill rig and equipment in and out of each site. Tables 1 and 2 below provide drill hole data including coordinates and target depths. Drill holes to be completed at RM 274 (DH-14-201 through -206) are shown on Figure 2. Drill holes will be 2.98-inch diameter (NQ) and completed as observation wells at the ground surface with locking standpipes encased in concrete.

Table 1: RM 274 Dam Axis Drill Hole Data

Drill Hole	Depth (feet)	Feature	Access Type
<i>Dam Axis</i>			
DH-14-201	206	Upper Right Abutment	Airlift
DH-14-202	338	Lower Right Abutment	Airlift
DH-14-203	361	Lower Left Abutment	Airlift
DH-14-204	224	Upper Left Abutment	Airlift
DH-14-205	265	Upstream Left Abutment	Airlift
DH-14-206	TBD	Upstream Left Abutment (Optional)	Airlift

Table 2: RM 274 Dam Axis Drill Hole Coordinates

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Dam Axis Right Abutment</i>				
DH-14-201	2261912.0720'	6378372.1790'	863	Well
DH-14-202	2261063.4415'	6378273.0490'	649	Well
<i>Dam Axis Left Abutment</i>				
DH-14-203	2260573.0344'	6377526.7104'	659	Well
DH-14-204	2260344.0427'	6377091.9555'	884	Well
DH-14-205	2259813.8884'	6376517.9375'	936	Well
DH-14-206	2259819.8788'	6377156.8260'	717	Well
* California State Plane Coordinate System NAD83, Zone 4; Vertical Datum NAVD88. Coordinates and elevations are approximate, exact locations will be determined at site based on field conditions.				

DRILLING METHODS AND EQUIPMENT at RM 274

Drilling will be accomplished using a skid-mounted rotary diamond core drill rig (Photo 1). A brief description of the drill rig and the drilling equipment is provided below.

Drilling Equipment

Drilling equipment would consist of:

- Either an Atlas Copco CS100 P4 or Longyear 28 skid mounted rotary diamond core drill rig, power pack and control panel
- stock tank and circulating pump
- drill rods, core barrels, diamond bits and tools
- water supply pump and 1/2-inch PVC water line

Drilling Operations

All drill holes in the dam axis will be diamond rotary core drilled using recirculated water pumped from Millerton Reservoir. Rock core would be boxed and transported from the drilling sites to the staging area by helicopter. Drill cuttings consisting mostly of fine to medium sand would be filtered from the drilling water and spread on the ground surface. All drill holes in the dam axis will be completed as groundwater monitoring wells.

The drill rig would be thoroughly serviced prior to starting drilling operations. Any oil or hydraulic fluid leaks would be repaired. Absorbent pads and oil booms would be available at the drilling sites in case of an oil or hydraulic fluid leak. A Spill Prevention Control & Countermeasure Plan, a Fire Prevention and Suppression Plan, and a Spill Hazard Analysis (for drilling operations) will be provided prior to drilling.

Onsite fire-fighting equipment will include hand tools (axes, fire rakes and shovels), (2)-5 gallon water pump backpacks, high-pressure water pump and hose (powered by drill), (2)-5 pound fire extinguishers and (1)-10 pound fire extinguisher, and about 100-gallons of onsite water.

Site Access, Mobilization and Demobilization

As currently planned, daily access to the drill sites would be via boat from Millerton Reservoir South Shore State Recreation Area (SRA) to a footpath leading to the individual drill sites. The boat would be docked each night at the SRA and used to shuttle personnel and hand tools. Most drilling equipment would be hauled by truck to a flat, paved, open area near the left abutment of Friant Dam to be used as a staging area for the helicopter airlift (Photo 2). From the staging area, drilling equipment would be airlifted to the drill sites by helicopter (Photo 3). Depending on the lifting capacity of the helicopter, several (17 to 19) separate airlifts may be required at each site. The helicopter airlift does not require that the helicopter land. A 100 to 150-foot-long static line with lifting hooks are used to “pick and drop” the individual loads from the staging area to the drilling sites. Upon completion of drill holes the equipment would be airlifted from the final drill site back to the staging area and hauled out by truck. A Job Hazard Analysis (JHA) of the helicopter airlift and equipment handling procedures will be completed prior to the flight.

Drilling Water

Drilling water would be pumped from Millerton Reservoir to a stock tank at the drilling site. Water supply pumps would be transported and mounted on a barge. Drill water would be re-circulated and contained in the stock tank during drilling operations with only minor amounts of drill water splashing onto the ground surface. Most water should evaporate or percolate into the ground; no water should flow back into Millerton Reservoir.

Environmental and Cultural Survey

Environmental and cultural surveys of the proposed sites and access routes are being processed and a compliance date in 2014 is anticipated.

Environmental/Special Considerations

Re-Fueling Operations and Fuel Storage

Drilling operations at RM 274 will have the fuel flown in by helicopter. Fuel will be contained in a steel fuel tank which in turn will be stored in a lockable metal secondary containment box about 4 ft. x 4 ft. x 3 ft. See the following section on "Spill Prevention" for preventive measures regarding refueling of the drill rig and storage of onsite fuel.

Drill Pad Preparation

Only limited hand excavation is planned at the drill sites for the purpose of leveling the drill rig. Most leveling should be accomplished with leveling legs attached to the rig and timber blocking. Upon completion of each hole the drill pad excavation will be backfilled with excavated material and returned to its natural slope. Drill hole locations were targeted for the most accessible areas (flattest and most unobstructed) nearest each proposed feature to be investigated.

DIVERSION TUNNEL

As discussed above, drilling for the diversion tunnel will consist of one 3.78-inch diameter (HQ) drill hole (TH-14-1) displayed on Figure 2. Tables 3 and 4 below provide drill hole data including coordinates and target depth.

Table 3: Diversion Tunnel Drill Hole Data

Drill Hole	Depth (feet)	Feature	Type
<i>Diversion Tunnel</i>			
TH-14-1	385	Near Diversion Tunnel Outlet on Sky Harbor Drive	Track Drill Rig

Table 4: Diversion Tunnel Drill Hole Coordinates

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Diversion Tunnel</i>				
TH-14-1	2264285.2759'	6379909.5224'	1147	Well

DRILLING METHODS AND EQUIPMENT AT THE DIVERSION TUNNEL DRILL HOLE

Drilling at the diversion tunnel alignment will be performed by a track mounted rotary diamond core drill rig (Photo 4).

Drilling Equipment

Drilling equipment would consist of:

- CME 850 X track mounted rotary diamond core drill rig
- stock tank and circulating pump
- drill rods, core barrels, diamond bits and tools
- water supply pump and 1/2-inch PVC water line

Drilling Operations

The tunnel drill hole TH-14-1 will be advanced by pilot bit and diamond rotary core drilling methods using a track mounted CME 850 X drill rig. Drilling will advance 4- inch diameter casing through fill, and soil material to competent rock. The drill hole will be advanced using a pilot bit to elevation 625 and then advanced and sampled to total depth with rotary diamond core drilling. Rock core would be boxed and transported from the drilling sites and shipped to the Reclamation Materials Engineering and Research Lab (MERL) for testing. Drill cuttings consisting mostly of fine to medium sand would be filtered from the drilling water and spread on the ground surface. The drill hole will be left open with casing to facilitate down hole optical televiewer and geophysical surveys prior to the hole being completed as a groundwater monitoring well with a flush mounted manhole encased in concrete.

Site Access, Mobilization and Demobilization

The drill rigs and support equipment will travel via paved roads to a dirt parking area off Sky Harbor Road. The drill rig will be set up in the fenced cattle chute area. Traffic control will be necessary during initial mobilization of the drill rig on to the site and mobilization off the site at

the completion of the drilling. Security will be necessary for the hours that the drill crew and geologists are not onsite with the drill equipment.

Drilling Water

Drilling water will be transported to the diversion tunnel drill site from Friant Dam via water truck. Drill water will be re-circulated and contained in a stock tank during drilling operations with only minor amounts of drill water splashing onto the ground surface.

Environmental and Cultural Survey

Environmental and cultural surveys of the proposed sites and access routes are being processed and a compliance date in 2014 is anticipated.

Environmental/Special Considerations

A Spill Prevention Control & Countermeasure Plan, a Fire Prevention and Suppression Plan, and a Spill Hazard Analysis (for drilling operations) will be provided prior to drilling.

Onsite fire-fighting equipment will include hand tools (axes, fire rakes and shovels), (2)-5 gallon water pump backpacks, high-pressure water pump and hose (powered by drill), (2)-5 pound fire extinguishers and (1)-10 pound fire extinguisher, and about 100-gallons of onsite water.

Quarry Borrow Area

As discussed above, the geologic investigation for the proposed quarry borrow area will consist of five drill holes and six test pit excavations. Access to the quarry borrow area is via a rough dirt road easement through private property.

DRILL HOLES

The five drill holes to be advanced in the quarry borrow area (BH-14-1 through -5) will have a 3.78-inch diameter (HQ) and locations are shown on Figure 2. Tables 5 and 6 below provide drill hole data including coordinates and target depths.

Table 5: Quarry Borrow Area Drill Hole Data

Drill Hole	Depth (feet)	Feature	Type
<i>Quarry Borrow Area Drill Holes</i>			
BH-14-1	112	Center of Quarry Area	Truck Mounted Drill Rig
BH-14-2	137	Northwest Quarry Area	Truck Mounted Drill Rig
BH-14-3	154	Northeast Quarry Area	Truck Mounted Drill Rig
BH-14-4	88	South Center Quarry Area	Truck Mounted Drill Rig
BH-14-5	99	Southwest Quarry Area	Truck Mounted Drill Rig

Table 6: Quarry Borrow Area Drill Hole Coordinates

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Quarry Borrow Area Drill Holes</i>				
BH-14-1	2265113.7802'	6380663.8845'	1212	Well
BH-14-2	2265720.2448'	6380549.6448'	1238	Well
BH-14-3	2265524.7296'	6380881.3560'	1229	Well
BH-14-4	2264548.0846'	6380269.5957'	1189	Well
BH-14-5	2264074.9826'	6379876.3773'	1142	Well
* California State Plane Coordinate System NAD83, Zone 4; Vertical Datum NAVD88. Coordinates and elevations are approximate, exact locations will be determined at site based on field conditions.				

DRILLING METHODS AND EQUIPMENT AT QUARRY BORROW AREA

Drilling at the quarry borrow area will be performed by a track mounted rotary diamond core drill rig (Photo 4).

Drilling Equipment

Drilling equipment would consist of:

- CME 850 X track mounted rotary diamond core drill rig
- stock tank and circulating pump
- drill rods, core barrels, diamond bits and tools
- water supply pump and 1/2-inch PVC water line

Drilling Operations

All drill holes will be core advanced by rotary diamond core drilling methods using a track mounted CME 850 X drill rig. The rock core recovered from the drill holes will be logged, photographed boxed, labeled and shipped to MERL for aggregate testing. Drill cuttings consisting mostly of fine to medium sand would be filtered from the drilling water and spread on the ground surface. All drill holes will be completed as observation wells with locking standpipes encased in concrete.

Site Access, Mobilization and Demobilization

Site access to the quarry borrow area is through private property via a 3.75 mile long unimproved dirt access road connecting CR 216 to the proposed quarry site located on Federal property. Due to the rough condition of the road, a few areas will have to be improved prior to mobilization of a drill rig to the site. Access road improvements will consist of minor grading, excavation and tree trimming.

Personnel and supplies will be transported in daily from a parking area located at Pebble Beach Road and CR 216.

Drilling Water

Drilling water will be transported in daily either from a private water supply, located at the Fine Gold Creek Crossing, or from Friant Dam via a small water truck. The water will be emptied into a large water storage tank located in the quarry borrow area. The large storage tank will be

connected to a stock tank located near active drill hole locations. Drill water will be re-circulated and contained in the stock tank during drilling operations with only minor amounts of drill water splashing onto the ground surface.

Biologic and Archeological Survey

Biologic and archeological surveys of the proposed sites and access routes are being processed and a compliance date in 2014 is anticipated.

Environmental/Special Considerations

A Spill Prevention Control & Countermeasure Plan, a Fire Prevention and Suppression Plan, and a Spill Hazard Analysis (for drilling operations) will be provided prior to drilling.

Onsite fire-fighting equipment will include hand tools (axes, fire rakes and shovels), (2)-5 gallon water pump backpacks, high-pressure water pump and hose (powered by drill), (2)-5 pound fire extinguishers and (1)-10 pound fire extinguisher, and about 100-gallons of onsite water.

GEOLOGIC TEST PITS

The six test pits (QTP-14-1 through -6) to be excavated in the quarry borrow area locations are shown on Figure 2. Tables 7 and 8 below provide additional test pit data, including coordinates.

Table 7: Quarry Borrow Area Test Pit Data

Test Pit	Depth (feet)	Feature	Type
<i>Quarry Borrow Area Test Pits</i>			
QTP-14-1	13	North Quarry	Rubber Track Excavator
QTP-14-2	13	Quarry	Rubber Track Excavator
QTP-14-3	13	Quarry	Rubber Track Excavator
QTP-14-4	13	Quarry	Rubber Track Excavator
QTP-14-5	13	Quarry	Rubber Track Excavator
QTP-14-6	13	South Quarry	Rubber Track Excavator

Table 8: Quarry Borrow Area Test Pit Coordinates

Drill Hole	Coordinates*		Elevation* (feet)	Completion
	Northing	Easting		
<i>Quarry Borrow Area Test Pits</i>				
QTP-14-1	2254295.6756'	6373624.5659'	890	Backfill
QTP-14-2	2265519.0657'	6380872.9361'	1228	Backfill
QTP-14-3	2265595.4117'	6380550.3402'	1231	Backfill
QTP-14-4	2265208.9513'	6380560.8601'	1210	Backfill
QTP-14-5	2264994.6934'	6380290.0417'	1202	Backfill
QTP-14-6	2264670.8384'	6380335.1167'	1208	Backfill

* California State Plane Coordinate System NAD83, Zone 4; Vertical Datum NAVD88. Coordinates and elevations are approximate, exact locations will be determined at site based on field conditions.

TEST PIT METHODS AT THE QUARRY BORROW AREA

The test pits will be excavated to refusal or to the maximum depth reach of a small excavator with a toothed bucket.

Field Program (6 Total Test Pits)

- 6 Test Pits at Quarry Borrow Area
 - QTP-14-1 through -6

Excavation Equipment

Excavation equipment will consist of rubber-tracked excavator with a blade and a toothed bucket, similar to a Caterpillar 364 (Photo 5).

Excavation Operations

Excavation will progress through soil and decomposed material until refusal or the maximum depth limits of reach for the excavator are achieved. All test pits will be geologically logged, photographed and samples selected for laboratory gradations and Atterberg limits testing. All test pits will be backfilled and compacted with excavated material.

Site Access, Mobilization and Demobilization

Site access is through private property via a 3.75 mile long unimproved dirt access road connecting CR 216 to the proposed quarry borrow area located on Federal property. The access road will require minor improvements prior to mobilization of drill rig and support equipment. Personnel and supplies will be transported in daily from a parking area located at Pebble Beach Road and CR216.

Environmental and Cultural Survey

Environmental and cultural surveys of the proposed sites and access routes are being processed and a compliance date in 2014 is anticipated.

Environmental/Special Considerations

A Spill Prevention Control & Countermeasure Plan, a Fire Prevention and Suppression Plan, and a Spill Hazard Analysis (for drilling operations) will be provided prior to drilling.

Onsite fire-fighting equipment will include hand tools (axes, fire rakes and shovels), (2)-5 gallon water pump backpacks, high-pressure water pump and hose (powered by drill), (2)-5 pound fire extinguishers and (1)-10 pound fire extinguisher, and about 100-gallons of onsite water.

GEOLOGIC MAPPING

Geologic mapping will be performed at the dam axis, cofferdam locations, quarry borrow area, batch plant area, staging area and on haul road alignments, where accessible.

Geologic mapping will be performed by a minimum of two field geologists at a time, travelling by foot. Only handheld tools will be used to take measurements and no disturbance of animate or inanimate objects will occur during the performance of the field mapping.



Photograph 1

DRILL RIG AND DRILLING EQUIPMENT

Reclamation's Atlas Copco CS100 P4 skid-mounted drill rig in operation on the right abutment of RM 274 above Millerton Reservoir in summer of 2006. A helicopter airlift was required to transport the drill rig and all drilling equipment to the drill site.



Photograph 2

HELICOPTER AIRLIFT

A large, secure, paved area on the left abutment of Friant Dam will provide a mostly dust-free staging area for the helicopter operations. Individual loads will be secured, separated and sequenced for transport upon arrival of the helicopter. Each load will weigh less than 2000 pounds.



Photograph 3

HELICOPTER AIRLIFT

The engine for the Altas Copco CS 1000 drill rig is being airlifted into drilling site DH-06-6 near the right abutment of RM 274 in the summer of 2006. A pad for the drill rig was prepared before the airlift. The drill rig had to be assembled one piece at a time while the helicopter hovered in position overhead.



Photograph 4

TRACK MOUNTED DRILL RIG

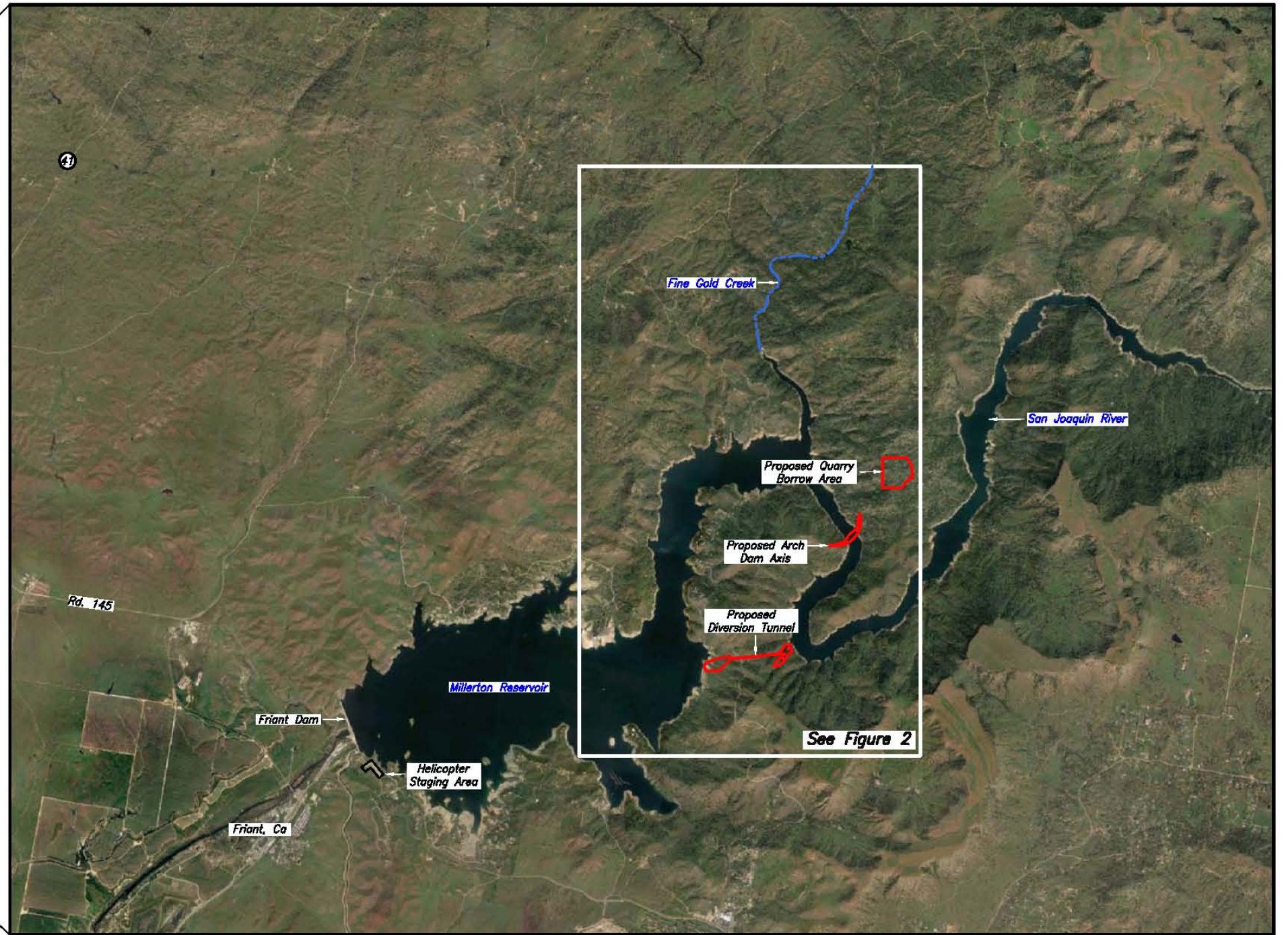
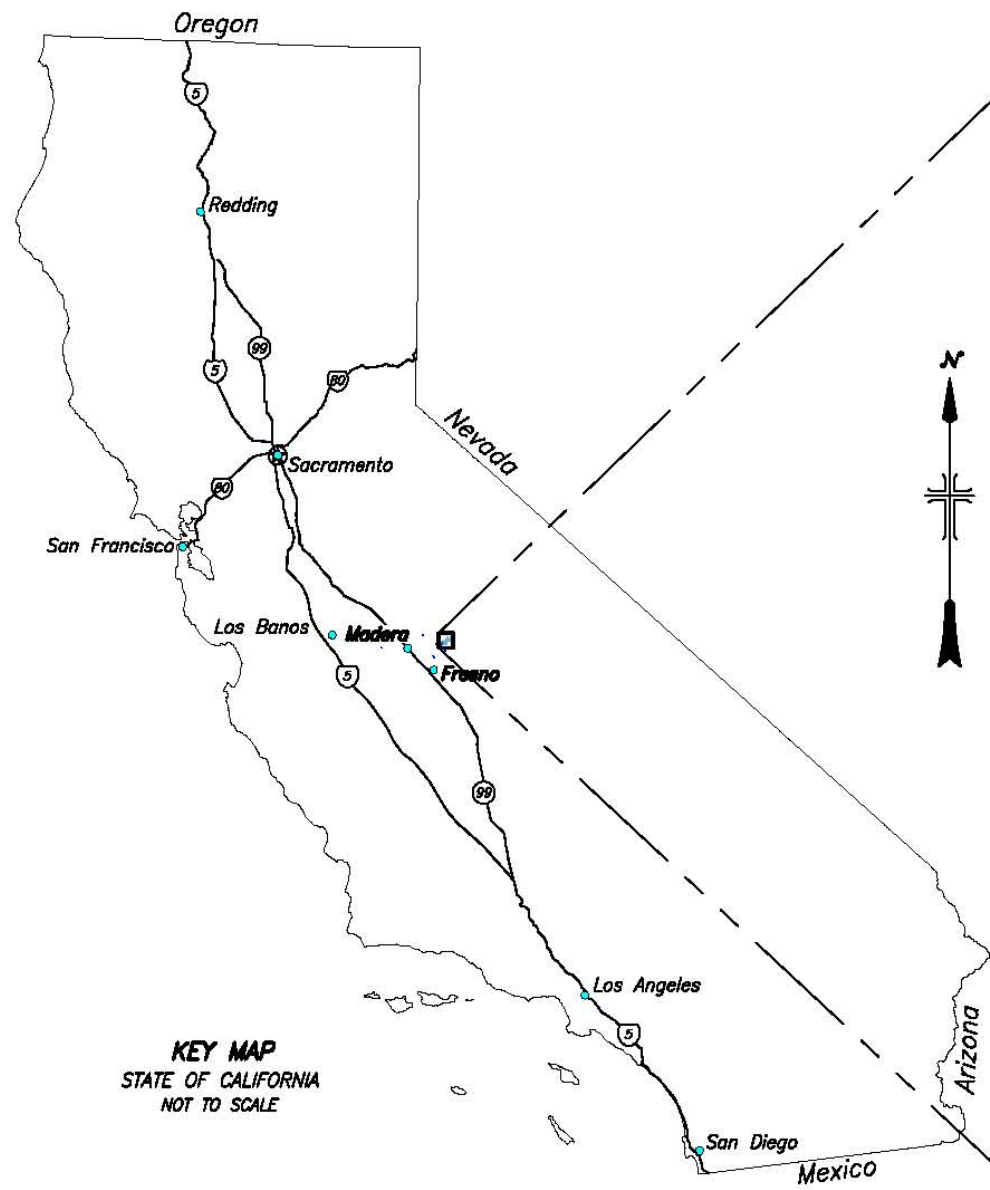
Photograph of CME 850 X track mounted drill rig similar to the drill rig planned for use in the quarry borrow area and the diversion tunnel drilling.



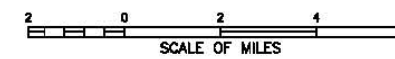
Photograph 5

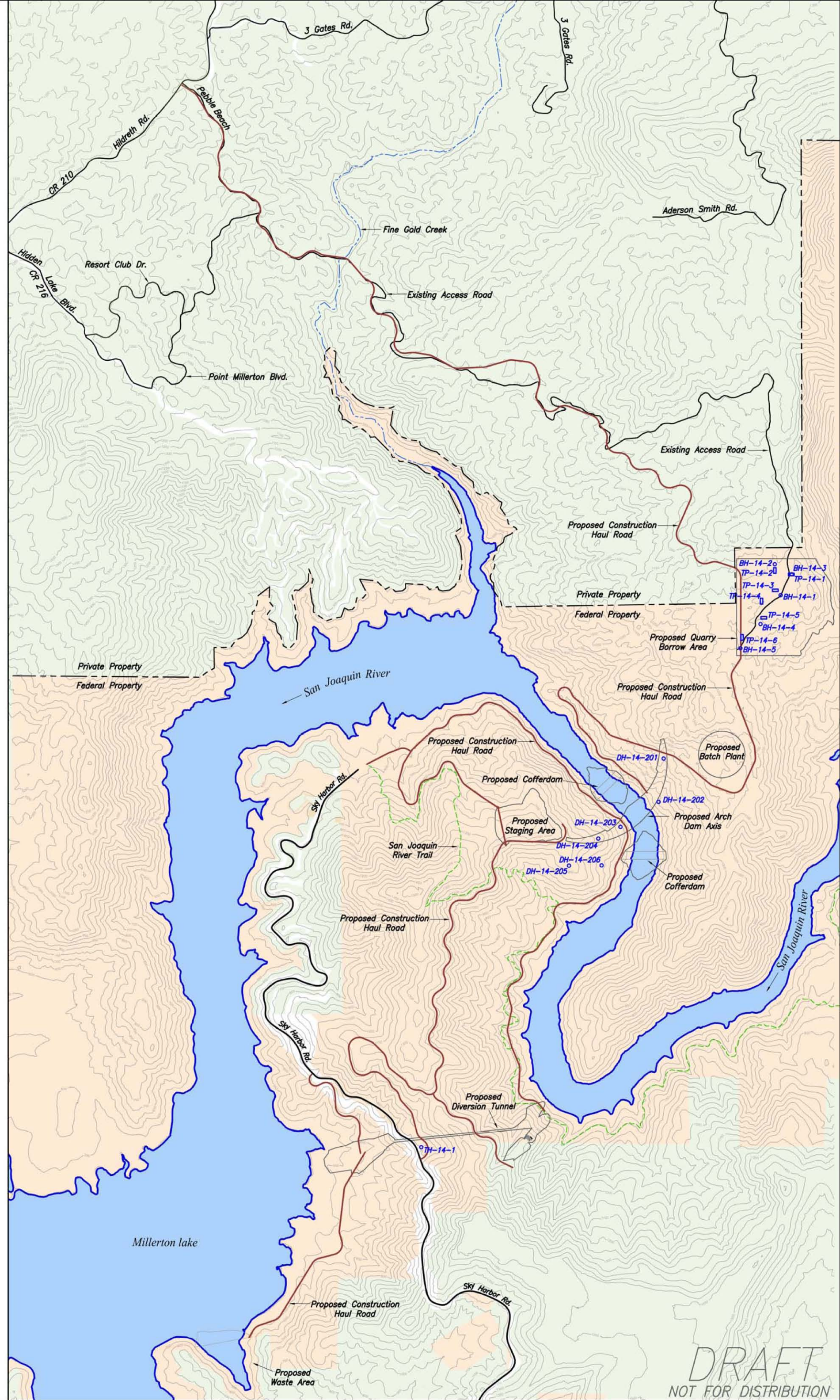
SMALL TRACK MOUNTED EXCAVATOR

Photograph of a small rubber track mounted excavator, similar to the excavator planned to be used to perform access road improvements and excavate test pits in the quarry borrow area.



VICINITY MAP







LEGEND

- Federal Land
- Private Property
- Existing Road
- Proposed New Access Roads
- San Joaquin River Trail
- Proposed drilling location
- Proposed Rest Pit Location
- San Joaquin River
- Fine Gold Creek

RECLAMATION
Managing Water in the West

UPPER SAN JOAQUIN RIVER BASIN STORAGE INVESTIGATION LOCATIONS
FIGURE 2
 SCOPE OF WORK

DRAFT

NOT FOR DISTRIBUTION

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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July 25, 2014

Reply in Reference To: BUR_2014_0709_001

Anastasia T. Leigh
Regional Environmental Officer
Bureau of Reclamation, Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

RE: Geotechnical Investigation-Feasibility Study-Temperance Dam Site; Upper San Joaquin River Basin Storage; (14-SCAO-126)

Dear Ms. Leigh:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Bureau of Reclamation (Reclamation) is seeking my comments regarding the effects that the above named project will have on historic properties.

The United States Congress has directed the Secretary of the Interior to study the feasibility of new water storage projects in California; including along the San Joaquin River above Friant Dam. Reclamation is preparing a report for Congress on the feasibility of constructing a dam at Temperance Flat consistent with non-destructive planning efforts under CFR § 800.1(c). Actions such as geotechnical investigations are needed to help inform design and build cost estimates. Therefore, Reclamation has proposed the drilling of seven geotechnical units to obtain geotechnical data at Temperance Flat for the feasibility study.

Each drilling unit will expose a four inch diameter core to a maximum depth of 500 feet below surface. The entire drilling operation will occupy an area no greater than ten square yards. The drill holes will be backfilled with bentonite clay. Due to the rugged topography in the test areas, a ten by ten platform mounted drill will be flown in by helicopter and placed at the drill site from which all work will be conducted. Drill crew members will access the sites by boat or on foot via existing trails.

The Area of Potential Effects (APE) is a thirty foot buffer around the ten foot square platform at each drill site. The vertical APE is 500 feet below surface for each four inch diameter drill hole. The helicopter will take off and land from an existing paved parking lot at the south end of Friant Dam.

In addition to your letter received July 9, 2014, you have submitted the following document as evidence of your efforts to identify and evaluate historic properties in the project APE:

- *MP-153 Cultural Resources Post Field Summary Record; (14-SCAO-126) Geotechnical Investigations Upper San Joaquin River Basin Storage Investigation; Central Valley Project; Millerton Lake (Proposed Temperance Flat Dam Location).* (Nickels, June 27, 2014).

- *Cultural Resources Analysis in Support of the EIS/EIR, Upper San Joaquin River Basin Storage Investigation, Fresno and Madera Counties, California* (Rich, Byrd & Brandy, April 2014).

Archival research was obtained as part of research on a regional context, baseline of known cultural sites, ethnographic study and sensitivity analysis conducted for the proposed Temperance Flat Dam. This included a records search at the Southern San Joaquin Valley Information Center originally conducted in 2001 and updated in 2006, 2008 and again on August 22, 2013. No previously recorded cultural resources were identified within the project APE.

A pedestrian field survey, utilizing fifteen meter transects was conducted at the proposed drill locations on April 8, May 22 and June 11, 2014. Each drill location received two field surveys; the first with the geologist who staked the exact drill location and a second time with a representative from Table Mountain Rancheria and North Fork Rancheria. Field survey included a minimum of thirty meters beyond the APE at each location. No cultural resources were identified during field survey.

Native American consultation included contact with the Native American Heritage Commission and Native American tribes and individuals likely to have knowledge of sites of religious or cultural significance to them in the project area (March – June, 2014). No such properties were identified through consultation efforts. Reclamation considers the operation of the helicopter as a possible indirect effect on historic properties as it could potentially have an impact on sacred sites, religious activities or traditional cultural properties. Through Native American consultation, Reclamation has not been informed of any potential effects from the helicopter.

Pursuant to 36 CFR §800.4(d)(1) Reclamation has determined there will be *No Historic Properties Affected* by the proposed geotechnical testing project. Based on your identification efforts, I concur with the *Finding of No Historic Properties Affected*. Identification efforts are sufficient and I also have no objections to the delineation of the APE, as depicted in the supporting documentation.

Thank you for considering effects to historic properties in your project planning. Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, Reclamation may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns regarding archaeological resources, please contact Associate State Archaeologist, Kim Tanksley at (916) 445-7035 or by email at kim.tanksley@parks.ca.gov. Any questions concerning the built environment should be directed to State Historian, Kathleen Forrest at (916)445-7022 or by email at kathleen.forrest@parks.ca.gov.

Sincerely,



Carol Roland-Nawi, PhD
State Historic Preservation Officer