

# **B.F. Sisk Dam Raise and Reservoir Expansion Project Environmental Impact Report/ Supplemental Environmental Impact Statement**

**Appendix L: Recreation Supporting Information**

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# Appendix L Recreation Supporting Information

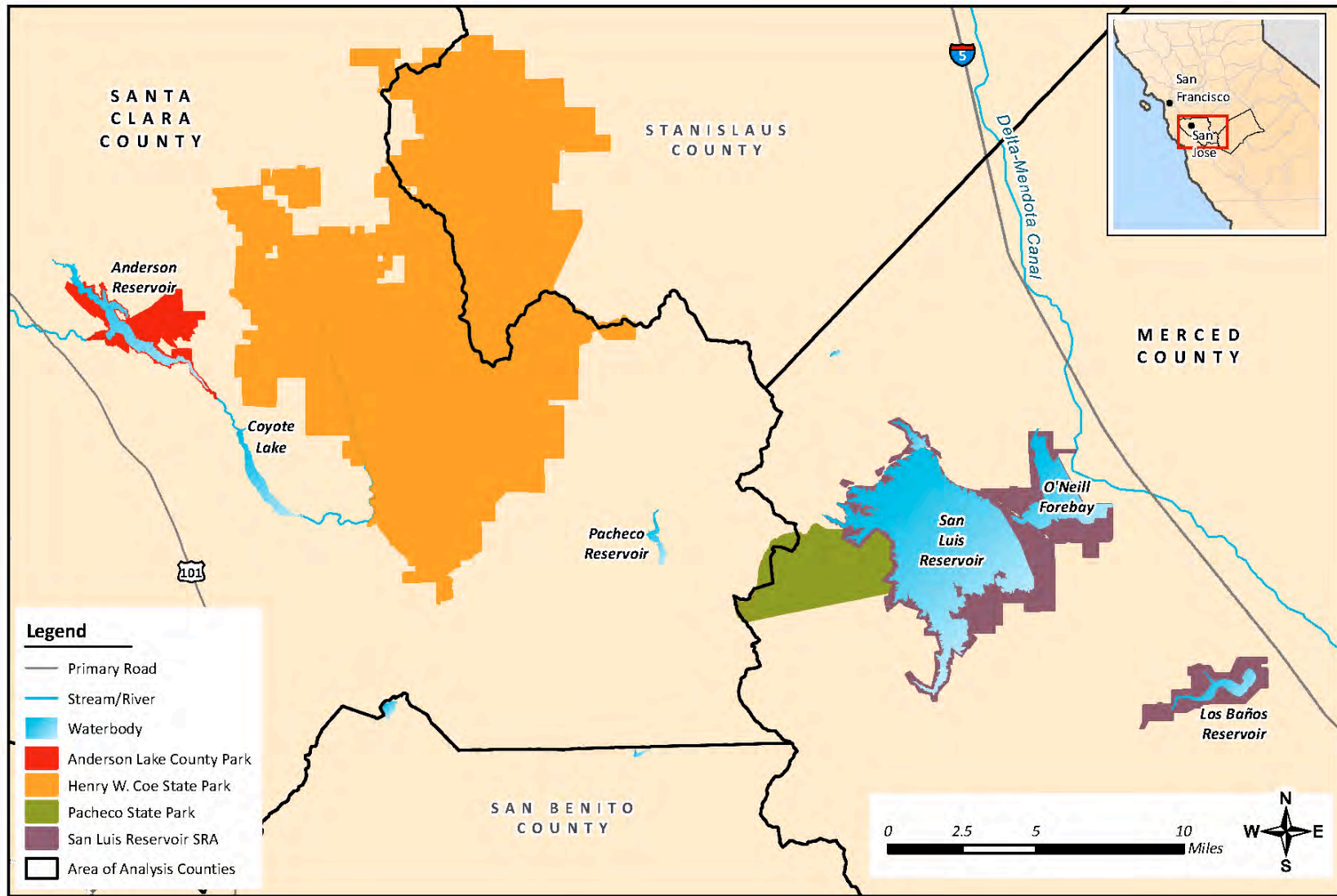
This appendix presents the existing environmental setting for recreation resources and opportunities with the potential to be affected by the proposed alternatives.

## L.1 Area of Analysis

The recreation area of analysis includes recreation resources with the potential to be affected by proposed restrictions or construction of the action alternative. The recreation facilities included in this analysis are the San Luis Reservoir and the San Luis Reservoir State Recreation Area (SRA) in Merced County.

Figure 1 shows the recreation area of analysis including San Luis Reservoir and the San Luis Reservoir SRA, Pacheco State Park (SP) and nearby recreational facilities.

The San Luis Reservoir SRA lies along State Route (SR) 152, in Merced County, 13 miles northwest of the City of Los Banos, ten miles southeast of the City of Gustine, thirty-eight miles east of the City of Gilroy, and two miles west of the unincorporated Town of Santa Nella. It is accessible via Interstate 5 (I-5), or from SR 33 to SR 152 (United States Department of the Interior, Bureau of Reclamation [Reclamation] and California Department of Parks and Recreation [CDPR] 2013). The San Luis Reservoir SRA spans approximately 27,000 acres and includes major facilities such as the San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir, as well as several other federal and state-owned lands and facilities (Reclamation and CDPR 2013). Although, Los Banos Reservoir is not included in the area of analysis in other sections of this document, it is included in the recreation analysis as it is a part of the San Luis SRA.



**Figure 1. Recreation Area of Analysis** (the San Luis Reservoir SRA and Pacheco State Park)



## L.2 Affected Environment/ Environmental Setting

The San Luis Reservoir was constructed in 1967 as part of the California State Water Project (SWP) and Central Valley Project (CVP) systems to store and deliver water. The San Luis Reservoir SRA was developed later, beginning with an agreement in 1969 and initiation of general plan development in 1971 (Reclamation and CDPR 2013).

The San Luis Reservoir SRA is divided into five use areas,<sup>1</sup> Basalt, Dinosaur Point, Los Banos Creek, Medeiros, and San Luis Creek, and one minor use area for off-highway vehicle (OHV) use (see Figure 2 below). There are two additional areas designated for wildlife; both allow for hunting and backcountry hiking, along with nature study activities. The primary activities at each use area vary but, collectively, the San Luis Reservoir SRA provides opportunities for boating, swimming, windsurfing, camping, and fishing (Reclamation and CDPR 2013). See Table 1 for a detailed description of each use area’s primary recreation facilities and opportunities.

**Table 1. San Luis Reservoir SRA Use Areas**

Use Area	Picnicking	Camping		Fishing	Boating/ Water Sports	Boat Ramps	Swimming	Trails	Horseback Riding	Day Use	Toilets	Showers	Other
		# of Sites	RV										
Basalt	X	79	X	X	X	X	X	X		X	X	X	Eight ADA accessible campsites, fish cleaning station, storage lockers, proximity to grocery store and laundry facility.
Dinosaur Point		0		X	X	X	X			X	X		Excellent lake access, parking for 123 vehicles, 5 shade ramadas, public telephone, street luge, and bicycling.
Los Banos Creek	X	14		X	X	X	X	X	X	X	X		All campsites include shade ramadas, equestrian trails, and parking for 40 vehicles with trailers.

<sup>1</sup> Use areas refer to the designated major public recreation facilities within the San Luis Reservoir SRA (Reclamation and CDPR 2013).

Use Area	Picnicking	Camping		Fishing	Boating/ Water Sports	Boat Ramps	Swimming	Trails	Horseback Riding	Day Use	Toilets	Showers	Other
		# of Sites	RV										
Medeiros	X	400	X	X	X	X	X			X	X		50 campsites with shade ramadas, picnic tables, and barbecues and approximately 350 primitive campsites for tents and RVs.
San Luis Creek	X	53	X	X	X	X	X	X		X	X		Six ADA accessible campsites, the only ADA accessible trail, two group campsites, two large beaches, irrigated lawns, fish cleaning station, changing area, and parking for 171 vehicles with trailers or 390 without.

Source: CDPR 2011, Reclamation and CDPR 2013.  
 Key: ADA= Americans with Disabilities Act; RV = Recreational Vehicle

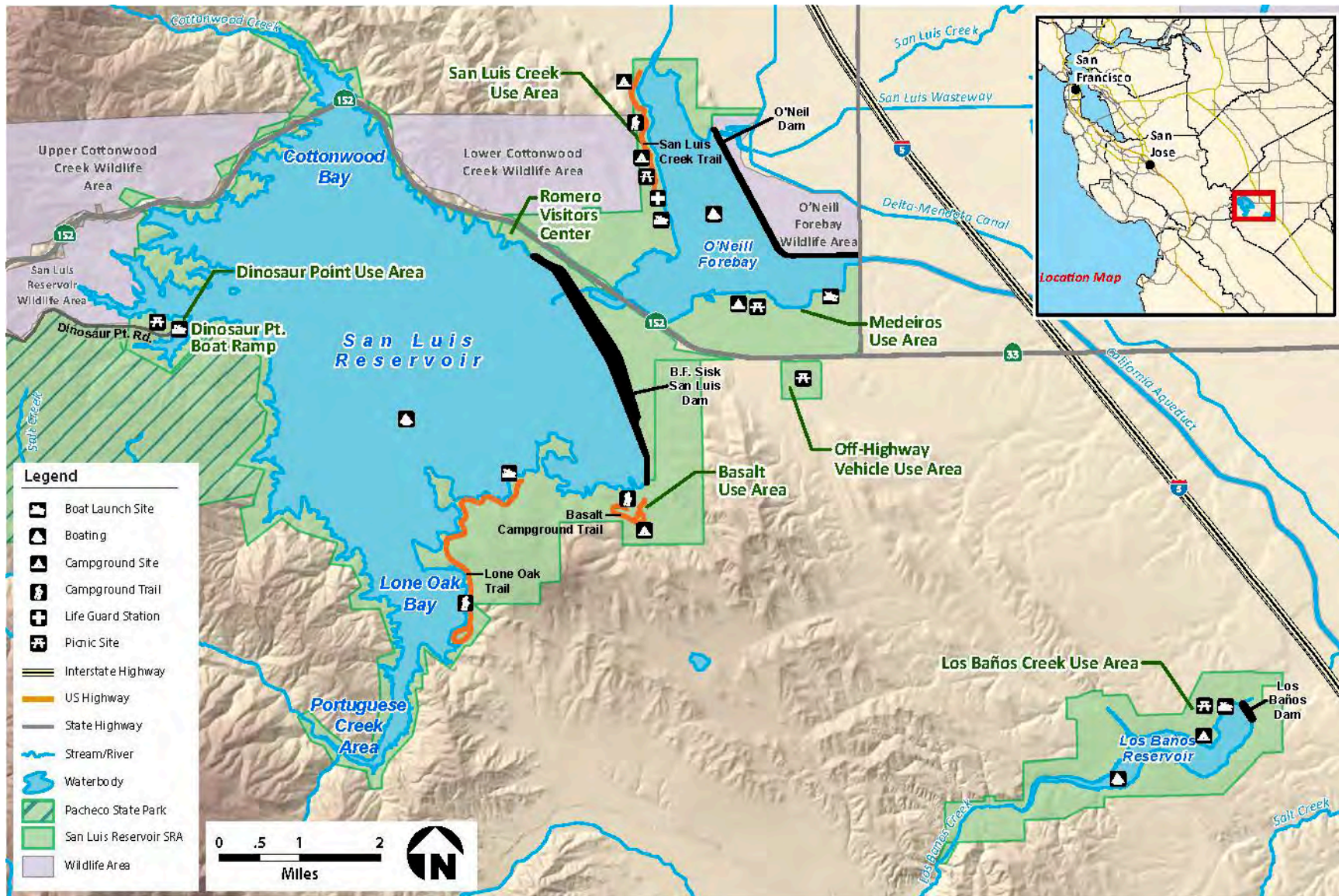
### L.2.1 Park Access

The San Luis Reservoir SRA provides multiple points of access to allow visitors to reach its various use areas. From I-5, visitors can enter the park at Canyon Road to access the Los Banos Creek Use Area. From both SR 33 and SR 152, visitors can access the O’Neill Forebay, as well as the Medeiros and San Luis Creek use areas. SR 152 also provides visitor access to both the Basalt Use Area and OHV area via Basalt and Gonzaga Roads. The Dinosaur Point Use Area can also be accessed via SR 152, at the Romero Visitor Center and the Dinosaur Point Road entrance (CDPR 2006). Dinosaur Point Road also provides primary public access to Pacheco SP.

### L.2.2 Camping and Picnicking Facilities

The San Luis Reservoir SRA has four campgrounds that provide over 540 campsites for visitor use. The San Luis Reservoir SRA consists of two developed campgrounds, at the Basalt and San Luis Creek use areas, that provide 132 campsites. The Basalt campgrounds are the most developed, including toilets, showers, boat ramps, a fish cleaning station, trail access, designated picnic areas, and American with Disabilities Act (ADA) accessible camping accommodations. The only other available ADA accessible campgrounds include six sites at the San Luis Creek Use Area. The two group campsites at San Luis Creek Use Area can accommodate up to 30 and 60 campers, respectively. Other campgrounds, including those at the Medeiros and Los Banos Creek use areas, are underdeveloped with minimal amenities.

Most undeveloped campsites still provide some shade, picnic areas and toilets. No campground accommodations are offered at the Dinosaur Point Use Area (CDPR 2011, Reclamation and CDPR 2013). Figure 2 presents the park’s existing camping facilities.



Source: CDPR 2011 and 2006

Figure 2. San Luis Reservoir SRA Use Area Map

All campgrounds include some capacity for picnicking. The San Luis Reservoir SRA also offers five group picnic sites along the O'Neill Forebay shoreline, with day use accommodations in both the North and South Beaches. An additional 200 picnic sites are available along San Luis Creek (CDPR 2020).

### **L.2.3 Boating and Water-Related Recreation Opportunities**

Boating and other water sports, such as jet skiing and windsurfing, are allowed from sunrise to sunset on San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir (CDPR 2011). There are boat ramps at all five use areas (Reclamation and CDPR 2013). Within the San Luis Reservoir, boats can be launched at the Dinosaur Point and Basalt boat ramps. Boaters can launch at the San Luis Creek Use Area; however, boats are prohibited at its North Beach. The Los Banos Creek Reservoir, separate from the main San Luis Reservoir and O'Neill Forebay system, has its own boat ramp (CDPR 2011). Within the San Luis Reservoir SRA, boating poses some risks due to existing shallow areas and potential hazards during reservoir drawdown periods. Heavy winds also pose as a hazard in the San Luis Reservoir SRA and can inhibit boating conditions (CDPR 2020).

### **L.2.4 Swimming Opportunities**

The only area designated for recreational swimming is in the roped area of the San Luis Creek's North Bend area. Swimming is allowed throughout the park outside of the designated area. No lifeguards are on duty in the park and swimmers are cautioned to be aware of boats on the water (CDPR 2011).

### **L.2.5 Fishing Opportunities**

Fishing is a popular recreation activity at the San Luis Reservoir, O'Neill Forebay, and Los Banos Creek Reservoir. Fishing derbies are often held at the O'Neill Forebay for bass, crappie and bluegill (Reclamation and CDPR 2013). Overnight fishing is permitted in specific areas within the San Luis Creek Use Area, but is restricted within the campgrounds. The Medeiros Use Area allows overnight fishing at its campgrounds (CDPR 2011).

### **L.2.6 Hiking Opportunities**

The San Luis Reservoir SRA provides hiking opportunities at the Basalt, Los Banos Creek, and San Luis Creek use areas. Hiking opportunities are also available at the two designated wildlife use areas. The Basalt Use Area includes two formally designated trails, the Basalt Campground Trail (1.5 mile loop), and the Lone Oak Trail (6 miles round trip). The San Luis Creek trail is the only ADA compliant trail in the SRA (CDPR 2011, Reclamation and CDPR 2013).

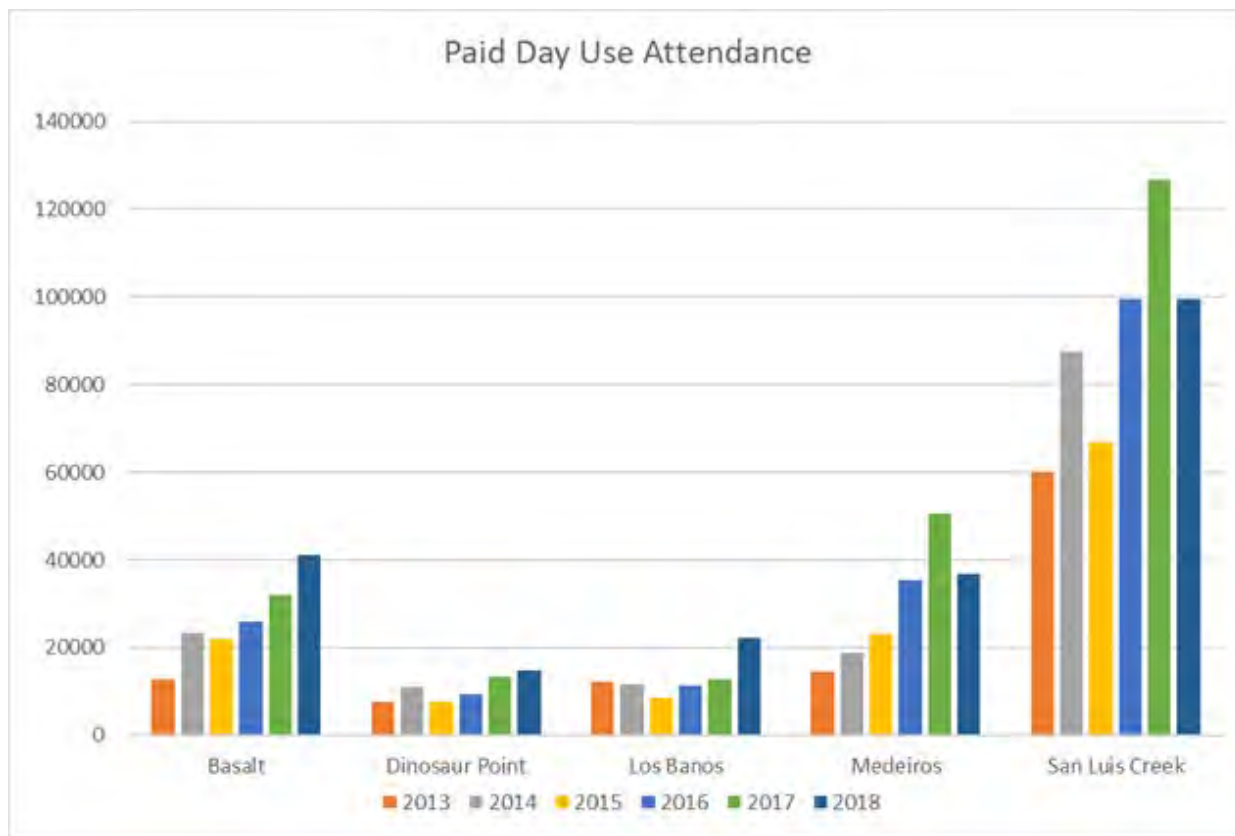
### **L.2.7 Hunting Opportunities**

During hunting season, hunting is allowed at the San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir. Hunting is also allowed in the two designated wildlife use areas. Hunting is not allowed within 500 feet of campgrounds, picnic areas, or dam and water structures (CDPR 2011).

### **L.2.8 Visitor Attendance**

The CDPR has collected visitor attendance data for the San Luis Reservoir SRA by use area for the years 2013 to 2016. Data are broken down by paid day use, free day use, overnight use and the number of boats launched. Figures 3 to 5 show visitor attendance trends within the San Luis Reservoir SRA use areas.

Figure 3 shows the paid visitor rate trends for the San Luis Reservoir SRA five use areas. The San Luis Reservoir SRA hosted approximately 210,000 paid visitors in 2018. Of those visitors, the majority visit the area to utilize the recreation resources at the San Luis Creek, Basalt and Medeiros use areas. Historically, the San Luis Creek Use Area has been the most popular. Table 1 shows that the San Luis Creek Use Area provides more recreation opportunities when compared to all the use areas. Free day use rate trends are similar to those of paid day use.

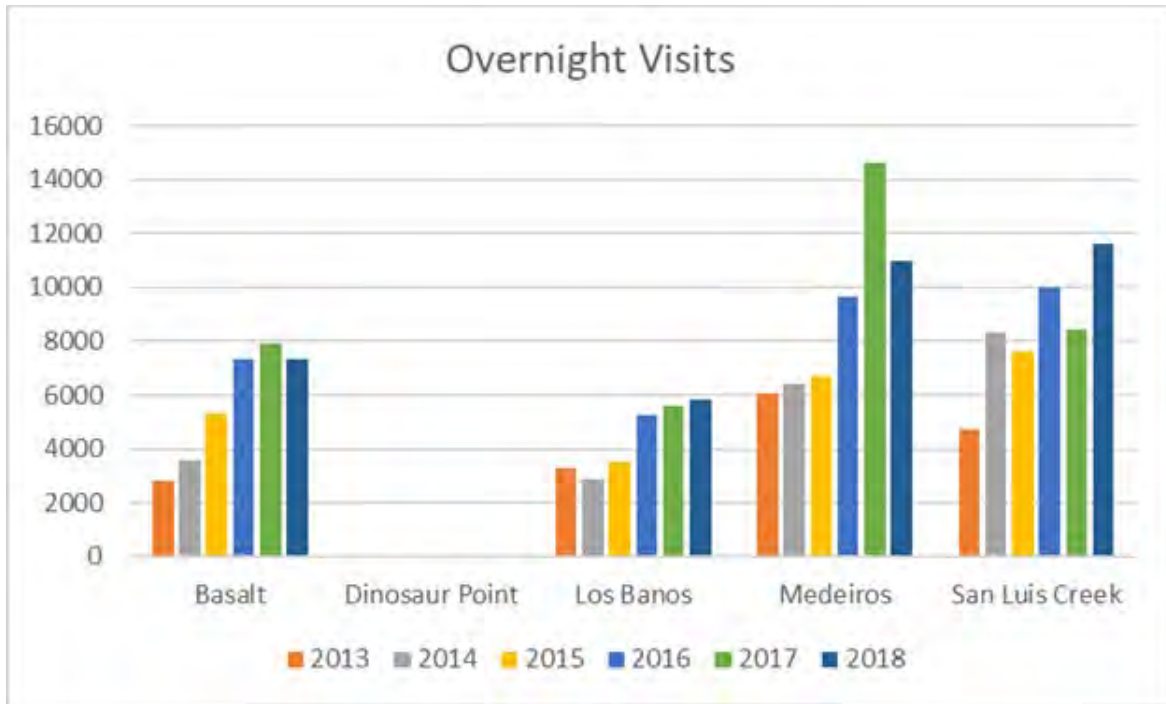


Source: CDPR 2018.

**Figure 3. San Luis Reservoir SRA Paid Visitor Rates**

Figure 4 shows the overnight visitor rate trends for four of the five San Luis Reservoir SRA use areas. The Dinosaur Point Use Area does not offer camping accommodations; therefore, visitors are not allowed to use its facilities overnight. Overnight use is greatest at the San Luis Creek Use Area; however, the Basalt and Medeiros use areas are also commonly utilized for overnight camping. Table 1 shows that these three use areas offer many campsites and the only recreational vehicle (RV) accommodations.

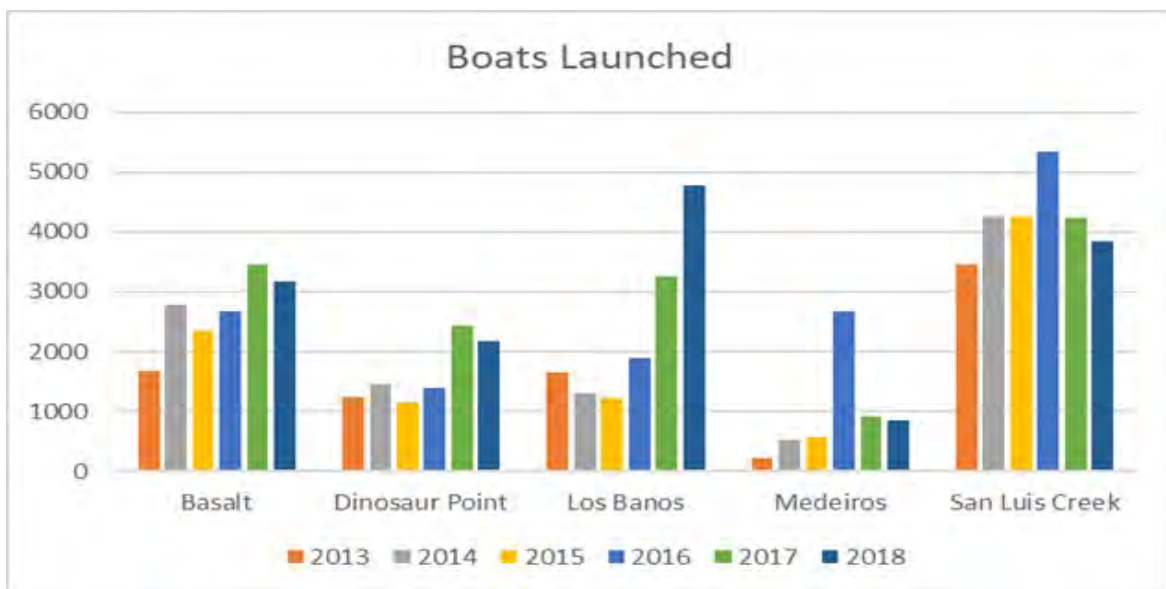




Source: CDPR 2018.

**Figure 4. San Luis Reservoir SRA Overnight Visitor Rates**

Figure 5 shows the boat ramp utilization trends for the five San Luis Reservoir SRA use areas. Boat ramps are at all five use areas. On average, the San Luis Creek Use Area has the most consistently used boat ramp. In recent years, the Los Banos Creek Use Area boat ramp has been increasingly utilized, with almost 5,000 boats launched in 2018. Approximately 14,800 boat launches occurred in 2018 within the San Luis Reservoir SRA.

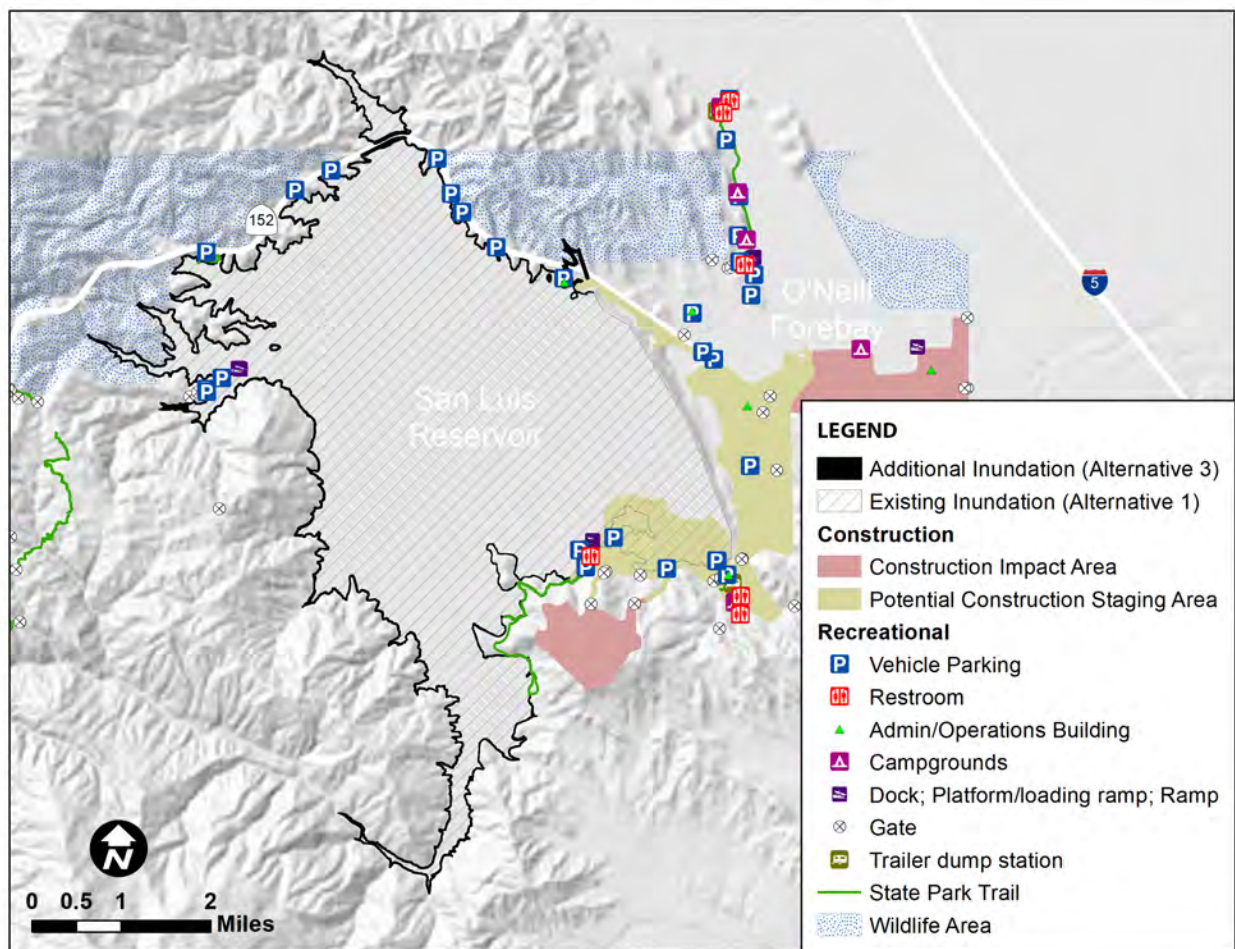


Source: CDPR 2018.

**Figure 5. San Luis Reservoir SRA Boat Launches**

### L.3 Recreation Analysis

Construction activities associated with Alternatives 1 and 3 would take place in the same location and during the same construction period. Basalt and Medeiros use areas have been identified for construction staging and borrow areas for both alternatives. Each use area provides camping, picnicking, fishing, and swimming opportunities. Figure 6 shows the extent of the recreational impacts due to the construction proposed under Alternatives 1 and 3. In Basalt Use Area, Basalt Campground Trail and a portion of Lone Oak Trail (approximately 930 feet, 3 %) would fall within the construction staging areas and would be closed to the public during construction. Alternative 2 does not include construction.



**Figure 6. Recreational Impacts Due to Construction at San Luis Reservoir**

Under Alternative 3, reservoir operations would result in the inundation of an additional 445 acres of lands that are not inundated when the reservoir fills to capacity under existing conditions. Table 11 summarizes the inundation that occurs under existing operations and the additional inundation expected due to operations of the dam raise alternative. According to existing data, the increase in water levels and inundated areas resulting from project operations would impact four additional existing recreational facilities and could inundate approximately 8,308 feet (1.6 miles) of

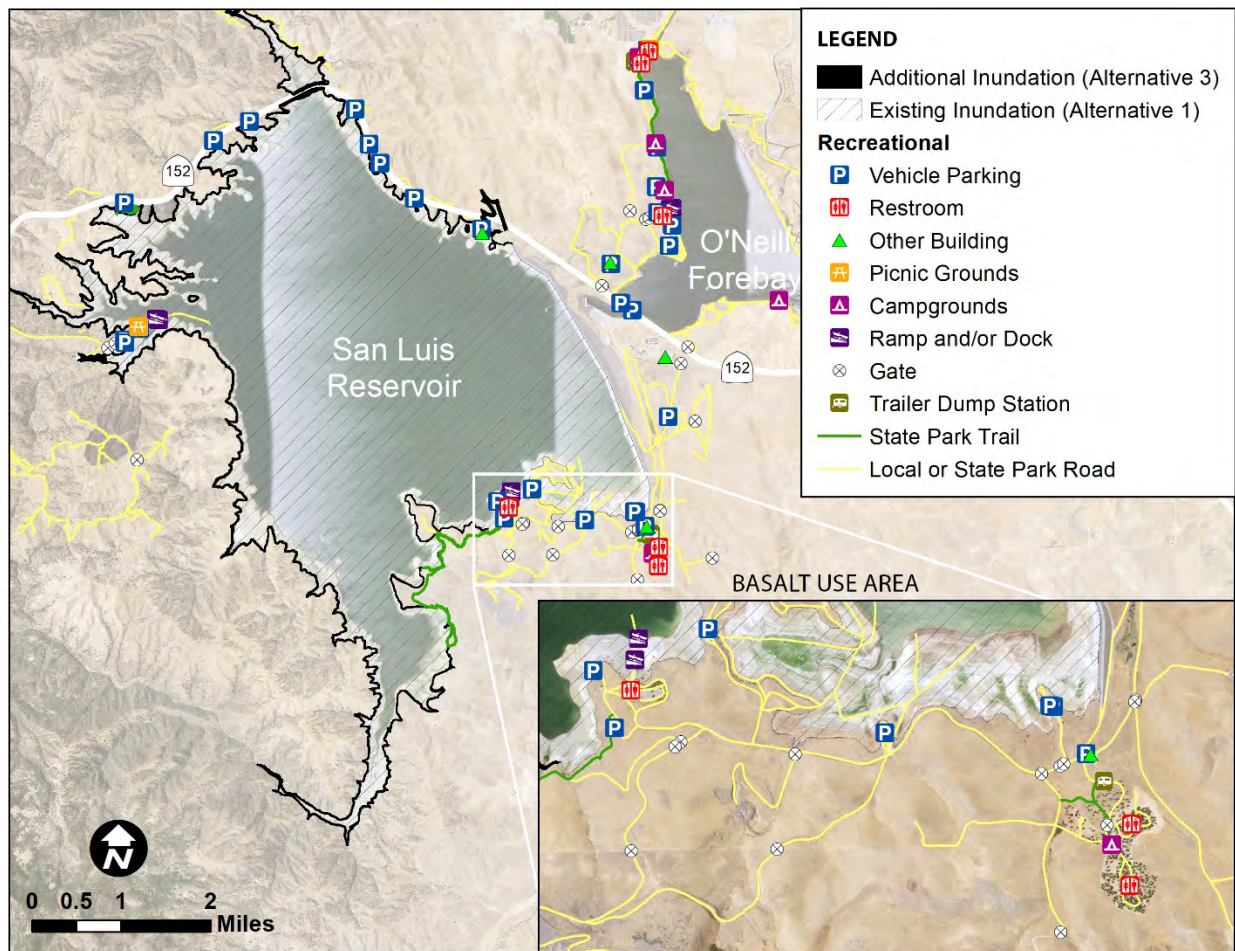
recreational routes (trails and roads) in addition to the inundation that would occur under existing conditions. The majority of impacted lands are federally- or state-owned foothill pasture lands.

**Table 11. Inundation at Maximum Surface Elevation at San Luis Reservoir**

Impact Type	Without Project	With Project	Measurement Unit
Recreational Facility	4	4	Tally
Boat Ramp/ Dock	4	-	Tally
Vehicle Parking and Picnic Area	-	4	Tally
Recreational Route	29,089	8,308	Feet
Trails	205	2,804	Feet
Basalt Use Area	29	2,298	Feet
Dinosaur Point Use Area	-	-	Feet
Roads	28,884	5,503	Feet
Basalt Use Area	1,481	-	Feet
Dinosaur Point Use Area	1,650	3,803	Feet
Park Property - San Luis Reservoir SRA	20,211	655	Acres
Land Ownership - Fed/State	12,815	404	Acres
Land Ownership - Private	35	41	Acres
Land Use - Foothill Pasture	12,850	445	Acres

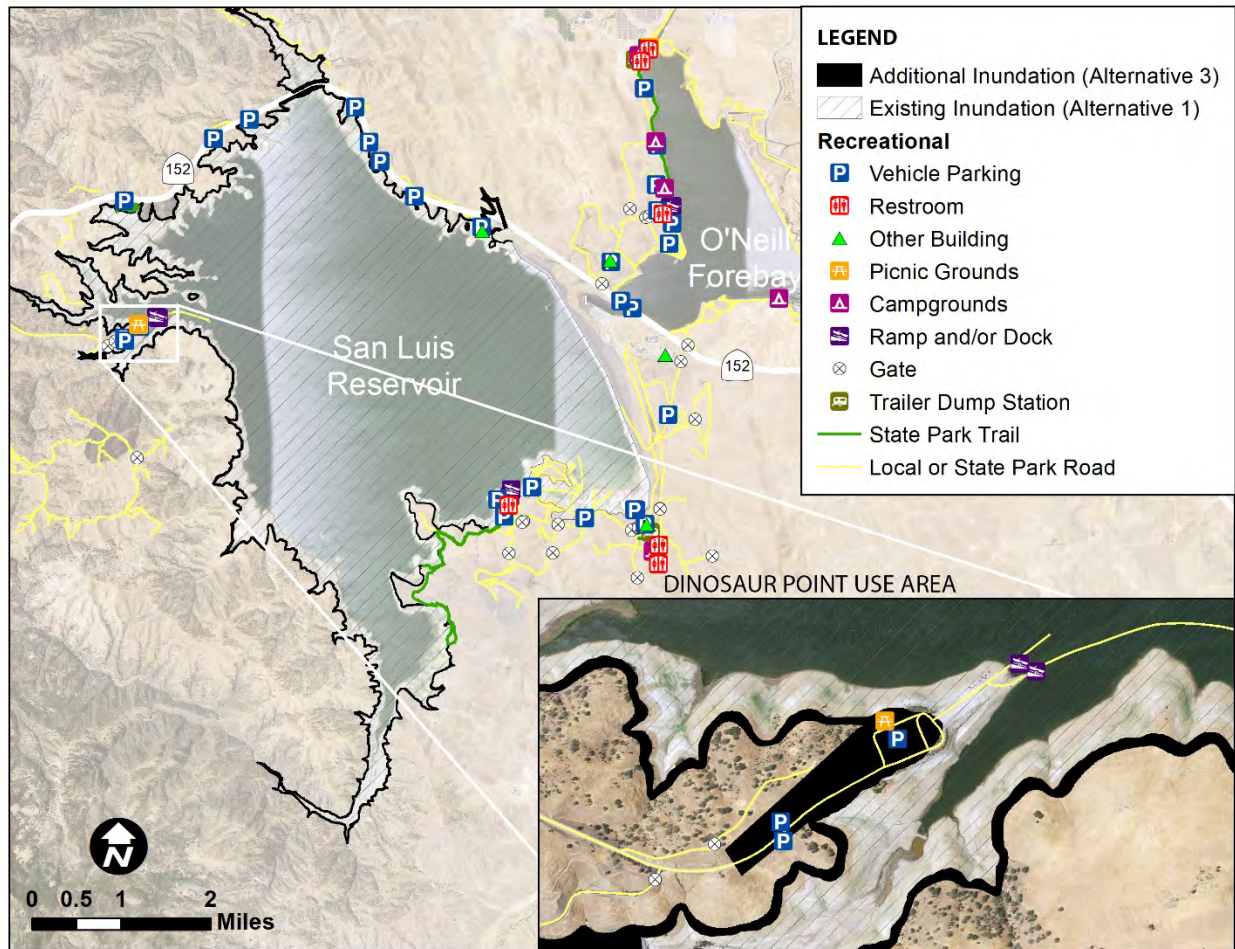
Figure 7 shows the anticipated impacts associated with increased inundation at and around Basalt Use Area. As shown, project operation could result in the inundation of approximately 2,298 feet of the Lone Oak Trail in Basalt Use Area. Based on the inundation mapping, the project would result in no additional inundation at the boat launch. However, because the top of the boat launch is less than a mile from the inundation that would occur under existing conditions (i.e., No Project/No Action Alternative), reservoir water fluctuations due to the operation of Alternative 3 could impact the boat launch. Therefore, modifications to Goosehead Point Boat Launch are included under Alternative 3.





**Figure 7. Inundation at San Luis Reservoir – Impacts to Basalt Use Area**

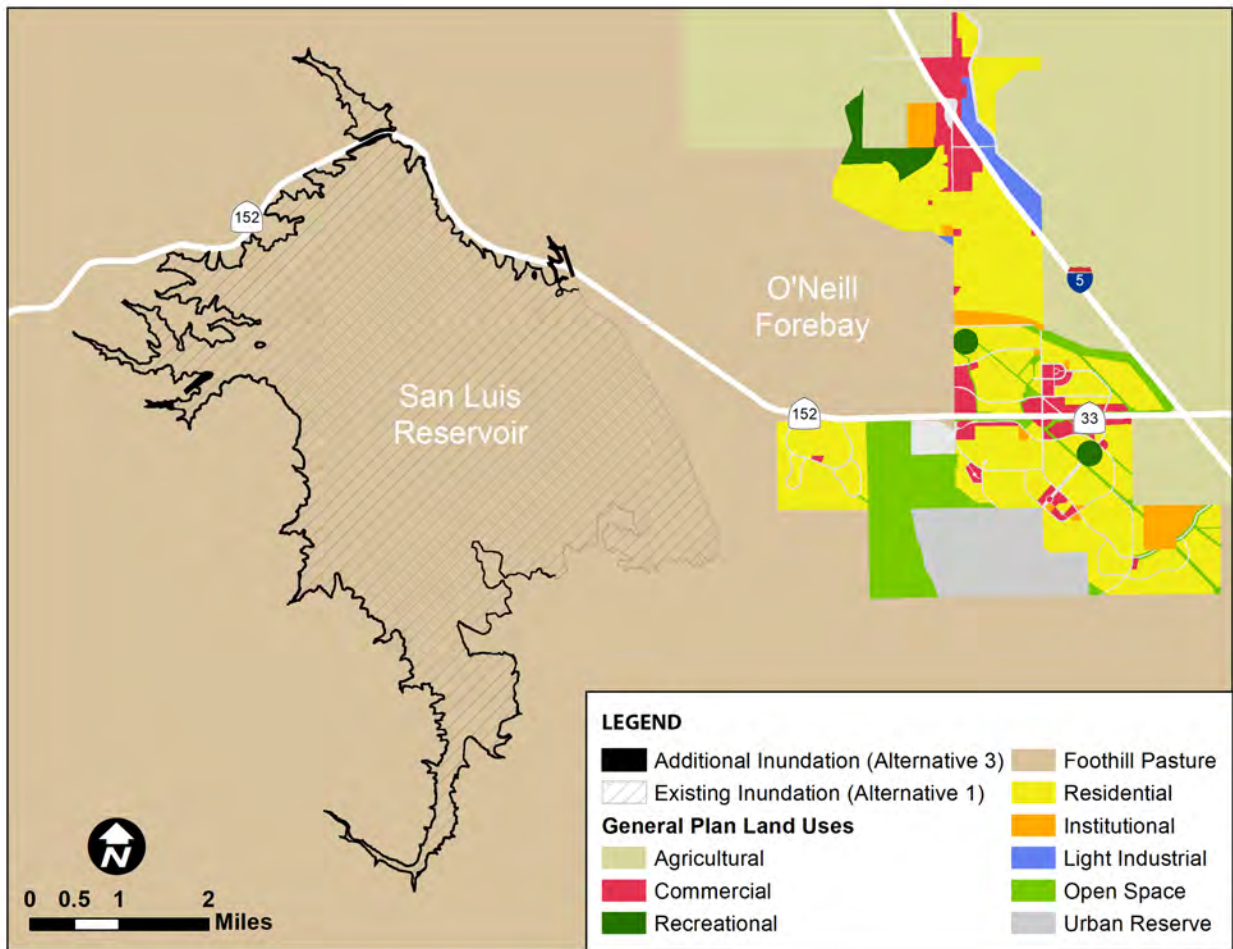
Dinosaur Point Boat Launch would be inundated under existing conditions (i.e., Alternative 1). Figure 8 shows the anticipated impacts associated with increased inundation at and around Dinosaur Point Use Area. As shown, project operation could result in the inundation of three parking areas, a picnic area, and an additional 3,803 feet of roads in Dinosaur Use Area. Therefore, Alternative 3 includes modifications to Dinosaur Point Boat Launch, including the parking areas, to minimize the potential reduction in recreational use at the site.



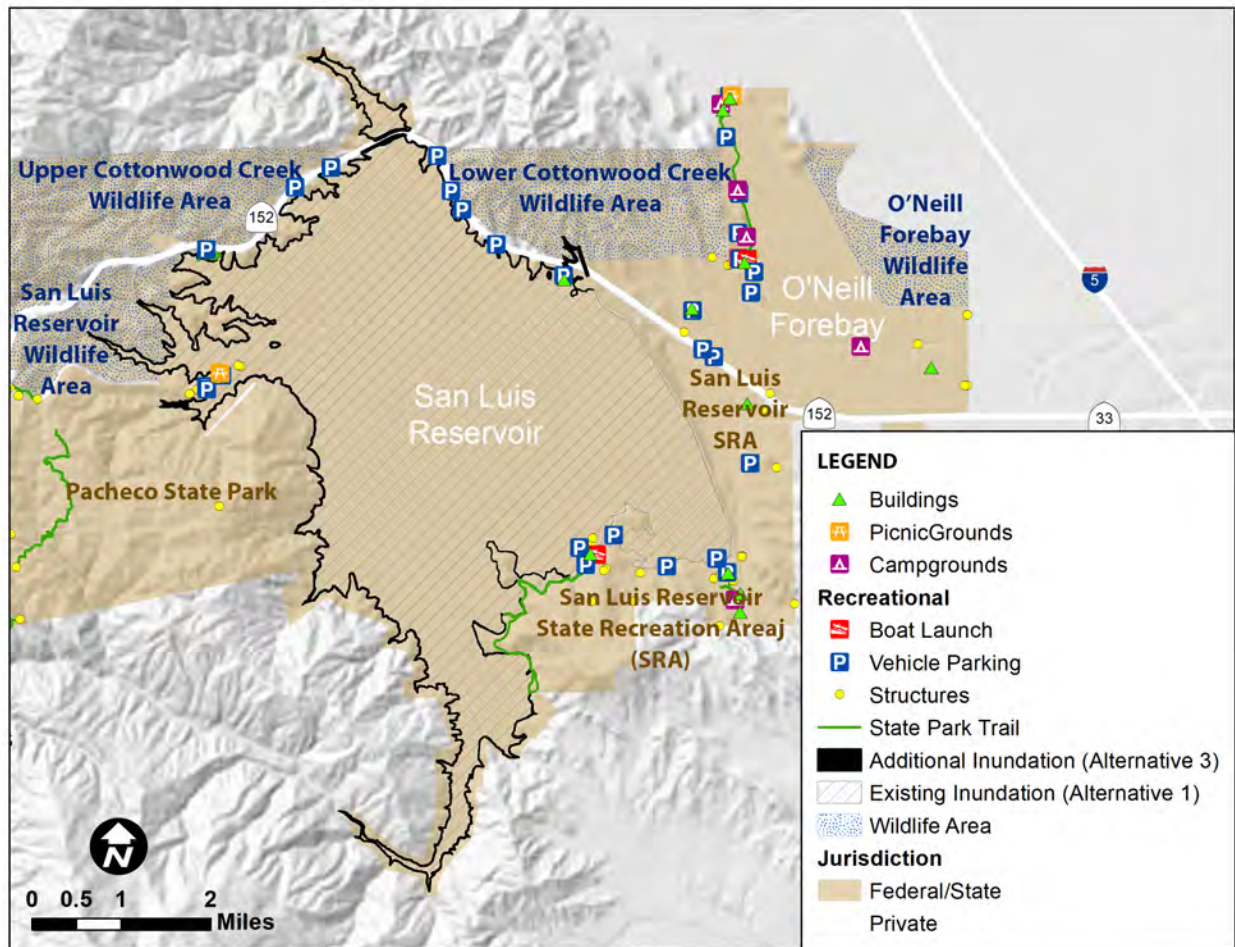
**Figure 8. Inundation at San Luis Reservoir – Impacts to Dinosaur Point Use Area**

Figures 9 and 10 illustrate the land use and land ownership at San Luis Reservoir and the surrounding areas.





**Figure 9. Inundation at San Luis Reservoir – Impacted Land Use**



**Figure 10. Inundation at San Luis Reservoir – Impacted Landowners**

## L.4 References

California Department of Parks and Recreation (CDPR). 2006. *Pacheco State Park General Plan and Environmental Impact Report*. Accessed on: 09 27 2017. Available at: [https://www.parks.ca.gov/?page\\_id=22694](https://www.parks.ca.gov/?page_id=22694).

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United States Department of the Interior, Bureau of Reclamation (Reclamation), South-Central California Area Office and California Department of Parks and Recreation (CDPR). 2013. *San Luis Reservoir State Recreation Area Resource Management Plan/General Plan, Final Environmental Impact Statement/Environmental Impact Report*. Fresno, California, U.S. Department of the Interior Bureau of Reclamation and Sacramento, California, California Department of Parks and Recreation. Accessed on: 09 27 2017. Available at: [https://www.usbr.gov/mp/nepa/nepa\\_projdetails.cfm?Project\\_ID=548](https://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=548).

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# **B.F. Sisk Dam Raise and Reservoir Expansion Project Environmental Impact Report/ Supplemental Environmental Impact Statement**

**Appendix M: Cultural Resources Report**

# **Cultural Resources Report for the B.F. Sisk Dam Raise Project, Merced County, California**

***Prepared for:***

U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region *and*  
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**Project No. 3639-01**

B.F. Sisk Dam Raise Alternative Area of Potential Effects: 5,028 Acres  
USGS 7.5-Minute Topographic Maps: Los Banos Valley (2015), Mariposa Peak (2015),  
Pacheco Pass (1971), and San Luis Dam (1969), Merced County, California

**June 2020**





## **Confidentiality Statement**

Archaeological remains and historic period built environment resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. This document contains sensitive information regarding the nature and location of cultural resources, which should not be disclosed to unauthorized persons.

Information regarding the location, character or ownership of certain historic properties may be exempt from public disclosure pursuant to the National Historic Preservation Act (54 USC 300101 et seq.) and the Archaeological Resources Protection Act (Public Law 96-95 and amendments). In addition, access to such information is restricted by law, pursuant to Section 6254.10 of the California State Government Code.



# Management Summary

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and San Luis & Delta-Mendota Water Authority (Authority) initiated the B.F. Sisk Dam Raise Project (Project) to examine potential strategies or alternatives aimed at increasing the quantity and operational flexibility of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. On behalf of Reclamation and the Authority, and under contract to CDM Smith, Pacific Legacy, Inc. conducted a cultural resources investigation in support of the Project that encompasses two main alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. The Non-Structural Alternative would entail operational changes only and would result in no significant changes to reservoir water elevations. The B.F. Sisk Dam Raise Alternative would increase the height of the dam and greatly expand the storage capacity of the San Luis Reservoir. The implementation of the Non-Structural Alternative is expected to result in no impacts to cultural resources, therefore this investigation focuses on the B.F. Sisk Dam Raise Alternative, which has the potential to result in significant impacts to cultural resources if implemented.

This cultural resources investigation was carried out in compliance with federal and state historic preservation laws, including the National Environmental Policy Act (42 USC 4321-4347), Section 106 (54 USC 306108) of the National Historic Preservation Act (54 USC 300101 et seq.), and the California Environmental Quality Act (PRC 21000 et seq.). Archival and record searches were completed by Pacific Legacy for the B.F. Sisk Dam Raise Alternative Project Area, defined as a 0.5-mile radius surrounding the Area of Potential Effects (APE). Contact with the Native American Heritage Commission (NAHC) was initiated, and consultation with Native American tribal representatives was undertaken by Reclamation in 2017 and in 2019 for resources within the B.F. Sisk Dam Raise Alternative APE. Pacific Legacy completed cultural resource inventory surveys within the APE, and JRP Historical Consulting, LLC. (JRP) conducted an architectural field visit to evaluate the B.F. Sisk Dam and its key features. All of these efforts were aimed at identifying archaeological and historic period built environment resources in areas that may be impacted by implementation of the B.F. Sisk Dam Raise Alternative, particularly historic properties that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP) and/or historical resources that are listed in or may be eligible for listing in the California Register of Historical Resources (CRHR).

The archival and record searches, contact with the NAHC, and cultural resource inventory surveys noted above were originally performed in support of the San Luis Low Point Improvement Project (SLLPIP) between 2012 and 2019, while the architectural field visit by JRP was conducted in support of the B.F. Sisk Safety of Dams (SOD) Modification Project in 2018. As proposed by Reclamation and the Santa Clara Valley Water District (Valley Water), the SLLPIP includes four action alternatives aimed at increasing the quantity and reliability of water supplies to contractors and consumers dependent on the San Luis Reservoir. Archival and record searches conducted for the SLLPIP alternatives fully encompassed the B.F. Sisk Dam Raise Alternative and were updated in 2020 for the current Project. Inventory surveys conducted by Pacific Legacy for SLLPIP action alternatives also directly overlapped the APE for the B.F. Sisk Dam Raise Alternative. All relevant cultural resources data collected and processed as a part of the SLLPIP have been integrated in this document. Cultural resources associated with the SLLPIP were previously discussed in a 2018

cultural resources report (Pacific Legacy 2018) and assessed in a Draft Environmental Impact Statement (EIS)/ Environmental Impact Report (EIR) (Reclamation and Valley Water 2019). In-depth archival research completed by JRP (2018) on the B.F. Sisk Dam and its key features for the B.F. Sisk SOD Modification Project also has been included in this report. As proposed by Reclamation and State of California Department of Water Resources (DWR), the B.F. Sisk SOD Modification Project included two main action alternatives aimed at ensuring the safety of the downstream public following a significant seismic event. Cultural resources associated with the B.F. Sisk SOD Modification Project were documented in a 2019 cultural resources report (Pacific Legacy 2019) and analyzed in a Final EIS/EIR (Reclamation and DWR 2019).

The B.F. Sisk Dam Raise Alternative APE spans 5,028 acres in western Merced County. It encompasses all areas included in the B.F. Sisk SOD Modification Project as well as the San Luis Reservoir and Cottonwood Bay shorelines and the Cottonwood Bay embankment along State Route (SR) 152. Approximately 4,454 acres within the APE were subject to intensive pedestrian inventory surveys between 2012 and 2020, while 574 acres could not be examined due to inundation or safety concerns. Erosion has impacted portions of the Cottonwood Bay shoreline, while much of the San Luis Reservoir shoreline has been affected by wave action and recreational activity. Areas closer to the B.F. Sisk dam have been altered by construction and maintenance of existing dam infrastructure.

Archival and record searches revealed that 52 prior cultural resource studies have been carried out within the B.F. Sisk Dam Raise Alternative Project Area and that 33 of those studies overlapped the APE. Fifty-one cultural resources were previously recorded within the Project Area, including 19 within the APE. Fifteen of those 19 resources are prehistoric archaeological sites (CA-MER-14, CA-MER-15, CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-28, CA-MER-29, CA-MER-41, CA-MER-82, CA-MER-130, CA-MER-136, CA-MER-137, and CA-MER-437), one is a prehistoric archaeological district (P-24-000489/San Luis Gonzaga Archaeological District), and three are historic period resources (CA-MER-451H, CA-MER-521H, and the B.F. Sisk Dam).

Eleven previously recorded cultural resources were relocated within the APE, including seven prehistoric sites (CA-MER-15, CA-MER-28, CA-MER-82, CA-MER-83, and CA-MER-130, CA-MER-136, and CA-MER-137), most with midden, lithics, and groundstone; one historic period water tank and trough (CA-MER-521H); one historic period ranch complex (CA-MER-451H); one historic period road (CA-MER-477H); and key features of the B.F. Sisk Dam/San Luis Reservoir Historic District. Two of these known resources (CA-MER-83 and CA-MER-477H) were originally plotted outside of the APE but were noted within it during inventory surveys. Ten resources previously recorded in the B.F. Sisk Dam Raise Alternative APE were not relocated during inventory surveys. These included seven prehistoric archaeological sites originally noted along the San Luis Reservoir shoreline (CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-29, and CA-MER-41); one prehistoric site (CA-MER-14) that was presumably destroyed by dam construction; one that was found to be a natural feature (CA-MER-437); and one arbitrarily defined prehistoric district (P-24-000489/San Luis Gonzaga Archaeological District) with no physical markers in the APE.

Thirty-two resources were discovered within the B.F. Sisk Dam Raise Alternative APE during inventory surveys conducted between 2012 and 2020. These included a series of historic period transmission poles with a debris scatter (CA-MER-484H); two industrial sites (CA-MER-492H and CA-MER-509H) associated with construction of the B.F. Sisk Dam; eight historic period road

segments (CA-MER-489H, CA-MER-491H, CA-MER-493H, CA-MER-494H, CA-MER-495H, CA-MER-513H, CA-MER-519H, and PL-Sisk-01); a concrete equipment pad (CA-MER-510H); a corral and water tank (CA-MER-511H); a helicopter pad (CA-MER-512H); a ditch segment (CA-MER-514H); three earthen dams with impound ponds (CA-MER-515H, CA-MER-516H, and CA-MER-518H); two prehistoric middens, one with lithics and groundstone (CA-MER-517) and the other with fire-affected rock (PL-Sisk-05); and a series of survey markers and monitoring wells (CA-MER-520H) associated with construction and maintenance of the B.F. Sisk Dam. A historic period well head (P-24-002166), metal can (P-24-002167), concrete foundation (P-24-002172), two watering troughs (P-24-002169 and P-24-002170); and bottle (P-24-002171) were recorded as isolated finds in addition to an isolated prehistoric core (P-24-001990), a biface fragment (P-24-001991), a cobble and flake (P-24-002168), and a displaced cupule boulder (PL-Sisk-02).

Two of the previously recorded prehistoric sites (CA-MER-130 and CA-MER-136) and the prehistoric district (P-24-000489/San Luis Gonzaga Archaeological District) are listed in the NRHP and CRHR. JRP (2018) recommended the B.F. Sisk Dam and its key facilities eligible for listing in the NRHP and CRHR as contributing elements to the B.F. Sisk Dam/San Luis Reservoir Historic District, though not eligible as individual facilities. Drawing on information from inventory surveys and site-specific documentary research, Pacific Legacy has produced survey level evaluations for most of the cultural resources within the B.F. Sisk Dam Raise Alternative APE. Two industrial resources associated with construction of the B.F. Sisk Dam system (CA-MER-492H and CA-MER-509H) are recommended not eligible for listing in the NRHP or CRHR and are considered non-contributing elements of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018). Seven historic period resources (CA-MER-510H, CA-MER-511H, CA-MER-512H, CA-MER-513H, CA-MER-514H, and CA-MER-520H, CA-MER-521H) have been determined not eligible for inclusion in the NRHP with concurrence from the State Historic Preservation Officer and recommended not eligible for listing in the CRHR (Polanco 2018). Twelve historic period resources (CA-MER-477H, CA-MER-484H, CA-MER-489H, CA-MER-491H, CA-MER-493H, CA-MER-494H, CA-MER-495H, CA-MER-515H, CA-MER-516H, CA-MER-518H, CA-MER-519H, and PL-Sisk-01) are recommended not eligible for listing in the NRHP and the CRHR. Seven prehistoric archaeological sites (CA-MER-15, CA-MER-28, CA-MER-82, and CA-MER-83, CA-MER-137, CA-MER-517, and PL-Sisk-05) remain pending evaluation for listing in the NRHP and CRHR.

Sixteen of the resources listed above may be subject to construction impacts under the B.F. Sisk SOD Modification Project. One resource would be subject to additional construction impacts under the B.F. Sisk Dam Raise Alternative, one would be altered as a result of modifications to SR 152, and 17 resources along the San Luis Reservoir and Cottonwood Bay shorelines would experience operational impacts from increased and fluctuating water levels. These resources, and the potential effects that would result from implementation of the B.F. Sisk Dam Raise Alternative, are the focus of this document.

This report begins with an introduction to the current Project, specifically its geographic and regulatory setting (Chapter 1.0), followed by an overview of the natural environment (Chapter 2.0) and cultural history (Chapter 3.0) of the Project vicinity. Archival and records search results are presented (Chapter 4.0) along with a discussion of the methods that were used during the inventory surveys (Chapter 5.0). The results of those surveys are detailed (Chapter 6.0), and conclusions and recommendations are offered regarding the known or potential significance of cultural resources within the B.F. Sisk Dam Raise Alternative APE (Chapter 7.0). Archival and records search result maps are included (Appendix A), as are maps of cultural resources relocated or discovered within

B.F. Sisk Dam Raise Project  
Cultural Resources Report, Merced County, California

the B.F. Sisk Dam Raise Alternative APE during inventory surveys (Appendix B). Confidential cultural resource records for resources within the B.F. Sisk Dam Raise Alternative APE are provided (Appendix C), along with NAHC correspondence (Appendix D) and photographic documentation (Appendix E). Depending on which alternative is selected under the current Project, many of the cultural resources discussed in this document may not be impacted by ground disturbing activities. The information and recommendations provided in this report, however, should assist Reclamation and the Authority in managing cultural resources associated with this and future projects associated with the B.F. Sisk Dam and San Luis Reservoir.

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## Acronyms and Abbreviations

amsl	above mean sea level
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
Authority	San Luis and Delta-Mendota Water Authority
BP	before present
BLM	U.S. Bureau of Land Management
CCIC	Central California Information Center
CCS	Cryptocrystalline silicate
CFR	Code of Federal Regulations
CHL	California Historical Landmark
CHRIS	California Historical Resources Information System
CRHR/CR	California Register of Historical Resources/California Register
CVP	Central Valley Project
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
GPS	Global Positioning System
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP/NR	National Register of Historic Places/National Register
NWIC	Northwest Information Center
PRC	Public Resources Code
Reclamation	U.S. Bureau of Reclamation
SHPO	State Historic Preservation Officer
SLLPIP	San Luis Low Point Improvement Project
SR	State Route
SWP	State Water Project
USGS	United States Geological Survey
Valley Water	Santa Clara Valley Water District

# Chapter 1 Project Background

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and San Luis & Delta-Mendota Water Authority (Authority) initiated the B.F. Sisk Dam Raise Project (Project) to examine potential strategies or alternatives aimed at increasing the quantity and operational flexibility of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. On behalf of Reclamation and the Authority, and under contract to CDM Smith, Pacific Legacy, Inc. conducted a cultural resources investigation in support of the Project, which encompasses two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. The Non-Structural Alternative would entail operational changes only and would result in no significant changes to reservoir water elevations. The B.F. Sisk Dam Raise Alternative would increase the height of the dam and greatly expand the storage capacity of the San Luis Reservoir. The Non-Structural Alternative is not expected to result in impacts to cultural resources. This investigation therefore focuses on the B.F. Sisk Dam Raise Alternative, which has the potential to result in both construction and operational impacts to cultural resources if implemented.

This cultural resources investigation was carried out in compliance with federal and state historic preservation laws, including the National Environmental Policy Act (42 USC 4321-4347), Section 106 (54 USC 306108) of the National Historic Preservation Act (54 USC 300101 et seq.), and the California Environmental Quality Act (PRC 21000 et seq.). Archival and record searches were completed by Pacific Legacy for the B.F. Sisk Dam Raise Alternative Project Area, defined as a 0.5-mile radius surrounding the Area of Potential Effects (APE). Contact with the Native American Heritage Commission (NAHC) was initiated, and consultation with Native American tribal representatives was undertaken by Reclamation in 2017 and in 2019 for resources within the B.F. Sisk Dam Raise Alternative APE. Pacific Legacy completed cultural resource inventory surveys within the APE, and JRP Historical Consulting, LLC. (JRP) conducted an architectural field visit to evaluate the B.F. Sisk Dam and its key features. All of these efforts were aimed at identifying archaeological and historic period built environment resources in areas that may be impacted by implementation of the B.F. Sisk Dam Raise Alternative, particularly historic properties that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP) and/or historical resources that are listed in or may be eligible for listing in the California Register of Historical Resources (CRHR).

The archival and record searches, contact with the NAHC, and cultural resource inventory surveys noted above were originally performed in support of the San Luis Low Point Improvement Project (SLLPIP) between 2012 and 2019, while the architectural field visit by JRP was conducted in support of the B.F. Sisk Safety of Dams (SOD) Modification Project in 2018. As proposed by Reclamation and the Santa Clara Valley Water District (Valley Water), the SLLPIP includes four action alternatives aimed at increasing the quantity and reliability of water supplies to contractors and consumers dependent on the San Luis Reservoir. Archival and record searches conducted for the SLLPIP alternatives fully encompassed the B.F. Sisk Dam Raise Alternative and were updated in 2020 for the current Project. Inventory surveys conducted by Pacific Legacy for SLLPIP action alternatives also directly overlapped the APE for the B.F. Sisk Dam Raise Alternative. All relevant cultural resources data collected and processed as a part of the SLLPIP have been integrated in this document. Cultural resources associated with the SLLPIP were previously discussed in a 2018

cultural resources report (Pacific Legacy 2018) and assessed in a Draft EIS/EIR (Reclamation and Valley Water 2019). In-depth archival research completed by JRP (2018) for the B.F. Sisk SOD Modification Project on the B.F. Sisk Dam and its key features also has been included in this report. As proposed by Reclamation and State of California Department of Water Resources (DWR), the B.F. Sisk SOD Modification Project included two main action alternatives aimed at ensuring the safety of the downstream public following a significant seismic event. Cultural resources associated with the B.F. Sisk SOD Modification Project were documented in a 2019 cultural resources report (Pacific Legacy 2019) and analyzed in a Final EIS/EIR (Reclamation and DWR 2019). These documents provide much of the information contained in this report, which is intended to serve as a standalone work.

## **1.1 Project Location and Setting**

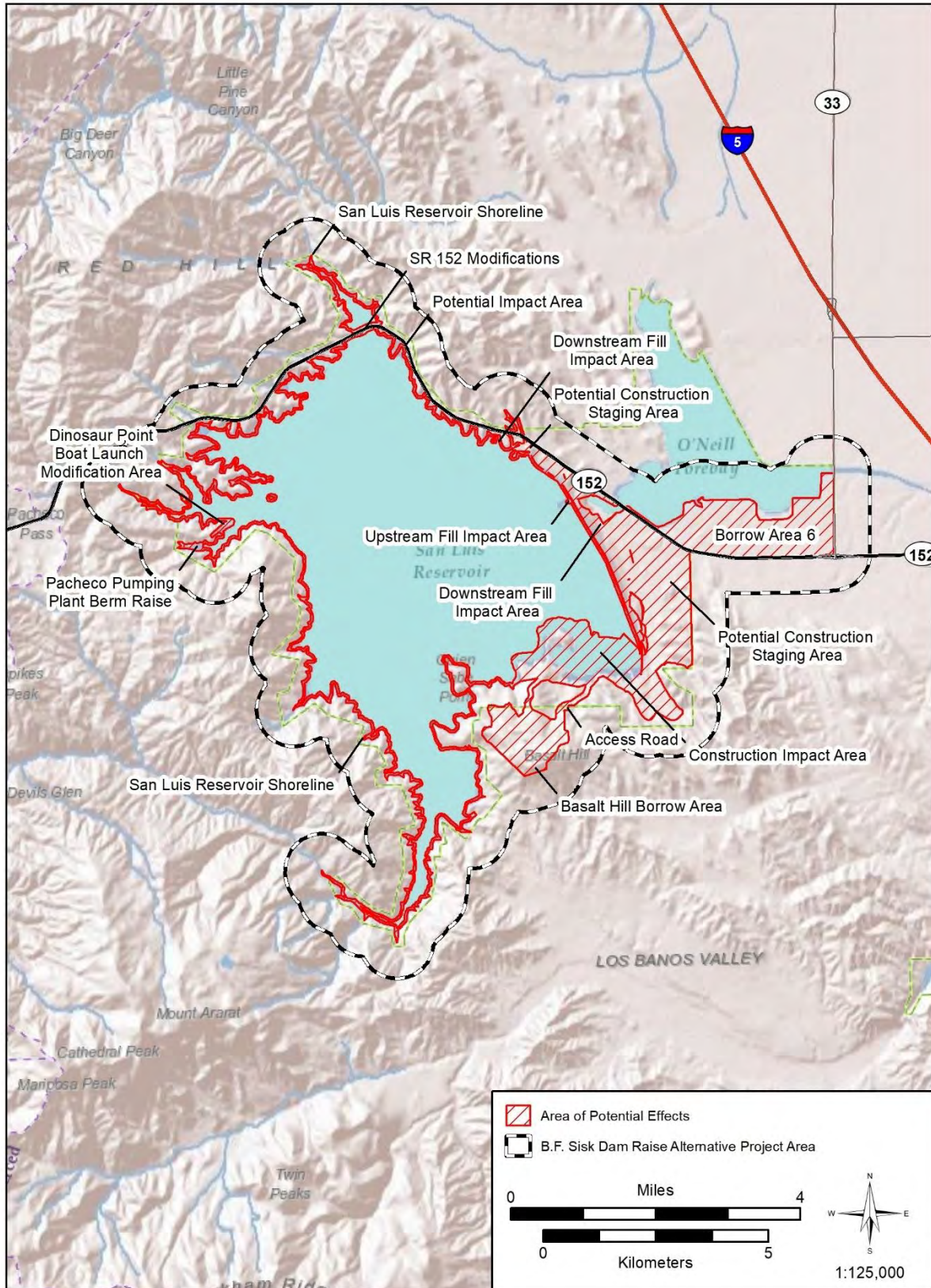
The B.F. Sisk Dam Raise Alternative is centered on the San Luis Reservoir in western Merced County south of the Sacramento-San Joaquin Delta. The San Luis Reservoir is located approximately 40 miles southeast of the City of San Jose and 10 miles west of the City of Los Banos (*see* Figure 1-1). It is one of California's largest off-stream reservoirs with a current storage capacity of over two million acre-feet. Water from the Sacramento-San Joaquin Delta is delivered to the San Luis Reservoir via the California Aqueduct, a component of California's State Water Project (SWP), and the Delta-Mendota Canal, a component of Reclamation's Central Valley Project (CVP). The reservoir has a surface area of more than 12,700 acres at its current full capacity. It measures approximately 9 miles in length, 5 miles in width, and features over 65 miles of shoreline. With the exception of water, transportation, and power infrastructure, the San Luis Reservoir area has remained largely undeveloped.

## **1.2 Project Description and Purpose**

As noted above, the main goal of the proposed Project is to increase the quantity of available water supplies and flexibility of water deliveries, particularly to contractors south of the Sacramento-San Joaquin Delta. Reclamation and the Authority have analyzed a range of management measures and alternatives in support of the current Project. The main criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening were combined into two action alternatives: the Non-Structural Alternative and B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the Project Draft EIR/Supplemental EIS (SEIS) prepared by Reclamation and the Authority (2020). Each alternative is described below.

### **1.2.1 No Action/No Project Alternative**

The No Action/No Project Alternative assumes that the proposed Action or Project will not be implemented, though it includes the implementation of other reasonably foreseeable actions that are expected to occur if the proposed Project is not approved. Under the No Action/No Project Alternative, the Crest Raise Action under the B.F. Sisk SOD Modification Project will be implemented, and the height of the dam will be increased to reduce safety concerns for the downstream public following a significant seismic event. Specifically, the Crest Raise Action will



**Figure 1-1. The B.F. Sisk Dam Raise Alternative Project Area of Potential Effects.**

B.F. Sisk Dam Raise and Reservoir Expansion  
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raise the height of the B.F. Sisk Dam by 12 feet to an elevation of 566 feet above mean sea level (amsl). This will reduce the likelihood of overtopping if slumping or deformation of the dam were to occur as a result of seismic activity and will allow the San Luis Reservoir to continue operating at its current maximum storage elevation. The Crest Raise Action will be implemented by adding embankment material, stability berms, and downstream crack filters to the existing structure. Downstream stability berms will be anchored to bedrock alongside the placement of additional embankment materials on the downstream slope of the dam to increase the crest elevation by 12 feet and to increase the distance between the water surface and the dam crest. This would prevent reservoir overtopping and failure in the event of dam deformation (Reclamation 2019).

In addition to dam crest deformation, seismic shaking can cause cracks in the dam embankment susceptible to erosion that can lead to dam failure. Downstream crack filters restrict the migration of soil materials through these cracks, mitigating the potential for post-seismic cracks to spur internal erosion within the dam embankment. This seismic crack-induced erosion risk would be addressed by installing downstream filters across the full width of the raised dam crest on the downstream face of the new embankment material. Evaluation of the seismic shaking potential at B.F. Sisk Dam also has identified the potential need for additional modifications to the foundation soils beneath the berm. The development of a foundation shear key is being evaluated as an optional modification. A foundation shear key is developed by over-excavating the weak overburden foundation soils found beneath the berm footprint and replacing them with material with a higher shear strength.

As proposed, the downstream stability berms and shear key would be constructed by first excavating existing soils to bedrock. These excavations would reach depths of 50 to 80 feet for the stability berms with a maximum depth of 160 feet if the shear key option is implemented. Slope protection would be removed to the top elevation of the embankment and stockpiled downstream of the toe. An existing toe drain would then be excavated and removed. These operations would expose an existing blanket drain and surrounding filter materials along the downstream face of the dam. After excavations are complete, existing filters/drains located at the downstream toe would be re-established and a new toe drain seepage collection system would be installed. Stronger materials would then be placed as backfill and compacted. Shell material and a rock blanket would be placed on the downstream side of the embankment until it reaches an elevation of 480 feet. At 480 feet, construction for the two-stage downstream crack filter would begin and the filter material along with shell material would continue up to the new dam crest elevation. Above an elevation of 550 feet, the raised crest would be developed by placing riprap and bedding, core, a two-stage chimney filter, and the downstream shell. Materials used would be stockpiled downstream of the toe and in a borrow area. After fill placement is completed, road base and paving of the dam crest would complete the overlay raise.

The Crest Raise Action will require several borrow, construction, and staging areas near the B.F. Sisk Dam, as well as roads connecting them. These areas include the Basalt Hill Borrow Area, Borrow Area 6, three construction staging areas, upstream and downstream stability berms or fill impact areas, and expanded embankment areas. Construction of the Crest Raise Action also will require the removal of one of nine existing transmission towers near the Gianelli Pumping-Generating Plant. The remaining eight towers will be reconfigured and remain operational during construction. Following completion of the B.F. Sisk SOD Modification Project, the removed transmission tower will be replaced. Cumulatively, the Crest Raise Action spans 3,914 acres. Cultural resources that may be impacted by the B.F. Sisk SOD Modification Project were detailed in a 2019 cultural resources report (Pacific Legacy 2019) and assessed in a Final EIS/EIR (Reclamation and DWR 2019).



Mitigation measures or environmental commitments that would be implemented to reduce impacts to cultural resources from the Crest Raise Action are discussed in a 2019 Record of Decision (ROD).

### **1.2.2 Non-Structural Alternative**

Under the Non-Structural Alternative, Reclamation and the Authority would rely on operational measures to meet Project objectives, specifically changes in the current approach for annual CVP water supply allocations. The maximum storage capacity of the San Luis Reservoir is roughly 2,027,840 acre-feet with a federal share of 966,000 acre-feet and state share of 1,062,000 acre-feet. The annual allocation of CVP supplies is managed by the Reclamation Central Valley Operations Office, which develops the annual allocation to fully utilize stored CVP supply in the reservoir to meet CVP contractors' requirements. Under the Non-Structural Alternative, the annual allocation would be altered so that up to 310,000 acre-feet of stored CVP supply is reserved in the San Luis Reservoir at the end of wetter years for allocation to south-of-Delta CVP contractors in subsequent drier years. In drier years, the 310,000 acre-feet of reserved supply would be allocated to agricultural (98%) and military or industrial south-of-Delta CVP water users (2%). Under this new operational configuration, allocated water supply not used by CVP contractors could not be rescheduled for use in a subsequent year.

This change in San Luis Reservoir operations to increase available water supply in dry and critical years would impact average water supply deliveries to CVP and SWP contractors. This alternative would not completely meet the Project's objectives, though it would partially meet the water supply reliability objective. The Non-Structural Alternative would not require any ground disturbing activities or physical maintenance actions and, according to current models, would result in reservoir elevations consistent with historical norms. Changes in operational measures under the Non-Structural Alternative are not expected to newly inundate or expose cultural resources or result in increased erosion to cultural resources along the margins of the San Luis Reservoir or Cottonwood Bay.

### **1.2.3 B.F. Sisk Dam Raise Alternative**

The B.F. Sisk Dam Raise Alternative would be completed by placing additional fill material on the dam embankment to raise the dam crest an additional 10 feet above the 12-foot embankment raise under development as a part of the B.F. Sisk SOD Modification Project Crest Raise Action. The additional 10 feet of embankment would support an increase in San Luis Reservoir storage capacity totaling 130 thousand acre-feet. It would result in a final crest elevation of 576 feet and a maximum water surface elevation of 554 feet amsl. There are three sub-alternatives under the B.F. Sisk Dam Raise Alternative that relate to different operational configurations, or the varying assignment and use of the increased storage capacity. Impacts to cultural resources under these sub-alternatives are expected to be the same or very similar, however, and are not discussed in detail. Elements common to each of the sub-alternatives include the (1) *Construction of Dam Raise*, (2) *SR 152 Modifications*, and (3) *Operation of Dam Raise*. Briefly, these elements are as follows:

- 1) *Construction of Dam Raise*: All of the B.F. Sisk Dam Raise sub-alternatives include the elevation of the B.F. Sisk Dam by 10 feet across the entire dam crest. In addition to raising the height of the dam to accommodate the increased capacity of the San Luis Reservoir, all sub-alternatives will include the installation of downstream stability berms and crack filters and raising the existing outlet works intake towers, access bridge, and spillway intake by 10 feet.



The existing saddle dike, or the East Dike, located approximately 1,300 feet north of the main embankment, will be modified by adding a downstream filter. With increased reservoir surface elevations, modifications will be made to the Dinosaur Point and Goosehead Point boat launches to increase the operating elevation of the ramps by 10 feet, and the existing berm near the Pacheco Pumping Plant also would be similarly elevated. Construction of the additional 10-foot dam embankment and associated modifications would begin during construction of the B.F. Sisk SOD Modification Project and would rely on the use of the same access roads, borrow areas, and construction staging areas. The B.F. Sisk SOD Modification Project Crest Raise Action is scheduled to start in September 2020 and continue through December 2028.

- 2) *SR 152 Modifications:* Under all sub-alternatives, the increased capacity of the San Luis Reservoir will require modifications to a section of SR 152 between Post Mile (PM) R5.239 and R5.806 where it crosses over Cottonwood Creek and spans an embankment separating Cottonwood Bay from the San Luis Reservoir. The current maximum water elevation of the reservoir is 544 feet. Under the B.F. Sisk Dam Raise sub-alternatives, the maximum water level would increase by 10 feet. The current elevation of SR 152 near the Cottonwood Creek crossing ranges in elevation from 555 to 558 feet or higher. With the lowest point of SR 152 approximately 1 foot above the proposed maximum water elevation level, it is assumed that modifications will be needed to protect the roadway. A second location along SR 152 at PM R6.296 will be similarly protected by adding downslope fill material to the embankment to protect the roadway when the enlarged reservoir is filled to capacity.
- 3) *Operation of Dam Raise:* In coordination with the Authority and its member agencies, Reclamation and DWR identified several operational configurations for the B.F. Sisk Dam Raise Alternative. These sub-alternatives were intended to capture a range of requested stakeholder configurations and cover a range of potential environmental effects. These effects include potential growth inducing impacts from increases in water supply reliability and potential environmental impacts to aquatic resources in the Delta from changes in Delta water exports.

### 1.3 Area of Potential Effects

The B.F. Sisk Dam Raise Alternative APE spans 5,028 acres and includes all areas that may be directly or indirectly impacted by the Project. It incorporates all areas within the B.F. Sisk SOD Modification Project Crest Raise Action, specifically the Basalt Hill Borrow Area, Borrow Area 6, three construction staging areas, upstream and downstream stability berms or fill impact areas, expanded embankment areas, and several existing access roads that require improvement (*see* Figure 1-1). Ground disturbing activities within these areas may directly alter significant cultural resources as a result of construction, excavation, staging, maintenance, hauling, and other actions. As a part of the Crest Raise Action, Reclamation has developed a Programmatic Agreement that outlines the steps required to complete the Section 106 process for historic properties within these areas (Reclamation 2019).

Additional areas that may be subject to construction impacts under the B.F. Sisk Dam Raise Alternative include the Dinosaur Point and Goosehead Point boat launches, an existing berm at the

Pacheco Pumping Plant, and a portion of SR 152 between San Luis Reservoir and Cottonwood Bay, all of which will be elevated to avoid inundation. Implementation of the B.F. Sisk Dam Raise Alternative also will result in operational impacts to cultural resources as maximum water levels are increased in the San Luis Reservoir and Cottonwood Bay. Significant cultural resources along the San Luis Reservoir and Cottonwood Bay shorelines may be subject to mechanical and biochemical impacts as resources become fully or partially inundated and exposed to increased wave action.

## 1.4 Regulatory Context

Reclamation is the lead Federal Agency for the Project under NEPA and the Authority is the lead State Agency under CEQA. As a federal undertaking, the Project is subject to Section 106 of the NHPA<sup>1</sup> (54 USC 300108), which states

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, shall take into account the effect of the undertaking on any historic property. The head of the Federal agency shall afford the [Advisory] Council [on Historic Preservation] a reasonable opportunity to comment with regard to the undertaking.

The implementing regulations of Section 106 of the NHPA are found in 36 CFR Part 800, which identifies the steps and consultation requirements that must be taken to comply with Section 106 of the NHPA. Pursuant to 36 CFR 800.16(l)(1), a historic property is defined as

any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

The criteria for determining NRHP eligibility are found in 36 CFR Part 60.

In the event that historic properties within the APE for an undertaking will be subject to adverse effects, the lead federal agency is required to consider ways to avoid, minimize, or mitigate (“resolve”) such effects, in consultation with the Advisory Council on Historic Preservation (ACHP), the SHPO, and other Section 106 consulting parties. This often requires the development

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<sup>1</sup> Following ACHP guidelines, “Section 106” is referred to as that section of the original public law that enacted the NHPA as opposed to its current legal citation (54 USC 306108). It is a reference that has been in constant use for almost 50 years. The provisions of the newly codified NHPA may be found under 54 USC 300101 et seq.

and execution of a Memorandum of Agreement or Programmatic Agreement among the consulting parties (36 CFR 800.6).

Section 106 regulations allow federal agencies to conduct “nondestructive project planning activities before completing compliance with Section 106” (36 CFR 800.1[c]), provided any subsequent consideration of alternatives to avoid, minimize, or mitigate adverse effects is not restricted during the planning process. At this time, Reclamation does not have an undertaking with the potential to affect historic properties as the feasibility and environmental studies are planning activities. Should Congress authorize an identified Project alternative or other Project that addresses the stated aims of the Project and the lead Federal Agency has an undertaking as defined in 36 CFR 800.14(y) and 800.3(a)(1), that federal action will then be subject to NHPA Section 106 compliance and other federal cultural resources laws as applicable.

Because the Project construction alternative includes lands owned and administered by Reclamation, additional cultural resource policies and procedures also are relevant. Among these is the Native American Graves Protection and Repatriation Act (NAGPRA) (Public Law 101-601; 25 USC 3001-3013), which describes the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian organizations with respect to the treatment, repatriation, and disposition of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, referred to collectively in the statute as “cultural items,” with which they can show a relationship of lineal descent or cultural affiliation. NAGPRA also establishes procedures for the inadvertent discovery or planned excavation of Native American cultural items on federal or tribal lands.

Additional mandates applicable to Reclamation administered lands are outlined in the manuals “Policy for Cultural Resources Management” (LND P01; Reclamation 2012a), “Directives and Standards for Cultural Resource Management” (LND 02-01; Reclamation 2012b), and “Administration of the Archaeological Resources Protection Act (ARPA) on Bureau of Reclamation Land” (LND 02-04; Reclamation 2014). Reclamation is also guided by the “Policy for Museum Property Management” (LND P05; Reclamation 2012c) and “Directives and Standards for Museum Property Management” (LND 02-02; Reclamation 2012d).

#### **1.4.1 National Register of Historic Places**

The NRHP is “an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR 60.2). Eligibility for inclusion in the NRHP is determined by applying the following criteria, which were developed by the National Park Service in accordance with the NHPA and outlined in 36 CFR 60.4:

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

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or

- C. That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

Any prehistoric or historic period district, site, building, structure, or object that meets one or more of the criteria above and possesses sufficient integrity may be eligible for inclusion in the NRHP as a historic property.

Typically, cemeteries, birthplaces, or graves of historic period figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, commemorative properties, and properties that have achieved significance within the past 50 years are not considered eligible for listing in the NRHP. Such properties may qualify, however, if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
- A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR 60.4).

### **1.4.2 California Environmental Quality Act**

State historic preservation regulations affecting the Project include the statutes and guidelines contained in CEQA. CEQA requires lead state agencies to consider carefully the potential impacts of a project on historical resources. A “historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript that is considered historically or

archaeologically significant (PRC 5020.1). Section 15064.5 of state CEQA *Guidelines* specifies criteria for evaluating the significance or importance of cultural resources as follows:

- The resource is associated with events that have made a contribution to the broad patterns of California history;
- The resource is associated with the lives of persons important in our past;
- The resource embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important individual or possesses high artistic values; or
- The resource has yielded, or may be likely to yield, important information in prehistory or history.

The technical advice series produced by the California Governor's Office of Planning and Research offers guidance on procedures to identify historical resources, evaluate their importance and potential for listing in the CRHR, and estimate potential impacts on historical resources. The advice series strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities including, but not limited to, museums, historical commissions, associates, and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

### **1.4.3 California Register of Historical Resources**

The CRHR, which is similar to the NRHP, is an authoritative guide that was created to identify the state's historical resources and to indicate what properties are subject to protection, to the extent prudent and feasible, from substantial adverse change. The criteria for CRHR eligibility are based upon NRHP criteria. Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for or listed in the NRHP, California Historical Landmarks (CHL) numbers 770 and above, and California Points of Historical Interest.

Per the CRHR, historical resources may consist of buildings, structures, objects, or archeological sites. Each of these entities is assessed for its historical, architectural, archaeological, cultural, or scientific importance. Per CEQA *Guidelines*, (Section 15064.5[b]), project activities may have a significant impact on the environment if they would cause a substantial adverse change in the significance of a historical resource. Activities that could result in a substantial adverse change include demolition, replacement, substantial alteration, and/or relocation of the resource. Steps that must be implemented in order to comply with state CEQA *Guidelines* include the following:

- Identify cultural resources;
- Evaluate the significance of the cultural resources based on established thresholds of historical, architectural, archaeological, cultural, or scientific importance;
- Evaluate the effects of a project on all cultural resources; and

- Develop and implement measures to mitigate the effects of the project on significant cultural resources.

The State Office of Historic Preservation has broad authority under federal and state law for the implementation of historic preservation programs in California. The SHPO comments on effect determinations and eligibility for listing in the NRHP and the CRHR.

## 1.5 Report Organization and Project Participants

This report begins with an introduction to the Project, specifically its geographic and regulatory setting (Section 1.0), followed by an overview of the natural environment (Section 2.0) and cultural history (Section 3.0) of the San Luis Reservoir vicinity. Archival and records search results for the Project Area are presented (Section 4.0) along with a discussion of the methods that were used during the inventory surveys (Section 5.0). The results of those surveys are detailed (Section 6.0), and conclusions and recommendations are offered regarding the known or potential significance of cultural resources encountered within the B.F. Sisk Dam Raise Alternative APE (Section 7.0). Maps of previously recorded cultural resources and prior cultural resource studies associated with each alternative are included (Appendix A), as are maps of cultural resources relocated or discovered within the APE for each alternative during inventory surveys (Appendix B). Confidential records for cultural resources within the B.F. Sisk Dam Raise Alternative APE are provided (Appendix C), along with NAHC correspondence (Appendix D) and photographic documentation (Appendix E).

The following Pacific Legacy personnel assisted in the cultural resources investigation for the Project and/or assisted in the production of this report:

- John Holson (MA), 40 years of experience, Principal Investigator;
- Lisa Holm (PhD), 28 years of experience, Senior Archaeologist/GIS Analyst;
- Elena Reese (MA), 32 years of experience, Historian;
- Mary O'Neill (BA), 22 years of experience, Field Supervisor;
- David Daly (MA), 12 years of experience, Field Supervisor;
- Christopher Peske (BA), 7 years of experience, Field Supervisor; and
- Shanna Streich (MA), 14 years of experience, Supervisor

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## Chapter 2 Natural Environment

The following presents an environmental overview of the B.F. Sisk Dam Raise Alternative vicinity with a focus on the physiography and geology of the area as well as its climate, hydrography, vegetation, and fauna. A brief account of recent geoenvironmental history, late Quaternary geology, and soils is offered so that landscape change and geomorphic processes within the B.F. Sisk Dam Raise Alternative APE may be better understood. Relying heavily on existing geoarchaeological studies, particularly that completed by Rosenthal and Meyer (2004b) for District 10 of the California Department of Transportation (Caltrans), the potential to encounter buried cultural resources within the APE also is explored.

### 2.1 Physiography and Geology

The San Luis Reservoir lies within the eastern Diablo Range foothills, which are a part of the larger Coast Ranges physiographic province. These foothills generally range in elevation from 200-2,500 feet amsl and are characterized by weakly to moderately dissected rolling topography at the eastern extent of the range where they grade into and are buried by the deep alluvium of the Great Valley Physiographic Province. The western foothills are more deeply dissected with steep slopes. The foothills are northwest trending, sub-parallel to the San Andreas Fault, and underlain by Great Valley Sequence bedrock units in the east and rocks of the Franciscan complex in the west, though several isolated outcrops of Miocene basalt also are present (Lettis 1982; Wagner et al. 1991). Broad, terraced valleys generally separate the foothills, which represent sites of localized subsidence and uplift, respectively. The northwest trending valleys are and typically underlain by thick sequences of Quaternary alluvium. The San Luis Reservoir is situated in one of these valleys, the San Luis Flat, which is created by a pull-apart basin in the Ortigalita Fault Zone, a major Holocene dextral strike slip fault zone that constitutes the eastern part of the larger San Andreas Fault system (Bryant and Cluett 2000).

### 2.2 Late Quaternary Geology, Geomorphology, and Soils

Previous geological studies of the Diablo Range foothills indicate that the area has undergone dramatic landscape changes since people first inhabited the region roughly 15,000 years ago. During the late Pleistocene, the combined runoff from the Sacramento and San Joaquin rivers flowed through what is now the San Francisco Bay as a single inland drainage before reaching the Pacific Ocean near the Farallon Islands (Atwater et al. 1977). Toward the end of the Pleistocene, the melting of continental glacial ice caused a rapid rise in worldwide sea levels, known as eustatic sea level change. In response, the Pacific shoreline migrated eastward, reaching the opening near the Golden Gate about 10,000 years ago. The San Francisco Bay eventually formed as continued sea level rise drowned low-lying inland valley areas. By about 7,000 years ago, the rate of worldwide sea-level rise began to slow dramatically, and relatively slow submersion of more inland portions of the bay and the Sacramento-San Joaquin Delta began (Atwater 1980, 1982; Shelton and Begg 1975; Stanley and Warne 1994; Wells and Goman 1995). The decrease allowed sedimentation to keep pace



with submergence rates, causing extensive tidal flats and marshes to form around the margins of the bay (Atwater et al. 1979).

At the bay margin, the combination of rising water levels and increasing sedimentation rates created higher baselines for streams that entered the bay. As the lower channels of drainages became choked, sediments were pushed onto the surface of surrounding floodplains, burying exposed surfaces and slowly constructing channel margin levees (Helley et al. 1979). Concurrently, older landforms adjacent to upstream reaches in these drainages were eroded by lateral channel migration, as stream sinuosity increased to maintain equilibrium gradients in response to rising baselines. This led to the formation of an “alluvial apron around the bay plain and the extensive valleys of the region” that is graded to the present sea level (Helley et al. 1979: 18). As a result, many of the Late Pleistocene and Early Holocene land surfaces were overlain by thick deposits of younger alluvium that are generally less than 5,000 years old. These older land surfaces usually exhibit well-developed buried soil profiles (paleosols) that represent a significant stratigraphic boundary in the region. A paleosol is an “old soil” that formed because of weathering at or near the ground surface during a past interval of relative landform stability, making it available for human use and occupation in the past. Alternating periods of landform stability that produce paleosols and periods of instability and deposition that bury them have been documented throughout Central California during the Holocene (Meyer and Dalldorf 2004; Meyer and Rosenthal 2008; Rosenthal and Meyer 2004b).

Further inland from the bay margin, upland valleys of the Diablo Ranges also witnessed profound landscape changes in the late Quaternary, though likely more as a direct result of climatic changes rather than eustatic sea level change. Geological studies in Contra Costa County and the foothills of the western San Joaquin Valley demonstrate that many valleys in the region were partially filled with alluvium by several cycles of deposition in the Holocene that were separated by periods of landscape stability and soil formation (Lettis 1982; Marchand and Allwardt 1981; Pape 1978; Rogers 1988). Geoarchaeological studies in eastern Contra Costa County in the Los Vaqueros area determined that distinct episodes of deposition occurred in different valleys during the Early, Middle, and Late Holocene (Meyer 1996; Meyer and Rosenthal 1997).

During the Late Holocene, ongoing but much more gradual sea level rise caused the expansion of tidal marshes at the bay margin in newly filled valleys. By the 1850s, before Euro-American settlement and reclamation, tidal marshes had expanded in the region to cover twice as much surface area as all the inland water of the bay and Sacramento-San Joaquin Delta combined (Atwater et al. 1979). Post Euro-American settlement land use changes, including reclamation efforts for conversion to agriculture, channelization of drainages, widespread grazing, and more recent urbanization have led to further landscape changes. This brief review indicates that the timing, magnitude, and extent of landscape changes were sufficient to have potentially buried cultural resources in the Diablo Range foothills, particularly within the structural basin of the San Luis Flat.

### **2.2.1 Late Quaternary Surficial Geology**

Late Quaternary surficial geology has been mapped for the western portion of the San Luis Reservoir area by Knudsen et al. (2000). That area is marked by Early to Late Pleistocene undifferentiated alluvium (Qoa) that is more than 30,000 years old. Qoa deposits are described as moderately to deeply dissected alluvial fan, stream terrace, basin, and channel deposits. For other portions of the San Luis Reservoir area, detailed surficial geologic mapping does not appear to be available, though a study by Lettis (1982) described deposits for the western San Joaquin Valley and eastern Diablo Range, and the State Geologic Mapping Compilation offers generalized data

compiled on a regional basis for the conterminous U.S. (Horton et al. 2017). Much of the San Luis Reservoir area in Merced County appears to be situated on steeply sloping erosional hillslopes underlain by bedrock. Much of the now inundated portion of the San Luis Reservoir area, however, is situated in the alluvial basin of the San Luis Flat (*see* Figure 2-1).

Lettis (1982) described two Holocene units, Patterson and Dos Palos alluvium, that are present in the eastern foothills of the Diablo Range and on the floor of the San Joaquin Valley, respectively. Patterson alluvium underlies present stream channels and low terraces inset into older Late Pleistocene/Early Holocene San Luis Ranch alluvium. Patterson alluvium is purported to form extensive, deep fill-in valleys of the eastern Diablo Range, including Carrisalito Flat, which is located approximately 10 miles south of San Luis Reservoir. A gastropod shell obtained from a depth of 0.5 meters in a low terrace along San Luis Creek just east of O'Neill Forebay provided a Late Holocene date for Patterson alluvium (Lettis 1982: 77). Although the San Luis Reservoir had already inundated the San Luis Flat when Lettis (1982) conducted his research, thus preventing him from mapping that location, it seems likely that Holocene deposits of Patterson alluvium covered portions of the San Luis Flat along Cottonwood Creek, San Luis Creek, and other unnamed drainages that were subsequently flooded.

### **2.2.2 Soils**

The U.S. Department of Agriculture's Natural Resources Conservation Service (USDA-NRCS) has mapped soils for the San Luis Reservoir area as a part of the Soil Survey Geographic (SSURGO) database for Merced County (USDA-NRCS 2007). SSURGO mapping does not extend to inundated areas such as the San Luis Reservoir, but otherwise covers both rural and urban areas. Due to inundation, portions of the B.F. Sisk Dam Raise Alternative APE are not mapped as part of the SSURGO database.

With the exception of Hillgate silt loam, all of the soils found around the San Luis Reservoir are formed on erosional landforms (i.e., hillslopes) in residuum (*see* Figure 2-2 and Table 2-1). Hillgate silt loam is formed in alluvium from mixed sources, more specifically on the Qoa unit described in the preceding section on surficial geology. Its well-developed soil profile with numerous Bt horizons is a byproduct of extended subaerial weathering through time (Birkeland 1999; Birkeland et al. 1991), which suggests it has been exposed at the surface since the late Pleistocene. In addition to mapped soils, it is likely that a number of unmapped soils series were present at lower elevations, such as moderately sloped portions of San Luis Flat, including the Lost Hills, Pleasanton, and Ortigalita series (Lettis 1982). These soils are commonly mapped on San Luis Ranch alluvium and are moderately developed with A/Bt/C soil profiles. Soil series on more gently sloped areas of San Luis Flat, especially along Cottonwood Creek and San Luis Creek, would likely have been Panoche, Mocho, Orestimba, Oxalis, Clear Lake, or Levis series soils (Lettis 1982: 126). These soils are commonly mapped on Patterson alluvium, have A/C profiles, and often contain paleosols.

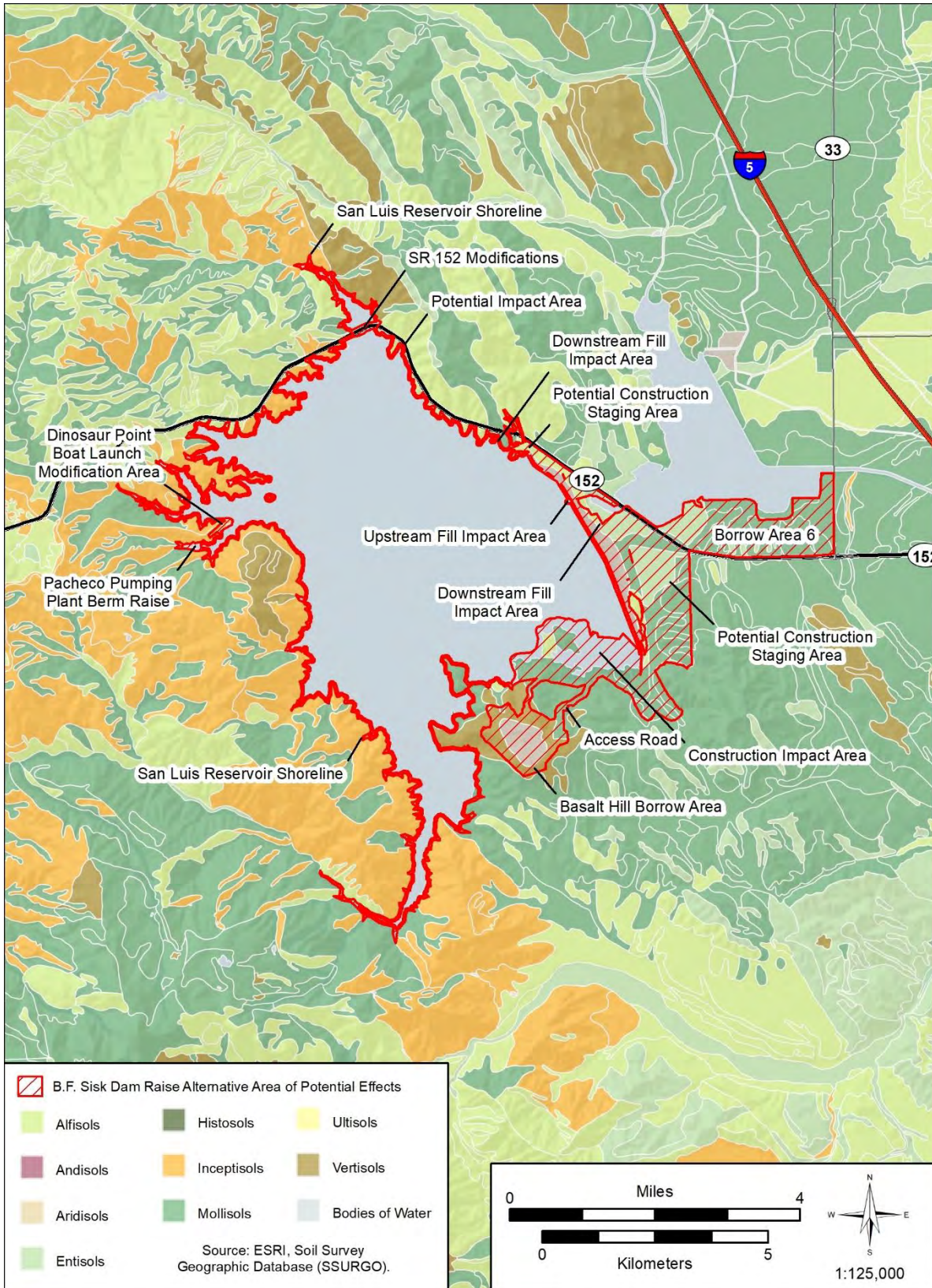
### **2.2.3 Buried Cultural Resource Sensitivity**

The sensitivity for buried cultural resources has been successfully modeled using ages of depositional landforms and soils as a primary variable in Central California (Meyer and Rosenthal 2008; Rosenthal and Meyer 2004a, 2004b). These models generally rely on the probability that more recent Holocene deposits possess a greater potential to bury cultural resources than older Holocene deposits. Because human occupation is generally thought to have occurred in the Latest Pleistocene (after 15,000 years ago), landforms that pre-date this period and remain exposed at the surface have









**Figure 2-2. SSURGO Soil Map Units within the San Luis Reservoir Area.**

**Table 2-1. SSURGO Soil Units in the San Luis Reservoir Area.**

Map Unit Name <sup>1</sup>	Soil Order	Soil Profile
Asolt very stony clay, 30-50% slopes	Vertisol	A1/A2/A3/C/R
Conosta clay loam, 8-15% slopes	Alfisol	A1/A2/Bat/Bt/BCt/Cr
Fifield-Gonzaga complex, 30-50% slopes	Mollisol	A/Bt/C1/C2/R (Fifield); A1/A2/ABt/Bt1/Bt2/R1/R2 (Gonzaga)
Fifield-Millsholm complex, 30-50% slopes	Mollisol/ Inceptisol	A1/Bt/C1/C2/R (Fifield); A1/A2/Bt/R (Millsholm)
Hillgate silt loam, 2-9% slopes	Alfisol	A1/A2/A3/2Bt1/2Bt2/2Bt3/2Bt4
Millsholm loam, 8-15% slopes	Inceptisol	A1/A2/Bt/R
Millsholm loam, 30-50% slopes	Inceptisol	A1/A2/Bt/R
Millsholm-Fifield complex, 30-50% slopes	Mollisol/ Inceptisol	A1/A2/Bt/R (Millsholm); A1/Bt/C1/C2/R (Fifield)
Millsholm-Rock Outcrop complex, 15-30% slopes	Inceptisol	A1/A2/Bt/R
Oneil silt loam, 30-50% slopes	Mollisol	A1/A2/A3/AC/Ck/R
Vallecitos rocky loam, 15-30% slopes	Alfisol	A1/A2/Bt1/Bt2/R
Water (Not Mapped)	-	-

<sup>1</sup> From USDA-NRCS 2007, 2010a

very low buried cultural resource sensitivity. Many of the areas around the San Luis Reservoir consist of erosional landforms with younger soils or depositional landforms that are Late Pleistocene in age. All of the soils listed in Table 2-1 are estimated to have a very low sensitivity for buried cultural resources, an assessment reinforced by previous regional geoarchaeological studies (Rosenthal and Meyer 2004b). Younger landforms, however, were present within the San Luis Flat prior to the inundation of the reservoir and may be exposed during drought years or periods of significant drawdown. These landforms include Holocene age terraces consisting of Patterson alluvium along drainages. Because Patterson alluvium is considered to be Late Holocene in age, such landforms are considered highly sensitive. Although they have not been mapped in detail due to inundation, these areas should be considered highly sensitive for buried cultural resources. The extent to which the extent to which certain areas were graded or cut for fill material related to construction of the B.F. Sisk Dam or other facilities (e.g., Pacheco Pumping Plant, SR 152 Modifications areas, etc.), however, could lower this sensitivity assessment. The extent of post-inundation erosion would also influence this assessment.

## 2.3 Climate and Hydrology

The B.F. Sisk Dam Raise Project Area is characterized by a Mediterranean climate consisting of wet, cold winters and hot, dry summers. The Western Regional Climate Center (WRCC 2013) has documented climatological data from six weather stations within the San Luis Reservoir vicinity for roughly a century, depending on the specific weather station. Two weather stations collected data near the San Luis Reservoir. From 1963 to 2007, the B.F. Sisk Dam weather station reported annual temperatures from 38° F in January to 92° F in July while the average was 74° F. Data also was collected at the Pacheco Pass weather station from 1949 to 1977, but it generated insufficient data for temperature generalizations. The growing seasons in the San Luis Reservoir area range from 215

to 260 days per year. This season is defined as the period between the last freezing temperature of the spring and the first freezing temperature of the fall. The last freezing temperature generally occurs in March, while the first occurs in November or December. Precipitation in the San Luis Reservoir vicinity varies considerably from year to year and is based on microclimate. Generally, the average amount of precipitation decreases from the northwest to the southeast. The average precipitation at B.F. Sisk Dam is 10.45 inches and 12.77 inches at Pacheco Pass.

San Luis Reservoir comprises the largest water body in Merced County. As an off-stream storage reservoir, it does not block any major river drainages to obtain water. Instead, water is pumped into the reservoir during wetter months via the California Aqueduct and Delta-Mendota Canal for later use. The reservoir has a catchment area of 84.6 square miles. San Luis Creek is considered the main tributary to San Luis Reservoir, though Cottonwood Creek also empties into the reservoir. The San Luis Reservoir has a current storage capacity of 2,041,000 acre feet (Autobee 2011) and a current high water elevation of 544 feet amsl. The low point of the reservoir pool varies over the year in part due to demand, supply, and water allocation guidelines. The base of the B.F. Sisk Dam rests at 225 feet amsl.

## 2.4 Vegetation and Fauna

A range of vegetation communities exists within the San Luis Reservoir vicinity, in large part a product of the diverse topography and hydrology of the two main areas. The varied vegetation communities support a wide variety of fish, mollusks, waterfowl, and large and small mammals. At least five distinct natural communities occur within the San Luis Reservoir area. These communities include Valley and Foothill Grassland, Oak Woodland, Northern Mixed Chaparral, Coast Range Mixed Coniferous Forest, and Riparian Forest.

Valley and Foothill Grasslands occur primarily on hill slopes that are barren of trees or brush growth as well as areas of the valley floor not subsumed by the San Luis Reservoir. Most of the plant species within this community are non-native grass species such as wild oat (*Avena barbata*) and rip-gut brome (*Bromus diandrus*). This community is generally associated with Oak Woodlands, which tend to occur on areas downslope from ridgelines. Oak Woodlands mark the transition between savannah-like grassy plains in the lowlands and forest-like stands of trees at higher elevations. This community is dominated by coast live oak (*Quercus agrifolia*) and valley oak (*Q. lobata*). Other species may include poison oak (*Toxicodendron diversilobum*) and non-native grass species.

Oak Woodland communities were an important part of the Native American subsistence economy, and acorns comprised a staple food item. It has been suggested that acorn procurement was critical in encouraging more sedentary lifeways among California Native Americans. In addition to acorns, Oak Woodlands also provide habitat for species of fauna that were an important part of the prehistoric diet. These animals included mule deer (*Odocoileus hemionus*), Roosevelt elk (*Cervus canadensis*), ground squirrel (*Citellus* sp.), rabbit (*Sylvilagus* spp.), and Black-tailed Jackrabbit (*Lepus californicus*).

Oak Woodlands often replace areas of chaparral that have been cleared. Clearing and other modern activities have most likely removed much of the chaparral communities from the North Coast Ranges (Fredrickson 1973: 141), yet Northern Mixed Chaparral communities continue to exist within the San Luis Reservoir vicinity. These communities are dominated by plants such as chamise

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(*Adenostoma fasciculatum*), scrub oak (*Quercus dumosa*), Manzanita (*Arctostaphylos* sp.), and buckbrush (*Ceanothus cuneatus*). Chaparral communities provide habitat for mule deer (*Odocoileus hemionus*), Roosevelt elk (*Cervus canadensis*), and small mammals such as striped skunk (*Mephitis mephitis*) and badger (*Taxidea taxus*). Many bird species such as California quail (*Lophortyx californicus*) and mourning dove (*Lenaidura macroura*) find refuge in chaparral.

Mountain slopes among the higher elevations continue to be dominated by Coast Range and mixed Coniferous Forest communities. Species in these communities include Douglas fir (*Pseudotsuga menziesii*), California buckeye (*Aesculus californica*), big leaf maple (*Acer macrophyllum*), and madrone (*Arbutus menziesii*). The ground cover in these areas often includes Manzanita (*Arctostaphylos* sp.) and Christmas berry (toyon or *Heteromeles arbutifolia*). This community provided habitat for many large mammals such as grizzly bear (*Ursus californicus*), black bear (*Euarctos americanus*), mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and Roosevelt elk (*Cervus canadensis*). Many species of birds, such as the golden eagle (*Aquila chrysaetos*) and red-tailed hawk (*Buteo jamaicensis*), and small mammals thrived in these forests.

Along the riparian corridors, Riparian Forests flourish with black walnut (*Juglans californica*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and red willow (*Salix laevigata*). Although not riparian obligates, California buckeye (*Aesculus californica*), elderberry (*Sambucus mexicana*), and valley oak (*Quercus lobata*) also occur along the banks of drainages. The water elevation of the San Luis Reservoir fluctuates a great deal, preventing the establishment of riparian vegetation typically associated with lake edges such as sedges (*Carex* sp.), bulrush (*Scirpus fluviatilis*), and cattail (*Typha latifolia*).

## Chapter 3 Cultural Setting

### 3.1 Archaeological Background

#### 3.1.1 Central California Archaeology and the Development of Cultural Sequences

Among the earliest archaeological investigations conducted in Northern California was that undertaken by Max Uhle in 1902 at the Emeryville Shellmound in the San Francisco Bay Area. Through his excavations, Uhle (1907: Plate 4) recognized ten strata in the mound, though his profile drawings indicate many more strata that he grouped together. From an analysis of burials, artifacts and stratigraphy, Uhle (1907) concluded “there is some support for the suggestion that cultural differences are expressed in the history of the mound.” Further investigations by Nels Nelson (1996 [1906]) affirmed much of Uhle’s original analysis of the deposit. Nelson (1996 [1906]) identified eleven strata on the opposite side of the mound from where Uhle had originally trenched, though he did not reach a conclusion as to possible cultural differences represented by these strata.

Nelson (1909, 1910) continued his investigations of Bay Area prehistory with a survey of shellmound locations and a more extensive excavation of the Ellis Landing Shellmound near Richmond. At Ellis Landing, Nelson (1910) recognized a distinction between the upper and lower parts of the mound, but he relied heavily on evolutionary principles of cultural development, which obscured the more subtle indications of culture change evident in California shellmounds. Nelson ultimately concluded that no major cultural breaks were present and that the people living at the mound throughout its occupation “were all essentially of the same type of culture” (Nelson 1910: 402).

Alfred Kroeber (1909: 4) drew upon the work of Nelson and Uhle to assert “in California ... neither archaeology nor ethnology has yet been able to discover either the presence or the absence of any important cultural features in one period that are not respectively present or absent in the other.” With his control of the Department of Anthropology at the University of California and his belief that the archaeology of the Bay Area could lead to few insights concerning the historical development of Native American culture, Kroeber shifted the resources of the Department away from archaeology and more towards salvage ethnography (Gerow with Force 1968: 2). The scattered archaeological work that was conducted in the Bay Area during the pre-war period—such as at the Emeryville Shellmound—further undermined Uhle’s early observations of culture change in the archaeological sequence of the region.

While California archaeology in general suffered from assumptions regarding lack of culture change, a breakthrough for the discipline was made with the publication of *Prehistoric Man of the Santa Barbara Coast* (Rogers 1929) and “Chumash Prehistory” (Olson 1930). These publications were the first studies in California prehistory to recognize and name cultural sequences based on archaeological materials. It was not until the publication of *The Archaeology of the Deer Creek-Cosumnes Area* (Lillard and Purves 1936), however, that Central California had a stratigraphically based cultural sequence equivalent to that of Rogers (1929) and Olson (1930). This important publication laid the



groundwork for what would become known as the “Central California Taxonomic System,” or the CCTS (Gerow with Force 1968: 5).

While these publications sparked a reappraisal of earlier work in the Bay Area, the archaeological investigations that led to the creation of the CCTS were primarily focused on the Central Valley where the sites, due to the presence of rich and abundant grave lots, were considered much more productive for discovering evidence of cultural change. In general terms, the CCTS was a cultural sequence divided into three successive cultural periods: the Early, Middle (also called Transitional), and Late Horizons (Heizer and Fenenga 1939; Lillard and Purves 1936; Lillard et al. 1939). The creation of a cultural sequence for Central California marked a turning point for California archaeology, leading Heizer and Fenenga (1939) to conclude that traditional views of California prehistory as uniform and stable were no longer tenable and that culture change had been ongoing and pronounced.

One of the primary goals of this new paradigm in Central California archaeology was to integrate the culture history of the Central Valley and Bay Area (Beardsley 1948, 1954; Heizer and Fenenga 1939: 396; Lillard et al. 1939: 61). This task was complicated, however, by the advent of radiocarbon dating and an increase in the amount of data available for analysis. Rapid development of the Bay Area meant that more sites and cultural materials were being discovered, which in turn led to an increasing appreciation for the diversity and variation in regional assemblages. The CCTS could not account for these new discoveries without significant revision (Gerow with Force 1968: 5), as the system was based on the belief that “the Bay constituted a local marginal and culturally backward area into which outside influences either failed to spread or spread slowly or halfheartedly” (Heizer 1949: 39).

Being based on the diffusionist notion of “climax” areas or regions (Kroeber 1920, 1939), the CCTS considered the Central Valley as the area in which dominant cultural trends developed and later spread into surrounding areas. In contrast, Gerow with Force (1968) proposed that several different early cultures existed in Central California and that these cultures later converged to create the cultures of the Middle Horizon. Even though this proposition demanded a thorough revision of the CCTS, Gerow with Force (1968) did not offer an alternative to the existing system. Instead, the authors worked within the confines of the CCTS to integrate the new data within the old system, though other archaeologists were also growing dissatisfied with the status quo (Bennyhoff and Fredrickson 1994; Fredrickson 1973, 1994a).

Fredrickson (1994a) undertook to overhaul the CCTS and began by separating the cultural and temporal dimensions of the system. “The three-part Central California cultural sequence proved to be implicitly unilineal, fostered by the deliberate linking, through the concept of the horizon, of the cultural and the temporal dimensions” (Fredrickson 1994a: 5-6). Fredrickson’s revision of the sequence for California eventually produced three major chronological periods: Paleo-Indian, Archaic, and Emergent. For the cultural dimensions of the revised taxonomic framework, Fredrickson’s most important contribution was the concept of the “pattern” (Bennyhoff and Fredrickson 1994: 20-22; Fredrickson 1994b: 40-43). An archaeological pattern, as typically defined, represents a basic adaptation generally shared by a number of separate cultures over an appreciable period within a given geographic area. The pattern is characterized by similar technological skills and devices (specific cultural items); similar economic modes (production, distribution, consumption), including trade and wealth practices (often inferential); and similar mortuary and ceremonial practices (Bennyhoff and Fredrickson 1994: 21).

The increasing complexity of the revised CCTS reflected the increasing diversity of the archaeological record. Yet with the rise of the “New Archaeology” in the 1960s and 1970s, interest in archaeological taxonomy waned. The new paradigm emphasized the primacy of the environment as the regulating force for culture change at the expense of historical and social factors that may have helped to shape human history (Fredrickson 1992 in Hughes 1994: 92). Classification systems like the CCTS grouped archaeological cultures in such a way to be able to study their historical and social relationships. With the lack of interest in these relationships, the program of classification was largely abandoned. In addition to the shift in paradigm, the sociopolitical tenor of the discipline also began to change. Grave lots, which were the traditional source of data for taxonomic questions, were less accessible to researchers due to avoidance during archaeological projects or out of respect for the wishes of Native American communities. Both the interest in taxonomy and the data necessary for its study became increasingly rare.

### **3.1.2 The San Luis Reservoir Area**

Within Fredrickson’s revised CCTS, the Windmill, Berkeley, and Augustine patterns are particularly relevant to the Central Valley. Best known from archaeological manifestations in the Delta and nearby grasslands, Windmill Pattern sites (ca. 3000 BC to 1000-500 BC) are also recognized in the Sacramento Valley north of Sacramento, the Sierra Nevada foothills, and the Coast Ranges. The artifact assemblages include a variety of flaked and ground stone, baked clay, and shell items, implying a diverse subsistence base and exchange or trade relationships with distant areas. Most of the non-obsidian rock sources (e.g., quartz crystals, calcite, alabaster, and schist) for Windmill Pattern artifacts are from Sierra Nevada sources (Moratto 1984), whereas much of the obsidian used for chipped stone artifacts is from the western Great Basin and North Coast Ranges (Jackson 1974). The Windmill burial pattern is unique in that virtually all of the interments are ventrally extended with the head oriented to the west. Artifacts associated with burials are common and imply social stratification, with males generally having higher status than females. It has been suggested that Windmill people lived in small, highly mobile groups and that some Windmill groups occupied the Sierra Nevada foothills during the summer and the Sacramento Valley during the winter. A riverine-marshland orientation is generally recognized for the Windmill Pattern (Moratto 1984: 206, 552). Windmill deposits in the Central Valley and Delta are typically situated on low, broad mounds and some are known to underlie complex archaeological deposits (e.g., villages or permanent habitation sites) dating to subsequent periods. Windmill assemblages have also been identified in cave settings in the Sierra foothills.

The Berkeley Pattern (ca. 1000-500 BC to AD 500) represents a gradual subsistence shift to increased reliance on acorns, fish, and birds. Stone bowl mortars and pestles are found in large quantities. An extensive bone tool kit was also developed along with unique knapping techniques and particular types of shell beads and pendants. Burial practices also differed from Windmill sites, with flexed burials in variable orientations. Large shell heaps have been the focus of study in the Delta and San Francisco Bay regions, and many of these sites show subsequent occupation during Augustine Pattern times (Moratto 1984).

Augustine Pattern (ca. AD 500-1800) artifact assemblages reflect an intensification of hunting, gathering, and fishing necessitated by an expanding population (Moratto 1984). Acorns, freshwater and anadromous fish, and waterfowl were principal subsistence foods. Mortuary practices showed significant variability and included cremation. Trade networks became more regularized, with serrated obsidian points, black steatite pipes and beads, magnesite cylinders and beads, charmstones,

clam shell disk beads, and other durable goods traded into the Central Valley from the North Coast Ranges.

Between 1962 and 1968, several archaeological studies were conducted in the Project vicinity prior to the construction of the San Luis, Los Banos, and Little Panoche reservoirs (Moratto 1984). Olsen and Payen (1969) and Moratto (1984) defined a series of four cultural complexes (Positas Complex, ca. 3300-2600 BC; Pacheco Complex, ca. 2600 BC-AD 300; Gonzaga Complex, ca. AD 300-1000; and Panoche Complex, ca. AD 1500-1850) based on artifact types and burials at 4-MER-S94 (also known as CA-MER-94) and other sites in the western Central Valley. The Positas Complex is represented by artifacts recovered from the base of CA-MER-94 consisting of perforated flat cobbles, small shaped mortars, short cylindrical pestles, a few flake scrapers, milling slabs and mullers, and spire-lopped *Olivella* shell beads.

The Pacheco Complex is represented by artifacts recovered from CA-MER-94 B and C components and is divided into two phases. Phase B (ca. 2600-1600 BC) is marked by large leaf-shaped bifaces, thick rectangular *Olivella* beads, and rare rectangular *Haliotis* ornaments. Phase A (ca. 1600 BC-AD 300) artifacts include various bead types (spire-ground, saucer, and split-drilled *Olivella* beads, *Macoma* clam disc beads, *Haliotis* disc beads, *Haliotis cracherodii* shell ornaments, and stone beads); perforated canine teeth; bird bone awls; scapula grass cutters; polished stone rings, pins, and flat pebble pendants; abundant millingsstones, mortars, and pestles; and large to medium projectile points, often stemmed or side-notched. The beads and ornaments relate to the Middle Period in Central California. Coastal influences are reflected in the form and material of some of the projectile points, the presence of *Mytilus* and clamshell in middens, and flexed burials at a time when extended burials were prevalent in the area (Olsen and Payen 1969).

The Gonzaga Complex is represented by CA-MER-3B, CA-MER-14, and CA-MER-94 (Schulz 1970a, 1970b). The majority of diagnostic artifacts from this period have been recovered in association with both extended and flexed burials. Diagnostic artifacts include various bead types (whole spire-ground, thin centrally-perforated rectangular, split-punched, oval, and thin rectangular *Olivella* beads; freshwater mussel shell disc beads and whole limpet shells; and a variety of *Haliotis* ornaments), rare square stem, tapered stem, and serrated projectile points; some bone awls, bone pins, incised mammal bone tubes, bird bone whistles, and scapulae grass cutters; polished stone spool-shaped ear ornaments and small cylindrical plugs; and abundant milling tools such as bowl mortars, shaped pestles, and rarer slab mortars. A single house was discovered with two superimposed floors, a circular basin and a basin with a mud rim and firepit but no postholes. The Gonzaga Complex is similar to Phase I of the "Late Horizon" in the San Joaquin Delta (Moratto 1984).

The Panoche Complex is represented by several sites, including CA-MER-94, CA-MER-27, CA-MER-119, CA-MER-3A, CA-FRE-128, and CA-FRE-129. Diagnostic artifacts include several bead types (clamshell disc beads; steatite disc beads; side-ground, spire-ground, disc, and lipped *Olivella* beads; and *Haliotis* epidermis disc beads and circular and rectangular *Haliotis* ornaments); small side-notched and serrated projectile points; many flaked stone scrapers; bone awls, scapulae grass cutters, bird bone whistles and tubes, and bone beads; polished stone ear spools, conical pipes, and pins; and a variety of mortars and pestles. Flexed burials as well as primary and secondary cremations were noted at Panoche Complex sites. Larger circular assembly houses as well as smaller circular dwellings also were discovered. The Panoche Complex resembles the San Joaquin Delta "Late Horizon" Phase 2 and shows parallels with tribes from the southern coast (Moratto 1984).

## 3.2 Ethnographic Background

The crest of the Diablo Range is generally regarded as the dividing line between the ethnographic territories of the Northern Valley Yokuts in the Central Valley and the Costanoan, or Ohlone, to the west in the Santa Clara Valley (Kroeber 1925). Territorial boundaries were likely somewhat fluid in the past, however, and there was certainly much trade, exchange, and movement between areas. The following sections therefore discuss both groups and offer a brief account of the Northern Valley Yokuts and Ohlone following European contact.

### 3.2.1 Northern Valley Yokuts

#### ***Territory***

The San Luis Reservoir area lies within the traditional territory of the Northern Valley Yokuts, which extended south from the confluence of the Calaveras and San Joaquin Rivers to the point at which the San Joaquin River turns abruptly east. It encompasses the central San Joaquin Valley east from the Diablo Range to the Sierra Nevada. Linguistically, the Northern Valley Yokuts are relative newcomers to the central San Joaquin Valley. They were pushed north by the Numic-speaking Monache beginning about 500 years ago (Kroeber 1959). Approximately 50 linguistically identifiable tribes were known to exist under the umbrella of “Yokuts” (Kroeber 1976). The Kahwathwah Yokut tribe lived in the San Luis Reservoir area (Latta 1949).

The pre-contact Yokuts population has been estimated as three to four hundred people in each tribe, with 15,000-20,000 people for the entire group (Kroeber 1976). Another estimate, based on available food resources, suggests that the population was as high as 31,000 or more (Baumhoff 1963: 221). The Northern Valley Yokuts territory included riparian woodlands, freshwater marshes, valley grasslands, oak woodlands, open river channels, lakes, and sloughs (Schulz 1981). Little ethnographic information exists for the Northern Valley Yokuts. The rapid spread of disease and the Euro-American invasion of their territory for mining and related activities in the early to mid-19<sup>th</sup> century led to rapid population declines and displacement of the Northern Valley Yokuts (Wallace 1978).

#### ***Subsistence***

The Northern Valley Yokuts relied heavily on fishing in rivers, sloughs, and streams throughout their territory in the central San Joaquin Valley. Salmon spawned during the fall in the San Joaquin River and its tributaries, and sturgeon was also an important food resource. Dragnets, stone sinkers, and antler-tipped harpoons were used for fishing. Aquatic birds, such as duck and geese, and plant foods were an integral part of the subsistence base. Fire was commonly used to encourage seed-bearing grasses and plants.

Food processing implements included the mortar and pestle, hand and milling stones, and wood mortars. Baskets were also used in seed winnowing and acorn storage. The bow and arrow were the primary means for hunting mammals such as tule elk, deer, and pronghorn antelope. Projectile points or arrowheads were made of local chert, jasper, and chalcedony. Obsidian was rare, and only available through trade. In terms of volume, acorns were the single most important food in Native Central California. During the winter months, when hunting and fishing could be difficult and fresh plant foods were unavailable, consumption of acorn products may have exceeded that of all other foods combined (Schulz 1981).

### **Settlement**

Most Northern Valley Yokut houses were circular or oval semi-subterranean single-family dwellings of tule mats over pole frames. Large communal residences sheltering ten or more families also were constructed (Moratto 1984). Sweathouses and larger ceremonial chambers have been documented ethnographically (Gayton 1936, 1948). Settlements were reported on mounds above permanent waterways, likely because these elevated ground surfaces were safe from flooding and contained abundant food resources.

### **Trade**

Trade occurred north and south along the San Joaquin River. Tule rafts were used for transportation as well as trade (Gayton 1936). Baskets, blankets, and flaked stone were traded from the Miwok in exchange for dogs (Barrett and Gifford 1933). Trade between the Yokuts of the San Luis Reservoir area and the Ohlone occurred along routes through what would later become “Pacheco Pass.” Abalone and mussel shells were imported from the coast. Obsidian was most commonly acquired from sources on the eastern slopes of the Sierra Nevada Range.

## **3.2.2 Ohlone**

### **Territory**

The inhabitants of the territory to the west of the Northern Valley Yokuts were known ethnographically as the Ohlone or Costanoan after the Costanoan language group. Costanoan languages belong to the Utian family of the Penutian language stock (Shipley 1978) and were spoken from the San Francisco Bay Area southward along the coast to Point Sur and inland to the Diablo Ranges and portions of the northern San Joaquin Valley (Milliken 1995). The designation Costanoan derives from the Spanish word *Costaños*, or “coast people.” The term is misleading, however, as it amalgamates and homogenizes 10,000 or more people who lived in the region into a single ethnolinguistic unit. In reality, the term “Costanoan” subsumes as many as forty or fifty politically independent groups—some of which spoke mutually unintelligible but genetically related languages—under a single umbrella. Many present-day descendants prefer the term Ohlone, which is said to have derived from the name of a coastal village in San Mateo County (Levy 1978).

Knowledge of Ohlone culture is largely based on information gathered from Spanish expeditions between 1769 and 1776, documents maintained at missions, the works of ethnographers and linguists, and from Native descendants. Primary ethnographic sources include Harrington (1933, 1942) and Kroeber (1925). Overviews are provided in Heizer (1974), Levy (1978a), Margolin (1978), and Milliken (1983, 1991, 1995), among other texts. Galvan (1968) and Williams (1890) offer Native accounts of Ohlone history, and an excellent example of contemporary ethnohistory can be found in Cambra et al. (1996).

### **Political Organization**

As defined by Kroeber (1925) the basic Ohlone political unit was the “tribelet,” an autonomous, self-governing, territorially defined unit over which recognized authority was given to one person, in most instances the leader or chief. Each triblet would be composed of one or more villages and a number of camps within its recognized and protected resource exploitation zone. Studies by C.D. King and others suggest that over time several of these triblets amalgamated into larger tribal units (Breschini et al. 1983). Due to geographic barriers and distance between Ohlone triblets, however, the integration of smaller political units into larger ones was the exception rather than the rule.

Recent scholarship has questioned Kroeber's interpretation of the Ohlone political system. According to Milliken, socio-political groups were essentially clusters of unrelated family groups that formed loose cooperative communities in the event of ceremonial festivals, group harvesting efforts, and inter-family conflict resolution (Milliken 1995). These disparate multi-family communities joined for the majority of the year to form a large village centrally located between their lands. In other instances, rather than forming a single village, these family units distributed themselves into as many as five semi-permanent villages.

The nature of political authority among Central California tribes has been differentially characterized by early explorers and missionaries as both egalitarian and hierarchical. Records from Mission San Juan Bautista for example attempted to fit local Native Americans into a Spanish system, and described tribal leadership by *capitanes*, or male village leaders. Paradoxically, Father Arroyo de la Cuesta, also of Mission San Juan Bautista, described in his correspondence with Spanish officials a primarily egalitarian, leaderless society in which social control was embedded within the dynamics of deep-seated inter-family feuds. It is evident from Arroyo de la Cuesta's observations that he did not view these divisions in Native leadership as comparable with the hierarchical ranks of bureaucratic Spanish society. He did note, however, that though the "pagan state" lacked distinguished *capitanes*, distinct male leadership roles did arise in battles, banquets, and ceremonies (Arroyo de la Cuesta in Geiger and Meighan 1976).

### ***Spiritual Practices***

Early accounts of the Ohlone suggest that they practiced a religion based on sun worship. According to these accounts, the Ohlone often greeted the sun with gestures, demonstrations, and offerings (Kroeber 1925). Sun worship, however, was probably a small part of a much broader pattern of interacting with the natural environment, and early interpretations of sun worship were probably due to the early explorers' cultural misunderstanding of the ceremonies they observed.

Merriam's ethnographic accounts of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries describe references to bear shamanism, a practice also observed among other Native American groups. Within shamanistic cultures, shamans serve as spiritual and physical healers, ritual leaders, and as powerful channels of supernatural power. Merriam, having observed shamanistic ritual, described the use of poisons by shamans, including deadly substances like the venom of rattlesnakes, extracts from the lungs of turtles and frogs, and less caustic substances such as human saliva (Merriam 1966).

### ***Subsistence, Trade, and Material Culture***

The Ohlone were hunter-gatherers who occupied semi-permanent camps and villages from which they could take advantage of seasonal changes in resource availability. Dwellings at these habitation sites were dome-shaped, with pole frameworks and thatch roofs and walls. Other structures that could be found in an Ohlone village included acorn granaries; sweat houses for the men, often along stream banks; menstrual houses for women; and dance houses and assembly houses, generally in the center of a village (Broadbent 1972). From these villages the Ohlone visited the mountains, valleys, and sloughs to collect resources.

The early explorer Vizcaíno noted a diverse diet among the Ohlone people, which included seeds (dock, tarweed, and chia), nuts (pine nuts, buckeye, hazel, and pepper/bay nuts), berries (Manzanita), grasses, roots, and insects that were gathered locally. The single most important food item among the Ohlone was the acorn, at least four species of which were collected and processed into meal or flour (Breschini et al. 1983). *Pinole* is a ground meal or flour derived from the processed seeds of

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several plants, including tarweed (Merriam 1966). Tobacco was prepared in a mortar and used as an emetic substance or, more rarely, smoked in the manner of Europeans (Merriam 1966). Tea was commonly prepared from the flowers, leaves, and bark of the Manzanita, elderberry, coffeeberry, toyon, and nettles.

Terrestrial animals formed a large portion of the Ohlone diet, and included birds and small mammals, which were hunted, clubbed, trapped, and snared. Fish were hooked or caught by hand, and explorers reported that sea otters were often clubbed in the water or snared if encountered on land. Shellfish provided an important seasonal food resource, and it is likely that the Ohlone dove for certain prized species, such as *Mytilus edulis*, freshwater mussel (*Gonidea* sp.), marine clams (*Protothaca* sp.), and snails (*Tegula* sp.). Broadbent (1972) reported that frogs, toads, and owls were specifically forbidden from consumption among the Ohlone, a taboo that may have been embedded in socio-cultural beliefs or may simply have reflected cultural preferences.

To promote the growth of seed-bearing annuals and to control the growth of rampant chaparral species, the Ohlone periodically burned vegetation in areas surrounding village sites or in areas of food gathering and hunting. As noted by historical and ethnographic observers, these operations were extremely efficient in controlling vegetation and involved considerable skill and foresight. Gordon states that the burning sequences had the overall effect of bringing to the open “an increased supply of food plants and game” (Gordon 1974: 27), and by the time of initial European settlement in the San Francisco Bay Area, regional vegetation had already been altered considerably by controlled burning.

An abundance of information exists on the material culture of the Ohlone. Mission-era accounts of clothing worn by Rumsen Ohlone neophytes at the Carmel Mission note that women often wore “a short apron of red and white cords twisted and worked as closely as possible, which extends to the knee” (Breschini et al. 1983: 299). According to these accounts, men typically went naked except for the few who covered themselves with a small cloak of rabbit skin above the waist. Other materials employed in the manufacture of clothing were green and dry tule, sea otter furs, and deerskin. Personal ornamentation included black and white face and body paint, which was created from mined cinnabar and typically worn by men. Red ochre was worn as body paint by Ohlone warriors in battle. In daily life, the Ohlone wore ornaments created from abalone shell.

Shell beads were widely used by the Ohlone as a form of currency. *Olivella* shells, mussels, abalone shells, salt, dried abalone, woven baskets, and other items were traded for prized goods with nearby villages and with more distant villages located in other environmental zones. Among the items received by the Ohlone in such transactions were stores of the prized piñon nut and obsidian for tool making. Regional interaction among the Ohlone, and with neighboring cultures such as the Salinan and Yokuts, took place through trade, ceremonies, warfare, and intermarriage. Group exchange and “gifting” occurred at feasts of seasonal resources and at seasonal ceremonial dances and festivals (Milliken 1991: 70). Intermarriage usually occurred between adjacent groups and was rare between those at greater distances (Milliken et al. 1993). Both marital and trade issues were affected by and effected warfare between the tribes (Amoros in Heizer 1974), which has been described as common at the time of Spanish contact (Fages 1937). These well-documented animosities often flared because of territorial disputes and infringements, frequently associated with resource access and control (e.g., Broadbent 1972; Fages 1937; Mason 1912; Langsdorff 1968).

## 3.3 Historic Period Background

### 3.3.1 The Spanish Period

Although European contact with Native Americans in California commenced as early as 1542 with the explorations of Juan Rodríguez Cabrillo (Erlandson and Bartoy 1995), the historic period in Central California began in earnest with the expansion of the Spanish frontiers northward from Mexico into Alta California during the 18<sup>th</sup> century. In 1769, Sergeant José de Ortega, the scout for the expedition of Gaspar de Portolá, discovered the entrance to the San Francisco Bay. The interior of the Bay Area was first explored in 1775 by Juan Mañuel de Ayala and José Cañizares (Hoover et al. 1990: 330). These expeditions were partially focused on the identification of sites for the establishment of missions. Using a tripartite system of military presidios, religious missions, and civilian pueblos, the Spanish government rapidly established a network of settlements from San Diego to San Francisco. One of the first colonizing parties in northern Alta California, under José Joaquín Moraga and Padre Francisco Palou, arrived in San Francisco in 1776 and founded the Presidio of San Francisco and *Misión San Francisco de Asís* (also known as Mission Dolores) (Hoover et al. 1990: 333). The following year, *Misión Santa Clara de Asís* and *El Pueblo de San José* were established in the South Bay (Hoover et al. 1990: 400).

Exploration from the central coast into the San Joaquin Valley began with the Gabriel Moraga expeditions of 1806, 1808, and 1810. The 1806 expedition started in San Juan Bautista, probably entered the valley along San Luis Creek in Merced County, and explored portions of the San Joaquin and Merced Rivers. During the 1810 expedition, Moraga's route brought him back to San Juan Bautista by way of San Luis Creek and Pacheco Pass (Hoover et al. 1990: 198). It has been suggested that the route through Pacheco Pass may have originally been a Yokut or Miwok trade route between the Santa Clara and San Joaquin Valleys (Marschner 2000).

At about the same time as Moraga's explorations, Russia started colonizing coastal lands southward from Alaska into California. The Russians established Fort Ross in 1812 near the modern town of Jenner. The Spanish countered this incursion by establishing *Misión San Rafael Arcangel* and *Misión San Francisco de Solano* in Sonoma to establish a northern frontier.

By the beginning of the 19<sup>th</sup> century, the Spanish had established an interior road called *El Camino Viejo*. The route ran from the Los Angeles coast north along the western edge of the San Joaquin Valley to the Patterson Pass (near Tracy) and then west to San Antonio (current East Oakland) (Hoover et al. 1990). One of the stopping points for water along the route was at *El Arroyo de San Luis Gonzaga* at *Rancho Centinela* just east of the San Luis Reservoir area (Hoover et al. 1990: 199). Little is known of *Rancho Centinela*, however it is thought to have been a Spanish-era outpost for *vaqueros*, or stockmen, who drove livestock across Pacheco Pass to the Santa Clara Valley. An adobe, which may have dated to as early as 1810, stood at the *vaquero* camp location until it was demolished in 1900 (Latta 1936: 14-15; Snoke 2010).

### 3.3.2 The Mexican Period

Mexico gained independence from Spain in 1822, and Alta California became a part of the Mexican frontier. The newly established Mexican government attempted to colonize their northern frontier by secularizing mission lands in 1834 and by granting large tracts of land to *Californio* citizens as a reward for loyal service. These ranchos were meant to stake the Mexican claim to the area and halt the possibility of further Russian incursion into Mexican territory (Hoover et al. 1990).



Secularization brought an influx of Mexican settlers to California and allowed for the emergence of a new class of wealthy landowners known as *rancheros*. This led to an emphasis on ranching and agricultural activities in California that became known as the “hide and tallow trade” (Hoover et al. 1990). By the 1840s, there were an estimated 150,000 to 200,000 hides exported annually from Alta California (Burcham 1982: 126-127). During the 1830s and 1840s, there were a series of raids and counter expeditions between the Miwok and Yokut tribes and the Mexican colonists. Although never constructed, Governor Alvarado proposed in 1843 that a fort or stockade be built in Pacheco Pass to secure the route from raiding parties (Beck and Haase 1974: 23).

In 1843, Juan Pérez Pacheco and José María Mejía were granted *Rancho San Luis Gonzaga*, which comprised the eastern Pacheco Pass region, including much of the Project Area as well as the former *Rancho Centinela* property. The land had previously been granted in 1841 to Francisco Rivera but was revoked when Rivera did not establish a residence on the land (Hoover et al. 1990: 200). The grant was bounded by the San Joaquin River to the east; Los Banos Creek to the south; and *Rancho Ausaymas y San Felipe* to the west, which was held by Juan’s father Francisco Pérez Pacheco (Beck and Haase 1974). Juan Pérez Pacheco built a one-story adobe house near the route through the pass and raised cattle for the hide and tallow trade. Over the years, the Pacheco family built a second adobe that collapsed during the 1868 earthquake (Hoover et al. 1990: 200; Marschner 2000: 259). The original 1840s adobe survived intact until 1962 when it was unsuccessfully moved in advance of dam construction (Hoover et al. 1990: 200) (*see* Section 3.3.3).

When Juan Pérez Pacheco died in 1855, the property reverted to his father Francisco, who died just five years later in 1860. Francisco’s property, including *Rancho San Luis Gonzaga* and half of *Rancho Ausaymas y San Felipe*, passed first to his wife and then to his only surviving child Ysidora after his wife died in 1892. Ysidora married Mariano Malarin in 1850 and had two daughters. One married Dr. Ramon Roca while the other married Dr. Luis Fatjo. The Fatjos and their children inherited the Merced portion of *Rancho San Luis Gonzaga* (Hoover et al. 1999: 200). In 1949, Paula Fatjo, the great-great granddaughter of Francisco Pérez Pacheco, moved to the *ranchito* and remodeled the original 1843 adobe (Pierce 1977: 107). *Rancho San Luis Gonzaga* remained an operating cattle ranch during Paula Fatjo’s time, though she also bred and boarded Arabian horses there until her death in 1992 (Pierce 1977: 107-111, Bissonnette 2007).

At the west end of Pacheco Pass, was *Rancho San Ysidro* (Old Gilroy), granted in 1810 to Ygnacio Ortega. Ortega died in 1833, and the *ranchito* was divided among his heirs, Ysabel Ortega, Quentin Ortega, and María Clara de la Asunción (wife of John Gilroy). The resulting *Rancho Ysidro* and *Rancho La Polka* lay to the west and southwest of the San Luis Reservoir vicinity.

In the 1840s, relations between Mexico and the U.S. became strained as the U.S. expanded westward toward the Pacific Ocean. Political stresses erupted into the Mexican-American War of 1846-1848. At the close of the war, Alta California became part of the U.S. with the signing of the Treaty of Guadalupe Hidalgo.

### **3.3.3 The American Period**

In 1848, at the close of the Mexican-American War, James Marshall discovered gold on the American River and the California Gold Rush began. The discovery brought tens of thousands of immigrants from around the world that pushed further into the California interior than the Spanish or Mexican settlers that had come before. The wealth and expanding population of California curtailed the usual territory phase, and California became a state in 1850 (Hoover et al. 1990).

Due to the rapid influx of settlers into the state, legal determination of ownership of lands awarded by Spanish or Mexican authorities was often disputed. The new American government passed the Land Act of 1851, which placed the burden of proof-of-ownership on the grantees so that the few Native Americans who had received grants lost their titles, as did many Hispanic landowners. By congressional action, grant claims were heard by a board of Land Commissioners and then appealed in federal courts. By 1885, 97% of the claims had been decided. In some instances, however, land ownership was not decided until after a claimant's death. Such was the case with Juan Pérez Pacheco's claim to *Rancho San Luis Gonzaga*. Though he died in 1855, the land was not patented in his name until 1871.

As gold mining in California declined in the 1860s, agriculture and ranching, which had been established to feed the miners, expanded to become important industries for the state economy. Farming in the American Period was characterized by three types of pursuits: cattle and sheep ranching, grain farming, and irrigation agriculture. Cattle and sheep ranching were dominant until the 1880s. During that time, free-ranging, comparatively wild Spanish cattle were replaced by American breeds of livestock and dairy cows. Sheep breeds were also improved in the late 1850s and 1860s by breeding with merino sheep (Burcham 1982).

During the American Period, ranching and dairying activities expanded in the Pacheco Pass region as the *ranchos* were subdivided and portions sold off or leased. General information regarding American Period ranches within and near the San Luis Reservoir vicinity is presented below. Water conveyance and transportation, two other key factors that guided the development of the region, are also discussed below.

### ***Ranches and Agriculture in the San Luis Reservoir Area***

*Rancho San Luis Gonzaga* became known as San Luis Ranch during the American Period. With the onset of the Gold Rush, Juan Pérez Pacheco realized that selling beef to miners was more lucrative than selling hides, and thus he shifted the economic focus of his *ranch*. The Pachecos also partnered with the Butterfield Overland Stage Company and provided a stopover station for the stage route. Due in part to these strategies, and unlike many *Californio* ranchers, the Pachecos were able to retain most of their lands (Marschner 2000: 259; Wood 2005: 46). During the 1930s and 1940s, the 1840s adobe was used as a restaurant, the Old Adobe Inn (Wood 2005: 47). The adobe survived until 1962 when Paula Fatjo attempted to move the adobe to a location west of the proposed San Luis Reservoir in advance of its construction (Hoover et al. 1990: 200; Wood 2005: 46). The remains of the adobe currently lie within Pacheco State Park (Bissonnette 2007).

During the 1850s, Pedro and Bernardo Altube, Spanish Basque immigrants, herded cattle from Southern California and pastured them at the abandoned *Rancho Centinela* adobe prior to their sale (Ziesing et al. 1997: 51). They and their partners, Juan Bautista Arambide, Bernardo Ohaco, and Carlos Garat, acquired the property during the 1860s and 1870s, raised cattle and sheep, and built a second adobe (Snok 2010; Ziesing et al. 1997: 52). The Bascos, as they were known, came into direct competition with the expanding Miller and Lux cattle empire in the San Joaquin Valley during the 1860s. By 1871, the Altube brothers sold their holdings and moved to Nevada to start their Spanish Ranch in Elko County. The Arambide and Garat families followed them later in the decade (Ziesing et al. 1997: 53).

Henry Miller and Charles Lux came to California during the 1850s as butchers and formed a partnership in 1858 to buy cattle for slaughter (Pierce 1977: 174). From these beginnings, they

expanded to become one of the largest cattle ranching corporations on the west coast with land holdings in California, Oregon, and Nevada. When Lux died in 1887, Miller bought out Lux's heirs and continued to expand the empire, which lasted through the 1920s before financial debts curtailed the company's growth (Iglesias 2001: 180; Pierce 1977: 183). In the San Joaquin Valley, Miller and Lux leased Pacheco lands for grazing and in the 1870s or 1880s built a wood frame-line cabin and corrals near the Pacheco adobe. The line cabin was standing as of 2004 (Wood 2005: 47).

The remains of the Domengine Sheep Ranch are located on the southern shore of current San Luis Reservoir. John Domengine, a French Basque, immigrated to California during the Gold Rush, ranched cattle near Santa Clara until 1865, and then worked for Miller and Lux as a sheep ranch foreman until 1867. Around 1867, he started his own sheep ranch on the San Luis Ranch and ran it until 1873 when he sold his holdings to Simon Camy. In 1872, John's son, Adolph Domengine, joined his father at the sheep ranch and continued to work for the new owner until 1874 when Camy's ranching enterprise moved to Fresno (Vandor 1919: 2181-2182). In 1889, the area near Domengine Spring was issued as a 160-acre homestead entry patent to Joseph Bareilles Couloume, a French immigrant who started sheep ranching south of the reservoir between 1880 and 1889 (BLM 2020a). He and his son, Frank Bareilles, continued ranching and farming there through at least the 1930s (Merced County 1932; U.S. Census Bureau 1920:1A; 1930:6A).

John Dowdy came to California from North Carolina in 1854 (Thompson and West 1876: 109). U.S. Census records suggest John Dowdy and other family members were residing in the Gilroy Township by 1870 and may have been there by 1860 (U.S. Census Bureau 1860: 246, 1870: 99A). An 1882 General Land Office (GLO) plat map shows a "Dowdy Barn and House" northeast of Pacheco Creek near the Stanislaus-Santa Clara County border (BLM 2016). By 1898, the Dowdys had patented 1,144 acres of land in the area (Parkman and McGuire 1984: 108). The current Dowdy Ranch Headquarters complex in Henry W. Coe State Park west of Pacheco Creek was built from ca. 1910 to the 1950s by Franklin, George, and John Dowdy (Parkman and McGuire 1984: 203; U.S. Census Bureau 1910: 9B).

The O'Connor Dairy Ranch was established by 1882 along Pacheco Creek (BLM 2016). No O'Connors are noted in the 1876 directories for Santa Clara County, which suggests that they may not have moved to the area before the late 1870s (Thompson and West 1876). The O'Connor Ranch was shown on the 1921 and 1947 Gilroy Hot Springs 15-minute U.S. Geological Survey (USGS) topographic maps as well as the 1955 Pacheco Peak 15-minute USGS topographic map (USGS 1921, 1947, 1955b). U.S. Census data for 1910 and 1920 show that the Timothy O'Connor family along the Pacheco Pass toll road were raising stock on a cattle ranch and were likely associated with the dairy (U.S. Census Bureau 1910: 9B, 1920: 9B). By 1989, the ranch was owned by the Andresen family of Pacheco Land and Cattle, Inc. (Hylkema 1989: 1).

### **Water Conveyance**

During the late 19<sup>th</sup> century, the aridity of the western San Joaquin Valley began to pose problems for agricultural production. Wells were initially used for irrigation, but as groundwater was depleted canal projects were undertaken to move water from the San Joaquin River to the west. Henry Miller was involved in early attempts to develop irrigation within the western Central Valley. He organized the San Joaquin & Kings River Canal and Irrigation Company and, in 1871, built a canal from the San Joaquin River to the town of Los Banos (Outcalt 1925:221). In 1874, Miller extended the canal to Los Banos Creek and then to the town of Newman four years later (Outcalt 1925:222). The canals provided much of the irrigation for Miller's properties and for local agriculture. Upon Miller's

death in 1916, his daughter and son-in-law inherited the bulk of his vast land holdings along with his water rights (Outcalt 1925:402).

In 1887, the California Legislature passed the Wright Act, which formed irrigation districts across California (Stene 2011:3). The Wright Act was amended in 1897 to ensure that there was sufficient bond funding for irrigation projects (Stene 2011:4). The Merced Irrigation District was established during the 1870s and 1880s for the eastern side of Merced County and developed many miles of canals (Merced Irrigation District 2014). In 1902, the U.S. government passed the Reclamation Act, which established the U.S. Reclamation Service (within the U.S. Geological Survey), which later became the U.S. Bureau of Reclamation. The Reclamation Act encouraged the occupation of previously undeveloped lands through the construction of irrigation systems and the distribution of water through reclamation. The construction of irrigation systems led to an increase in homesteading, which in turn fostered economic development.

By the 1920s, the depletion of groundwater reservoirs was a widely recognized problem within the western San Joaquin Valley. During the 1930s, the federal government began the CVP, a massive irrigation scheme that involved building dams and canals throughout California. In 1939, Henry Miller's heirs agreed to exchange their San Joaquin River riparian water rights, which would be impacted by the construction of Friant Dam and its diversion of the river through the Madera and Friant-Kern Canals, for substitute water diverted from the Sacramento River. They did not abandon their riparian water rights but agreed not to exercise them as long as the government could provide substitute water through "exchange contracts." These contracts are still in effect, and some of Miller and Lux's original canals continue to convey irrigation water today (San Joaquin River Exchange Contractors 2014).

During the early 1940s, America's entry into World War II increased demand for agricultural products and further depleted groundwater in the western Central Valley (U.S. Bureau of Reclamation 2011). By the 1950s, the west side of the Central Valley had become the focus of both the federal CVP and the newly formed SWP (Stene 2011:10). A 1954 federal investigation identified the area along Pacheco Pass in the Diablo Mountains as the ideal site for the San Luis Reservoir (Reclamation 2011). Despite opposition from a variety of regional factions, a state bond measure to fund irrigation in the western Central Valley was narrowly passed in 1960. To avoid the unnecessary expense of parallel aqueducts, the State of California agreed to partner with the federal government in the creation of the San Luis Unit in 1961 (Stene 2011:13-14). The San Luis Reservoir in the Diablo Mountains west of Los Banos would be filled with water supplied by the federal Delta-Mendota Canal and the state's California Aqueduct (Stene 2011:14). A ground-breaking ceremony officiated by John F. Kennedy marked the start of construction in 1962, and all construction was completed for the project by 1967. Typically, water from the Delta is pumped into the reservoir in winter and early spring and released in summer when water supplies are low (Department of Water Resources 1974:276).

The 117-mile long Delta-Mendota Canal, completed by Reclamation in 1951, was built to convey water diverted from the Sacramento River to the Mendota Pool, for exchange contract delivery. The canal transports water from the Tracy Pumping Plant (C.W. Bill Jones Pumping Plant) along the western side of the San Joaquin Valley for irrigation and potential storage at San Luis Reservoir, then travels east across the valley for delivery to Mendota Pool, where it is conveyed through various private canals to exchange contract irrigators. At its Mendota Pool

terminus, the water conveyed through the Delta-Mendota Canal is also used to recharge the San Joaquin River, which is diverted upstream at Friant Dam by the Madera and Friant-Kern canal systems (Stene 1994:13-14).

The California SWP was first envisioned in 1919 by Lt. R.B. Marshall who proposed conveying water from the Sacramento River watershed to the San Joaquin Valley and then over the Tehachapi Mountains to Southern California. A State Water Plan was introduced in 1931, however funding remained unavailable during the Great Depression. After World War II, the SWP was reintroduced and finally passed in 1960. In 1963, construction was begun on the California Aqueduct, a series of canals, tunnels, and pipelines that implement Marshall's early 20<sup>th</sup> century vision. The main line of the canal was completed in 1971, with subsequent branches or extensions completed as late as 1997 (California Department of Water Resources 2014).

The aqueduct begins at the San Joaquin-Sacramento River Delta at the Banks Pumping Plant, which pumps from the Clifton Court Forebay. Water is pumped by the Banks Pumping Plant to the Bethany Reservoir, which serves as a forebay for the South Bay Aqueduct via the South Bay Pumping Plant. From the Bethany Reservoir, the aqueduct flows by gravity to the O'Neill Forebay at San Luis Reservoir. From the O'Neill Forebay, it flows to the Dos Amigos Pumping Plant and then on for roughly 95 miles before it diverges in Kings County into a main line and a Coastal Branch. In southern Kern County, the main line splits into a West Branch and an East Branch, which together serve Los Angeles, San Bernardino, and Riverside counties. The Department of Water Resources operates and maintains the Gianelli Power Plant, a pumped-storage hydroelectric plant at the base of the B.F. Sisk Dam, which impounds San Luis Reservoir. The San Luis Canal portion of the California Aqueduct comprises the federally built portion of the SWP and delivers both federal and state water to the San Luis Reservoir.

### ***Transportation Development***

In 1856 to 1857, a toll road was built through Pacheco Pass by Andrew D. Firebaugh, and two stations (Bell Station and one near Mountain House) were added to collect tolls. The road was used by the Butterfield Overland Stage from 1858 through 1861, and *Rancho San Luis Gonzaga*, also known as the San Luis Station, became a prominent stopping place (Hoover et al. 1990: 199). A telegraph line followed the toll route through the pass (BLM 2016). The ranch complex expanded during the 1850s through the 1880s to include a hotel, a post office, a store, a tavern, and a blacksmith shop. In 1894, the San Luis Ranch also became a station for the short-lived Bicycle Mail Route that existed for two weeks while the American Railway Union went on strike (Wood 2005: 46). By 1878, Merced and Santa Clara counties had purchased the toll road and replaced it with a new road built as a public highway, a portion of which is now a segment of the Whiskey Flat Trail in Pacheco State Park.

In 1915, the Pacheco Pass road became a part of the state highway system, and the state built a third road through the pass (Hoover et al. 1990: 199). Finished in 1923, SR 152 between Bell Station and Pacheco Pass had a number of curves and steep grades. In 1939, beginning roughly one mile east of Bell Station, a 2.6-mile realignment was established that improved the accessibility and safety of the route (CAhighways.org 2010). A 3.3-mile long segment of the road was rebuilt in 1950 as a four-lane expressway, spanning the 1939 alignment and the Merced County border. In 1963 through 1965, a 12-mile long, 4-lane expressway was established from the County border eastward to bypass the San Luis Reservoir, which by then was under development. Whereas the 1940s-era alignment of SR 152 cut through the San Luis Flat, the 1960s-era reroute bypassed it to the north before curving to pass

to the south of what would become the San Luis Forebay. This reroute cut and filled the ridges and gulches with 11,400,000 cubic yards of soil and rock to form a level roadbed. The “Cottonwood Fill” (PL-Sisk-04) portion of rerouted SR 152 was designed and built in a coordinated effort by the State Division of Highways, DWR, and Reclamation to simultaneously reroute the road segment over Cottonwood Creek, provide drainage from Cottonwood Creek into Cottonwood Bay, and provide connectivity between Cottonwood Bay and the main portion of San Luis Reservoir (Kroeck 1963; Weaver 1965:5). A portion of SR 152, the “Highway 152 Tree Row” west of Gilroy between Santa Theresa Boulevard and the Uvas Creek Bridge, was listed in the NRHP in 2007, though other portions of the roadway alignment have not been formally evaluated according to available documentation.

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# Chapter 4 Background Research Methodology and Findings

## 4.1 Archival and Records Searches

As noted in Chapter 1, the cultural resources investigation for the current Project relies heavily on prior efforts completed for the SSLPIP and B.F. Sisk SOD Modification Project. In support of the SSLPIP, Pacific Legacy conducted archival and record searches at the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) in November 2009 (CCIC File number 75541), August 2012 (CCIC File number 8330I), and May 2016 (CCIC File number 9765I) for areas that overlap or subsume the B.F. Sisk Dam Raise Alternative Project Area. In February 2020, an updated archival and records search was completed through the CCIC (File number 11316I) for the B.F. Sisk Dam Raise Alternative APE and a surrounding 0.5-mile radius to ensure a complete and current inventory of known cultural resources and prior studies within the Project Area. The locations and unique identifiers<sup>2</sup> for all prior studies and previously recorded cultural resources were obtained from four 7.5-minute USGS topographic reference maps on file with the CCIC. They included the Los Banos Valley (2015), Mariposa Peak (2015), Pacheco Pass (1971), and San Luis Dam (1969) maps. The CCIC also provided listings of properties in the following historic registers maintained by the State of California:

- NRHP Directory of Determinations of Eligibility (California Office of Historic Preservation, Volumes I and II 1990);
- Historic Property Data File for Merced and Santa Clara counties (California Department of Parks and Recreation 2012);
- California Inventory of Historic Resources (California Department of Parks and Recreation 1976); and
- California Historical Landmarks (California Office of Historic Preservation 1996); and
- California Points of Historical Interest (California Department of Parks and Recreation 1992).

The CCIC also provided further ancillary information, including the following:

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<sup>2</sup> Unique identifiers for prior studies within Merced County begin with "ME-." Previously recorded cultural resources may or may not be assigned a state Trinomial number, which begins "CA-," but will have a Primary number. Primary numbers consist of a "P-" followed by a two-digit numeric county code ("24-" for Merced) followed by a six digit number indicating the order in which it was assigned (e.g., P-24-000116, etc.).



- Caltrans State and Local Bridge Survey (California Department of Parks and Recreation 2011);
- Caltrans Statewide Historic Bridge Inventory (California Department of Transportation 2013), which includes listings of bridges previously evaluated for listing in the NRHP and determined eligible for listing be not re-evaluated, bridges that remain unevaluated, and local agency bridges;
- Historic Highway Bridges of California (California Department of Transportation 1990);
- Historic American Landscapes Survey (HALS) Inventory – Northern California (California Office of Historic Preservation 2009);
- Linear Resource Concordance List for Canals, Ditches, Levees, Railroads, Roads, Trails, and Transmission Lines (California Office of Historic Preservation 2013);
- List of Railroads by County (California Office of Historic Preservation 2013);
- List of Historic Survey Reports (Bibliography) (California Office of Historic Preservation 1994); and
- Survey of Surveys: A Summary of California’s Historical and Architectural Resource Surveys (Department of Parks and Recreation 1989).

The archival and records searches included a review of all relevant 7.5-minute and 15-minute USGS topographic maps encompassing the Project Area on file with the CCIC. In general, reports for prior studies conducted within the Project Area were copied in full if they resulted in positive findings (i.e., if they reported on the discovery of cultural resources) or in part if they yielded negative findings (i.e., they reported on no newly discovered cultural resources). Cultural resource records for archaeological sites, built environment resources, and isolated finds were copied in full. Those materials were collated and entered into a geographic information system (GIS) database depicting the spatial extents and basic attributes of each previously recorded cultural resource or prior study. These materials also were scanned and archived as a part of the Project’s administrative record. Materials available online such as historic period topographic maps and GLO plat maps were not copied at the CCIC. Instead, they were downloaded and analyzed as necessary to aid in the identification of potential but unrecorded historic period resources.

## **4.2 Prior Studies and Previously Recorded Cultural Resources**

Archival and records searches revealed that 52 prior cultural resource studies have been carried out within the B.F. Sisk Dam Raise Project Area and that 33 of those intersected some portion of the APE (*see* Table 4-1 and Appendix A, Figures A-1 through A-7). Among the most extensive of these was an overview completed by the California Department of Parks and Recreation (2005) for the San Luis Reservoir Recreation Area EIS/EIR. Another was the Luis Reservoir Recreation Area Draft Resource Management Plan/General Plan and Draft EIS/EIR by Reclamation and the California Department of Parks and Recreation (2012). Particularly relevant was a draft “Built-Environment Inventory for the B.F. Sisk Dam Corrective Action Study, Merced County, California” (ICF 2013). It included an inventory of built environment resources within the

**Table 4-1. Previous Cultural Resource Studies Conducted within the B.F. Sisk Dam Raise Alternative Project Area.**

<b>Study Number</b>	<b>Study Type</b>	<b>Author</b>	<b>Date</b>	<b>Results</b>	<b>Intersects APE</b>
ME-000581	Inventory Survey	Adams	1988	Negative	Yes
ME-000602	Site-Specific	Follett	1983	Positive	Yes
ME-000603	Reconnaissance	Foster	1982	Negative	Yes
ME-000605	Inventory Survey	Foster	1985	Negative	No
ME-000618	Inventory Survey	Littlefield	1984	Negative	Yes
ME-000645	Sensitivity Study	Napton	1990	Positive	Yes
ME-000655	Excavation	Nissley	1975	Positive	Yes
ME-000657	Site-Specific	Olsen	1968c	Positive	No
ME-000666	Inventory Survey	Peak & Associates, Inc.	1979	Negative	Yes
ME-000683	Site-Specific	Riddell	1968	Positive	Yes
ME-000695	Overview	Varner	1975	Negative	No
ME-000699	Inventory Survey	Weber	1978	Negative	No
ME-000709	Reconnaissance	Wren	1987	Positive	No
ME-001462	Site-Specific	Olsen and Payen	1969	Positive	No
ME-001746/ 001747	Excavation	Schulz	1970a; 1970b	Positive	Yes
ME-001954	Reconnaissance	Thornton	1993	Positive	No
ME-001975	Sensitivity Study/EIR	Peak & Associates, Inc.	1991a	Negative	No
ME-001976	Inventory Survey	Peak & Associates, Inc.	1992	Negative	Yes
ME-003228	Excavation	Jensen	1976	Positive	Yes
ME-003345	Site-Specific	Stroppini	1975	Positive	Yes
ME-004287	Reconnaissance	Runnings and Haversat	2001	Negative	No
ME-004424	Inventory Survey	Napton	2001	Negative	No
ME-004578	Inventory Survey	Peak & Associates, Inc.	1991b	Indeterminate	No
ME-004688	Inventory Survey	Jensen	2002	Negative	No
ME-005221	Survey	Hector et al.	2003	Positive	No
ME-005378	Reconnaissance	Wren	2004	Negative	No
ME-005498/ 005499/005500	Inventory Survey	Leach-Palm, Mikkelsen, King, and Hatch	2004a; 2004b; 2004c	Positive	Yes
ME-005590	Inventory Survey	Wulzen	2004	Negative	Yes
ME-005758	Inventory Survey	Jones & Stokes	2003	Negative	No
ME-005777	Inventory Survey	Wulzen	2005	Negative	Yes

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<b>Study Number</b>	<b>Study Type</b>	<b>Author</b>	<b>Date</b>	<b>Results</b>	<b>Intersects APE</b>
ME-005908	Reconnaissance	Bonner	2005	Positive	No
ME-005926	Inventory Survey	Maslonka & Associates	2005	Positive	No
ME-006017	Inventory Survey	Whatford	1996a	Positive	No
ME-006099	Master Plan	EDAW	2006	Positive	No
ME-006474	Inventory Survey	Wulzen	2008a	Positive	Yes
ME-006535	Inventory Survey	Wulzen	2007a	Negative	Yes
ME-006834	Geotechnical Testing	Fry	2008	Negative	Yes
ME-006836	Site-Specific	Zaugg	2008	Negative	Yes
ME-006882	Overview (EIS/EIR)	California Department of Parks and Recreation	2005	Positive	Yes
ME-006984	Reconnaissance	Chotkowski	2009a	Negative	Yes
ME-007007	Inventory Survey	Chotkowski	2009b	Negative	Yes
ME-007015	Inventory Survey	Wulzen	2003a	Negative	Yes
ME-007119	Overview	Romoli and Ruby	1963	Positive	Yes
ME-007120	Overview	Olsen	1974	Positive	Yes
ME-007269	Reconnaissance	Chotkowski	2010a	Negative	Yes
ME-007405	Management Plan	Chotkowski	2010b	Negative	Yes
ME-007933	Survey	Siskin et al.	2010	Positive	Yes
ME-008185	Reconnaissance	Wulzen	2009	Positive	Yes
ME-008283	Inventory Survey	Johnston and Brewer	2015	Positive	Yes
---	Built-Environment Inventory	ICF International	2013	Positive	Yes
---	Inventory Survey	Holm, Reese, Ballard, Streich, Kovak, Sanchez and Holson	2014	Positive	Yes
---	Built-Environment Inventory	JRP Historical Consulting, LLC.	2018	Positive	Yes

B.F. Sisk Dam Raise Alternative APE, including the B.F. Sisk Dam and San Luis Reservoir, the O'Neil Dam and Forebay, the William R. Gianelli Pumping-Generating Plant, and the San Luis Operation and Maintenance Center. The study was never finalized, but its author concluded that the dam, the reservoir, the pumping-generating plant, and the forebay were eligible for listing in the NRHP and CRHR under Criterion A/1 for their importance to the development of the CVP and SWP as well as state and federal partnerships regarding water infrastructure (ICF 2013).

More recently, JRP (2018) re-examined the key elements of the B.F. Sisk Dam System during an architectural field inventory in support of the B.F. Sisk Dam SOD Modification Project. They recommended the B.F. Sisk Dam and San Luis Reservoir, the O’Neil Dam and Forebay, the William R. Gianelli Pumping-Generating Plant, and the San Luis Operation and Maintenance Center and their appurtenant features eligible for listing in the NRHP and CRHR under Criterion A/1 as contributing elements to the B.F. Sisk Dam/San Luis Reservoir Historic District. Elements of the district were recommended not eligible for individual listing in the NRHP or the CRHR, but taken together were found to be significant within the context of water resource development in California and an integral part of both the CVP and SWP (JRP 2018). Two ancillary facilities used in construction of the dam, the Basalt Hill Quarry (CA-MER-509H) and a rip-rap separation plant (CA-MER-492H), were recommended as non-contributing elements of the district.

Fifty-one cultural resources have been previously recorded within the B.F. Sisk Raise Dam Alternative Project Area, including 19 that intersect the APE. (*see* Table 4-2). Fifteen (CA-MER-14, CA-MER-15, CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-28, CA-MER-29, CA-MER-41, CA-MER-82, CA-MER-130, CA-MER-136, CA-MER-137, and CA-MER-437) are prehistoric archaeological sites; one is a prehistoric district (P-24-000489/San Luis Gonzaga Archaeological District); and three are historic period resources (CA-MER-451H, CA-MER-521H, and the B.F. Sisk Dam System).

**Table 4-2. Previously Recorded Cultural Resources within the B.F. Sisk Dam Raise Alternative Project Area.**

Resource Designation	Description	Author	Date	NRHP/CRHR	Intersects APE
B.F. Sisk Dam/San Luis Reservoir Historic District	Historic period B.F. Sisk Dam and its key facilities, including the B.F. Sisk Dam and San Luis Reservoir, the O’Neil Dam and Forebay, the William R. Gianelli Pumping-Generating Plant, and the San Luis Operation and Maintenance Center	ICF International	2013	RE (NRHP/CRHR)	Yes (Expanded Embankment, Downstream Stability Berms, Construction Staging Areas, and Reservoir Shoreline)
		JRP Historical Consulting	2018		
CA-MER-8 <sup>1</sup> P-24-0001091	Prehistoric lithic scatter with one handstone	Treganza	1960	NEV	No
CA-MER-9 <sup>1</sup> P-24-0001101	Prehistoric house-pits with lithic scatter and one mortar	Treganza	NA-b	NEV	No
CA-MER-14 <sup>2</sup> P-24-000115	Prehistoric lithic scatter with groundstone, burials, and rock cairn; destroyed	Olsen	1962	NEV	Yes (Expanded Embankment)
		Riddell	1962a		
		Glassow	1962, 1963		

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<b>Resource Designation</b>	<b>Description</b>	<b>Author</b>	<b>Date</b>	<b>NRHP/CRHR</b>	<b>Intersects APE</b>
CA-MER-15 P-24-000116	Prehistoric village site with bedrock mortars and flaked stone	Riddell	1962b	NEV	Yes (San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch)
CA-MER-16 P-24-000117	Prehistoric village site with two burials	Riddell	1963	NEV	No
CA-MER-17 P-24-000118	Prehistoric house-pits and midden deposit	Olsen	1963	NEV	No
CA-MER-18 P-24-000119	Prehistoric small, dark, rocky deposit with flakes, a shell, and possibly a human bone	Olsen	1964a	NEV	No
CA-MER-19 P-24-000120	Prehistoric midden deposit with pestle and flaked stone	Olsen	1964b	NEV	No
CA-MER-20 P-24-000121	Prehistoric midden deposit with pestle	Olsen	1964c	NEV	Yes (San Luis Reservoir Shoreline – South Highway 152)
CA-MER-21 P-24-000122	Prehistoric midden deposit with bedrock mortar	Olsen	1964d	NEV	Yes (San Luis Reservoir Shoreline – North of Dinosaur Point Boat Launch)
CA-MER-22 P-24-000123	Prehistoric midden deposit	Olsen	1964e	NEV	Yes (San Luis Reservoir Shoreline – North of Dinosaur Point Boat Launch)
CA-MER-23 P-24-000124	Prehistoric midden deposit with pestle fragment	Olsen	1964f	NEV	Yes (San Luis Reservoir Shoreline – North of Dinosaur Point Boat Launch)
CA-MER-24 P-24-000125	Prehistoric village site with mortars and pestles	Riddell	1964	NEV	No
CA-MER-26 P-24-000127	Prehistoric Midden and small lithic scatter	Olsen	1965a	NEV	No
CA-MER-27 P-24-000128	Prehistoric midden deposit with flaked stone and groundstone	Olsen	1965b	NEV	Yes (San Luis Reservoir Shoreline – Near Dinosaur Point Boat Launch)
CA-MER-28 P-24-000129	Prehistoric occupation deposit with flaked stone	Olsen	1965c	NEV	Yes (San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch)

<b>Resource Designation</b>	<b>Description</b>	<b>Author</b>	<b>Date</b>	<b>NRHP/CRHR</b>	<b>Intersects APE</b>
CA-MER-29 P-24-000130	Prehistoric Midden with silicate flakes and a scraper and mortar	Olsen	1965d	NEV	Yes (San Luis Reservoir Shoreline – East side of San Luis Creek Inlet)
CA-MER-31 P-24-000132	Prehistoric midden with two silicate scrapers	Olsen	1965e	NEV	No
CA-MER-32 P-24-000133	Prehistoric Midden with flakes and a hammerstone	Olsen	1965f	NEV	No
CA-MER-41 P-24-000142	Prehistoric midden deposit with fire affected rock fragments, flaked stone and groundstone	Olsen	1966a	NEV	Yes (San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch)
CA-MER-42 P-24-000143	Prehistoric midden deposit with flaked stone	Olsen	1966b	NEV	No
CA-MER-56/H <sup>1</sup> P-24-0001571	Site of historic San Luis Ranch Adobe	Latta	1950	NEV	No
	Prehistoric site with lithic scatter, handstones, mortars, and burials	Treganza	1960		
CA-MER-82 P-24-000182	Prehistoric occupation deposit with flaked stone and fire affected rock	Olsen	1966c	NEV	Yes (San Luis Reservoir Shoreline – West side of San Luis Creek Inlet)
CA-MER-83 P-24-000183	Prehistoric midden deposit	Olsen	1966d	NEV	No
CA-MER-94 P-24-000194	Prehistoric village site with sandstone bowl and flaked stone	Riddell	1962c	NEV	No
CA-MER-96 P-24-000196	Prehistoric midden with groundstone pieces and possible house-pits	Olsen	1964g, 1968a	NEV	No
CA-MER-99 P-24-000199	Prehistoric village site with groundstone and flaked stone tool	Riddell	1962d	NEV	No
CA-MER-130 P-24-000220	Prehistoric midden deposit with “pitted boulder”	Olsen	1968b	E (NRHP, code 1D)	Yes (San Luis Reservoir Shoreline – North of Dinosaur Point Boat Launch)
CA-MER-131 P-24-000221	Prehistoric midden site with one rimmed housepit	Payen and Olsen	1969a	NEV	No

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<b>Resource Designation</b>	<b>Description</b>	<b>Author</b>	<b>Date</b>	<b>NRHP/CRHR</b>	<b>Intersects APE</b>
CA-MER-132 P-24-000222	Prehistoric midden site with one small housepit	Payen and Olsen	1969b	NEV	No
CA-MER-134 P-24-000224	Prehistoric midden deposit with bedrock mortars	Payen and Olsen	1969c	E (NRHP, code 1D)	No
CA-MER-135 P-24-000225	Prehistoric midden deposit with pestle fragment	Olsen and Pritchard	1970	E (NRHP, code 1D)	No
CA-MER-136 P-24-000226	Prehistoric midden deposit with pestle fragments	Olsen	1971a	E (NRHP, code 1D)	Yes (Cottonwood Bay Shoreline)
CA-MER-137 P-24-000227	Prehistoric large occupation site on knoll with pestle fragments	Olsen	1971b	NEV	Yes (Cottonwood Bay Shoreline)
CA-MER-138 P-24-000228	Prehistoric midden deposit	Olsen	1973	NEV	No
CA-MER-261H P-24-000351	Two historic rock alignments and one rock pile with ceramic artifacts	Wulzen	2007b	NEV	No
CA-MER-433 P-24-001806	Prehistoric bedrock milling features and petroglyphs	Whatford	2004	NEV	No
CA-MER-437 P-24-001859	Two prehistoric milling stations	Wulzen	2003b, 2007c	NEV	Yes (Construction Impact Area – West of Goosehead Point)
CA-MER-451H P-24-001876	Ranch complex	Wulzen	2008b	NEV	Yes (Construction Staging Area – South of B.F. Sisk Dam)
CA-MER-477H P-24-001822	Historic linear features comprising road cuts and retaining walls associated with State Route 152 and a stage route	Whatford	1996f	NEV	No
	Historic linear feature consisting of a 3,455-foot long segment of the old Pacheco Pass Highway	Barnes	2009		
CA-MER-521H P-24-002173 SLTP-B-11	Elevated water tank and water trough	Fuerstenberg	2014	NE (NRHP), RNE (CRHR)	Yes (Borrow Area 6 - South of O'Neill Forebay)

Resource Designation	Description	Author	Date	NRHP/CRHR	Intersects APE
CA-MER-523 P-24-002193	Historic period ditch segment north of O'Neill Forebay	Hildebrandt	2019	NEV	No
Harris Ranch vicinity	Harris Ranch vicinity per the 1955 USGS Pacheco Pass 7.5-minute topographic map	---	---	NEV	No
P-24-000078	Historic Basalt Hill Fire Lookout Station	Thornton	1991	AE (NRHP, code 4CM)	No
P-24-000489	San Luis Gonzaga Archaeological District comprised of five prehistoric midden sites (CA-MER-107, CA-MER-126 CA-MER-130, CA-MER-134, and CA-MER-135)	Olsen	1970	E (NRHP, code 1S)	Yes (Reservoir Shoreline – Dinosaur Point Area; Cottonwood Bay Levee Modification and Levee Raise Areas)
P-24-000643 CHL-829	California State Historical Landmark # plaque commemorating Lt. G. Moraga's 1805 traversal of Pacheco pass	Arbuckle	1979	NEV (NRHP); E (CRHR)	No
P-24-001729	The site consists of a very light scatter of historic ironstone fragments	Peak and Gerry	1991	NEV	No
P-24-001823	Historic linear feature comprising a 4-mile long fence	Whatford	1996d	NEV	No
P-24-001856	San Luis Gonzaga Rancho-Paula (Pacheco) Fatjo Ranch Historic District	Bissonnette	2007	NEV	No
P-24-001931	California Aqueduct	Ambacher	2011	RE (NRHP and CRHR)	No

<sup>1</sup> Note CA-MER-8, CA-MER-9 and CA-MER-56/H are not plotted on maps provided by the CCIC, however they appear in a 1960 report by A. Treganza (ME-000694) on file with the CCIC that notes their approximate locations and basic constituents.

<sup>2</sup> Note CA-MER-14 appears in a study (ME-07119) by Romoli and Ruby (1963) but is not mapped by the CCIC.

NRHP/CRHR: AE – appears eligible; DNE – determined not eligible; E – eligible; NE – not eligible; NEV – not evaluated; RE – recommended eligible

Five of the 19 cultural resources within the B.F. Sisk Dam Raise Alternative APE have been previously evaluated for listing in the NRHP and/or the CRHR. Two prehistoric sites, one a prehistoric midden deposit with a “pitted boulder” (CA-MER-130, Olsen 1968b) and the other a prehistoric midden deposit with pestle fragments (CA-MER-136), are listed in the NRHP and CRHR. CA-MER-130 is regarded as a contributing element to the San Luis Gonzaga Archaeological



District (P-24-000489), a prehistoric district with five known midden sites that is also listed in the NRHP and CRHR. A fourth resource, a historic period water tank and trough (CA-MER-521H), was determined not eligible for listing in the NRHP and recommended not eligible for listing in the CRHR (Polanco 2018, Holm et al. 2014). Finally, the B.F. Sisk Dam and its key features were recommended eligible for listing in the NRHP and CRHR as a part of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018). Figures A-1 through A-7 in Appendix A depict all previously recorded cultural resources within the B.F. Sisk Dam Raise Alternative Project Area.

### **4.3 Native American and Organizational Contact**

As a part of the current Project, Pacific Legacy contacted the NAHC on February 18, 2020 to request a search of the Sacred Lands File as it encompasses the B.F. Sisk Dam Raise Alternative APE. A response was received on February 25, 2020 from Ms. Nancy Gonzalez-Lopez, Cultural Resource Analyst with the NAHC, indicating that no Native American cultural resources had been identified through a search of the Sacred Lands File within the B.F. Sisk Dam Raise Alternative APE. Ms. Gonzalez-Lopez provided a list of Native American tribal representatives who may have knowledge of or interest in cultural resources in the Project vicinity. These individuals included Valentin Lopez, Chairperson of the Amah Mutsun Tribal Band; Robert Ledger, Chairperson of the Dumna Wo-Wah Tribal Government; Katherine Perez, Chairperson of the Northern Valley Yokuts Tribe; and William Leonard, Chairperson of the Southern Sierra Miwuk Nation. Additional Native American tribal representatives were identified by Reclamation and will be included in Project consultation efforts.

As a part of the environmental review process, Reclamation is consulting with Native American tribal representatives and other potential stakeholders regarding the Project consistent with Section 106 of the NHPA. The Authority is consulting with Native American tribal representatives regarding the Project in accordance with CEQA and Assembly Bill 52. Reclamation has recently conducted outreach to the Native American community on behalf of other proposed projects that overlap the B.F. Sisk Raise Dam APE. These include the SLLPIP as well as and geotechnical studies supporting the B.F. Sisk Dam SOD Modification Project Crest Raise Action. On May 18, 2020, the Authority sent certified letters to Native American tribal representatives identified by the NAHC and Reclamation to inform them about the Project and request consultation. No responses have been received to date, however following Executive Order N-54-20, responses are anticipated within 60 days. All available tribal consultation documentation for the Project is included in Appendix D.

# Chapter 5 Survey and Recording Methodology

## 5.1 Inventory Survey Methods

Pacific Legacy personnel conducted intensive pedestrian inventory surveys within the B.F. Sisk Dam Raise Alternative APE in 2012 and 2016 in support of the SLLPIP. These surveys took place over the course of 12 days between November 13, 2012 and December 6, 2012 and 34 days between June 22, 2016 and August 11, 2016. Approximately 3,904 acres were examined within the APE during these two field seasons. Pacific Legacy personnel completed the intensive pedestrian inventory survey of an additional 355 acres over the course of 7 days between March 30 and April 23, 2020 in support of the current Project. With the exception of areas that were inundated at the time of survey or marked by steep, unsafe terrain, all accessible portions of the B.F. Sisk Dam Raise Alternative APE have been fully examined using the same methodology and level of rigor as of April 2020.

During inventories within the B.F. Sisk Dam Raise Alternative APE, Pacific Legacy personnel were divided into teams of two to six professional archaeologists, each led by a field director or crew chief. Pedestrian surveys were performed using systematic transects in which team members were spaced no more than 12-15 meters apart. No artifacts were collected, and no subsurface testing or excavation was conducted. Within areas of particularly dense vegetation or poor visibility, field personnel performed judgmental surface scrapes to expose the ground surface. The main objective of the inventory surveys was to identify previously recorded cultural resources, document newly discovered resources, and note the potential of surveyed areas to contain buried cultural materials.

All previously recorded and newly identified prehistoric and historic period cultural resources were documented using global positioning system (GPS) receivers with sub-meter accuracy (e.g., Trimble GeoXT or GeoXH). A standardized data dictionary was used with each unit to ensure cross-compatibility between crew members and across field seasons. All location and attribute data collected via GPS receiver were compiled into a geospatial database to aid in record and report production and to facilitate future management.

Prior to initiating the inventory surveys, personnel were supplied with records of previously recorded cultural resources and copies of relevant historic period maps. Field personnel also received information regarding the identification and anticipated age range of prehistoric and historic period cultural resources within the APE as well manuals regarding landforms, soil types, and floral and faunal resources to ensure that standardized recording nomenclature was used.

During the inventory surveys, every effort was made to relocate and document previously recorded sites and isolated finds in accessible areas. Personnel were provided with location information on GPS receivers and on field maps of areas identified for survey. They also were provided with information on potential resources noted but not formally recorded through prior cultural resource studies and through information obtained from historic period map research. If a resource could not be located, field personnel examined nearby locations based on the resource description and using

maps from the original records. For those previously recorded cultural resources that were relocated, field personnel noted the condition of the resource, documented any materials not previously observed, created new sketch and location maps as necessary, and updated other pertinent information on Department of Parks and Recreation (DPR) Forms 523 (*see* Appendix C).

When a cultural resource was newly discovered during inventory survey, personnel conducted a careful inspection of the vicinity, assigned the resource a temporary number, plotted its location using a GPS receiver and topographic maps, and documented its nature and extents. All resources were fully recorded at the time of their discovery. Modern structures, objects, or materials were only recorded if they represented a modification, intrusion, or disturbance to a prehistoric or historic period cultural resource. Resources that were indistinguishable as historic period or modern were fully recorded by field personnel and subject to further investigation through archival research. For instance, several road alignments were not immediately distinguishable as historic period travel routes but were documented in the field and examined using historic period topographic maps and aerial photographs.

Generally, recording efforts were limited to the APE though there were several instances in which cultural resources, particularly linear features, extended beyond the APE or encompassed areas not accessible to pedestrian survey (e.g., inundated areas, areas of extreme slope, etc.). In the case of certain road alignments (e.g., CA-MER-519H), accessible segments were recorded in the field but also were documented digitally with the aid of georeferenced true-color orthophotographs. Given its size and scale, similar methods were used to record the Basalt Hill Quarry (CA-MER-509H).

## **5.2 Vegetation, Terrain and Other Access Limitations**

The B.F. Sisk Dam Raise Alternative APE is almost entirely within the San Luis Reservoir State Park and is largely undeveloped except for roads and facilities associated with the construction and maintenance of the B.F. Sisk Dam and San Luis Reservoir. The vast majority of the San Luis Reservoir area is covered with dense, knee-high to waist-high grasses that limit (5%) ground surface visibility away from the shoreline. Relatively few woodland areas are present and are limited mostly to riparian corridors bordering existing drainages. Wave action and currents have eroded a series of step-like benches parallel with the reservoir shoreline. This has limited vegetation growth along the shoreline and contributed to better (30-60%) average ground surface visibility in those areas. Wave action has likely eroded, displaced, or buried many cultural materials that were once present along the San Luis Reservoir and Cottonwood Bay shorelines, particularly those exposed to the prevailing northeast-southeast winds, which can average 25 miles per hour in the during the month of May (Windfinder.com). The terrain in the eastern portion of the San Luis Reservoir area, particularly near the O'Neill Forebay, is generally flat and open with a gentle (1-2°) north-facing or east-facing slope. In contrast, the southern San Luis Reservoir shoreline, Cottonwood Bay shoreline, and Basalt Hill area are marked by rolling foothills and narrow valleys and canyons with slopes that exceed 30° in some areas.

Certain areas within the B.F. Sisk Dam Raise Alternative APE could not be examined due to extreme, unsafe terrain. These areas included the southwestern Cottonwood Bay shoreline and the area surrounding the Basalt Hill Quarry. Other areas were inaccessible due to inundation or the presence of existing infrastructure. For instance, the shoreline within the construction staging area

south of the dam was inundated at the time of the inventory surveys, as were areas fronting the dam. Inventory surveys in 2012 and 2016 revealed that Cottonwood Bay could not be safely accessed from SR 152. In 2020, right-of-entry permissions were obtained from the property owner directly north of Cottonwood Bay, and field crews were able to safely access the B.F. Sisk Dam Raise Alternative APE by descending through his property to Reclamation lands.

### 5.3 Cultural Resource Documentation

All cultural resources encountered during the inventory surveys were documented on DPR Forms 523 and on supplemental records in keeping with procedures identified in the *Instructions for Recording Historical Resources* (California Office of Historic Preservation 1995). At a minimum, resource documentation was completed on DPR Form 523(a) (a Primary form) and DPR Form 523(j) (a 1:24,000-scale map depicting the cultural resource location). Sites were defined as three or more artifacts discovered within 30 meters of each other. Isolated finds were defined as a single artifact, two artifacts located less than 30 meters apart, or as isolated, discrete features within the landscape (e.g., a historic period well head or trough, two prehistoric lithic flakes, etc.).

Isolated finds were recorded via GPS receiver, photographed, and briefly described. Prehistoric sites and historic period resources were recorded via GPS receiver, photographed, described, documented on a sketch map at an appropriate scale, and supplemented with additional forms as necessary. Sketch maps were prepared that depicted the resource boundary, its major elements, and its relationship to other resources or natural features in the vicinity. Some cultural resource sketch maps were rendered against true color orthophotographs to depict the surrounding environment more clearly and to provide a better sense of scale (e.g., the Basalt Hill Quarry/CA-MER-509H). Datum locations, chosen for durability and the potential to remain unaffected by future impacts, were recorded via GPS receiver. These receivers were used to record location and attribute data; they were downloaded and corrected using GPS Pathfinder Office software and converted to GIS shapefiles for use with ESRI ArcGIS software. All sites were photographed to capture their landscape setting, internal features, and diagnostic artifacts, and all photographs were logged using image numbers that included information on photograph orientation, content, and date.

In addition to the standard DPR Forms 523, additional data sheets were included as necessary to document each cultural resource. Diagnostic and unusual, rare, or unique artifacts were assigned artifact numbers and recorded via GPS receivers and on site sketch maps. The potential for buried cultural deposits was noted through the inspection of natural or artificial exposures of soil stratigraphy (e.g., vertical soil exposures, areas of bioturbation, etc.). Daily field notes documenting inventory survey efforts were kept on standardized forms and archived at the Berkeley office of Pacific Legacy. DPR Forms 523 were regularly checked for completeness and consistency during the inventory surveys. Copies of new and updated records for cultural resources recorded in 2012 and 2016 were submitted to the CCIC and received permanent designations through the CHRIS, and these permanent number assignments have been used throughout this document. Records for cultural resources recorded in 2020 will be submitted to the CCIC for permanent number assignment through the CHRIS before the release of a Final EIR/SEIS for the Project.

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## Chapter 6 Inventory Survey Results

### 6.1. Inventory Survey Coverage

Pacific Legacy personnel conducted intensive pedestrian inventory surveys within the B.F. Sisk Dam Raise Alternative APE in 2012 and 2016 in support of the SLLPIP and in 2020 in support of the current Project. All physically accessible areas within the APE were examined using a survey interval of no more than 12-15 meters, and all previously recorded and newly identified cultural resources were documented as they were encountered. The B.F. Sisk Dam Raise Alternative APE includes areas that will be used concurrent with implementation of the B.F. Sisk SOD Modification Project Crest Raise Action. These include the Basalt Hill Borrow Area, Borrow Area 6, three potential construction staging areas, upstream and downstream stability berms or fill impact areas, expanded embankment areas, access roads, toe drains, an existing transmission line scheduled for modification, and a possible tunnel under SR 152 that would accommodate a conveyor system. Many of these activity areas overlap. For instance, the expanded embankment areas overlie the potential construction staging areas to the east of the B.F. Sisk Dam, and the access roads pass through the Basalt Hill Borrow Area, two potential construction staging areas, and Borrow Area 6. Areas that will be used as a part of the Crest Raise Action make up 3,914 acres within the 5,028-acre B.F. Sisk Dam Raise Alternative APE and are centered to the east of the San Luis Reservoir around the B.F. Sisk Dam. Areas within the B.F. Sisk Dam Raise Alternative APE separate from the Crest Raise Action are centered along the Dinosaur Point and Goosehead Point boat launches, the Pacheco Pumping Plant berm, the SR 152 modification alignment, and the San Luis Reservoir and Cottonwood Bay shorelines.

Areas examined within the B.F. Sisk Dam Raise Alternative APE in 2012 included a portion of the reservoir shoreline and a potential construction staging area that overlap the Dinosaur Point Boat Launch and Basalt Point areas. Most other areas within the APE were examined in 2016, including roughly 47.3 miles along the 65.1-mile San Luis Reservoir shoreline between the 560-foot contour downslope for 50 meters. Areas subject to inventory survey in one field season generally were not revisited unless resources were found to span multiple disturbance areas (e.g., historic period roads) and recording efforts necessitated some level of re-examination. Due to safety constraints, areas of extreme terrain within the Basalt Hill borrow area, a roughly 3.4-mile long stretch of the reservoir shoreline fronting the B.F. Sisk Dam, and fill impact and stability berm areas along or immediately adjacent to the dam could not be accessed. Portions of the potential construction staging area west of the dam were inundated during the 2016 inventory survey and also were not examined. The Cottonwood Bay area could not be safely accessed from SR 152, and permissions to access the area through private property could not be obtained in advance of the 2016 field season. A portion of Borrow Area 6 and a potential construction staging area were examined by Pacific Legacy personnel in 2013 as a part of the San Luis Transmission Line Project for the Western Area Power Authority (Holm et al. 2014). These areas were slated for avoidance in 2016 but were essentially re-examined as a part of larger, block survey areas. In total, approximately 3,888 acres were subject to intensive pedestrian inventory surveys within the B.F. Sisk Dam Raise Alternative APE in 2012 or 2016.

In 2018, JRP conducted an architectural field visit of the B.F. Sisk Dam and its key features, specifically the dam, San Luis Reservoir, William R. Gianelli Pumping-Generating Plant, San Luis Operation and Maintenance Center, O’Neill Dam, O’Neill Forebay, and O’Neill Pumping-Generating Plant. The results of that field visit were summarized in an architectural inventory and evaluation report (JRP 2018) submitted to Reclamation. JRP concluded that the dam and its key features, though not individually eligible for listing in the NRHP and/or the CRHR, are contributing elements to the B.F. Sisk Dam/San Luis Reservoir Historic District. They argued that the district is eligible for listing in the NRHP under Criterion A and in the CRHR under Criterion 1 as an integral part of both the CVP and SWP and for its significance within the context of water resource development in California (JRP 2018). JRP also assessed two additional elements relating to the construction of the B.F. Sisk Dam System that were initially recorded in 2012 and 2016. These included the Basalt Hill Quarry (CA-MER-509H) and a rock separation facility (CA-MER-492H); both were recommended as non-contributing elements of the historic district and not eligible for listing in the NRHP or the CRHR.

In 2020, Pacific Legacy completed the inventory survey of areas that were previously inaccessible (i.e., Cottonwood Bay) in 2012 or 2016 or areas that were added to the SLLPIP or B.F. Sisk SOD Modification Project after 2016. Specifically, these included an access route that spans the Basalt Hill Borrow Area and a potential construction staging area west of the dam as well an expanded construction staging area south of the dam. A 2.3 mile segment of the Cottonwood Bay shoreline was examined in 2020, though the southern portion of the western shore remained inaccessible due to steep terrain. As of April 2020, a total of 4,454 acres within the B.F. Sisk Dam Raise Alternative APE have been subject to intensive pedestrian inventory surveys and all physically accessible areas within the APE have been examined. Table 6-1 summarizes the survey coverage achieved for each impact area described in Section 1.2.3.

**Table 6-1. Inventory Survey Coverage within the B.F. Sisk Dam Raise Alternative Area of Potential Effects**

Alternative Impact Area	Surveyed (Full Coverage)	Unsurveyed (Terrain/Inundation)	Total Area
Construction of Dam Raise (Basalt Hill Borrow Area, Borrow Area 6, Expanded Embankment, Fill Impact/Stability Berm, Access Roads, Potential Construction Staging Areas, Cottonwood Bay Levee Modification and Levee Raise, Dinosaur Point and Goosehead Point Boat Launches)	3,444	549	3,993
SR 152 Modifications (Between Cottonwood Bay and the San Luis Reservoir)	12	11	23
Operation of Dam Raise (Cottonwood Bay and San Luis Reservoir Shorelines)	998	14	1,012
<b>Total</b>	<b>4,454</b>	<b>568</b>	<b>5,028</b>

Note: areas of overlap between the Cottonwood Bay or San Luis Reservoir shorelines and other impact areas are totaled as a part of the Construction of Dam Raise or Operation of Dam Raise impact areas.

## 6.2 B.F. Sisk Dam Raise Alternative Survey Results

Nineteen cultural resources were previously recorded within the B.F. Sisk Dam Raise Alternative APE. Fifteen of those 19 resources are prehistoric archaeological sites (CA-MER-14, CA-MER-15, CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-28, CA-MER-29, CA-MER-41, CA-MER-82, CA-MER-130, CA-MER-136, CA-MER-137, and CA-MER-437), one is a prehistoric archaeological district (P-24-000489/San Luis Gonzaga Archaeological District), and three are historic period resources (CA-MER-451H, CA-MER-521H, and the B.F. Sisk Dam/San Luis Reservoir Historic District). Ten of the 19 resources previously recorded in the B.F. Sisk Dam Raise Alternative APE were not relocated during inventory surveys. These included seven prehistoric archaeological sites originally noted along the San Luis Reservoir shoreline (CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-29, and CA-MER-41) that may have been mis-plotted when originally recorded, destroyed or obscured by natural processes, or subject to modern disturbance; one prehistoric site (CA-MER-14) that was presumably destroyed by dam construction; one that was found to be a natural feature (CA-MER-437); and one arbitrarily defined prehistoric district (P-24-000489/San Luis Gonzaga Archaeological District) with no physical markers in the APE. Eleven previously recorded cultural resources were relocated within the APE, including seven prehistoric sites (CA-MER-15, CA-MER-28, CA-MER-82, CA-MER-83, and CA-MER-130, CA-MER-136, and CA-MER-137), most with midden, lithics, and groundstone; one historic period water tank and trough (CA-MER-521H); one historic period ranch complex (CA-MER-451H); one historic period road (P-24-001822); and key features of the B.F. Sisk Dam/San Luis Reservoir Historic District. Two of these known resources (CA-MER-83 and CA-MER-477H) were originally plotted outside of the APE but were noted within it during inventory surveys.

Thirty-two resources were first documented in the B.F. Sisk Dam Raise Alternative APE during inventory surveys conducted between 2012 and 2020 (*see* Appendix B, Figures B-1 through B-7). These included a series of historic period transmission poles with a debris scatter (CA-MER-484H); two industrial sites (CA-MER-492H and CA-MER-509H) associated with construction of the B.F. Sisk Dam; eight historic period road segments (CA-MER-489H, CA-MER-491H, CA-MER-493H, CA-MER-494H, CA-MER-495H, CA-MER-513H, CA-MER-519H, and PL-Sisk-01); a concrete equipment pad (CA-MER-510H); a corral and water tank (CA-MER-511H); a helicopter pad (CA-MER-512H); a ditch segment (CA-MER-514H); three earthen dams with impound ponds (CA-MER-515H, CA-MER-516H, and CA-MER-518H); two prehistoric middens, one with lithics and groundstone (CA-MER-517) and the other with fire-affected rock (PL-Sisk-05); and a series of survey markers and monitoring wells (CA-MER-520H) associated with the B.F. Sisk Dam. A historic period well head (P-24-002166), metal can (P-24-002167), concrete foundation (P-24-002172), two watering troughs (P-24-002169 and P-24-002170); and bottle (P-24-002171) were recorded as isolated finds, along with one isolated prehistoric core (P-24-001990), one biface fragment (P-24-001991), one cobble and flake (P-24-002168), and one displaced cupule boulder (PL-Sisk-02). Table 6-2 summarizes the cultural resources that were relocated or discovered within the B.F. Sisk Dam Raise Alternative APE; a fuller discussion of these resources is presented in Section 7.4. Table 6-3 lists those resources that could not be relocated within the APE during the 2012, 2016, and 2020 inventory surveys. Inventory survey findings for the specific impact areas described in Section 1.2.3 are detailed below.



**Table 6-2. Previously Recorded and Newly Identified Cultural Resources within the B.F. Sisk Dam Raise Alternative Area of Potential Effects.**

Site Number	Description	Author	Date	Impact	APE Location
<b>Previously Recorded Archaeological Sites or Built Environment Resources</b>					
B.F. Sisk Dam System <sup>1</sup>	Historic period B.F. Sisk Dam and associated facilities, with additional Cottonwood embankment feature recorded in 2020	JRP Historical Consulting	2018	Construction of Dam Raise; SR 152 Modifications	Downstream Stability Berms/Fill Impact Areas; Expanded Embankment; Reservoir Shoreline – Fronting the B.F. Sisk Dam
CA-MER-15 P-24-000116	Prehistoric pictographs, bedrock mortars, cupules, cleared areas midden soil, lithic scatter	Greenberg, O’Neill, Sprague, Walton et al.	2016	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat launch
CA-MER-28 P-24-000129	Prehistoric occupation site with lithic scatter	Greenberg, O’Neill, Sprague, Varkel et al.	2016a	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
CA-MER-82 P-24-000182	Prehistoric lithic scatter with groundstone	Greenberg, Sprague, and Wiant	2016a	Operation of Dam Raise	Reservoir Shoreline – West side of San Luis Creek Inlet
CA-MER-83 P-24-000183	Prehistoric midden soil with lithic scatter and groundstone	O’Neill and Walton	2016a	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
CA-MER-130 P-24-000220	Prehistoric midden soil with two bedrock mortar features with five mortars and groundstone	O’Neill and Walton et al.	2016	Operation of Dam Raise	Reservoir Shoreline – North of Dinosaur Point Boat Launch (not previously inundated) <sup>2</sup>
CA-MER-136 P-24-000226	Prehistoric midden deposit with pestle fragments	Peske, O’Neill, and Daly	2020a	Operation of Dam Raise	Reservoir Shoreline – Cottonwood Bay (location not previously inundated) <sup>2</sup>
CA-MER-137 P-24-000227	Prehistoric large occupation site on knoll with pestle fragments	Peske, O’Neill, and Daly	2020b	Operation of Dam Raise	Reservoir Shoreline – Cottonwood Bay

Site Number	Description	Author	Date	Impact	APE Location
CA-MER-451H P-24-001876	Historic period ranch complex	Daly, O'Neill, and Peske	2020a	Construction of Dam Raise	Construction Staging Area – South of B.F. Sisk Dam
CA-MER-477H P-24-001822	Fourteen historic period road segments	Elliott, Ledebuhr, Fittinghoff, Atwater	2012b	Construction of Dam Raise	Dinosaur Point Boat Launch Modification Area; Reservoir Shoreline – Dinosaur Point Area
CA-MER-521H P-24-002173 SLTP-B-11	Historic water tank and trough	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016a	Construction of Dam Raise	Borrow Area 6 - South of O'Neill Forebay
<b>Newly Discovered Archaeological Sites or Built Environment Resources</b>					
CA-MER-484H P-24-001974 PL-SLLP-A-001	Historic period transmission poles and debris scatter	Trout and Atwater et al.	2012a	Operation of Dam Raise	Reservoir Shoreline – Dinosaur Point Area (not previously inundated) <sup>2</sup>
CA-MER-489H P-24-001979 PL-SLLP-A-013	Historic period road segment	Elliott and Trout et al.	2012	Operation of Dam Raise	Reservoir Shoreline – Dinosaur Point Area
CA-MER-491H P-24-001985 PL-SLLP-A-010	Historic period road segment	Trout and Atwater et al.	2012b	Construction of Dam Raise	Potential Construction Staging Area – West of Goosehead Point
CA-MER-492H P-24-001986	Historic period industrial site used in construction of the B.F. Sisk Dam	Elliott, Ledebuhr, Fittinghoff, Atwater	2012a	Construction of Dam Raise	Potential Construction Staging Area – West of Goosehead Point
CA-MER-493H P-24-001987 PL-SLLP-A-014	Historic period road segment	Greenberg and Beckett	2016a	Construction of Dam Raise	Potential Construction Staging Area – West of Goosehead Point

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Site Number	Description	Author	Date	Impact	APE Location
CA-MER-494H P-24-001988 PL-SLLP-A-015	Historic period road segment	Greenberg and Beckett	2016b	Construction of Dam Raise	Basalt Hill Borrow Area; Potential Construction Staging Area – West of Goosehead Point; Access Road Area
CA-MER-495H P-24-001989 PL-SLLP-A-016	Historic period road segment	Greenberg and Beckett	2016c	Construction of Dam Raise	Potential Construction Staging Area – West of Goosehead Point
CA-MER-509H P-24-002154 PL-SLLPIP-16-01	Historic period Basalt Hill Quarry, part of the industrial complex used in construction of B.F. Sisk Dam system	Daly, O'Neill, and Peske	2020b	Construction of Dam Raise	Basalt Hill Borrow Area; Access Road Area
CA-MER-510H P-24-002155 PL-SLLPIP-16-02	Historic concrete equipment pad near O'Neill Forebay	Greenberg, O'Neill, Sprague, and Trout	2016	Construction of Dam Raise	Borrow Area 6 - South of O'Neill Forebay
CA-MER-511H P-24-002156 PL-SLLPIP-16-03	Historic metal water tank on railroad ties in a corral area near O'Neill Forebay	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016b	Construction of Dam Raise	Borrow Area 6 - South of O'Neill Forebay
CA-MER-512H P-24-002157 PL-SLLPIP-16-05	Historic helicopter pad located east of the BF Sisk Dam	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016c	Construction of Dam Raise	Potential construction staging areas – block east of B.F. Sisk Dam
CA-MER-513H P-24-002158 PL-SLLPIP-16-06	Historic asphalt road segment	Greenberg, Sprague, and Wiant	2016b	Construction of Dam Raise	Potential construction staging areas – block east of B.F. Sisk Dam
CA-MER-514H P-24-002159 PL-SLLPIP-16-07	Historic ditch segment	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016d	Construction of Dam Raise	Potential construction staging areas – block east of B.F. Sisk Dam

Site Number	Description	Author	Date	Impact	APE Location
CA-MER-515H P-24-002160 PL-SLLPIP-16-09	Historic period earthen dam with impound pond	O'Neill and Walton	2016b	Operation of Dam Raise	Reservoir Shoreline – South of SR 152
CA-MER-516H P-24-002161 PL-SLLPIP-16-10	Historic period earthen dam with impound pond	Sprague and Wiant	2016	Operation of Dam Raise	Reservoir Shoreline – South of SR 152
CA-MER-517 P-24-002162 PL-SLLPIP-16-11	Prehistoric lithic scatter with midden and groundstone	Greenberg, O'Neill, Sprague, Varkel et al.	2016b	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
CA-MER-518H P-24-002163 PL-SLLPIP-16-12	Historic period earthen dam with impound pond	Greenberg, Sprague, and Wiant	2016c	Operation of Dam Raise	Reservoir Shoreline – South side of San Luis Creek Inlet
CA-MER-519H P-24-002164 PL-SLLPIP-16-13	Historic period dirt road segments	Greenberg, Sprague, and Wiant	2016d	Operation of Dam Raise	Reservoir Shoreline – San Luis Creek Inlet
CA-MER-520H P-24-002165 PL-SLLPIP-16-14	Historic period survey markers and monitoring wells associated with construction and maintenance of the B.F. Sisk Dam	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016e	Construction of Dam Raise	Downstream Stability Berms/Fill Impact Areas; Potential Construction Staging Areas
PL-SISK-01	Historic period access road associated with the Basalt Hill Quarry	O'Neill and Daly	2020	Construction of Dam Raise	Basalt Hill Borrow Area; Access Road Area
PL-SISK-05	Prehistoric midden site with fire-affected rock	Peske, O'Neill, and Daly	2020a	Operation of Dam Raise	Cottonwood Bay Shoreline
<b>Newly Recorded Isolated Finds</b>					
P-24-001990 PL-SLLP-A-ISO-010 (not updated 2016)	Isolated prehistoric utilized core	Elliott, Ledebuhr, Atwater, Fittingoff	2012c	Construction of Dam Raise	Construction Impact Area – West of Goosehead Point
P-24-001991 PL-SLLP-A-ISO-011 (not updated 2016)	Isolated prehistoric biface fragment	Elliott, Ledebuhr, Atwater, Fittingoff	2012d	Construction of Dam Raise	Construction Impact Area – West of Goosehead Point

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Site Number	Description	Author	Date	Impact	APE Location
P-24-002166 PL-SLLPIP-ISO-16-01	Isolated historic well head	Greenberg, O'Neill, Sprague, Trout, and Wiant	2016f	Construction of Dam Raise	Borrow Area 6 - South of O'Neill Forebay
P-24-002167 PL-SLLPIP-ISO-16-02	Isolated historic metal fuel can	Greenberg	2016	Construction of Dam Raise	Potential construction staging areas – block east of B.F. Sisk Dam
P-24-002168 PL-SLLPIP-ISO-16-05	Isolated prehistoric tested chert cobble and flake	Greenberg, Sprague, and Wiant	2016e	Operation of Dam Raise	Reservoir Shoreline – East side of San Luis Creek Inlet
P-24-002169 PL-SLLPIP-ISO-16-06	Isolated historic water trough	O'Neill and Sprague	2016	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
P-24-002170 PL-SLLPIP-ISO-16-07	Isolated historic galvanized water trough	Greenberg, Sprague, and Wiant	2016f	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
P-24-002171 PL-SLLPIP-ISO-16-08	Isolated historic soda bottle	Greenberg, Sprague, and Wiant	2016g	Operation of Dam Raise	Reservoir Shoreline – North of Dinosaur Point Boat Launch
P-24-002172 PL-SLLPIP-ISO-16-09	Historic concrete pad foundations near O'Neill Forebay	O'Neill and Sprague et al.	2016	Construction of Dam Raise	Borrow Area 6 - South of O'Neill Forebay
PL-SISK-ISO-02	Isolated prehistoric cupule boulder	Peske, O'Neill, and Daly	2020b	Construction of Dam Raise	Access Road

Note: Author and Date reflect most recent recording.

<sup>1</sup>Includes the Cottonwood embankment (PL-Sisk-04), a feature of the San Luis Reservoir recorded by Pacific Legacy in 2020

<sup>2</sup>Indicates resources above the current reservoir pool level that could be newly affected by the B.F. Sisk Dam Raise Alternative

**Table 6-3. Previously Recorded Cultural Resources Not Relocated during Inventory Survey of the B.F. Sisk Dam Raise Alternative Area of Potential Effects.**

Site Number	Description	Author	Date	Impact	APE Location
<b>Archaeological Sites or Built Environment Resources</b>					
CA-MER-14 P-24-000115	Prehistoric lithic scatter with groundstone, burials, and rock cairn; destroyed	Riddell and Olsen	1962	Construction of Dam Raise	Expanded dam embankment
CA-MER-20 P-24-000121	Prehistoric midden deposit with pestle	Olsen	1964c	Operation of Dam Raise	Reservoir Shoreline – South of SR 152
CA-MER-21 P-24-000122	Prehistoric midden deposit with bedrock mortar	Olsen	1964d	Operation of Dam Raise	Reservoir Shoreline – North of Dinosaur Point Boat Launch
CA-MER-22 P-24-000123	Prehistoric midden deposit	Olsen	1964e	Operation of Dam Raise	Reservoir Shoreline – North of Dinosaur Point Boat Launch
CA-MER-23 P-24-000124	Prehistoric midden deposit with pestle fragment	Olsen	1964f	Operation of Dam Raise	Reservoir Shoreline – North of Dinosaur Point Boat Launch
CA-MER-27 P-24-000128	Prehistoric midden deposit with flaked stone and groundstone; reported covered by imported fill in 2012	Olsen	1965b	Operation of Dam Raise	Reservoir Shoreline – Near Dinosaur Point Boat Launch
CA-MER-29 P-24-000130	Prehistoric Midden with silicate flakes and a scraper and mortar	Olsen	1965d	Operation of Dam Raise	Reservoir Shoreline – East side of San Luis Creek Inlet
CA-MER-41 P-24-000142	Prehistoric midden deposit with fire-affected rock fragments, flaked stone and groundstone	Olsen	1966a	Operation of Dam Raise	Reservoir Shoreline – South of Dinosaur Point Boat Launch
CA-MER-437	Two prehistoric milling stations	Wulzen	2003b, 2007c	Construction of Dam Raise	Construction Impact Area – West of Goosehead Point

Site Number	Description	Author	Date	Impact	APE Location
P-24-000489	San Luis Gonzaga Archaeological District comprised of five prehistoric midden sites (CA-MER-107, CA-MER-126 CA-MER-130, CA-MER-134, and CA-MER-135), listed in the NRHP and CRHR	Olsen	1970	Construction of Dam Raise	Cottonwood Bay Levee Modification and Levee Raise Areas; Reservoir Shoreline – Dinosaur Point Area

Note: Author and Date reflect when resource was last located

## 6.2.1 Construction of Dam Raise

### ***Basalt Hill Borrow Area***

The Basalt Hill Borrow Area is on the western shoulder of Basalt Hill, a prominent peak that flanks the southern reservoir shoreline. An existing access road extends northeast from the borrow area to a potential construction staging area and then to Borrow Area 6 while a second road spans the borrow area and a potential construction staging area just west of the dam. The Basalt Hill Borrow Area ranges in elevation from roughly 700 feet amsl along its western margin to 1,707 feet at the summit near the eastern side of the borrow area. Although much of the summit of Basalt Hill was subject to inventory survey, unsafe or extreme areas of terrain surrounding the summit were not accessible.

Three historic period resources were relocated or newly recorded within the Basalt Hill Borrow Area between 2012 and 2020. The most prominent was the Basalt Hill Quarry (CA-MER-509H), which was documented within a 150-acre area made up of a series of terraces that incorporated the improved areas of the mine on the northern shoulder of Basalt Hill. When it was recorded, the quarried area was covered by sparse grasses while the more heavily disturbed areas were marked by invasive weeds. The quarry area as a whole offered fair to good (50-80%) ground surface visibility, though the slopes surrounding the quarry area offered very limited (5-10%) ground surface visibility in areas subsumed by dense, knee-high grasses. Two natural springs were noted on the northern slope of Basalt Hill, but no cultural materials were observed in either location. An improved dirt road (CA-MER-494H) extending northeast from the Basalt Hill Quarry was identified, and an additional segment of the road was recorded in 2016 as it extended west towards the quarry. In 2020, another major historic period access road was recorded to the east (Sisk-01), and additional features associated with CA-MER-509H were noted.

### ***Borrow Area 6***

Borrow Area 6 is south of the O'Neill Forebay, east of SR 33, and north of SR 152. It is relatively flat with a slight (1-2°) slope to the north and is crossed by several shallow, unnamed drainages. During the 2016 inventory survey, vegetation throughout the borrow area consisted of thick knee-high to waist-high grasses that offered very limited (0-10%) ground surface visibility. The record for one previously recorded historic period resource was updated and four newly identified historic period resources were recorded in 2016. One resource (CA-MER-521H) was first recorded by Pacific Legacy personnel in 2014, though the site record and accompanying report have not yet been

filed with the CCIC pending permission from the Western Area Power Authority (Holm et al. 2014). It was documented as a livestock watering locale with an elevated cylindrical water tank and a circular trough surrounded by fencing. In 2016, the resource appeared as described in the original 2014 cultural resource record. Two newly identified sites included a concrete equipment pad and a large boulder from the Basalt Hill Quarry that were found near the northwest corner of Borrow Area 6 (CA-MER-510H) and a corral complex with a large welded water tank, a loading chute, a livestock access gate, fencing, and two circular metal water troughs (CA-MER-511H). Two isolated finds also were discovered and included a pair of concrete pad foundations (P-24-002172) and an isolated 6-inch diameter iron well head (P-24-002166) along an access road leading to the corral complex.

### **Potential Construction Staging Areas**

Three potential construction staging areas were examined within the B.F. Sisk Dam Raise Alternative APE. Two are located to the east of the B.F. Sisk Dam while the third is along the southern margin of the San Luis Reservoir on the northern flanks of Basalt Hill to the west of the dam. A portion of this third construction staging area was inundated at the time of the 2016 inventory survey and remained inaccessible, but all remaining areas were subject to intensive pedestrian inventory survey.

The terrain within the construction staging areas varied greatly. The southern third of the construction staging area to the west of the dam was marked by heavily vegetated hills and slopes while the northern portion of the staging area was characterized by largely denuded, gentle slopes where inundation, wave action, and recent recreational activities had altered the landscape. Mechanical impacts along the reservoir shoreline in the northern portion of the staging area were evident in the form of a series of shallow, stepped, cut terraces. Human activities, particularly recreational fishing, also left behind hundreds of rock features, including fishing rod supports that appeared as cairns or rock piles, rock alignments in linear or semi-circular shapes, and other rock accumulations. None of these features was identified as prehistoric, and all were presumed to post-date the filling of the San Luis Reservoir. During the inventory surveys, eight resources were identified within the construction staging area to the west of the B.F. Sisk Dam. These included segments of four historic period roads (CA-MER-491H, CA-MER-493H, CA-MER-494H, and CA-MER-495H) that were first documented in 2012. Two (CA-MER-493H and CA-MER-495H) were updated in 2016 to include additional segments. The northern portion of a historic period industrial resource that was used to support construction of the B.F. Sisk Dam (CA-MER-492H) and two isolated prehistoric finds (P-24-001990 and P-24-001991) also were encountered within the potential construction staging area.

The two potential construction staging areas just east of the B.F. Sisk Dam were examined in 2016. One was a smaller northern block of roughly 113 acres and the other was a much larger block to the south encompassing approximately 1,102 acres. The northern staging area spans a narrow stretch of land at the northern end of the B.F. Sisk Dam just southwest of SR 152 that extends from the north side of the inlet to the O'Neill Forebay to just south of Romero Overlook. The landform includes level to slightly east-facing flats with two prominent hills. Elevations range from 240 feet at the O'Neill Forebay to over 600 feet amsl at the northern end of the area. In 2016, the vegetation was mostly high grass with sparse juniper, which offered very poor (0-10%) ground surface visibility. The larger, southern construction staging area is marked by fairly level terrain and elevations of approximately 300 feet in the northern portion of the block that becomes increasingly steep to the



southeast where elevations exceed 600 feet amsl. As with the northern construction staging area, the area to the south was characterized by thick, high grasses that offered very limited (0-10%) ground surface visibility. Sixteen features associated with CA-MER-520H, all historic period survey markers or observation wells, were recorded in the construction staging areas to the east of the dam. Four additional historic period resources were encountered in the southern block in addition to the CA-MER-520H features. These included a helicopter landing pad (CA-MER-512H), an asphalt road segment (CA-MER-513H), an excavated earthen irrigation ditch (CA-MER-514H), and an isolated metal can (P-24-002167).

### ***Dinosaur Point and Goosehead Point Boat Launches and Pacheco Pumping Plant***

The Dinosaur Point Boat Launch and Pacheco Pumping Plant areas are located on the western margin of the San Luis Reservoir near Dinosaur Point Road, and the Goosehead Point Boat Launch is along the reservoir shoreline just north of a potential construction staging area north of Basalt Hill. Both boat launches will be elevated 10 feet to accommodate increased water elevations within the reservoir, and the existing berm or levee at the Pacheco Pumping Plant also will be elevated by 10 feet to protect facility operations. Inventory surveys revealed a series of 14 historic period road segments (CA-MER-477H) that pass through the Dinosaur Point Boat Launch area extending west outside of the APE. A previously recorded prehistoric site (CA-MER-27) within the Pacheco Pumping Plant area was presumably destroyed or capped by fill material during its construction and was not relocated during inventory survey. The arbitrarily defined extents of the San Luis Gonzaga Archaeological District (P-24-000489) also overlap the Pacheco Pumping Plant area, however none of the district's contributing resources occur within the APE. No cultural resources were noted within or near the Goosehead Point Boat Launch area, which was heavily impacted and scoured by wave action.

### ***Expanded Embankment, Downstream Fill Impact, and Access Road Areas***

The proposed expanded embankment areas and downstream stability berm or fill impact areas largely overlap. They also intersect the two potential construction staging areas east of the B.F. Sisk Dam. Portions of the expanded embankment areas and downstream stability berm or fill impact areas were inaccessible due to terrain or safety considerations, and accessible portions appeared largely disturbed by previous dam and facility construction. Vegetation in these areas consisted mostly of dense knee-high grasses, thistle, and a few areas with sparse tree cover, yielding very poor (0-10%) ground surface visibility. Eleven features associated with CA-MER-520H were detected in areas that could be safely accessed. All of these features consisted of brass Reclamation elevation markers or observation wells used for measuring ground water levels and potential dam seepage.

Existing access roads identified for improvement pass through the potential construction staging areas, Borrow Area 6, and the Basalt Hill Borrow Area. One of these access roads begins at the northwest corner of Borrow Area 6 near the O'Neill Forebay, crosses SR 152 at the inlet to the O'Neill Forebay, and passes south along the eastern side of the B.F. Sisk Dam before turning west towards the Basalt Hill Quarry (CA-MER-509H). A second access road links a potential construction staging area to the west of the dam with the Basalt Hill Borrow Area to the south (PL-Sisk-01). An isolated displaced prehistoric cupule boulder (PL-Sisk-ISO-02) was noted downslope from this second access road. Segments of a third existing access road were recorded in 2012 and 2016 (CA-MER-494H) as they approach and enter the Basalt Hill Quarry Borrow Area. These access roads range in elevation from roughly 240 feet to more than 1,200 feet amsl and pass through rugged, variable terrain (*see* Appendix E).

### **6.2.2 SR 152 Modifications**

The main SR 152 Modifications area comprises an approximate 0.6-mile linear tract between PM R5.239 and PM R5.806 in the northern portion of the San Luis Reservoir where Cottonwood Creek would empty into the reservoir. This SR 152 Modifications area is characterized by imported fill and riprap that form the Cottonwood embankment, which supports the roadway and allows waters from Cottonwood Bay to flow via a culvert into the reservoir. During the 2020 survey, the eastern end of the embankment was visually inspected. The western end was not accessible due to steep terrain, and the water level in the reservoir prevented access to the central section. Grasses are present around the embankment near the water level and are subject to active cattle grazing. Above the Cottonwood Bay high waterline, scattered oak trees are present. Apart from the cottonwood embankment itself, no previously recorded or newly identified cultural resources were noted in the area, which overlaps the reservoir shoreline. The Cottonwood embankment was documented in 2020 as PL-Sisk-04 and is considered a key feature of the San Luis Reservoir, which is a contributing element of the B.F. Sisk Dam/San Luis Reservoir District (P-24-002184). Additional embankment fill material also will be added just southwest of SR 152 at PM R6.295 to protect the roadway from inundation. This area was examined in 2016, but no cultural resources were observed.

### **6.2.3 Operations**

#### ***San Luis Reservoir Shoreline***

The San Luis Reservoir shoreline spans roughly 65.1 miles around the circumference of the reservoir from the 560-foot elevation contour downslope for roughly 50 meters, with the lower extents varying based on topography. The reservoir shoreline crosses each of the potential construction staging areas, with the greatest overlap occurring within the potential construction staging area west of the dam. A portion of the shoreline within that staging area was inundated at the time of the 2016 inventory survey, and approximately 3 miles that front the western face of the B.F. Sisk Dam were inaccessible, but all remaining portions of the San Luis Reservoir shoreline were subject to inventory survey. Since the shoreline is below the reservoir high waterline, the majority of the area is relatively flat and clear of vegetation, with ground surface visibility ranging from 30-75% along the wave-eroded lake margins.

Eight cultural resources were previously recorded along the reservoir shoreline and noted within the B.F. Sisk Dam Raise Alternative APE. These include a prehistoric site with petroglyphs, milling features, cleared areas, midden, and lithic tools (CA-MER-15); two prehistoric midden sites with lithic and artifact scatters (CA-MER-28 and CA-MER-83); a prehistoric lithic scatter with groundstone (CA-MER-82); a midden deposit with associated bedrock milling features and groundstone (CA-MER-130); and a historic period road (CA-MER-477H) that also crosses the Dinosaur Point Boat Launch area. The arbitrarily defined San Luis Gonzaga Archaeological District (P-24-000489) and elements of the B.F. Sisk Dam/San Luis Reservoir Historic District also intersected the reservoir shoreline. The Cottonwood embankment, which supports SR 152 and bridges Cottonwood Bay and the San Luis Reservoir, was recorded in 2020 as a feature of the reservoir, which is a key contributing element to the B.F. Sisk Dam/San Luis Reservoir Historic District.

Seven archaeological sites or built environment resources and four isolated finds were newly identified along the reservoir shoreline, including a series of historic period transmission poles with a debris scatter (CA-MER-484H); three earthen dams with impound ponds (CA-MER-515H, CA-

MER-516H, and CA-MER-518H); a prehistoric lithic and groundstone artifact scatter (CA-MER-517); and two historic period roads (CA-MER-489H and CA-MER-519H). The four isolated finds included a prehistoric chert cobble and flake (P-24-002168), two isolated water troughs (P-24-002169 and P-24-002170), and one isolated bottle (P-24-002171).

Seven previously recorded prehistoric sites (CA-MER-20, CA-MER-21, CA-MER-22, CA-MER-23, CA-MER-27, CA-MER-29, and CA-MER-41) could not be relocated along the San Luis Reservoir shoreline during inventory survey. It is possible that these sites were mis-plotted during initial recording; mis-plotted later through the CHRIS; or impacted by wave action, geomorphic processes, and/or human activities. One prehistoric site (CA-MER-27) along the shoreline that also overlaps the Pacheco Pumping Plant area is believed to have been destroyed or covered by imported fill.

All of the resources along the reservoir shoreline within the B.F. Sisk Dam Raise Alternative APE may be subject to impacts if the maximum water level of the reservoir is increased. These potential operational impacts have been studied in other lake and reservoir settings (Lenihan et al. 1981:18), and can include *mechanical impacts* from persistent wave action and nearshore currents that shape, abrade, erode, cover, and reveal shoreline topography and cultural resources as well as *biochemical impacts* to site soils and contextual relationships that can lead to the differential preservation of archaeological materials. These mechanical and biochemical impacts would be in addition to any direct effects to cultural resources that might result from construction activities associated with implementing the alternative. In particular, it is anticipated that two archaeological sites (CA-MER-130 and CA-MER-484H) will be newly affected by an increase in the maximum water level of the San Luis Reservoir.

### **Cottonwood Bay Shoreline**

Cottonwood Bay is to the north of the San Luis Reservoir and the Cottonwood embankment, which supports SR 152 and allows Cottonwood Creek to drain south into the reservoir. The perimeter of the bay measures some 3.5 miles around the shoreline from the 560-foot elevation contour downslope for roughly 50 meters. Approximately 2.3 linear miles of the Cottonwood Bay shoreline were surveyed in 2020, corresponding to the entire eastern shore and the northern portion of the western shore. The southern portion of the western shore was inaccessible due to steep terrain. Because the shoreline lies below the high waterline for the reservoir, the area was largely clear of vegetation, and surface visibility ranged between 35-75% between the water level and the high waterline.

Two prehistoric archaeological sites were previously recorded along the shore of Cottonwood Bay. Both were originally recorded as midden sites with lithic scatters (CA-MER-136 and CA-MER-137), though when they were relocated in 2020 only midden soils were evident, and no surface artifacts remained. One prehistoric midden site with groundstone tools (PL-Sisk-05) was newly identified in 2020. The Cottonwood embankment also was documented in association with the B.F. Sisk Dam/San Luis Reservoir Historic District.

## Chapter 7 Evaluations, Conclusions, and Recommendations

Archival and record searches and inventory surveys revealed that 43 cultural resources are present within the B.F. Sisk Dam Raise Alternative APE, including 11 resources that were previously recorded and 32 that were newly discovered as a result of Pacific Legacy investigations (*see* Table 6-2). These totals do not include cultural resources that were previously recorded but not relocated (*see* Table 6-3). Between 2012 and 2020, all accessible areas within the APE were subject to intensive pedestrian surveys, and a comprehensive inventory of archaeological and built environment resources was produced. Certain areas were inaccessible due to safety constraints or inundation, and these areas are expected to remain inaccessible if the B.F. Sisk Dam Raise Alternative is implemented. An assessment of the B.F. Sisk Dam and its appurtenant facilities was completed by JRP in 2018, and further evaluation efforts centered on the dam and its key elements are not anticipated.

This investigation fulfills three main objectives that will assist Reclamation and the Authority in managing cultural resources associated with the current Project. First, it presents a complete inventory of cultural resources within all accessible portions of the B.F. Sisk Dam Raise Alternative APE. Second, it incorporates a geospatial database with current, accurate cultural resource boundaries that may be used to locate, manage, and potentially avoid archaeological and historic period built environment resources within the APE if the B.F. Sisk Dam Raise Alternative is selected. Finally, it provides important baseline data in the form of detailed records that can be used to evaluate and manage cultural resources for this and other overlapping projects.

In the sections that follow, data collected during the inventory surveys will be used in conjunction with resource-specific documentary research to offer NRHP/CRHR eligibility recommendations for archaeological sites and built environment resources within the B.F. Sisk Dam Raise Alternative APE. These evaluations are prefaced by a brief discussion of the criteria and methods that were used in assessing eligibility, the research themes and questions that were explored when examining prehistoric and historic period resources, and the resource types and attributes that were used to classify archaeological sites and built environment resources within the Project vicinity. Evaluations were based surface evidence, natural subsurface exposures (e.g., bioturbation, drainage profiles, hillslope erosion exposures, etc.), and archival research as appropriate. No subsurface excavation was undertaken during inventory surveys within the APE.

### 7.1 Cultural Resource Evaluation Criteria and Methods

Criteria for formally evaluating cultural resources under the NRHP and the CRHR were introduced in Sections 1.4.1 and 1.4.2. Using those criteria, evaluations will be based on an approach that assesses the integrity or condition of cultural resources and their significance in relation to the four criteria outlined under 36 CFR Part 60.4 and under Section 15064.5 of state CEQA *Guidelines*.

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Assessments of integrity are based upon the integrity of location, design, setting, materials, workmanship, feeling, and association for each resource examined. Integrity of location refers to whether a resource has been displaced from its original position. It may apply to standing structures or infrastructural elements, or it may apply to archaeological sites or cultural resource deposits that have been moved or displaced from where they originated. Cultural resources that lack integrity of location will generally have lost their depositional or historic context and would be expected to provide little significant information important to the study of prehistory or history. Integrity of setting, feeling, and association are particularly relevant when assessing historic period buildings, structures, objects, and sites for which the physical setting and its degree of preservation are important (e.g., a historic period irrigation ditch that is part of a larger intact site or district, a canal or aqueduct that remains in use and has not been substantially altered, or a historic period farmstead that retains its rural agricultural setting). In contrast, archaeological sites, particularly prehistoric cultural deposits, can be significant if undisturbed even if they are encountered in a developed setting incongruent with the context of their original deposition. Integrity of design, materials, and workmanship may be pertinent to prehistoric sites or historic period resources, though integrity of design and workmanship are most often examined with reference to historic period built environment resources.

In order to evaluate prehistoric or historic period cultural resources for their potential eligibility for listing in the NRHP/CRHR, it is necessary to examine them with reference to a historic context. Information regarding the natural environment and cultural history of the Project vicinity was included in Sections 2.0 and 3.0, while Section 4.2 outlined many of the most common types of cultural resources that have been previously documented within the Project Area. Research themes and questions relevant to the specific resource types likely to be encountered in each alternative Project Area are offered below in Sections 7.2 and 7.3. Contextual information specific to individual cultural resources is presented in Section 7.4. This information was developed largely through an examination of archival documents and records and was particularly critical to the evaluation of historic period sites and structures within the B.F. Sisk Dam Raise Alternative APE. A variety of sources, many available online, were consulted. These included previous site records; historic period topographic maps; federal land patents; GLO survey plats and mineral survey plats; federal manuscript and agricultural census records; mining bulletins and journals; historical newspapers and photographs; and local county histories, tax documents, and voter registers. Online materials were accessed through the following locations:

- *USGS* (<http://nationalmap.gov/>) for topographic maps;
- *BLM* (<http://www.glorerecords.blm.gov/>) for land patent data and cadastral survey maps;
- *USGS, The National Map: Historic Topographic Map Collection* (<http://nationalmap.gov/historical/>);
- *Historic Map Works* ([http://www.historicmapworks.com/Browse/United\\_States/California/](http://www.historicmapworks.com/Browse/United_States/California/));
- *David Rumsey Map Collection* (<http://www.davidrumsey.com/>) for historical maps;
- *Library of Congress: American Memory Map Collection* (<http://memory.loc.gov/ammem/gmdhtml/gmdgeogindex1.html>) for historical maps;

- *UC Berkeley Map collection* (<http://sunsite.berkeley.edu/histopo/>) for historical topographic maps;
- *University of Alabama Historical Maps of California* ([http://alabamamaps.ua.edu/historicalmaps/us\\_states/california/index\\_Before1875.html](http://alabamamaps.ua.edu/historicalmaps/us_states/california/index_Before1875.html)) for maps;
- *The Meriam Library Special Collections at California State University, Chico* (<http://cricket.csuchico.edu/spcfotos2/photos6.html>) for historical photographs and maps;
- *Historic Aerial photographs by NETR Online* (<http://www.historicaerialphotographs.com/>) for historic aerial photographs;
- *UC Santa Barbara Library, Map and Imagery Laboratory* (<http://www.library.ucsb.edu/mil/airs>) for aerial photographs;
- *California Digital Newspaper Collection*, UC Riverside (<http://cdnc.ucr.edu>);
- *Online Archive of California* (<http://www.oac.cdlib.org/>);
- *USGS Publications Warehouse* (<http://pubs.er.usgs.gov/browse/usgs-publications>) for water supply papers and well data;
- *Ancestry.com* (<http://www.ancestry.com>) for federal census data, county voter registers and tax data bases, California newspaper collection, local newspapers, city/town directories, military records, and vital statistics; and,
- Google books for county histories and other government publications.

The aim in constructing resource-specific contexts was to identify potential associations with events that made a significant contribution to the broad patterns of our history (NRHP Criterion A/CRHR Criterion 1) and to identify potential associations with one or more individuals who were significant to our past (NRHP Criterion B/CRHR Criterion 2). The distinctive physical characteristics—the construction, style, or artistic values (NRHP Criterion C/CRHR Criterion 3) of cultural resources—were most evident through their material aspects but were also considered in light of their historic context. Finally, resource-specific contexts were used to evaluate the potential of sites or structures to yield information important to the study of prehistory or history (NRHP Criterion D/CRHR Criterion 4).

## 7.2 Potential Research Themes and Questions for Evaluating Prehistoric and Historic Period Cultural Resources

A series of research themes and questions that might be addressed during the evaluation of cultural resources within the B.F. Sisk Dam Raise Project Area are presented below. Most of these themes and questions are relevant to both prehistoric and historic period resources, though the manner in which they are addressed will vary greatly based on the type of resource under assessment.

B.F. Sisk Dam Raise and Reservoir Expansion  
Appendix I: Cultural Resources Report

- *Chronology* is a fundamental research theme central to the study of both prehistoric and historic period cultural resources. A focus on chronology allows researchers to examine sites and/or structures as representative of (or anomalous within) a particular time and place, relate sites and/or structures to one another and to broader regional landscapes or patterns in prehistory or history, and better understand change through time as expressed through a given resource. Questions relating to chronology might include the following:
  - Does the resource contain dateable or temporally sensitive materials such as charcoal, other organic remains, obsidian, diagnostic projectile point types, or dateable historic period glass, metal, or ceramic artifacts?
  - Does the historic period structure exhibit details in its fabrication or construction that would render it dateable?
  - What do dateable materials or structures reveal about when the site was used, how it was related to other sites in the vicinity, and how use or occupation of the resource may have changed through time?
  
- *Economy* comprises another key research theme that is relevant to the study of prehistoric and historic period cultural resources. For historic period resources, the theme of economy has much to do with how products or materials were produced, sold, purchased, and consumed. For prehistoric sites, the theme of economy is closely related to subsistence, though it also may relate to how raw materials or finished goods were obtained or traded. The theme of economy is closely aligned to other research themes such as settlement or community organization, technology, trade and exchange, and cultural identity. Questions relating to economy or economic subsistence might include the following:
  - Does the resource contain evidence of the subsistence economy such as macrofloral or faunal remains? Do those materials represent seasonally or more permanently available foods? If seasonal materials are represented, what might they reveal about when or how a given site was used (e.g., temporary versus long-term habitation)? Is there evidence of food storage present?
  - Are non-local resources represented, perhaps indicating trade or exchange?
  - What do the floral or faunal remains reveal about the use of technology at the site?
  - Within historic period resources, is there evidence that food was grown for household consumption and/or grown as an economic commodity? Is there evidence for the consumption of non-local or mass produced goods?
  
- *Settlement or Community Organization* refers to how people occupied the landscape—how they moved through space, where they established their settlements or communities, how those settlements or communities were structured and organized, and how those settlements or communities were related to others within the same region or territory. Questions relating to settlement or community organization might include the following:

- How is space structured within the boundaries of the resource? Is there evidence for different activity areas? What might that reveal about aspects of cultural identity such as gender, race, or ethnicity?
- How does a particular resource relate to the larger settlement landscape or community? What cultural or environmental factors might have influenced the choice of one locale versus another?
- Was a given resource area used temporarily or permanently? On a seasonal or year-round basis?
- What might the resource reveal about social or economic structures at the local or regional level?
- *Technology* refers to the tools or methods that are used during the course of daily activities such as procuring or processing foods, building dwellings or other structures, and manufacturing utilitarian or non-utilitarian items. Questions relating to technology might include the following:
  - What kinds of tools were being used or manufactured by the people accessing or inhabiting the resource area?
  - Do they shed light on how the resource area was used or what activities may have been carried out there?
  - Do the artifacts present represent finished or unfinished items and what might that reveal about trade, exchange, and/or commerce?
  - What does the technology represented at a given resource location reveal about cultural chronology, the economy, and/or trade and exchange?
- *Trade and Economic Exchange* relate to how finished goods and raw materials were obtained through direct or indirect interactions between social groups. At prehistoric sites, it is possible to discover marine shell from the coast at sites within the San Joaquin Valley interior or non-local lithic materials procured from other regions. At historic period sites, it is even more common to find goods or materials of non-local manufacture that were acquired through commercial activity. Questions relating to trade and exchange might include the following:
  - Does the site contain non-local materials or goods? How and from whom were those materials obtained?
  - What do those items reveal about the spatial extent and stability of trade networks? What might those items reveal about technology, community organization, cultural identity, or the priorities and values of a given site's occupants?
  - How do non-local materials at a resource location relate to the broader cultural landscape and environmental region?



- *Cultural History and Identity* pertain to the ways in which groups developed and formed shared identities based on social organization, political affiliation, religious practices, and/or gender, race, and ethnicity. Questions relating to cultural history and identity might include the following:
  - Does the resource area contain materials that can be linked to a particular social group that may shed light on the cultural history or identity of its inhabitants?
  - What do those materials or the ways in which they were structured, used, or organized reveal about gender, race, or ethnic identity?
  - Are particular ethnographic or linguistic groups represented?
  - For late prehistoric or historic period resources, how do the materials or remains within a given site support or refute other lines of evidence such as oral history or documentary records?

The research themes and questions above are not exhaustive but provide a basic framework for examining cultural resources within the San Luis Reservoir vicinity and for evaluating the potential NRHP/CRHR eligibility of those resources within the APE for the B.F. Sisk Dam Raise Alternative.

## 7.3 Site Types and Attributes

An integral part of conducting cultural resource evaluations includes defining and documenting the site types represented by a given group of cultural resources. This was noted in Section 6.0 when discussing the types of cultural resources that were encountered during the inventory surveys. Defining and documenting general site types is useful because it can guide the construction of contexts for historic period sites and structures or suggest fruitful research themes and questions for prehistoric sites. A brief outline of site types and attributes representative of those typically found within the San Luis Reservoir vicinity is presented below. Several of these site types were encountered during inventory surveys while others were noted during archival and records searches of the B.F. Sisk Dam Raise Project Area.

### 7.3.1 Prehistoric Site Types and Attributes

Typical prehistoric site types might include permanent or temporary habitation sites or activity-specific sites such as lithic scatters or food processing areas.

- *Permanent habitation sites* comprise residential sites that were occupied on a permanent or nearly permanent basis. Such sites are often distinguished by their size and by evidence for long-term occupation and material deposition. Permanent habitation sites frequently contain stratified midden deposits or mounds. Midden deposits consist of black or very dark, organic-rich soils that accumulate through intensive or long-term and repeated deposition. Permanent habitation sites might also be expected to feature evidence of house-pit depressions or the remains of other habitation structures. House-pit depressions are typically round, measure between 2-20 meters in diameter, and feature a low berm around their periphery. Given the effects of environmental forces and modern development, house-pit depressions are rarely encountered in the archaeological record

but can provide valuable information about daily activities and the use of space in prehistory. The presence of bedrock milling features may also be indicative of long-term habitation. Frequently encountered in the foothills and in areas with bedrock outcrops, bedrock milling features contain mortars or slicks—rounded, cup-like depressions or shallower, elongated depressions that were formed by and used for grinding hard seeds such as acorns and other materials. Although many bedrock milling features have been associated with long-term habitation, they also frequently occur in isolation or independent of other archaeological deposits. The evaluation of a site's physical setting or context is critical in examining such features. In addition to midden soils, house-pit depressions, and bedrock milling features, the archaeological assemblage at permanent habitation sites might be expected to include an array of groundstone and lithic tools as well as floral and faunal remains.

- *Temporary or seasonal habitation sites* include those that were occupied for a short duration or those that were occupied repeatedly, though on a seasonal or short-term basis. Typically smaller than permanent habitation sites, temporary or seasonal habitation sites usually lack accumulated midden deposits or formal house-pit depressions. An array of activities may be evident at temporary or seasonal habitation sites, though materials would be expected to be less diverse than encountered at permanent habitation sites. Bedrock milling features, groundstone, lithic tools, and floral and faunal remains may all be present at temporary or seasonal habitation sites, though the assemblage would likely be less varied, and materials would be expected to be fewer in number when contrasted with permanent habitation sites.
- *Activity-specific sites* include those that were used for one purpose or for a very limited range of purposes. Lithic scatters, lithic quarry areas, or food processing locales are all examples of such sites. Typically used once or for a short duration, these sites are often characterized by limited assemblages that represent the narrow range of activities that would have occurred there.

### 7.3.2 Historic Period Site Types and Attributes

Historic period site types that have been encountered or might be anticipated within the B.F. Sisk Dam Raise Alternative APE would include intact or remnant farmstead or ranch sites, agricultural sites, transportation infrastructure, water conveyance features, prospect pits or mining sites, foundations or structure pads, and debris scatters or deposits. Historic period site types are usually based on functional categories, and such sites are typically easy to distinguish based on their physical attributes. Cultural constituents often encountered at historic period sites include pits, privies, fences, ditches, water features, other structural elements, and domestic or industrial debris.

- *Farmstead or ranch sites* frequently include a residence and one or more outbuildings or structures clearly associated with ranching or agricultural activity (e.g., barn, corral, livestock watering locale, and/or shed). They may feature associated historic period debris deposits or scatters and may contain pits, privies, fences, ditches, and livestock watering locales marked by troughs, windmills, and/or water pumps.
- *Agricultural sites* typically include features that are functionally related to the cultivation, production, and harvesting of crops. Such sites are often distinguished by irrigation

ditches and canals, fencelines, modified or landscaped hedgerows or tree lines, and berms or mounded soil areas meant to aid water retention or abatement.

- *Transportation infrastructure* consists of historic period features such as paved or unpaved roads and railroad lines or grades. Railroad lines or grades generally feature a relatively level grade, typically on a constructed berm that may or may not include rails, ties, or spikes. Former railroad lines are often dismantled and repurposed as roads and can be difficult to distinguish in the form of berms that have been converted into unpaved roads. Roads are usually easier to distinguish and are sometimes associated with bridges, culverts, and/or secondary debris deposits or scatters left casually or deliberately by passing vehicles.
- *Water conveyance features* include infrastructural elements such as canals, ditches, dams, and dykes and are generally easy to distinguish in form and function, though they can be hard to discern or differentiate when encountered as a part of a larger water conveyance system. For instance, an agricultural canal and ditch system may contain hundreds of elements that have been added, removed, or transformed through time, and it can be difficult to distinguish the precise date or period when certain elements were altered.
- *Foundations or structure pads* include the material remains of a building's base and are generally constructed of stone, concrete, or wood. Structure pads are areas that have been leveled, typically for the placement of small, less permanent structures, and do not contain foundation elements.
- *Prospect pits or mining sites* typically comprise excavated pits or quarry areas made to test for or extract rocks, gravels, minerals or metals. Spoils piles, or areas of mounded soils or stones removed from prospect pits, are often found in conjunction with them.
- *Debris scatters or deposits* are typically composed of domestic and/or industrial materials that have been scattered or deposited in the area in which they were used (i.e., a primary deposit) or in an area unassociated with their use (i.e., a secondary deposit). A farmstead or ranch site for instance might feature one or more primary debris scatters containing domestic items such as glass, metal, and ceramics and might contain debris associated with ranching or farming activities such as barbed wire, fencepost remnants, and horseshoes. A historic period road might feature a secondary scatter of domestic or industrial items representing one or more roadside discard events.

## 7.4 Cultural Resource Evaluations

Not all of the cultural resources encountered during inventory surveys within the B.F. Sisk Dam Raise Alternative APE will be eligible for listing in the NRHP and/or the CRHR, and not all will require protection, avoidance, or mitigation per Section 106 of the NHPA or CEQA. Until all appropriate consultation efforts have been completed, however, Reclamation and the Authority will avoid impacts to cultural resources that have not been previously evaluated for listing in the NRHP and/or the CRHR.

Survey-level evaluations are offered below for cultural resources within the B.F. Sisk Dam Raise Alternative APE. Many of these resources were evaluated in support of the SLLPIP and B.F. Sisk SOD Modification Project. Some resources recommended not eligible for listing in the NRHP have received concurrence from the SHPO (Polanco 2018), though their eligibility status for listing in the CRHR remains unresolved. Other resources, specifically those discovered in 2020, are discussed for the first time. In the sections that follow, cultural resources evaluations are grouped according to the types of impacts anticipated under the B.F. Sisk Dam Raise Alternative: Construction of Dam Raise, SR 152 Modifications, and Operation of Dam Raise (*see* Section 1.2.3).

#### 7.4.1 Construction of Dam Raise

Most of the construction activities that will occur under the B.F. Sisk Dam Raise Alternative also will occur under the B.F. Sisk SOD Modification Project Crest Raise Action, and cultural resources that overlap the APE for both are expected to experience the same type and level of impacts within the same timeframe. For instance, three historic period road segments (CA-MER-493H, CA-MER-494H, and PL-Sisk-01) will be improved; the Basalt Hill Quarry (CA-MER-509H) will be re-activated; potential construction staging areas affecting five resources (CA-MER-492H, CA-MER-451H, CA-MER-512H, CA-MER-514H, and CA-MER-520H) will be used; and the Basalt Hill Borrow Area and Borrow Area 6 will be accessed to supply further materials for the enlarged dam embankment, potentially affecting five resources (CA-MER-494H, CA-MER-509H, CA-MER-510H, CA-MER-511H, and CA-MER-521H).

Construction impacts that would differ under the B.F. Sisk Dam Raise Alternative include raising the B.F. Sisk Dam a further 10 feet; increasing the crest elevation of the berm at the Pacheco Pumping Plant; and raising the operating elevation of the Dinosaur Point and Goosehead Point boat launches by 10 feet. No features would be removed, altered, or added to the to the B.F. Sisk Dam, the Pacheco Pumping Plant, or their appurtenant facilities that would be incongruent with their current setting, use, or operation. Further raising the height of the dam is not expected to result in adverse effects to the B.F. Sisk Dam/San Luis Reservoir Historic District or its contributing elements (JRP 2018). The elevation of the Goosehead Point Boat Launch would impact one historic period road (CA-MER-477H) that has been recommended not eligible for listing in the NRHP and CRHR, but no additional construction impacts associated with raising the height of dam a further 10 feet have been identified. Descriptions and survey level evaluations for cultural resources that overlap the B.F. Sisk SOD Modification Project Crest Raise Action and additional construction impact areas associated with the B.F. Sisk Dam Raise Alternative are presented below. An evaluation of the B.F. Sisk Dam/San Luis Reservoir Historic District is presented in a separate report by JRP (2018) and is not replicated here, though the district has been recommended eligible for listing in the NRHP/CRHR under Criterion A/1.

	<b>Site Description</b>
<b>CA-MER-451H P-24-001876</b>	CA-MER-451H is a historic period sheep ranch site near Domengine Spring that served as the ranch headquarters and residence. The site was first recorded in 2009 by W. Wulzen. Wulzen recorded eight features spanning a 2.76-acre area, including a possible structure pad (Feature 1); two galvanized water tanks (Features 2 and 3); fencing or a possible corral (Feature 4); an alignment of rocks (Feature 5); an improved spring (Feature 6); and two piles of rocks (Features 7a and 7b). No standing buildings associated with the ranching operation were present during the 2009
<b>Recommended Not Eligible for Listing in the NRHP/CRHR</b>	

**Appendix A,  
Figure A-6  
Appendix B,  
Figure B-6**

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Area –  
South of B.F. Sisk  
Dam)**

recording. Feature 1 is a 24 foot (NW/SE) by 12 foot (NE/SW) structural flat with daffodil bulbs planted nearby, but no signs of a foundation. Feature 2 is a 12-foot tall cylindrical water tank on an earthen pad with PVC pipe attached. Feature 3 is a second 8-foot tall tank on a wooden platform with a steel pipe and remains of a wooden roof with wire nails. Feature 4 is a 20-foot diameter possible corral with a wooden trough, fragmentary fencing, a gate, and a scatter of fence hardware. Feature 5 is a discontinuous rock alignment 75 feet from Feature 1. Feature 6 is an improved spring approximately 320 feet from Feature 2; it consists of a subterranean tank covered in wooden planks. Features 7a and 7b are basalt rock piles in the northwest corner of the site. Feature 7a is 16 feet (N/S) by 4 feet (E/W) and Feature 7b is 14 feet (N/S) by 5 feet (E/W).

CA-MER-451H is situated in a swale among surrounding hills south of the historic period San Luis Gonzaga Ranch and current San Luis Reservoir area and east of Basalt Hill. Vegetation includes seasonal grasses, non-native Eucalyptus, almond, and pine trees, and reported daffodils. No dates were established for the construction of these features, except that the water tanks and well improvements likely date to the early 20<sup>th</sup> century. On April 1 and April 8, 2020, archaeologists from Pacific Legacy conducted an intensive pedestrian survey of CA-MER-451H. Features 1-5, 7a, and 7b identified by Wulzen were relocated. Features 5, 7a and 7b (within the survey area) were photographed. Feature 6 was not relocated since it was further outside of the survey area. No associated artifacts were observed. The site condition is largely unchanged from the original recording, except that Feature 5 is now clearly disturbed and site vegetation has become more overgrown.

**Archival Research Summary**

CA-MER-451H is located in Township 10 South, Range 8 East in the southwest quarter of Section 26. An 1860 GLO plat for the township shows no structures or development in Section 26 indicating that the ranch was not yet present (BLM 2020a). The 1920 Pacheco Pass 15-minute USGS topographic map shows one structure at the ranch site southwest of the north-south road leading north to the San Luis Ranch (USGS 1920). The 1940 Pacheco Pass 15-minute USGS topographic map and 1953 San Luis Creek 7.5-minute USGS topographic map show two structures present, one on either side of the road, indicating the ranch may have continued operation into the 1940s (USGS 1940a, 1953). A 1953 aerial clearly depicts several standing structures and the water tank features near the corral. A 1964 aerial photograph depicts possibly three to four structures present at the ranch site, but they also may be related to construction of the B.F. Sisk Dam (Fairchild Aerial Surveys 1964).

The spring at CA-MER-451H is named Domengine, which refers to John Domengine and his son Adolph, who operated a sheep ranch there between about 1870 and 1873 (Vandor 1919:2181). John Domengine was a French Basque who arrived in California during the Gold Rush. After

operating a laundry in San Francisco, he ran a cattle ranch in Santa Clara County in the 1860s but lost it during the drought of 1864. He worked for Miller and Lux until 1867, when he struck off on his own and began his sheep ranching operation at San Luis Ranch (Vandor 1919:2181; Wulzen 2009). In 1873, John returned to France and sold his ranch to Simon Camy. Adolph stayed on to work for Mr. Camy, and a year later Camy and Domengine moved their flock to Fresno County where Adolph later became a prominent sheep rancher (Vandor 1919:2181-2182). The area of Section 26 that encompasses the ranch site is within the southwest quarter that was patented to Joseph Bareilles Couloume in 1889 (Doc #1902; BLM #CACAAA 096285) (BLM 2020b). Couloume, also known as Bareilles, was a barkeeper in San Francisco in 1880, but was voting in Mendezable Precinct in Merced County as a stock raiser by 1890 (Merced County 1890; U.S. Census Bureau 1880:621A). He continued to ranch and farm there through at least 1920 and his son, Frank Bareilles, continued to ranch in Township 3 through at least 1932 (Merced County 1932; U.S. Census Bureau 1920:1A; 1930:6A).

#### **NRHP/CRHR Evaluation**

CA-MER-451H is a historic period sheep ranch complex that includes a residence or barn structure pad, possible corral, two water tanks, and a water system derived from Domengine Spring. The site is evaluated under the historic context of *Ranching and Agriculture* in the American Period (*see* Section 3.3.3). Based on historic period maps, aerial photographs, land patent records, county history data, and chronological markers from the site's features, the site may have originally been used for sheep ranching as early as 1870, though the current features more likely date to the early to mid-20<sup>th</sup> century. There were definitely structures present between 1919 and 1940, remaining in use until the construction of the San Luis Reservoir in the 1960s. The site appears to date to the end of or post-date the height of Central Valley ranching (the late 19<sup>th</sup> century through the 1920s). The ranch was not prominent in agricultural development history in California. CA-MER-451H does not appear to have been associated with events significant in local or regional history and is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-451H may be associated with Adolph Domengine, a prominent sheep rancher in Fresno County, who spent three years sheep ranching with his father and a later owner in the site vicinity. His prominence is not directly connected with the CA-MER-451H site. The Couloume/Bareilles family ranched at CA-MER-451H from the 1890s through the 1930s. The family is not significant in local, state, or national history. The site is thus recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-451H is made up of components that are commonly used to control and maintain livestock (i.e., metal water tanks, a corral, fencing with a gate, and a wood water trough) and either a barn and/or residence.

There are no standing structures, and the type of structure (barn or residence) that was once present remains unclear. The other site features are fragmentary, except the water tanks and spring. None of these components is structurally unique, nor do they exemplify distinctive characteristics of a type, period, or method of construction. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

The resource is made up mostly of fragmentary livestock ranching features or features that have been modified for recent use (Domengine spring) and do not possess clear chronological association. There are no standing structures at the site and there are no signs of hollow-fill features such as a privy or debris pit. No historic period artifacts were noted at CA-MER-451H in 2020. Although CA-MER-451H has not been archaeologically tested for subsurface features, it is unlikely that such testing would reveal a sufficient quantity or diversity of artifacts with intact stratigraphy that might be used to address important research questions concerning *Ranching and Agriculture* in the American Period (see Section 3.3.3). Based on the surface features of the site, CA-MER-451H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-451H is in poor condition. Wulzen (2009) described site impacts as including the removal of standing structures, the construction of the Basalt water tank road through the site, construction of a house trailer pad approximately 50 feet from Feature 1, modern improvements to the Domengine Spring (Feature 6), and possible removal of cultural components by visitors from the nearby campground. The 2020 survey revealed that the Feature 5 rock alignment is now displaced in push piles. The resource's integrity of location is fair, though the extent of the site may not be fully defined due to the fragmentary nature of the features. The uncertainties regarding what features might be missing and their temporal assignment diminishes the site's integrity of design and workmanship. Aspects of setting, association, and feeling have been impacted by the construction of the dam and reservoir during the 1960s, by the removal of the structures noted on historic period maps from the 1940s and 1950s, and by the construction of the Basalt water tank road and nearby recreational campground (USGS 1920, 1940, 1953). The site no longer retains sufficient integrity of association and feeling to convey its history. Overall, the resource possesses poor integrity. CA-MER-451H is recommended not eligible for listing in the NRHP/CRHR.

### **Description**

**CA-MER-477H**  
**P-24-001822**

CA-MER-477H was first recorded by J.C. Whatford in 1996 as three segments (Features A, B, and C) of three separate road alignments. Feature A is located on a contour below the paved access road to Dinosaur Point. Feature B is a road cut situated on a contour above the paved access road to Dinosaur Point that includes the remains of an asphalt surface and occasional dry-laid stone retaining walls. Feature C comprises the road cut

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix A,  
Figure A-3  
Appendix B,  
Figure B-3**

**Construction of  
Dam Raise  
(Dinosaur Point  
Boat Launch  
Modification Area;  
Reservoir  
Shoreline –  
Dinosaur Point  
Area)**

along which the paved Dinosaur Point access road is oriented (Whatford 1996a). The modern four-lane alignment of SR 152 is located roughly 0.3 miles to the northwest of Feature C.

During the 2012 field inventory, the three road segments originally recorded as CA-MER-477H by Whatford were relocated along with 11 additional road segments. All of these segments comprise three separate road alignments that together span 3.5 miles E/W on the western side of San Luis Reservoir. Features A, B, and C, originally noted by Whatford in 1996, were re-designated Segments A, B, and C in 2012, while the remaining segments were designated Segments D through N. All represent travel routes that spanned Pacheco Pass before 1967. They begin in the wide valley at the top of Pacheco Pass near the modern alignment of SR 152 and cross the summit of the pass before following a ridgeline down into the former San Luis Valley. The features consist primarily of roadbeds cut into the hillsides, with some segments exhibiting asphalt paving and built-up roadbeds and causeways. A series of “C” blocks—concrete posts with a “C” stamped into one side—were noted along one of the road alignments and designated as Features 1 through 5. Posts of this type were used to delineate highway right-of-way between 1914 and 1934 (Windmiller 2007).

The three historic period road alignments include the 1920s-era route of SR 152. Construction of the route was completed in 1923, and it is represented by Segments B, D, E, F, G, H, I, J, and K as well as Features 1 through 5. Segments C and L represent two discontinuous portions of the improved 1940s-era route of SR 152. Finally, Segments A, M, and N represent the earliest alignment, which may mark the route of the 1856 Andrew Firebaugh Toll Road, the Pacheco Pass Stage Road, and/or a portion of the Butterfield Overland Mail route.

The main disturbances to CA-MER-477H include the construction and maintenance of Dinosaur Point Road and a pumping plant access road. Inundation of the reservoir has affected road Segments L, K, and M, and erosion has affected most of the resource segments. CA-MER-477H generally follows the course of a northwest-southeast trending ridgeline, first on the north side and then crossing to the south, with the exception of Segments M and N that continue on the north side. The resource passes through three vegetation communities: low to medium density chaparral with Manzanita, California sagebrush, coyote bush, chamise, and blue oaks; oak savanna blue oaks and non-native grasses; and open non-native grassland with cockleburs and other herbaceous plants. The resource descends below the reservoir’s high-water mark in several locations, which are marked only by sparse grasses and cockleburs.

**Archival Research Summary**

CA-MER-477H is located in Township 9 and 10 South, Range 7 East and in Township 10 South, Range 8 East in the unsectioned San Luis Gonzaga



Land Grant. The land grant was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts only the area not covered by the land grant. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho, but it is unclear if the stage route depicted corresponds to one or more of the CA-MER-477H road alignments (BLM 2016). The 1920 Pacheco Pass 15-minute USGS topographic map depicts Segments B, D, E, F, G, H, I, J, and K (USGS 1920). The 1940 Pacheco Pass 15-minute USGS topographic map shows Segments C and L. The 1955 Pacheco Pass 7.5-minute map portrays the San Luis Reservoir while the “Boat Ramp” road appears to represent portions of the 1940s-era alignment of SR 152. Two segments of the 1920s-era alignment of SR 152 are also shown (USGS 1955). A 1946 aerial photograph of the resource area shows numerous braided road alignments to the west of the reservoir near Dinosaur Point (Fairchild Aerial Surveys 1946). The 1920s-era SR 152 alignment is clearly visible, as is the later 1940s-era route. Several road segments that may represent the 19<sup>th</sup> century stage road are also visible. Two of the 1920s segments of SR 152 (Segments B and N) are most clearly discernible, as is one of the 1940s segments (Segment C).

Based on aerial photograph and historic period map evidence, CA-MER-477H represents the remains of three separate roads that traversed Pacheco Pass prior to 1967. One is the original 1920s-era route of SR 152, which was the first paved road over the pass and the one that included the distinctive “C” blocks. A second is the improved 1940s-era SR 152, a portion of which was repaved as Dinosaur Point Road after the flooding of the San Luis Reservoir in 1967 (Beck and Haase 1974: 52; Hoover 1990: 199; Whatford 1996: 1-2). Finally, the 1856 Andrew Firebaugh Toll Road, which later became the Pacheco Pass Stage Road and part of the Butterfield Overland Mail route, may be represented. Its correlation with early historic period maps is more tenuous, however, and it lacks associated features, such as the later 1920s-era “C” blocks that might support its link with a specific period and function.

#### **NRHP/CRHR Evaluation**

CA-MER-477H comprises 14 segments of three separate historic period road alignments that spanned Pacheco Pass. Each of the three alignments is evaluated under the historic context of *Transportation Development* in the American Period (*see* Section 3.3.3). Pacheco Pass is a part of a historically significant transportation corridor that was used by Native Americans as well as Spanish, Mexican, and American explorers, soldiers, and settlers. A commemorative plaque marking Gabriel Moraga’s 1805 exploration of Pacheco Pass has been designated as CHL-829 (P-24-000643) and installed at the Romero Overlook on the northeastern edge of San Luis Reservoir.

Segments A, M, and N of CA-MER-477H may represent portions of the 1856 Andrew Firebaugh Toll Road that later became the Pacheco Pass

Stage Road and part of the Butterfield Overland Mail route. Given the imprecision of the 1909 GLO map of the diseño of Rancho San Luis Gonzaga, the braided nature of the roads that cross the area, and the lack of associated materials that might confirm the age of the three recorded alignments, however, it is not possible to definitively link the road segments to the 19<sup>th</sup> century toll, stage, or mail route. Segments B, D, E, F, G, H, I, J, and K, which represent the 1920s-era alignment of SR 152, can be more securely linked to early historic period topographic maps (USGS 1920, 1955), as can the two segments (Segments C and L) that represent the improved 1940s-era alignment (USGS 1955).

Mere association with historical events or trends is not enough to qualify a resource for listing in the NRHP/CRHR under Criterion A/1. The resources' association with particular historical events or trends must be considered important as well. For instance, a historic period commercial building must be shown to have been significant in commercial history. Similarly, the three road alignments that make up CA-MER-477H may be considered potentially eligible for listing in the NRHP/CRHR under Criterion A/1 if they played a significant role in local or regional transportation development or history. As noted above, Segments A, M, and N of CA-MER-477H cannot be securely linked to their use as a part of the Andrew Firebaugh Toll Road, the Pacheco Pass Stage Road, or the Butterfield Overland Mail Route. Segments B, D, E, F, G, H, I, J, and K, which represent the 1920s-era alignment of SR 152, and Segments C and L, which represent the 1940s-era one, can be more firmly linked to a specific period through historical map and aerial photographic evidence. As remnant road alignments that played a significant role 1920s and 1940s-era transportation in Central California, 11 of the 14 road segments may be regarded as potentially eligible for listing in the NRHP/CRHR under Criterion A/1.

None of the road alignments that make up CA-MER-477H could be definitively linked with one or more historically significant individuals. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-477H comprises 14 segments of three separate road alignments that could not be clearly linked to any other buildings, structures, or sites within the vicinity. The road segments are not structurally unique and do not exemplify distinctive characteristics of a type, period, or method of construction. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As a series of isolated road segments, there is little potential to encounter subsurface components or vertical stratigraphy along CA-MER-477H. As a physical entity, the resource offers little potential to address important research questions about *Transportation Development* in the American Period

(see Section 3.3.3). Thus, CA-MER-477H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The overall condition of CA-MER-477H in 2012 was described as fair, with impacts from construction and maintenance of the Dinosaur Point Road and a pumping plant access road, reservoir inundation, and erosion. Generally, the road segments retain integrity location and materials, though vegetation growth has diminished their aspect of workmanship and materials. Integrity of design has been diminished by modern construction and development, while the aspect of setting has been impacted by later road, pumping station, and boat ramp construction and by the San Luis Reservoir. Aspects of association and feeling also have been impacted by access road, reservoir, and boat ramp construction, which resulted in the re-routing of SR 152 in its current alignment. Some of the CA-MER-477H road segments have lost any clear historic period association. For instance, Segment G is described as being potentially “mistaken for a wide shoulder” (Elliot et al. 2012c). The integrity of CA-MER-477H is poor to fair.

The potential 19<sup>th</sup> century road alignment of CA-MER-477H could not be securely linked to a specific time period or function and may represent portions of a toll road, stage road, and/or overland mail route. The 1920s and 1940s-era alignments of CA-MER-477H can be more securely fixed in time and space. Both served an important role in historic period transportation development, however both lack sufficient integrity to convey their significance in local or regional history. Portions of these alignments have been paved, inundated, and/or severely eroded. The recorded road segments are discontinuous and frequently limited in scale. Overall, the resource retains poor integrity. CA-MER-477H is recommended not eligible for listing in the NRHP/CRHR.

#### **Description**

CA-MER-491H is a dirt road segment that has been cut into the western slope of a north-south trending finger ridge. It measures approximately 600 feet in length and 10 feet in width. The cut into the ridge is approximately 2 feet high at a 32° angle. The northern end of the dirt road segment joins a maintained dirt road segment that intersects Basalt Road. A large boulder (6-x-5-x-2.5 feet) rests in the middle of the road roughly 200 feet south of its northernmost section. The south end of the road ends at a high water mark near the southeastern shore of the San Luis Reservoir.

**CA-MER-491H**  
**P-24-001985**  
**PL-SLLP-A-010**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-6**

CA-MER-491H is characterized by steep-sided, grassy finger ridges with slopes ranging from 16-22°. Sparse trees and dry, non-native grasses grow throughout the area, though most of the trees in the vicinity represent modern landscaping planted adjacent to a boat ramp parking lot. CA-MER-491H is fully exposed with fair to limited (20%) ground surface visibility. The road is in fair condition but has been impacted by erosion.

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Area –  
West of  
Goosehead Point)**

**Archival Research Summary**

CA-MER-491H is located in Township 10 South, Range 8 East in the southeast quarter of Section 28. Section 28 represents a half-section, with the unsectioned northern half subsumed by the San Luis Gonzaga Land Grant. Section 28 was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). The northern half of the southeast quarter, which subsumed the resource area, and the eastern half of the southwest quarter were later patented on February 23, 1892 by Antonio Lopez (Doc #2241, BLM# CACAAA 096296) (BLM 2016). In 1895, he also patented the western half of the southwest quarter.

An 1860 GLO plat map shows the Butterfield Overland Mail route and a telegraph line as they crossed the northwest corner of Section 13, however no historic period features were depicted in Section 28. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho—the future alignment of SR 152—but does not show the CA-MER-491H road alignment (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the dirt road segment (USGS 1920, 1940a). The 1953 San Luis Creek 7.5-minute USGS topographic map shows an east-west trending unimproved road spanning Section 28 that corresponds to CA-MER-491H (USGS 1953). The road segment, however, is not depicted on the 1969<sup>3</sup> San Luis Dam 7.5-minute USGS topographic map (USGS 1969a), likely because the area was inundated by that time. A 1946 aerial photograph of the area clearly shows the road segment as a part of a road leading west from a north-south trending road in Section 26 (Fairchild Aerial Surveys 1946).

CA-MER-491H passes approximately 760 feet to the west of a possible former homestead site (CA-MER-261H) that may have been associated with Antonio Lopez. Antonio “Antone” Lopez was born in 1844, came to California in 1851, and died in 1907 in Los Banos (Findgrave.com 2016). His obituary noted that he “worked for 40 years as Head Vaquero for Henry Miller of Miller and Lux. Antone was married to Theresa Harper and they had four children Maria Antonia, Henry Francis, Albert Henry, and Frank Henry.” Early 20<sup>th</sup> century U.S. Census records noted that Antonio Lopez resided in Township 3, was married to Theresa Lopez, had four children, and listed his occupation as “farmer” (U.S. Census Bureau 1900a: 9A, 1910: 9A). Since CA-MER-491H features no associated artifacts and aerial photographs reveal only that it was present by 1946, the road segment cannot be clearly linked to the Lopez land grant or to the possible former homestead.

**NRHP/CRHR Evaluation**

CA-MER-491H consists of a historic period road segment that was

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<sup>3</sup> The 1969 San Luis Dam 7.5-minute USGS topographic map was based on aerial photographs taken in 1967 and field checked in 1969.

constructed prior to 1946 (Fairchild Aerial Surveys 1946). It is evaluated under the historic context of *Transportation Development* in the American Period (*see* Section 3.3.3). The construction date of CA-MER-491H and its period of use remain unclear, though it may have been associated with a possible former homestead (CA-MER-261H) or with homesteaders or ranchers who required an east-west route outside of the San Luis Gonzaga Land Grant. The road segment could not be clearly linked to any buildings, structures, or sites within the vicinity, though the possible former homestead site is located just 760 feet to the west. CA-MER-491H does not appear to have been linked to any significant events or developments in local or regional history. It is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-491H lay within a land grant patented to Antonio Lopez in 1892, however no links could be established between Lopez or any subsequent landowners or leasees and the construction and use of the road segment. Although the builder or builders of the road remain unknown, it is unlikely that they figured prominently in local or regional history. CA-MER-491H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-491H is an isolated road segment that could not be clearly linked to any other buildings, structures, or sites within the vicinity. The road segment is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. Thus, the resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As an isolated road segment, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-491H. It offers limited potential to address important research questions about *Transportation Development* in the American Period (*see* Section 3.3.3). The resource is thus recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-491H does not appear to be maintained or in active use, though the northern end of the road joins another road segment that is maintained and leads to Basalt Road. It is in fair condition despite impacts from erosion and retains integrity of location, design, feeling, materials, and workmanship. It lacks integrity of association, however, because it could not be clearly linked to a particular time, event, individual, or purpose and could not be associated with other buildings, structures, or sites in the vicinity. It also lacks integrity of setting, as the resource has been inundated by the San Luis Reservoir to the south and truncated by a more recent road to the north. CA-MER-491H possesses fair overall integrity and is recommended not eligible for listing in the NRHP/CRHR.

**CA-MER-492H**  
**P-24-001986**  
**PL-SLLP-A-011**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR,  
(Non-Contributing  
Element to the  
B.F. Sisk  
Dam/San Luis  
Reservoir Historic  
District)**

**Appendix B,  
Figure B-6**

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Area –  
West of  
Goosehead Point)**

### **Description**

CA-MER-492H is a historic period industrial resource measuring 1,600 feet N/S by 1,100 feet E/W. It represents a part of the larger Basalt Hill Quarry (CA-MER-509H) and separation plant complex built in 1963 to process basalt into riprap for construction of the B.F. Sisk Dam (Autobee 2011: 11-12; Berman 2012: pers. comm.; Reclamation 1974: 49). The Basalt Hill Quarry (CA-MER-509H) is located approximately 2,500 feet to the southwest and comprises the main component of the complex, which also includes two historic period access roads (CA-MER-493H and CA-MER-494H). CA-MER-492H features five main loci (Locus 1 through 5). Locus 1 is a concrete tunnel through a small hill covered with piled riprap on top of which are three concrete foundation pads, six vertically embedded I-beams, a road segment, and a large number of cuts, flats, and bulldozer ramps. Locus 2 consists of a deep road cut, a road segment, and a flat. Locus 3 comprises a number of bulldozer scrapes as well as road segments and piled riprap. Locus 4 consists of two large bulldozer scrapes and two road segments. The final main locus, Locus 5, consists of two large bulldozer scrapes.

Considerable amounts of earth were moved during the formation of CA-MER-492H, and the hill that the tunnel is built through appears to be artificial. The site is located in a wide, flat, round valley situated between Basalt Hill to the southwest and San Luis Reservoir to the northeast. The terrain surrounding the resource area is relatively flat to the north and east, with moderate ground surface visibility obscured only by non-native grasses and occasional coyote bushes. The area has a 0-5° slope, is fully exposed, and features a northeastern aspect. The relatively level nature of the site may be due to historic period earthmoving. A 6-foot deep bank runs roughly parallel to the northwest-trending segment of one access road, separating the main portion of the site from the rest of the valley. A small knoll rests between the bank and Basalt Road, with portions of the knoll exhibiting bulldozer activity. The hills to the south and west are steep (>20°), particularly Basalt Hill, which has a maximum elevation of 1,707 feet amsl. Soils within the resource area are tan-brown silty loam and have been graded away in some areas, exposing the sedimentary bedrock beneath. Large portions of the resource area are covered by riprap, either piled or strewn, that would have arrived via a conveyor belt from the Basalt Hill Quarry (CA-MER-509H). The conveyor belt is no longer in place but does appear in historic period photographs.

CA-MER-492H is in fair condition with few visible impacts. The main impacts relate to the decommissioning of resource—standing superstructures in Locus 1 were removed, leaving only embedded I-beams and concrete pads. Grading of an access road has also damaged or covered the historic period access road that led through the tunnel. There are very few artifacts present at CA-MER-492H, likely as a result of cleanup activities following the facility's closure (Poole 2012: pers. comm.).

### **Archival Research Summary**

CA-MER-492H is located in Township 10 South, Range 8 East in the southwest quarter of Section 27. The southern half of Section 27 was patented to the Southern Pacific Railroad Company on April 20, 1875 (Doc #4, BLM# CACAAA 093859) (BLM 2016). No railroad was ever built through the section, however, and it was likely sold to local ranchers or other property owners. An 1860 GLO plat map depicts drainages along the northern edge of Section 27, but no historic period development (BLM 2016). The 1920 Pacheco Pass 15-minute USGS topographic map shows that the resource area was dominated by a northeast-southwest oriented drainage originating from a spring to the southwest in Section 34, but no access routes to or from the resource area are depicted (USGS 1920). The 1940 Pacheco Pass 15-minute USGS topographic map does not show CA-MER-492H but does depict a portion of a road that accesses the resource area (USGS 1940). The 1953 San Luis Creek 7.5-minute USGS topographic map shows that the resource area in Section 27 and the Basalt Hill Quarry (CA-MER-509H) area to the southwest in Section 33 remained unmodified (USGS 1953). To the south of CA-MER-492H in Section 34, the same map shows a fire lookout (P-24-000078) on the top of Basalt Hill and a south-trending access road leading away from it (USGS 1953). An access road through Section 27 to the north of the resource area is also depicted, though only a portion to the northwest currently remains on dry land. The concrete tunnel in Locus 1 of CA-MER-492H first appears on the 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969a), which also depicts the San Luis Reservoir and the Basalt Hill Quarry (CA-MER-509H).

Historic period map evidence supports other accounts that the Basalt Hill Quarry (CA-MER-509H) and separation plant complex were established in 1963 to support construction of the B.F. Sisk Dam and San Luis Reservoir, which were completed in 1967 (Autobee 2011: 11-12; Reclamation 1974: 49). In describing how the complex would have operated, Autobee (2011: 11) noted that Rock for zones 4 and 5 on the upstream face of the dam were extracted from a quarry at the top of nearby Basalt Hill. The quarry-run rock was excavated with a 15 cubic yard electric shovel and transported by 75-ton trucks to a separation plant. This plant separated the rock into plus-and-minus nine-inch sizes. Huge bar screens directed the larger size rock into a hopper that loaded the zone 5 material into 60-ton rear-dump trucks. The trucks had special braking systems for hauling safely down the steep access road. The smaller zone 4 rock dropped onto a 3,200-foot long conveyor belt down the hillside. This ended on a cantilevered tower over a 100-foot high stockpile at the bottom. There was a drive-through tunnel under the pile that allowed 100-ton trucks to be loaded in two minutes.

The Basalt Hill Quarry (CA-MER-509H) and separation plant complex was thus used for quarrying and separating rock fill, bedding, and riprap. CA-MER-492H would have been on the receiving end for “smaller zone 4

rock” that would have been transported from the Basalt Hill Quarry (CA-MER-509H) via the “3,200-foot long conveyor belt” (Autobee 2011: 11). Although the conveyor belt is no longer extant, the hill cut for the belt remains highly visible. The concrete footings and embedded I-beams in Locus 1 of CA-MER-492H likely represent the remains of the end of the conveyor belt and the tower. The poured concrete tunnel in Locus 1 would have been used in loading separated material onto vehicles for conveyance to the reservoir embankment and dam construction area.

After construction of the B.F. Sisk Dam was completed in 1967, the quarry and riprap separation plant were shut down, and the tunnel in Locus 1 of CA-MER-492H was reused for storage. Chain-link fencing was bolted to each tunnel entrance, and openings in the roof for loading rock were closed with metal sheeting. The conveyor belt linking CA-MER-492H with the Basalt Hill Quarry (CA-MER-509H) was removed, and superstructures such as the cantilevered tower noted by Autobee (2011: 11) were dismantled.

#### **NRHP/CRHR Evaluation**

CA-MER-492H is a historic period resource that was associated with the Basalt Hill Quarry (CA-MER-509H) and separation plant complex. This complex was established in 1963 to support the construction of the B.F. Sisk Dam and the San Luis Reservoir and comprises a part of the larger dam system. CA-MER-492H is evaluated as a part of that larger system under the historic context of *Water Conveyance* in the American Period (see Section 3.3.3).

The B.F. Sisk Dam and its appurtenant features were recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for their contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). As a feature within the B.F. Sisk Dam system, CA-MER-492H may be regarded as a contributing or non-contributing element under Criterion A/1. A connection to significant historic period events or trends is insufficient, in and of itself, to render a resource eligible for listing in the NRHP/CRHR under Criterion A/1. Rather, the role the resource played in those events or trends must be significant. The dam symbolizes the first and only state-federal collaboration in California water development to be conducted on such a large scale (Autobee 2011). The Basalt Hill Quarry and separation plant complex was created and used to support the construction of the B.F. Sisk Dam, however its role in the development of the dam and its key facilities was transitory and not sufficiently significant to render CA-MER-492H a critical part of the larger system. CA-MER-492H is thus recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion A/1.



No connection between the resource and one or more individuals significant in local, state, or national history could be established. Although the dam is named for former U.S. Congressman Bernice Sisk, that association is commemorative and too tenuous to be regarded as significant under NRHP/CRHR Criterion B/2. CA-MER-492H is thus recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion B/2.

The Basalt Hill Quarry (CA-MER-509H) and separation plant complex was used for quarrying and separating rock fill, bedding, and riprap. Structurally, the complex is not unusual or distinctive in engineering, or architecture. Cedar Spring Dam and Silverwood Lake in Southern California also used a gravity separation plant when quarrying rock for construction in the 1960s (California Dept. of Water Resources 1974: 328). The tunnel in Locus 1 of CA-MER-492H is lined with board-molded concrete and is not distinctive from other man-made tunnels. CA-MER-492H is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion C/3.

As an industrial resource, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-492H, and few surface artifacts remain. Much of the research potential for the Basalt Hill Quarry (CA-MER-509H) and separation plant complex may be found through archival documents and historic period photographs rather than through the resource's physical remains. CA-MER-492H is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion D/4.

CA-MER-492H does not appear to be actively maintained or used. It remains in fair condition despite impacts from decommissioning and retains integrity of location and workmanship. Integrity of materials is diminished because portions of the resource have been removed. It retains integrity of setting and association as the reservoir and dam are nearby, though integrity of association has been somewhat lessened by the removal of super-structures (i.e., tower and conveyor belt) that tied the site to the upper quarry area and separator plant. A current access road has damaged the historic period road system, which also diminishes its integrity of setting. The purpose of the tunnel system is no longer evident and no longer visually or physically connected to the larger complex. The aspect of feeling has been diminished, as construction of the dam and reservoir have long been completed. The overall integrity of CA-MER-492H is fair. CA-MER-492H possesses fair overall integrity. It is recommended as a non-contributing element to the NRHP/CRHR eligibility of the B.F. Sisk Dam system, recently defined as the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018).

**CA-MER-493H**  
**P-24-001987**  
**PL-SLLP-A-014**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-3 and B-6**

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Area –  
West of  
Goosehead Point)**

### **Description**

CA-MER-493H is an earthworks road segment that measures approximately 5,400 feet or 1.02 miles in length and 15 feet in width. It is oriented roughly northeast-southwest and connects with another road (CA-MER-494H) at its midpoint that trends southwest towards the Basalt Hill Quarry (CA-MER-509H). A 3,100-foot long segment of the road was recorded during the 2012 inventory survey while a 2,300-foot long segment was later recorded during the 2016 inventory survey. The road is built up to a height of 25 feet in some sections and cut 13 feet into the hillside in others to maintain a consistent grade. The road is mostly covered by gravels, which become sparse and eventually disappear as the road continues southwest. A small southern offshoot of this road was also discovered descending due south towards a drainage. It is covered by gravels and features two metal culverts. The main alignment contains one 3-foot diameter iron culvert in the center of a built-up causeway. Roughly 80% of the main road alignment and the small southern offshoot segment lie beneath the current average waterline of the San Luis Reservoir.

An orange-white CCS core (P-24-001990) and a red CCS biface fragment (P-24-001991) were discovered along the main road alignment near where CA-MER-493H and CA-MER-494H intersect. The core was embedded in the road while the biface fragment was found lying on the surface of the road. Neither was believed to be *in situ*. CA-MER-493H was likely built to facilitate dam construction, as it leads from an industrial resource (CA-MER-492H) that was a part of the Basalt Hill Quarry (CA-MER-509H) and separation plant complex to the B.F. Sisk Dam area. The road is in fair condition despite impacts from erosion, inundation, and use by four-wheel drive vehicles.

### **Archival Research Summary**

CA-MER-493H is located in Township 10 South, Range 8 East in the southern half of Section 27 and in the unsectioned San Luis Gonzaga Land Grant. The land grant was patented on May 16, 1871 to Juan Pérez Pacheco (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). The southern half of Section 27 was patented to the Southern Pacific Railroad Company on April 20, 1875 (Doc #4, BLM# CACAAA 093859) (BLM 2016). No railroad was ever built through the section, which was likely sold to unknown ranchers or other landholders. On February 23, 1892, Antonio Lopez patented the northern half of the southeast quarter and the eastern half of the southwest quarter in Section 28, which is just west of and adjacent to Section 27. He also patented the western half of the southwest quarter of Section 29 on May 30, 1895. Antonio Lopez had a homestead that was adjacent to an east-west road that crossed Sections 27 and 28, which may have included a small portion of the CA-MER-493H road alignment. That east-west road may have served as an early access route to the homestead during Lopez's tenure on the property (ca. 1890s to 1900).

An 1860 GLO plat map shows the Butterfield Overland Mail route and a telegraph line roughly 2 miles northeast of CA-MER-493H as they crossed Section 13, however no cultural features are depicted in Section 27. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho, but does not show roads to the south or southeast and does not depict a road in the CA-MER-493H location (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the road segment (USGS 1920, 1940), though they depict the east-west trending road that may have crossed or just slightly overlapped the location of CA-MER-493H. Similarly, a 1946 aerial photograph of the area and the 1953 San Luis Creek 15-minute USGS topographic map depict the east-west road alignment but not CA-MER-493H (Fairchild Aerial Surveys 1946; USGS 1953). The resource first appears on the 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969a), which depicts the inundated San Luis Reservoir and a small segment of the road as it ascends northeast towards the dam. As it would have been inundated, most of the recorded road segment is not depicted. The tunnel associated with the neighboring industrial resource (CA-MER-492H) also first appears on the 1969 map (USGS 1969a).

Based on historic period map evidence, CA-MER-493H appears to have been established prior to the inundation of the San Luis Reservoir in 1968 but after 1953 (USGS 1953, 1969). This supports the idea that the road was established to facilitate the construction of the dam and reservoir. CA-MER-493H does not appear to have been related to the east-west trending road that passed through Sections 27 and 28, though it may have slightly overlapped that earlier alignment.

#### **NRHP/CRHR Evaluation**

CA-MER-493H is a historic period road segment that was likely constructed after 1953 and prior to 1968. As recorded in 2012 and 2016, it serves as a link between an industrial resource (CA-MER-492H) associated with construction of the B.F. Sisk Dam and a point just southwest of the dam itself. It appears to have been established to support dam and reservoir construction activities. It is evaluated under the historic contexts of *Transportation* and *Water Conveyance* in the American Period (see Section 3.3.3).

The B.F. Sisk Dam has been recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for its contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). There is no evidence to indicate that CA-MER-493H was the first or only road used in the construction of the B.F. Sisk Dam. It was likely used to convey building materials to the dam construction area, but it does not contribute to the importance of the B.F. Sisk Dam system or the wider CVP and SWP. CA-MER-493H is thus

recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion A/1.

There is no evidence indicating that CA-MER-493H was developed or used during the 19<sup>th</sup> century, and no evidence linking the resource to early settlers or ranchers such as Juan Pérez Pacheco or Antonio Lopez. No connection between the resource and one or more people significant in local, state, or national history could be established. CA-MER-493H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-493H is an earthworks road segment. It is not structurally unique, nor does it exemplify distinctive characteristics of a type, period, or method of construction. CA-MER-493H is recommended not eligible for inclusion in the NRHP/CRHR under Criterion C/3.

As a road segment, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-493H. The resource offers limited potential to address important research questions about *Transportation and Water Conveyance* in the American Period (see Section 3.3.3). CA-MER-493H is recommended not eligible for inclusion in the NRHP/CRHR under Criterion D/4.

CA-MER-493H does not appear to be actively maintained or used. It remains in fair condition despite apparent impacts from erosion and inundation and retains integrity of location, design, materials, and workmanship. Physically and functionally, it lacks some integrity of association, feeling, and setting because the industrial resource (CA-MER-492H) it once supported is no longer in operation, dam construction has been completed, and the resource is largely inundated during non-drought years. Overall, CA-MER-493H retains fair integrity. CA-MER-493H is recommended not eligible for inclusion in the NRHP/CRHR.

#### **Description**

CA-MER-494H is a historic period graded dirt road that measures approximately 8,130 feet or 1.54 miles in total length and 20 feet in width. It is oriented generally northeast-southwest and bridges the Basalt Hill Quarry (CA-MER-509H) to the south and an earthworks road (CA-MER-493H) to the north. Two segments of the road (Segments 1 and 2) were recorded during the 2012 field inventory to either side of Basalt Road. Segment 1, located to the south of Basalt Road, measures approximately 1,950 feet in length and 20 feet in width. It contours though the hills downslope from the quarry and includes a number of hill cuts and causeways to maintain an approximate 5% road grade. Segment 2, located north of Basalt Road, measures 830 feet in length and 20 feet in width. It consists of a built-up causeway road covered in gravels that stands approximately 20 feet high on its west side and 15 feet high on its east side. The east side is covered with riprap and basalt boulders. During the 2016

**CA-MER-494H**  
**P-24-001988**  
**PL-SLLP-A-015**

**Recommended**  
**Not Eligible for**  
**Listing in the**  
**NRHP/CRHR**

**Appendix B,**  
**Figure B-6**

**Construction of  
Dam Raise (Basalt  
Hill Borrow Area;  
Potential  
Construction  
Staging Area –  
West of  
Goosehead Point;  
Access Road Area)**

inventory survey, a 5,350-foot long segment of the road was recorded descending southwest towards the Basalt Hill Quarry (CA-MER-509H) from Segment 1. It also measures 20 feet in width and is consistent in construction with Segment 1.

Segment 1 and the portion of the road recorded in 2016 are located above the reservoir's high waterline and both pass through a non-native grassland area with no trees or shrubs. The northern end of Segment 1 features a berm that was constructed to deny vehicle access from Basalt Road. Segment 2 is located below the reservoir's high waterline and is bordered by sparser non-native grasses, cockleburs, and the occasional willow tree. The CA-MER-494H road alignment slopes (3-5°) to the northeast and is fully exposed. It exhibits impacts from erosion, inundation, and the use of four-wheel drive vehicles.

**Archival Research Summary**

CA-MER-494H is located in Township 10 South, Range 8 East in the northeastern quarter of Section 33, the northwest quarter of Section 34, and the southern half of Section 27. The southern half of Section 27 was patented to the Southern Pacific Railroad Company on April 20, 1875 (Doc #4, BLM# CACAAA 093859) (BLM 2016). No railroad was built through the section, which was likely sold to unknown ranchers or other landholders. Those areas of Sections 33 and 34 that encompass the road were patented to the State of California in 1924 (BLM# CACAAA 002567, 096293, and 096298) (BLM 2016). The area includes a natural spring, and the land may have been leased for ranching or grazing.

An 1860 GLO plat map shows the Butterfield Overland Mail route and a telegraph line roughly 2 miles northeast of CA-MER-494H as they crossed Sections 12 and 13, however no cultural features are depicted in Sections 27, 33, or 34. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho, but does not show roads to the south or southeast and does not depict a road near the CA-MER-494H location (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the road (USGS 1920, 1940). The 1953 San Luis Creek 15-minute USGS topographic map depicts an east-west road alignment in Section 27 but it does not correspond to CA-MER-494H (USGS 1953). Perhaps most surprisingly, the 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969a) does not show the road alignment, though it does portray the inundated San Luis Reservoir and a road leading north from the Basalt Hill Mine as well as a dirt road leading southeast through Section 34. A 1946 aerial photograph of the site vicinity shows the east-west trending road through Section 27 as well as Segments 1 and 2 of CA-MER-494H (Fairchild Aerial Surveys 1946). The road segments appear to lead towards the spring in Section 34 or possibly the Basalt Hill Quarry (CA-MER-509H).

Historic period map evidence and land patent information provided few clues about when CA-MER-494H was built. In construction, it greatly resembles the historic period road (CA-MER-493H) that it intersects to the north. That road was associated with dam construction, and CA-MER-494H, which acts as a bridge between the Basalt Hill Quarry (CA-MER-509H) and the northern road, was almost certainly used during dam construction as well. Given its appearance on a 1946 aerial photograph, however, it may have originated as an earlier alignment leading to the natural spring in Section 34.

### **NRHP/CRHR Evaluation**

CA-MER-494H is a historic period road that was likely constructed, at least in part, prior to 1946. As recorded in 2012 and 2016, it serves as a link between the Basalt Hill Quarry (CA-MER-509H) to the southwest and a historic period access road (CA-MER-493H) to the northeast that leads to the B.F. Sisk Dam area. It appears to have been established, or at least used primarily, to support the construction of the B.F. Sisk Dam and the San Luis Reservoir. It is evaluated under the historic contexts of *Transportation* and *Water Conveyance* in the American Period (see Section 3.3.3).

The B.F. Sisk Dam has been recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for its contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). As a feature within the B.F. Sisk Dam system, CA-MER-494H may be regarded as a contributing or non-contributing element under Criterion A/1. A connection to significant historic period events or trends however does not necessarily render a resource eligible for listing in the NRHP/CRHR. Rather, the role the resource played in those events or trends must be significant. There is no evidence to indicate that CA-MER-494H was the first or only road used in the construction of the B.F. Sisk Dam. It was likely used to convey stone from the Basalt Hill Quarry (CA-MER-509H) to the dam construction area, but it does not contribute in a meaningful way to the importance of the B.F. Sisk Dam system as a component within the wider CVP and SWP. CA-MER-494H is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

There is no evidence indicating that CA-MER-494H was developed or used during the 19<sup>th</sup> century, and no evidence linking the resource to early settlers or ranchers in the vicinity. No connection between the resource and one or more people significant in local, state, or national history could be established. CA-MER-494H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-494H is a graded dirt road. It is not structurally unique, and it does not exemplify distinctive characteristics of a type, period, or method

of construction, nor does it represent the work of a master engineer. CA-MER-494H is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As a road segment, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-494H. The resource offers limited potential to address important research questions about *Transportation and Water Conveyance* in the American Period (*see* Section 3.3.3). CA-MER-494H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-494H does not appear to be actively maintained or used. A berm blocks access to much of the resource from Basalt Road, and the northern portion of the resource would be inundated in non-drought years. Overall, it remains in fair condition despite impacts from erosion and inundation and retains integrity of location, design, materials, and workmanship. Physically and functionally it lacks integrity of association, feeling, and setting because the quarry location (CA-MER-509H) it once supported is no longer in operation, dam construction has been completed, and the resource is partially inundated during non-drought years. Overall, CA-MER-494H retains fair integrity. CA-MER-494H is recommended not eligible for inclusion in the NRHP/CRHR.

#### **Description**

CA-MER-495H consists of a dirt road that is graded into the contour above the western end of Basalt Road and below a gated access road that leads to the Basalt Hill Quarry (CA-MER-509H). It ascends the hillslope from the northeast where it intersects a steep ravine as well as the quarry access road before continuing southwest and west towards the center of Section 28 in Township 10 South, Range 8 East. The eastern portion of the resource was first recorded during the 2012 inventory survey and the western portion of the alignment was mapped during the 2016 inventory survey. The total recorded road segment measures approximately 2,955 feet in length and 15 feet in width. The road is cut approximately 3-4 feet into the south-facing slope of a hillside and is built up about 2-3 feet on the downslope side. The road is wide enough for single vehicles to pass but not wide or stable enough to have supported heavy traffic or the large vehicles that would have been used to construct the B.F. Sisk Dam.

CA-MER-495H appears infrequently used and has been built above the inundation level of the reservoir, though it has been heavily impacted by erosion. The area surrounding the resource is fully exposed and marked by slopes of roughly 20°. The San Luis Reservoir is located just 750 feet to the northwest. Non-native grasses prevail along the road alignment, and no trees or shrubs are located in the vicinity.

**CA-MER-495H**  
**P-24-001989**  
**PL-SLLP-A-016**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-6**

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Area –  
West of  
Goosehead Point)**

### **Archival Research Summary**

CA-MER-495H is located in Township 10 South, Range 8 East in the southeast quarter of Section 28. Section 28 represents a half-section, with the unsectioned northern half subsumed by the San Luis Gonzaga Land Grant. Section 28 was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). The northern half of the southeast quarter, which subsumed most of the resource area, and the eastern half of the southwest quarter were later patented by Antonio Lopez on February 23, 1892 (Doc #2241, BLM# CACAAA 096296) (BLM 2016). In 1895, Lopez also patented the western half of the southwest quarter.

An 1860 GLO plat map shows the Butterfield Overland Mail Stage route and a telegraph line as they crossed Sections 12 and 13 well to the northeast of the resource, however no historic period features were depicted in Section 28. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho—a future alignment of SR 152—but does not show CA-MER-495H (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the road alignment (USGS 1920, 1940). The 1953 San Luis Creek 7.5-minute USGS topographic map shows an east-west trending unimproved road spanning Sections 27, 28, and 29 to the north of the resource, but it does not appear to correspond to CA-MER-495H (USGS 1953). The road segment may represent a later southwestern offshoot from the other alignment, which may indicate a 1940s-1950s date for CA-MER-495H. The 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969a) also fails to depict the resource, though it does depict the gated road to the Basalt Hill Quarry (CA-MER-509H).

Aerial photographs from 1946 and 1956 show the more northern east-west road alignment in the resource vicinity, but do not capture CA-MER-495H (Fairchild Aerial Surveys 1946; USDA 1957). CA-MER-495H passes approximately 750 feet south of a possible former homestead site (CA-MER-261H). Since CA-MER-495H features no associated artifacts and aerial photographs and historic period maps reveal only that it may have been present by the 1940s to 1950s, the road cannot be clearly linked to the Lopez land grant, the possible former homestead, or to any specific historic context or function.

### **NRHP/CRHR Evaluation**

CA-MER-495H is a historic period road segment that may have been constructed in the 1940s-1950s based on its proximity and likely association with an east-west trending road to the north. It is evaluated under the historic context of *Transportation Development* in the American Period (*see* Section 3.3.3). The construction date of CA-MER-495H and its period of use remain unclear, though it may have been associated with homesteaders or ranchers who required an east-west route outside of the San Luis Gonzaga Land Grant. The road segment could not be clearly



linked to any buildings, structures, or sites within the vicinity, though a possible former homestead site (CA-MER-261H), is located just 750 feet to the north. CA-MER-495H does not appear to have been linked to any significant events or developments in local or regional history. It is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-495H lies within a land grant patented to Antonio Lopez in 1892, however no links could be established between the construction or use of the road segment and Lopez or any subsequent landowners or leasees. Although the builder or builders of the road remain unknown, it is unlikely that they figured prominently in local or regional history. CA-MER-495H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-495H is an isolated road segment that could not be clearly linked to any other buildings, structures, or sites within the vicinity. The road segment is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. The resource is thus recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As an isolated road segment, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-495H. It offers very limited potential to address important research questions about *Transportation Development* in the American Period (*see* Section 3.3.3). The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-495H does not appear to be maintained or in active use. Although it has been impacted by erosion, it lies above the average waterline level of the San Luis Reservoir and remains in fair condition. It retains integrity of location, design, feeling, materials, and workmanship. It lacks integrity of association, however, because it could not be clearly linked to a particular time, event, individual, or purpose and could not be associated with other buildings, structures, or sites in the vicinity. Its integrity of setting has also likely been diminished by the inundation of the San Luis Reservoir. CA-MER-495H possesses fair overall integrity. The resource is recommended not eligible for listing in the NRHP/CRHR.

#### **Description**

CA-MER-509H, or the Basalt Hill Quarry, is a historic period industrial resource that spans 4,000 feet NW/SE by 5,000 feet NE/SW. It represents the main element of a quarry and separation plant complex built in 1963 to process basalt into riprap for construction of the B.F. Sisk Dam (Autobee 2011: 11-12; Berman 2012: pers. comm.; Reclamation 1974: 49). A smaller industrial resource (CA-MER-492H) that was connected to the Basalt Hill Quarry via a conveyor belt is located approximately 2,500 feet

**CA-MER-509H**  
**P-24-002154**  
**PL-SLLPIP-16-01**

**Recommended**  
**Not Eligible for**  
**Listing in the**

**NRHP/CRHR,  
(Non-Contributing  
Element to the  
B.F. Sisk  
Dam/San Luis  
Reservoir Historic  
District)**

downslope and to the northeast; it received riprap separated at the main quarry area that was then transported for construction of the dam and its related facilities. The conveyor belt was removed following construction of the dam, but the grade that supported it remains clearly visible. Two historic period earthworks roads (CA-MER-494H and PL-Sisk-01) linked the Basalt Hill Quarry to the dam area, while a second graded dirt road (CA-MER-493H) led from CA-MER-492H to the dam area.

**Appendix B,  
Figure B-6**

**Construction of  
Dam Raise (Basalt  
Hill Borrow Area;  
Access Road Area)**

The Basalt Hill Quarry has largely modified the entire western shoulder of Basalt Peak, which is located approximately 1,500 feet to the east and reaches a maximum elevation of 1,707 feet amsl. Descending from near the top of the hillslope, the quarry is divided into five terraces (Terraces 1-5) representing five elevations of the mining operation. Originally, four features were identified including a cairn with a metal post (Feature 1); a series of concrete equipment pads (Feature 2); a large gravity separator built into the hillside (Feature 3); and a triangular equipment pad (Feature 4) that may be associated with the operation of Feature 3. In 2020, Feature 4 was expanded to encompass the conveyor belt system, which includes the beltway alignment and three equipment pads: a triangular pad (4A), and two machinery mounts (4B and 4C). Few cultural materials were noted across the quarry area in 2016, but included a few pieces of milled lumber, heavy 3-inch diameter wire rope, nuts and bolts, heavy equipment parts, and pieces of metal grating. A single soft-top beverage can was found that dates from the late 1950s to the early 1960s (Maxwell 1993). An area near Feature 3 identified as Concentration 1 contains additional materials such as plate glass, indicating that some form of structure, potentially an operations office, once stood there. Two-track roads (CA-MER-494H and PL-Sisk-01) provide access to much of the site, and massive rock ramps, likely for heavy equipment, link the terraces.

The features present at the Basalt Hill Quarry reflect how infrastructure within the site was likely placed and used. Most significant was Feature 3, a large (85 feet N/S by 75 feet E/W) rock and aggregate size-sorter/separator that was built into a steep, north-facing slope at the northern edge of the resource. This 80-foot tall reinforced concrete structure was used to sort larger mined materials from the quarry into various sizes for use in different locations or aspects of the dam's construction. Material from the quarry was used for rock fill, riprap, and bedding. Quarried material was pushed into the top of Feature 3 and separated at the 8-inch size, with some materials crushed to manufacture bedding materials (California Department of Water Resources 1974: 279). The smaller fraction was transported via conveyor belt to CA-MER-492H where the material was picked up by trucks. The recorded Feature 4 conveyor beltway is a 2,800-foot long (NE/SW), 24-foot wide (NW/SE) road cut segment connecting the quarry to the processing site. The road is flat at the southwest upslope quarry end but has an 8° downslope to the northeast. Along the east side of this road cut, the alignment is built up approximately 6 inches above the roadbed grade. Along this raised portion,

parallel railroad ties measuring approximately 4-5 feet long by 12-18 inches wide are embedded perpendicular to the alignment and 20 feet apart. These wood ties likely supported the conveyor belt framework. The three associated concrete equipment pads likely supported the electric motor and equipment that ran the conveyor belt system (Autobee 2011:11).

Much of the Basalt Hill Quarry area has essentially been denuded of soils and surface vegetation, offering good (70-80%) ground surface visibility, though portions of the site are dominated by low grasses and occasional shrubs. The 1953 San Luis Creek 7.5-minute USGS topographic map shows that the site area featured a relatively gentle slope (5-6°) to the northwest, with a steep drop along the western margin of the landform. After the quarry was abandoned, the area had been leveled in five main, nearly flat terraces, with piles of rock spotting the landscape and some rock debris pushed off the steep western flank of the hillside. The area surrounding the site is dominated by waist-high and taller grasses, sparse mustard and thistle, and occasional trees in the lower lying areas. The Basalt Hill Quarry remains in fair condition with few visible impacts. The main impacts relate to the decommissioning of the resource—standing superstructures have been removed and there are very few artifacts present, likely as a result of cleanup activities following construction of the dam. The conveyor belt system, likewise, now lacks its machinery and belts as well as being impacted by erosion and vegetation growth.

#### **Archival Research Summary**

CA-MER-509H is located in Township 10 South, Range 8 East in Section 33. All of Section 33 was patented to the Southern Pacific Railroad Company on April 20, 1875 (Doc #4, BLM# CACAAA 093859) (BLM 2016), though no railroad was ever built through the area. An 1860 GLO plat map depicts drainages along the northern edge of the section, but no historic period development (BLM 2016).

The 1920 Pacheco Pass and 1922 San Luis Creek 15-minute USGS topographic maps do not show the quarry or any access routes at the site location, though they do show that later quarrying activates flattened much of the Basalt Hill area (USGS 1920, 1922a). Similarly, the 1940 Pacheco Pass 15-minute USGS topographic map does not show any historic period development within the site area (USGS 1940). The 1953 San Luis Creek 7.5-minute USGS topographic map shows that the resource area remained unmodified (USGS 1953), though a fire lookout (P-24-000078) and a south-trending access road had been established on the top of Basalt Hill by that time. The Basalt Hill Quarry complex first appears on 1964 and 1967 aerial photographs and on the 1969 San Luis Dam 7.5-minute USGS topographic map (Fairchild Aerial Surveys 1964; NETROnline 1967; USGS 1969a), which also depict the San Luis Reservoir and one of the features at CA-MER-492H. This supports historic period accounts that the Basalt Hill Quarry and separation plant complex were established in 1963 to support construction of the B.F. Sisk Dam and San Luis Reservoir,

which were completed in 1967 (Autobee 2011: 11-12; Reclamation 1974: 49).

In describing how the complex would have operated, Autobee (2011: 11) noted that

Rock for zones 4 and 5 on the upstream face of the dam were extracted from a quarry at the top of nearby Basalt Hill. The quarry-run rock was excavated with a 15 cubic yard electric shovel and transported by 75-ton trucks to a separation plant. This plant separated the rock into plus-and-minus nine-inch sizes. Huge bar screens directed the larger size rock into a hopper that loaded the zone 5 material into 60-ton rear-dump trucks. The trucks had special braking systems for hauling safely down the steep access road. The smaller zone 4 rock dropped onto a 3,200-foot long conveyor belt down the hillside. This ended on a cantilevered tower over a 100-foot high stockpile at the bottom. There was a drive-through tunnel under the pile that allowed 100-ton trucks to be loaded in two minutes.

The Basalt Hill Quarry and separation plant complex was thus used for quarrying and separating rock fill, bedding, and riprap. CA-MER-492H would have been used to receive “smaller zone 4 rock” transported from the Basalt Hill Quarry via the “3,200-foot long conveyor belt” (Autobee 2011: 11). An electric motor was used to start the conveyor belt moving and then gravity completed moving loads downhill which allowed the motor to become a generator to feed power back into the construction site’s transmission circuit (Autobee 2011:11-12; Cotter 1963:1068).

After construction of the B.F. Sisk Dam was completed in 1967, the quarry and riprap separation plant were shut down. The conveyor belt linking the Basalt Hill Quarry to CA-MER-492H was removed, and superstructures were dismantled as a part of site cleanup (Autobee 2011: 11). The quarry has been intermittently used since 1967 to supply repair materials for various SWP facilities (Clinkenbeard 1999:23). The gravity rock separator at CA-MER-509H represents a substantial structure, though it was not unique. Similar separators were built for the 1966-1971 construction of Cedar Springs Dam and Silverwood Lake in Southern California (California State Parks 2009:8).

#### **NRHP/CRHR Evaluation**

CA-MER-509H is a historic period resource that comprised the main element of the Basalt Hill Quarry and separation plant complex. This complex was established in 1963 to support the construction of the B.F. Sisk Dam and the San Luis Reservoir and was a part of the larger dam system. CA-MER-509H is evaluated as a part of that larger system under

the historic context of *Water Conveyance* in the American Period (*see* Section 3.3.3).

The B.F. Sisk Dam and its appurtenant features were recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for its contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). As a feature within the B.F. Sisk Dam/San Luis Reservoir Historic District, CA-MER-509H may be regarded as a contributing or non-contributing element under Criterion A/1. A connection to significant historic period events or trends is insufficient by itself to render a resource eligible for listing in the NRHP/CRHR under Criterion A/1. Rather, the role the resource played in those events or trends must be significant. The dam symbolizes the first and only state-federal collaboration in California water development to be conducted on such a large scale (Autobee 2011). The Basalt Hill Quarry and separation plant complex were created and used to support the construction of the B.F. Sisk Dam, however its role in the development of the dam and its key facilities was transitory and not sufficiently significant to render CA-MER-509H a critical part of the dam complex. CA-MER-509H is recommended as non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion A/1.

No connection between the resource and one or more individuals significant in local, state, or national history could be established. Although the dam is named for former U.S. Congressman Bernice Sisk, that association is commemorative and too tenuous to be regarded as significant under NRHP/CRHR Criterion B/2. CA-MER-509H is thus recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion B/2.

The Basalt Hill Quarry and separation plant complex were used for quarrying and separating rock fill, bedding, and riprap. Structurally, the complex is not unique or distinctive in engineering or architecture. Cedar Spring Dam and Silverwood Lake in Southern California also used a gravity separation plant when quarrying rock for construction in the 1960s (California Dept. of Water Resources 1974: 328). Similarly, other elements of CA-MER-509H such as the terraces and other features are not structurally unique or distinctive. The conveyor belt system used a combined electric motor and gravity system to run the conveyor belt, which in turn generated power for other elements of the system. This subsystem was noted in the *Minerals Yearbook, 1963* and *Engineering News Record* along with a general description of the overall system processes (Cotter 1963:1068; *Engineering News Record* 1963:46). The innovation does not appear to have been singled out as significant, and the associated machinery and motor were removed when the quarry closed thus leaving

no physical trace. CA-MER-509H is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion C/3.

As an industrial resource, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-509H, and few surface artifacts remain. Much of the research potential for the Basalt Hill Quarry and separation plant complex may be derived from archival documents and historic period photographs rather than through the resource's physical remnants. CA-MER-509H is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion D/4.

CA-MER-509H is not actively maintained and has not been used since the 1980s. It remains in fair condition despite impacts from decommissioning and retains integrity of location and workmanship. Integrity of materials is diminished because portions of the resource have been removed. It retains integrity of setting and association as the reservoir and dam are nearby, though integrity of association has been somewhat lessened by the removal of superstructures (i.e., possible structure near Concentration 1, conveyor belt elements) that were a part of the site and that tied the site to other areas of the complex. The aspect of feeling also has been diminished as construction of the dam and reservoir have long been completed. CA-MER-509H possesses fair overall integrity. It is recommended as a non-contributing element to the NRHP/CRHR eligibility of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018).

**CA-MER-510H**  
**P-24-002155**  
**PL-SLLPIP-16-02**

**Determined Not Eligible for Listing in the NRHP**  
**Recommended Not Eligible for Listing in the CRHR**

**Appendix B,**  
**Figure B-4**

**Construction of Dam Raise (Borrow Area 6 - South of O'Neill Forebay)**

#### **Site Description**

CA-MER-510H consists of a concrete foundation pad (Feature 1) with four raised concrete blocks with 1-inch diameter threaded studs with nuts. Approximately 100 feet east-southeast of Feature 1 is a large basalt rock with a 5-inch diameter bore hole drilled through it that does not appear to be associated with the resource. The concrete foundation pad may have supported compressors or similar equipment, but its function is unclear. Feature 1 is shaped roughly like the Roman numeral "II" and is made from rounded aggregate; it has a smoothed surface and beveled edges. No artifacts were noted in association with the feature, and its date of construction remains indeterminate. Nearby structures depicted on historic period topographic maps of the area indicate that the foundation may date to the 1940s or 1950s.

CA-MER-510H is located on the west side of the San Joaquin Valley along the southern shore of the O'Neill Forebay in a flat, open area. Surface visibility is poor due to dense knee-high vegetation that includes grasses, foxtails, mustard weed, vinegar weed, and sticky tarweed. The site is located roughly 80 feet south of an inoperative electric fence and 100 feet south of an east-west trending access road.

### **Archival Research Summary**

CA-MER-510H is located in Township 10 South, Range 8 East in the northwest corner of Section 13. An 1860 GLO plat map depicts the Butterfield Overland Stage route and telegraph line in Section 13 but does not depict any structures near the resource location (BLM 2016). The Southern Pacific Railroad Company patented all of Section 13 on April 20, 1875, (BLM 2016) but did not develop the land.

The 1920 Pacheco Pass 15-minute USGS topographic map shows that the original alignment of SR 152 passed through Section 13 near the site location (USGS 1920). By 1940, three houses were depicted on the General Highway Map of Merced County within Section 13, roughly 0.25 miles to the west, south-southwest, and south-southeast of the resource location (DPW-DH 1940). The 1940 Pacheco Pass 15-minute USGS topographic map shows that SR 152 had by then been rerouted to the southern edge of Section 13; it also shows that a series of telegraph lines followed the 1920 road alignment to the western edge of Section 13 before proceeding south along the section line to follow the new road alignment (USGS 1940). The 1940 map portrays a cluster of four buildings and an access road to the northeast of the resource area. The 1953 San Luis Creek 7.5-minute topographic map shows a house and windmill to the northeast of the site area, while the 1969 San Luis Dam 7.5-minute USGS topographic map shows the resource location to the south of O'Neill Forebay and to the north of a utility line (USGS 1953, 1969). Aerial photographs from 1946 depict structures to the northeast of the site area, but no structures could be clearly discerned near CA-MER-510H (Fairchild Aerial Surveys, Inc. 1946). CA-MER-510H may have been associated with the 1940s-era structures or with the 1950s-era house and windmill to the northeast.

### **NRHP/CRHR Evaluation**

CA-MER-510H is a historic period concrete foundation pad with no associated artifacts. The site is evaluated under the historic context of *Ranching and Agriculture* in the American Period (*see* Section 3.3.3). Based on historic period maps, land patent records, and historic period aerial photographs, the site was most likely associated with nearby structures constructed in the 1940s to 1950s-era. The site is also located near the 1940s-era alignment of SR 152 and may be associated with it. If CA-MER-510H was associated with ranching and/or agricultural activities, it likely post-dated the height of ranching in the Central Valley (the late 19<sup>th</sup> century through the 1920s). CA-MER-510H does not appear to have been associated with events significant in local or regional history and is therefore recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No association between CA-MER-510H and one or more individuals was revealed through archival research, so no link could be established between the feature and persons significant in local or regional history. The site is

recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-510H consists of a concrete foundation that is missing its superstructure. The feature is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

The site is made up of a single foundation. A boulder with a 5-inch diameter drilled hole lies roughly 100 feet east-southeast of the foundation, but it is temporally non-diagnostic and its association with the resource remains uncertain. The site does not contain materials that might be used to address important research questions regarding ranching and agriculture, transportation, or other potential research themes. Thus, the site is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-510H is in poor condition; it is largely subsumed by vegetation and the concrete that forms the foundation is crumbling. Although the resource retains integrity of location, the equipment and/or superstructure that once made up a part of the site has been removed, thus affecting its integrity of design, materials, and workmanship. Its integrity of setting, feeling, and association has presumably been diminished by the construction of the reservoir and dam and, possibly, by the re-routing of SR 152. Overall, the integrity of CA-MER-510H is fair to poor. CA-MER-510H is recommended not eligible for listing in the NRHP/CRHR.

In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-510H is not eligible for listing in the NRHP (Polanco 2018).

#### **Site Description**

CA-MER-511H is an apparent historic period livestock corral and watering location. It consists of a large, welded water tank set atop railroad tie supports situated within a corral that features a loading chute, a livestock access gate, fencing, and two circular metal water troughs. The corral fencing is portable and constructed of a variety of materials including metal piping, barbed wire, 4-x-4 wooden posts, remnant telephone poles, and other wooden posts. The welded water tank is set atop railroad tie supports for stabilization and constructed in three sections. The tank measures 17 feet in length and stands 6 feet high. The livestock-loading chute is positioned at the far northwestern corner of the corral. The livestock access gate is situated along the northeastern side of the corral and is constructed from metal piping and sheet metal. The “W” ranch brand or logo was cut into areas of the metal gate and on the corral fencing adjacent to the gate but could not be identified as a current

**CA-MER-511H**  
**P-24-002156**  
**PL-SLLPIP-16-03**

**Determined Not  
Eligible for Listing  
in the NRHP**

**Recommended  
Not Eligible for  
Listing in the  
CRHR**



**Appendix B,  
Figure B-4**

**Construction of  
Dam Raise  
(Borrow Area 6 -  
South of O’Neill  
Forebay)**

California brand (CDFA 2010). One metal water trough lies within the corral; it is circular with a wood-framed float protector. An upside-down circular metal water trough lies outside and to the west of the corral. Most of the components that make up CA-MER-511H are portable and could be reconfigured.

CA-MER-511H is located 0.36 miles to the south of the O’Neill Forebay and 0.26 miles north of the current alignment of SR 152. It lies just south of a northwest-southeast oriented transmission line and north of a road and a second transmission line. A gated access road to the north extends to the east from the main road around O’Neill Forebay. The site area is fully exposed, relatively flat, and densely covered by knee-high grasses, mustard weed, vinegar weed, and sticky tar weed that limit ground surface visibility.

**Archival Research Summary**

CA-MER-511H is located in Township 10 South, Range 9 East in the southeast quarter of Section 13. An 1879 GLO plat map depicts the Butterfield Overland Mail route and a telegraph line crossing the northwest quarter of Section 13 but depicts nothing in the resource location (BLM 2016). The 1920 Pacheco Pass 15-minute USGS topographic map shows the original alignment of SR 152 through the northwest quarter of Section 13 (USGS 1920). The 1940 Pacheco Pass 15-minute USGS topographic map shows that SR 152 had been rerouted to the southern edge of Section 13 and that one cluster of four buildings and another cluster of two buildings had been built in the northeast quarter of Section 13 (USGS 1940a). The 1953 San Luis Creek 7.5-minute USGS topographic map shows two wells and a windmill in the northeast quarter and a northwest-southeast trending utility line (USGS 1953). The 1969 San Luis Dam 7.5-minute USGS topographic map portrays the O’Neill Forebay to the north as well as an east-west trending utility line that follows SR 152. It also depicts a paired utility line immediately north of the resource that trends northwest-southeast and does not follow the alignment depicted on the 1953 map (USGS 1972). A 1946 aerial photograph shows the structures in the northeast quarter of Section 13, but no features are discernible in the area surrounding CA-MER-511H. A 1940 General Highway Map of Merced County depicts houses in the southwest, southeast, and northwest quarters of Section 13, and it is possible that the livestock complex is associated with the house in the southeast quarter.

The Final EIS/EIR for the San Luis Reservoir State Recreation Area mentions recent use of the resource area:

March 19, 1996, Concession Contract, Cattle Grazing. Located at San Luis Reservoir State Recreation Area, Medeiros Area in Merced County. This is a legal contract between the State and Chet Vogt, granting Mr. Vogt the right, privilege, and duty to graze cattle on an approximately 1,000-acre tract of the Medeiros Area located south of O’Neill Forebay, for the period of 8

months. Attached to the contract is a CEQA project evaluation (Reclamation 2013: Appendix A: A-19).

The 1940 U.S. Census noted that George Vogt, a farmer, lived north of Merced in Merced County (United States Census Bureau 1940). Although the connection is tenuous and not traceable through land patent records, it is possible that the Vogts have had ties to the area since the historic period, perhaps as lease holders and/or landowners. Ultimately, CA-MER-511H could not be tied to any specific individuals or to a particular time period. The complex may be associated with ranching activities that pre-date the reservoir's construction (ca. 1940s-1950s) or it may be associated with San Luis Reservoir Recreation Area grazing leases (Reclamation 2013: Appendix A-19).

### **NRHP/CRHR Evaluation**

CA-MER-511H is a livestock complex that includes a water tank, a corral with a loading chute, a livestock access gate, fencing, and two circular metal water troughs that potentially date to the historic period. The site is evaluated under the historic context of *Ranching and Agriculture* in the American Period (*see* Section 3.3.3). Based historic period maps, land patent records, county history data, and chronological markers from the site's features, the site may have been constructed between 1919 and 1940, remaining in use into the late 20<sup>th</sup> century. The site post-dates the height of Central Valley ranching (the late 19<sup>th</sup> century through the 1920s). CA-MER-511H does not appear to have been associated with events significant in local or regional history and is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-511H may be associated with Chet Vogt and/or with George Vogt, though no clear link could be established between the site and any individual from the historic period. The site is thus recommended not eligible for the NRHP/CRHR under Criterion B/2.

CA-MER-511H is made up of components that are commonly used to control and maintain livestock (i.e., a water tank, a corral, a loading chute, a livestock access gate, fencing, and metal water troughs). None of these components is structurally unique, nor do they exemplify distinctive characteristics of a type, period, or method of construction. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

The resource is made up mostly of moveable livestock control features that could be reconfigured as required. No portable artifacts were noted at CA-MER-511H, and it could not be linked to a particular time period. The site does not contain materials that might be used to address important research questions concerning *Ranching and Agriculture* in the American

Period (*see* Section 3.3.3). CA-MER-511H is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-511H is in fair condition. The resource's integrity of location is uncertain given the potential mobility of many of its components. Its potential mobility also diminishes its integrity of design and workmanship, which are diminished by uncertainties regarding what features might be missing. Aspects of setting, association, and feeling may have been impacted by the construction of the dam and reservoir during the 1960s, or by the removal of the structures noted on historic period maps from the 1940s and 1950s (USGS 1940a, 1953). Overall, the resource possesses fair integrity. CA-MER-511H is recommended not eligible for listing in the NRHP/CRHR.

In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-511H is not eligible for listing in the NRHP (Polanco 2018).

#### Description

CA-MER-512H is a control center and helicopter landing pad that spans a 2-acre area atop a cut and leveled hill 0.65 miles east of the B.F. Sisk Dam and the San Luis Reservoir. Two well-developed asphalt roads provide access to the resource area from Basalt Road, which lies 300 feet to the southwest. The top of the hill that makes up the resource area was cut and leveled for the concrete landing pad and the spoils were used to expand its dimensions. Several features were identified at CA-MER-512H including two circular concrete equipment pads (Features 1 and 2), a white-painted boulder (Feature 3), two reflector posts (Features 4 and 5), two white lines painted on a portion of the landing pad (Feature 6), and an underground telecommunications/radio terminal (Feature 7).

Features 1 and 2 measure approximately 8 to 9 feet in diameter and rest at ground level. One pad has four metal pipe-lined holes in a triangular configuration with one hole in the center; the other pad has only three holes. The holes are situated in the center 12 inches of each pad and are threaded with 0.5-inch diameter pipe that likely served as attachments to equipment or former superstructures. Feature 3, the white-painted boulder, rests on the south side of the pad just west of an access road and may not be *in-situ*. It was likely used as a reflector for safety purposes. Features 4 and 5 are metal posts with orange reflectors located in the western portion of the resource area near the perimeter of the pad. The posts are vertical pipes that stand approximately 2 feet high with protruding wires that are inserted in a 1-foot diameter circular concrete post support. Feature 7, the telecommunications/radio terminal, lies within in the far western portion of the site. It consists of an upright post with wires and cables that extend underground. The only other cultural constituents noted at CA-MER-512H include two downed and cut wood

**CA-MER-512H**  
**P-24-002157**  
**PL-SLLPIP-16-05**

**Determined Not Eligible for Listing in the NRHP**

**Recommended Not Eligible for Listing in the CRHR**

**Appendix B, Figure B-4**

**Construction of Dam Raise (Potential Construction Staging Areas – Block East of B.F. Sisk Dam)**

distribution line poles that likely post-date the construction and use of the landing pad.

CA-MER-512H lies within an oak woodland vegetation community with sparsely scattered oaks. The site is in poor condition with much of the concrete landing pad eroded or no longer present. The immediate area is fully exposed and dominated by tall grasses and mustard weed that cover much of the landing pad. Features 1 and 2 lack any superstructure and the remaining features appear to be broken, dismantled, heavily eroded, or displaced.

### **Archival Research Summary**

CA-MER-512H is located in Township 10 South, Range 8 East in the unsectioned San Luis Gonzaga Land Grant. The San Luis Gonzaga Land Grant, which included much of Township 10 South, was patented to Juan Pérez Pacheco (Doc # PLC 234, BLM # CACAAA 094227) on May 16, 1871 (BLM 2016). An 1879 GLO plat map depicts the area outside of the land grant but does not show the area encompassing CA-MER-512H.

The 1940 Pacheco Pass 15-minute USGS topographic map and a 1946 aerial photograph do not depict CA-MER-512H but do portray the rise on which the helicopter landing pad would be built (USGS 1940a, Fairchild Aerial Surveys 1946). The 1950<sup>4</sup> San Luis Creek 7.5-minute USGS topographic map and a 1957 aerial view of the site show the headquarters of nearby San Luis Ranch but do not show the helicopter landing pad or the roads leading to it (USGS 1950, USDA-CSS 1957). The site first appears on the 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969a). Land grant and historic period map data offer no evidence of development within the resource area prior to the establishment of the helicopter landing pad.

An account of the groundbreaking ceremony for the B.F. Sisk Dam, which was captured in a 1962 film clip (YouTube 2016), may mention the resource area:

The still morning of August 18, 1962 grew warm as the sun rose over 15,000 people driving the two-lane Pacheco Pass Highway leading to the site of the San Luis Dam. They gathered to view President John F. Kennedy as he presided over the dam's groundbreaking ceremonies, and at 11:30a.m., the presidential helicopter landed near the 100-foot-long speakers' platform (Autobee 1996).

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<sup>4</sup> The 1950 San Luis Creek 7.5-minute USGS topographic map was based on 1950 aerial photographs and was field checked in 1953.

The California Department of Water Resources (1974: 276) noted that the B.F. Sisk Dam, initially called the San Luis Dam, was constructed in 1963-1967. The “General Plan and Sections of San Luis Dam and O’Neill Forebay” show a “helicopter pad” cut into the hilltop at the site location. The plan does not show the helicopter landing pad’s date of construction, but it almost certainly dates to the early 1960s period of dam construction and pre-dates the August 1962 groundbreaking ceremony (California Department of Water Resources 1974: 278).

#### **NRHP/CRHR Evaluation**

CA-MER-512H is a historic period helicopter landing pad and control center that includes two circular concrete equipment pads (Features 1 and 2), a white-painted boulder (Feature 3), two reflector posts (Features 4 and 5), two white lines painted on a portion of the landing pad (Feature 6), and an underground telecommunications/radio terminal (Feature 7). Historic period maps indicate that the site was built after 1957 and before 1967, though it was likely constructed shortly before the 1962 groundbreaking ceremony or during the 1963-1967 period of dam construction (California Department of Water Resources 1974: 276).

On August 18, 1962, John F. Kennedy arrived by helicopter for the San Luis Dam groundbreaking ceremony. After comparing film footage of the event and current inventory survey photographs, it remains unclear whether CA-MER-512H marks the location of the President’s arrival or of any other groundbreaking event (YouTube 2016). The B.F. Sisk Dam has been recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for its contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). No definitive link could be made between CA-MER-512H and the 1962 groundbreaking ceremony, however, which was one of many commemorative events associated with CVP and SWP history. Any role CA-MER-512H may have played in the dam’s construction or commemoration remains unclear. CA-MER-512H is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

Although CA-MER-512H lay within the San Luis Gonzaga Land Grant conferred to Juan Pérez Pacheco (Doc # PLC 234, BLM # CACAAA 094227) (BLM 2016), there is no evidence that the resource area was used or developed during the rancho period. CA-MER-512H may have been associated with President John F. Kennedy’s 1962 groundbreaking ceremony for the B.F. Sisk Dam. If it was associated, its connection to the president’s visit was tenuous and transitory, thus insufficient to render the site eligible for listing in the NRHP/CRHR under Criterion B/2. No other potential connection between CA-MER-512H and one or more people significant in local, state, or national history could be established. CA-

MER-512H is thus recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

The site consists of a control center and helicopter landing pad on a leveled hilltop with seven internal features. CA-MER-512H does not display distinctive characteristics of a type, period, or method of construction or represent the work of a master engineer. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-512H has no associated artifact deposit and consists only of two concrete equipment pads, a white-painted boulder, two reflector posts, two white painted landing pad lines, and an underground telecommunications/radio terminal. Based on its extant features and the lack of any associated artifact deposit, the site does not offer sufficient data potential to contribute to our understanding of dam and reservoir construction, transportation systems, or other potential research themes. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The resource retains integrity of location, setting, feeling, and association. Its integrity of design, materials, and workmanship have been somewhat diminished by the lack of superstructures at two of the site's features and by the condition of the site as a whole (e.g., its features have been mostly broken, dismantled, heavily eroded, or displaced).

Overall, the integrity of the site is fair. CA-MER-512H is recommended not eligible for listing in the NRHP/CRHR. In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-512H is not eligible for listing in the NRHP (Polanco 2018).

#### **Description**

CA-MER-513H is a historic period road segment situated on a low berm. The two-lane segment is located east of the B.F. Sisk Dam, trends east-southeast from the 1940s-era alignment of SR 152, and lies just 210 feet to the south of the modern SR 152 alignment. Most of the road segment is asphalt-paved with a white-painted centerline, though an unpaved portion of the road trends to the northwest. The entire road segment measures approximately 300 feet in length and 30 feet in width. The underlying berm measures 50 feet in width and stands roughly 4.5 feet above the ground surface and slightly higher than the 1940s-era SR 152 alignment. No historic period structures or features were noted in association with the road, which has largely become overgrown with dense grasses and mustard weed. A portion of a metal Ford emblem was noted in association with the resource and likely dates to the 1960s.

**CA-MER-513H**  
**P-24-002158**  
**PL-SLLPIP-16-06**

**Determined Not  
Eligible for Listing  
in the NRHP**

**Recommended  
Not Eligible for  
Listing in the  
CRHR**

**Appendix B,  
Figure B-4**

**Construction of  
Dam Raise  
(Potential  
Construction  
Staging Areas –  
Block East of B.F.  
Sisk Dam)**

CA-MER-513H is located on a broad, relatively level (1-2°) plain immediately south of Gonzaga Road and east of Basalt Road. A large engineered drainage lies immediately south of the resource. CA-MER-513H is fully exposed, though dense vegetation greatly impedes ground surface visibility.

**Archival Research Summary**

CA-MER-513H is located in Township 10 South, Range 8 East in the unsectioned San Luis Gonzaga Land Grant just west of Section 13. The land grant was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts the Butterfield Overland Mail route and a telegraph line within the northwest quarter of Section 13 but does not depict the CA-MER-513H road segment. The 1920 Pacheco Pass 15-minute USGS topographic map does not depict the resource (USGS 1920), though it does show the original alignment of SR 152 through the northern half of Section 13. The 1940 Pacheco Pass 15-minute USGS topographic map also does not portray the resource (USGS 1940a), though it does show that SR 152 had by then been rerouted along the southern edge of Section 13. The 1953 San Luis Creek and 1969 San Luis Dam 7.5-minute USGS topographic maps show the 1940s-era alignment of SR 152, now Gonzaga Road, which appears to pass immediately north of the resource (USGS 1953, 1969), though CA-MER-513H itself is not depicted.

The 1940 General Highway Map of Merced County shows a house to the west of the southwest quarter of Section 13 and north of the recorded road segment but does not depict a road to the south of the 1940s-era alignment of SR 152 (DPW-DH 1940). A 1946 aerial photograph, however, shows what may be a small structure at the approximate location of the resource (Fairchild Aerial Surveys 1946). CA-MER-513H may thus represent a turnout for some sort of service structure or roadside feature that no longer remains extant.

**NRHP/CRHR Evaluation**

CA-MER-513H comprises a short road segment that was likely constructed prior to 1946 and may have been associated with the 1940s-era alignment of SR 152. The resource is evaluated under the historic context of *Transportation Development* in the American Period (*see* Section 3.3.3). Historic period map evidence for CA-MER-513H was inconclusive, though a 1946 aerial photograph indicates that the resources may have been associated with a small structure just south of the 1940s-era alignment of SR 152 (Fairchild Aerial Surveys 1946). Ultimately, the resource could not be clearly linked to any extant structure or feature and thus could not be tied to a specific function or period. As a remnant road segment with no clear ties to significant historic period events or trends, CA-MER-513H is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-513H could not be linked to any individual or group of individuals, historically significant or otherwise. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

Although it may have been associated with the 1940s-era alignment of SR 152 and possibly with a former structure located south of the highway, CA-MER-513H could not be clearly linked to any extant buildings, structures, or sites within the vicinity. The road segment is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As an isolated road segment, there is little potential to encounter subsurface components or vertical stratigraphy along CA-MER-513H. Lacking any secure context or association, the resource offers little potential to address important research questions about *Transportation Development* in the American Period (*see* Section 3.3.3). Thus, CA-MER-513H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The overall condition of CA-MER-513H is poor, as the road segment has become almost wholly obscured by vegetation. It retains integrity location and materials, though vegetation growth has diminished its aspects of workmanship and materials. Integrity of design has been diminished by modern construction and development within the reservoir area, which also has affected its integrity of setting. Aspects of association and feeling have presumably been impacted by reservoir construction and the re-routing of the 1940s-era alignment of SR 152. The overall integrity of CA-MER-513H is thus poor to fair. CA-MER-513H is recommended not eligible for listing in the NRHP/CRHR.

In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-513H is not eligible for listing in the NRHP (Polanco 2018).

#### **Description**

**CA-MER-514H**  
**P-24-002159**  
**PL-SLLPIP-16-07**

CA-MER-514H is an excavated earthen ditch that measures approximately 0.98 miles in length, 5 to 6 feet in width at the top, 1 to 2 feet in width at the bottom, and varies from 2 to 4 feet in depth. The ditch originates in the southwest near a deeply entrenched drainage that is partially lined with concrete. The drainage and ditch are located adjacent to an access road associated with the B.F. Sisk Dam. The ditch head lies above the depth of the entrenched concrete ditch, which may indicate that this resource predates dam construction or that it serves as overflow for the larger



**Determined Not Eligible for Listing in the NRHP Recommended Not Eligible for Listing in the CRHR**

**Appendix B, Figure B-4**

**Construction of Raise Dam (Potential Construction Staging Areas – Block East of B.F. Sisk Dam)**

concrete channel. The ditch trends to the northeast and terminates roughly 900 feet southwest of the modern alignment of SR 152.

CA-MER-514H loosely parallels Basalt Road to the east. It passes through a broad, gently sloping (1-2°) open flat dominated by dense, low grasses that limit ground surface visibility. The B.F. Sisk Dam is located roughly 800 feet to the southwest of the southern end of the ditch. A historic period road segment (CA-MER-513H) is located 760 feet to the east of the northern end of the ditch.

#### **Archival Research Summary**

CA-MER-514H is located in Township 10 South, Range 8 East in the unsectioned San Luis Gonzaga Land Grant. Section 24 is located to the east, and Section 13 is located to the northeast. The resource area was patented on May 16, 1871 to Juan Pérez Pacheco (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts only the area not covered by the land grant. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho as well as two alternate stage routes but does not depict the earthen ditch (BLM 2016). The 1920 Pacheco Pass 15-minute USGS topographic map shows the original alignment of SR 152 through the north of Section 13 while the 1940 Pacheco Pass 15-minute USGS topographic map shows that SR 152 had been rerouted to the southern edge of Section 13 (USGS 1920, 1940a). Neither map depicts the earthen ditch. The 1953 San Luis Creek and the 1969 San Luis Dam 7.5-minute USGS topographic maps show the 1940s-era and modern alignments of SR 152 respectively, but neither depict CA-MER-514H (USGS 1953, 1969). An aerial photograph from 1946 shows what appears to be the ditch to the south of SR 152 and south-southeast of the San Luis Ranch headquarters, so it appears that the resource was present by that time (Fairchild Aerial Surveys, Inc. 1946).

The San Luis Gonzaga Rancho was a Mexican land grant given in 1843 to Juan Pérez Pacheco and José Maria Mejía. The grant was bounded by the San Joaquin River to the east; Los Banos Creek to the south; and *Rancho Ausaymas y San Felipe* to the west, which was held by Juan Pacheco's father Francisco Pérez Pacheco (Beck and Haase 1974). When Juan Pacheco died in 1855, the property reverted to his father Francisco. Francisco died in 1860. His property, including the San Luis Gonzaga Rancho and half of *Rancho Ausaymas y San Felipe*, passed to his only surviving child Ysidora after Francisco's wife died in 1892. Ysidora married Mariano Malarin in 1850 and had two daughters. One married Dr. Ramon Roca while the other married Dr. Luis Fatjo. The Fatjos and their children inherited the Merced portion of San Luis Gonzaga Rancho (Hoover et al. 1999: 200). In 1949, Paula Fatjo, the great-great granddaughter of Francisco Pérez Pacheco, moved to the rancho and remodeled the original 1843 adobe that once stood on the property (Pierce 1977: 107). San Luis Gonzaga was an operating cattle ranch during Paula Fatjo's time, though she also bred and

boarded Arabian horses (Pierce 1977: 107-111). If the earthen ditch was present by 1946, it may or may not have been used by Fatjo.

### **NRHP/CRHR Evaluation**

CA-MER-514H is a historic period earthen ditch with no associated artifacts that appears to have been constructed sometime prior to 1946 (Fairchild Aerial Surveys, Inc. 1946). The purpose of the ditch remains unknown, and its possible association with other historic period features or activities remains unclear. It may have been used for agricultural or ranching activities, but it cannot be securely linked to a particular historic context. CA-MER-514H does not appear to have been associated with events significant in local or regional history and is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No association between CA-MER-514H and any individuals was revealed through archival research, so no link could be established between the feature and one or more persons significant in local or regional history. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-514H consists of an earthen ditch with no associated artifacts, features, or structures. The ditch is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. CA-MER-514H is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-514H contains no artifacts or materials that might be used to link the resource to a particular time period. It lacks the data potential to address important research questions regarding early farming or ranching activities, water conveyance, or other potential research themes. The resource is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-514H remains in fair condition. It retains integrity of location, materials, and workmanship. Aspects of design, association, and feeling are diminished because no clear functional or temporal context could be established for the resource. As it appears to predate 1946, reservoir and dam construction have likely impacted the resource's integrity of setting. Overall, the integrity of CA-MER-514H is fair to poor. CA-MER-514H is recommended not eligible for listing in the NRHP/CRHR.

In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-514H is not eligible for listing in the NRHP (Polanco 2018).

	<b>Description</b>
<b>CA-MER-520H</b> <b>P-24-002165</b> <b>PL-SLLPIP-16-14</b>	<p>CA-MER-520H consists of 38 historic period survey markers, elevation markers, control points, or observation wells that are associated with the construction, use, and maintenance of the B.F. Sisk Dam. The markers and control points include 15 stamped brass caps set in concrete pads, two 1.5-foot tall concrete markers, and four 5-foot tall concrete obelisks. Some of the markers are surrounded by piled rocks or are painted silver, presumably to aid identification and/or to offer protection from disturbance. One marker is noteworthy because the surrounding concrete pad features inscribed names, dates (1966), handprints, a child's footprint, and a stylized drawing. The 15 brass markers are stamped with "US Department of the Interior" and below that "Bureau of Reclamation" with an elevation in feet amsl. There are also 17 observation wells that consist of metal or plastic tubes that extend from the ground surface with associated marker signs; they are used to monitor ground water levels and potential dam seepage.</p>
<b>Determined Not Eligible for Listing in the NRHP</b>	<p>All of the markers and observation wells that make up CA-MER-520H are located on the eastern side of the San Luis Reservoir, and all but two are located to the east of the B.F. Sisk Dam. Thirty-six of the survey markers or observation wells are positioned between a point roughly 0.6 miles north of the Gianelli Pumping Station and below SR 152. They extend south to near the southern edge of the dam. From west to east, they are positioned between the dam and the eastern edge of the San Luis Gonzaga land grant. Two 5-foot tall concrete obelisks lie outside of that area. One is positioned near the 697-foot elevation point on a promontory 0.9 miles southwest of the dam while another is positioned near the top of Basalt Hill. The condition of these survey markers and observation wells varies. Some have fallen into disuse while others appear to be actively maintained.</p> <p>The setting for these markers and observation wells differs greatly. Some, including those adjacent to the B.F. Sisk Dam, lie within heavily modified environments while others lie within undisturbed areas featuring dense, high grasses and shrubs. The survey markers likely served as benchmarks for the survey and construction of the B.F. Sisk Dam and its appurtenant features. The 5-foot tall concrete obelisks may have acted as major control points while the other markers may have fulfilled more localized survey or construction needs.</p>
<b>Recommended Not Eligible for Listing in the CRHR</b>	<b>Archival Research Summary</b>
<b>Appendix B, Figures B-4 and B-6</b>	<p>The California Department of Water Resources (1974: 276) noted that the B.F. Sisk Dam, formerly the San Luis Dam, was constructed between 1963 and 1967. The isolated survey markers, elevation markers, control points, and observation wells that make up CA-MER-520H were likely established shortly before to shortly after that period. The site features occur in Township 10 South, Range 8 East in the unsectioned San Luis Gonzaga Land Grant and in Section 34. The 5-foot tall concrete obelisks occur near USGS elevation benchmark locations, but do not precisely correspond to</p>
<b>Construction of Dam Raise (Downstream Stability Berms/Fill Impact Areas; Potential Construction Staging Areas)</b>	

them. They and the other concrete markers are not depicted on USGS topographic maps (USGS 1920, 1940a, 1969), nor do they appear on a 1957 aerial view of the vicinity (USDA-CSS 1957).

### **NRHP/CRHR Evaluation**

CA-MER-520H comprises a series of historic period survey markers, elevation markers, control points, and observation wells that were likely set in place prior to or shortly after the 1963 to 1967 construction period for the B.F. Sisk Dam (California Department of Water Resources 1974: 276). The dam and its associated structures have been recommended eligible for listing in the NRHP and the CRHR under Criterion A/1 as a historic district significant in the development of the CVP and SWP and important to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley. CA-MER-520H would have been used for surveying and engineering in support of the dam's construction, while the observation wells have been used to measure seepage as a part of dam monitoring and maintenance. Though important in practical terms, these features played a minor role in the overall development of the B.F. Sisk Dam system. CA-MER-512H is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No connection between CA-MER-520H and one or more people significant in local, state, or national history could be established. CA-MER-520H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-520H consists of a series of isolated features that do not display distinctive characteristics of a type, period, or method of construction, nor do they represent the work of a master engineer. CA-MER-520H is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-520H is made up of survey markers, elevation markers, control points, and observation wells that lack associated artifacts or deposits. They do not offer sufficient data potential, either individually or collectively, to contribute to our understanding of water conveyance systems, dam and reservoir construction, or other potential research themes. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The individual elements of CA-MER-520H retain integrity of location, setting, feeling, association, materials, and workmanship. Their integrity of design, however, may have been somewhat diminished because it is unclear how some markers were used or how they may have been configured when they were first put in place. Overall, CA-MER-520H

possesses good integrity. CA-MER-520H is commended not eligible for listing in the NRHP/CRHR.

In support of NHPA Section 106 Consultation for the B.F. Sisk Dam Corrective Action Study Geotechnical Investigations, Merced County, California (Project # 18-SCA0-002.00 I), the SHPO concurred that CA-MER-520H is not eligible for listing in the NRHP (Polanco 2018).

### **Description**

CA-MER-521H is a historic period livestock watering locale that consists of an elevated, cylindrical water tank and a circular trough. Pacific Legacy personnel first recorded the site in 2013 during the Western Area Power Administration's San Luis Transmission Line Project (Holm et al. 2014). The final archaeological survey report for the project remains pending submission to the CCIC by Western. When the site was revisited in 2016, it was found to be unchanged and its features remained intact.

The elevated arc-welded, ferrous metal water tank sits on a railroad tie platform enclosed by an electric fence (Feature 1). It measures 6 feet in diameter and 17 feet in length. The circular trough (Feature 2) is made of corrugated metal with railroad tie and milled lumber supports. It measures 9 feet in diameter, stands 2 feet high, and rests on 52-inch high supports. No artifacts or other materials were observed in association with the site, which encompasses an area measuring 79 feet east-west by 66 feet north-south. CA-MER-521H is located roughly 0.5 miles to the southeast of the San Luis Reservoir on a flat floodplain that is dominated by dry seasonal grasses and mustard weed. It is located at an elevation of 259 feet amsl and is fully exposed.

### **Archival Research Summary**

CA-MER-521H lies within Section 18 of Township 10 South, Range 9 East. An 1855 GLO plat map of Section 18 depicted no structures or cultural features within the site vicinity (BLM 2016). Records indicate that on May 20, 1869, B. Bryant obtained a land patent for Sections 18, 24, 10, and 14 through cash entry (Doc #3279, #CACAAA 097971). A later 1888 GLO plat map depicts a road trending north from Section 19 through the south-central portion of Section 18 before terminating near the center of the section. The north-south road was labeled "the Road from D[???]'s San Luis and Stockton" and passed through an area that is today dominated by the Los Banos Substation (BLM 2016). The northwest corner of Section 18 was labeled as "the old sec. corner at corner of Miller and Lux's fence" (BLM 2016). An agricultural field lay at the center of the southern Section 18 line and was crossed by the road. The closest structure to CA-MER-521H depicted on the 1888 GLO plat map was described as "J. Alamanie's house," which was in the northwest corner of Section 19, roughly 1 mile to the southwest of CA-MER-521H (BLM 2016). Section 18 appears to have been used as an agricultural or ranch property in the 1870s to at least 1890, but it remains unclear if the property was associated with B. Bryant, J.

**CA-MER-521H**  
**P-24-002173**  
**SLTP-B-11**

**Determined Not Eligible for Listing in the NRHP**

**Recommended Not Eligible for Listing in the CRHR**

**Appendix A, Figure A-4**  
**Appendix B, Figure B-4**

**Construction of Dam Raise (Borrow Area 6 - South of O'Neill Forebay)**

Alamanie, or with the landholdings of Miller and Lux (*see* Section 3.3.3). Well records dating to 1916 revealed wells in Sections 1 and 24, but none were recorded in Section 18 (Mendenhall et al. 1916: Table 45; Davis et al. 1959).

The 1920 Pacheco Pass and 1922 San Luis Creek USGS 15-minute topographic maps show no buildings, structures, or access roads within the vicinity of CA-MER-521H (USGS 1920, 1922a). The 1940 Pacheco Pass USGS 15-minute topographic map shows no roads leading to the site area but does depict two structure complexes located approximately 0.5 miles to the northwest and southeast of CA-MER-521H. A utility line appeared along the southern border of Section 18 by 1939 (USGS 1940a). The 1953 San Luis Creek USGS 7.5-minute topographic shows no developments in Section 18, though it does depict several wells and windmills in the surrounding sections (USGS 1953).

The 1925 *History of Merced County* did not mention B. Bradley, who was noted in 1869 land patent records in association with Section 18, though it did mention that “Sadie Bradley was born at Mustang, Merced County” to William T. and Frances Bradley (Outcalt 1925: 650). In the 1900 U.S. Census, William T. Bradley was listed as a farmer in Newman Township, Merced County (U.S. Census Bureau 1900b). By 1906, voter records showed that the Bradleys resided in Ingomar where William T. Bradley ran a general store and served as postmaster (Merced County 1906). No clear association between the Bradley family and Section 18 or the CA-MER-521H vicinity could be established for the early to mid-20th century period when the water tank and trough were likely constructed, however, nor could the site be clearly linked to the Miller and Lux operation or to any other specific landowner.

### **NRHP/CRHR Evaluation**

CA-MER-521H appears to be a mid-20th century livestock watering locale. The site is evaluated under the historic context of Ranching and Agriculture in the American Period (*see* Section 3.3.3). Based on evidence derived from historic period maps, land patent records, a history of Merced County, and the site’s material constituents, the site appears to post-date the height (the late 19th century through the 1920s) of Central Valley agricultural and ranching development. The livestock watering locale does not appear to have been associated with significant events in local or state history, thus the site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

Archival research did not identify the owners and operators of the ranch with which CA-MER-521H was associated. The property may have been associated with B. Bryant, J. Alamanie, Miller and Lux, or with another unidentified party. No firm association with any individual or individuals

could be established. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-521H comprises features that are common to livestock watering locales (a water tank and a trough). The site's components are not structurally unique, and they do not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

The site is made up structural features and there is little potential to encounter a subsurface component. No artifacts were found in association with the site's features, and those features offer little potential to address important research questions about Technology or Economy within the context of Ranching and Agriculture in the American Period (see Section 3.3.3). Thus, the site is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-521H is in good condition despite the installation of an electric fence around the site. Although the construction of the San Luis Reservoir less than 0.5 miles to the northwest has likely diminished the site's integrity of feeling and association, it retains integrity of location, design, setting, materials, and workmanship and possesses good overall integrity. Despite its condition, CA-MER-521H is recommended not eligible for listing in the NRHP/CRHR. The SHPO concurred that CA-MER-521H is not eligible for listing in the NRHP on January 19, 2018 (Polanco 2018).

### **Description**

#### **PL-SISK-01**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-4**

**Construction Dam  
Raise (Basalt Hill  
Borrow Area;  
Potential  
Construction  
Staging Area –  
West of  
Goosehead Point;  
Access Road Area)**

PL-Sisk-01 is a historic period graded, graveled dirt road that measures approximately 10,060 feet or 1.9 miles in total length and 22.5 feet in width. It is oriented generally northeast-southwest and connects the Basalt Hill Quarry (CA-MER-509H) to the south with the industrial riprap production site (CA-MER-492H) to the north. One segment of the road was recorded during the 2020 inventory survey. The segment is located to the south of the current Basalt Road and follows the terrain contours downslope from the quarry northward and maintains an approximate 2-4° sloped road grade. The road segment has a shallow 10-inch drainage ditch and 8-foot wide, 18-inch tall berm on the upslope side and a 3.5-foot wide, 1.5-foot tall berm along downslope sections. A segment of the road was recorded descending southwest towards the Basalt Hill Quarry (CA-MER-509H) from the recorded portion (Segment 1) of historic road CA-MER-494H. CA-MER-494H is a second access road to Basalt Hill Quarry that lies to the east of PL-Sisk-01 and intersects with it at the north end of the quarry near its rock separator feature.

PL-Sisk-01 is located above the reservoir's high waterline and passes through a non-native grassland area with no trees or shrubs. The PL-Sisk-01 road alignment slopes (2-4°) downward to the northeast and is fully exposed. It exhibits impacts from erosion, current road maintenance

grading and vehicle use, and alteration of the road alignment at the north end intersection with Basalt Road from a Y-intersection to a T-intersection.

### **Archival Research Summary**

PL-Sisk-01 is located in Township 10 South, Range 8 East in the northeast quarter of Section 33, the southeast quarter of Section 28, and the southwestern quarter of Section 27. The southern half of Section 27 and all of Section 33 were patented to the Southern Pacific Railroad Company on April 20, 1875 (Doc #4, BLM# CACAAA 093859) (BLM 2020a). No railroad was built through the section, which was likely sold to unidentified ranchers or other landholders. The area includes a natural spring in Section 33, and the land may have been used or leased for ranching or grazing.

The area of Section 28 that encompasses the road is within the southern half of the southeast quarter patented to the State of California in 1924 (BLM# CACAAA 003258 01), and the northern half of the southeast quarter, patented to Antonio Lopez in 1892 (Doc #2241; BLM #CACAAA 096296) (BLM 2020b). Based on records for CA-MER-261H, the Lopez Homestead site, there is no physical connection between the historical homestead location and the PL-Sisk-01 road.

An 1860 GLO plat map shows the Butterfield Overland Mail route and a telegraph line roughly 2-3 miles northeast of PL-Sisk-01 as they crossed Sections 12 and 13 into Rancho San Luis Gonzaga lands, however no cultural features are depicted in Sections 27, 28, or 33 (BLM 2020c). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the road (USGS 1920, 1940). The 1953 San Luis Creek 15-minute USGS topographic map depicts an east-west road alignment across Sections 27 and 28 but it does not correspond to PL-Sisk-01 (USGS 1953). The 1969 San Luis Dam 7.5-minute USGS topographic map (USGS 1969) is the first map to depict the road alignment leading north from the Basalt Hill Quarry through Sections 33, 28, and 27. In Section 29 it connects to a road looping through industrial site CA-MER-492H. A 1957 aerial photograph of the quarry vicinity shows no sign of the road, though a 1964 aerial photograph clearly depicts the road segment (Cartwright and Co. 1957; Fairchild Aerial Surveys 1964). The road segment leads north from the Basalt Hill Quarry (CA-MER-509H).

Though the land patent information provided no historical information about the road, the historic period map and aerial photograph evidence indicates the road was built between 1957 and 1964. Those dates bracket 1963, the start of construction for the B.F. Sisk and O'Neill dams. The Basalt Hill Quarry supplied approximately 13.6 million cubic yards of basalt aggregate material for riprap and the construction of the B.F. Sisk and O'Neill dams, from 1963 to 1967 (Clinkenbeard 1999:7; California Department of Water Resources 1974:279). The road location connects the Basalt Hill Quarry (CA-MER-509H) and the riprap processing facility



(CA-MER-492H), which suggests the road was associated with dam construction. Clinkenbeard (1999:23) states that the Basalt Hill Quarry has been intermittently used since 1967 to supply repair materials for various SWP facilities. This suggests that the road has been used at least intermittently since it was first established.

### **NRHP/CRHR Evaluation**

PL-Sisk-01 is a historic period road that was constructed between 1957 and 1964, likely in 1963. It appeared to serve as a link between the Basalt Hill Quarry (CA-MER-509H) to the southwest and the historic period riprap production site (CA-MER-492H) to the northeast via Basalt Road and on to the B.F. Sisk Dam area. It appears to have been established and primarily used to support the construction of the B.F. Sisk Dam and the San Luis Reservoir. It is evaluated under the historic contexts of *Transportation* and *Water Conveyance* in the American Period (see Section 3.3.3).

The B.F. Sisk Dam has been recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for its contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). As a feature within the B.F. Sisk Dam system, PL-Sisk-01 may be regarded as a contributing or non-contributing element under Criterion A/1. A connection to significant historic period events or trends however does not necessarily render a resource eligible for listing in the NRHP/CRHR. Rather, the role the resource played in those events or trends must be significant. There is no evidence to indicate that PL-Sisk-01 was the first or only road used in the construction of the B.F. Sisk Dam. In fact, road CA-MER-494H also connects the quarry with the dam construction area. PL-Sisk-01 was likely used to convey stone from the Basalt Hill Quarry (CA-MER-509H) to the riprap production facility (CA-MER-492H) and the dam construction site, but it does not contribute in a meaningful way to the importance of the B.F. Sisk Dam system as a component within the wider CVP and SWP. In the evaluation of the B.F. Sisk Dam/San Luis Reservoir Historic District, JRP (2018:27-28) determined that the transportation grid within the district was a non-contributing element of the district. PL-Sisk-01 is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1 either on an individual level or as a contributing element of the B.F. Sisk Dam/San Luis Reservoir Historic District.

There is no evidence indicating that PL-Sisk-01 was developed or used during the 19<sup>th</sup> century, and no evidence linking the resource to early settlers or ranchers in the vicinity. No connection between the resource and one or more people significant in local, state, or national history could be established. PL-Sisk-01 is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

PL-Sisk-01 is a graded dirt and gravel road. It is not structurally unique, and it does not exemplify distinctive characteristics of a type, period, or method of construction, nor does it represent the work of a master engineer. PL-Sisk-01 is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As a road segment, there is little potential to encounter a subsurface component or feature with vertical stratigraphy at PL-Sisk-01. The resource offers limited potential to address important research questions about *Transportation* and *Water Conveyance* in the American Period (see Section 3.3.3). PL-Sisk-01 is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

PL-Sisk-01 appears to have been actively maintained and has been used since the dam construction era. Overall, it remains in fair condition despite impacts from erosion, recent maintenance grading, and alteration of its intersection with Basalt Road from a Y-intersection to a T-intersection. The road segment retains integrity of location, design, materials, and workmanship. Physically and functionally it lacks integrity of association, feeling, and setting because the quarry location (CA-MER-509H) and riprap facility (CA-MER-492H) it once supported are no longer in operation and dam construction has been completed. Overall, PL-Sisk-01 retains fair integrity. PL-Sisk-01 is recommended not eligible for inclusion in the NRHP/CRHR.

#### 7.4.2 SR 152 Modifications

Under the B.F. Sisk Dam Raise Alternative, fill embankment material would be added just southwest of SR 152 at PM R6.295 to protect the roadway, and the Cottonwood embankment and the portion of SR 152 that separates Cottonwood Bay and the San Luis Reservoir between PM R5.239 and PM R5.806 would be elevated 10 feet to accommodate an increase in the surface elevation of the reservoir. The boundaries of the B.F. Sisk Dam/San Luis Reservoir Historic District encompass the embankment and the full extents of Cottonwood Bay and the San Luis Reservoir. The Cottonwood embankment is not individually eligible for listing in the NRHP or CRHR but is regarded as an appurtenant feature of the San Luis Reservoir, a key contributor to the NRHP/CRHR eligibility of the district. Similar to the elevation of the dam, the elevation of the Cottonwood embankment is not expected to result in adverse effects to the B.F. Sisk Dam/San Luis Reservoir Historic District or any of its contributing elements (JRP 2018). The full extents of SR 152 have not been evaluated for listing in the NRHP/CRHR. The current highway alignment within the Project Area was built between 1963 and 1965 to bypass the San Luis Reservoir. It was converted from a two-lane to a four-lane highway between 1982 and 1992. No archaeological resources have been recorded near or along the Cottonwood embankment, and the potential to encounter such resources is extremely low, as the embankment comprises imported fill materials.

**Cottonwood  
Embankment  
(PL-Sisk-04)**

**Description**

The Cottonwood embankment, recorded during the 2020 inventory survey under the temporary designation PL-Sisk-04, is a historic period compacted-fill earthwork embankment that separates Cottonwood Bay

**Feature of the B.F. Sisk Dam/San Luis Reservoir Historic District**

**Recommended as a contributing feature of the B.F. Sisk Dam/San Luis Reservoir Historic District**

**Appendix B, Figure B-1**

**SR 152 Modifications (Cottonwood Bay and San Luis Reservoir)**

from the San Luis Reservoir and supports SR 152 as it crosses the north side of the reservoir. Cottonwood Bay collects water from the upstream Cottonwood Creek drainage and discharges it into the reservoir. The Cottonwood embankment measures approximately 2,000 feet long (WSW-ENE), 650 feet wide at the base, and 125 feet high at its maximum point. At the center of the base is an arched concrete culvert that allows water from Cottonwood Bay to drain into the San Luis Reservoir. The embankment was constructed between 1963 and 1965 as part of the larger project to relocate 12 miles of SR 152 from the San Luis Flat, which was inundated to form the San Luis Reservoir. The road relocation was both a California Division of Highways project and the first necessary phase associated with and preceding the construction of the B.F. Sisk Dam and San Luis Reservoir. The associated B.F. Sisk Dam was constructed between 1963 and 1967, creating the San Luis Reservoir and providing off-stream water storage and hydroelectric power generation for California's Central Valley. The B.F. Sisk Dam and San Luis Reservoir are both key contributing elements of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018). The PL-Sisk-04 embankment, which crosses and constrains the Cottonwood Bay portion of the San Luis Reservoir, is a feature of the San Luis Reservoir and therefore is an element of the historic district. The embankment was not specifically recorded or evaluated as a contributing or non-contributing element of the historic district in 2018, though it must be regarded and assessed as an element within the larger dam system.

PL-Sisk-04 is in good condition with few visible impacts. The access road to the east side of PL-Sisk-04 is well maintained. The only observable impacts to the embankment include vegetation growth between the rock riprap and the highway roadbed, and some erosion along the bay edge near the east end of the embankment. Vegetation includes seasonal grasses and bushes.

**Archival Research Summary**

PL-Sisk-04 is located in Township 9 South, Range 8 East in the southern half of the southeast quarter of Section 31. The 1920 Pacheco Pass 15-minute USGS topographic map shows that the current access road, Red Mountain Road, was present as "Cottonwood Grade" but does not show the embankment or Pacheco Pass Road in that location (USGS 1920). Historically, Pacheco Pass Road crossed San Luis Flat to the south, connecting San Luis Ranch with Gilroy and Los Banos (USGS 1920, 1940). The PL-Sisk-04 embankment and the rerouted Pacheco Pass highway (SR 152) first appear on the 1966 California State Highway Map and on a 1971 photo-revision of the 1955 Pacheco Pass 7.5-minute USGS topographic map (Division of Highways 1966; USGS 1955 PR1971).

The Cottonwood embankment was built between 1963 and 1965, concurrently with the beginning of construction on the B.F. Sisk Dam. Construction of the embankment was undertaken to allow SR 152 to be

relocated from the San Luis Flat, which was to be inundated to form the San Luis Reservoir. As reported in *California Highways and Public Works*, the contemporary journal of the California Division of Highways, the project to construct both the Cottonwood embankment or “Cottonwood Fill,” the “Big Fill,” and to terrace the hills toward the western end of the rerouted road alignment lasted two years from bid to completion and cost \$12 million (Kroeck 1963; Weaver 1965). The highway rerouting project was jointly financed by Reclamation, DWR, and the State Division of Highways as the first phase of building B.F. Sisk Dam and the San Luis Reservoir (Kroeck 1963:45). The overall SR 152 road project blasted, moved, and graded 11,400,000 cubic yards of local soil and rock to provide materials for at least fourteen fill areas, including the Cottonwood Fill and the Big Fill to the west to form a level roadbed across ridges and gulches (Kroeck 1963, Weaver 1965). The Cottonwood Fill used 2,000,000 cubic yards of fill over the top of an arched concrete culvert at the base of the PL-Sisk-04 embankment (Kroeck 1963; Weaver 1965:5). Plans for Cottonwood Fill were designed to account for periodic inundation by the reservoir to within 10 feet below the top of the embankment. The resulting embankment has a clay core with a 10-foot outer facing of rock to provide enough weight to prevent the embankment from sloughing (Kroeck 1963:47). The construction of the rerouted road segment was awarded to McNamara and Mannix, who completed the construction and opened two lanes of the four-lane roadway by January 1, 1965. The completion of the roadway coincided with work on the B.F. Sisk Dam, providing the new route for traffic so that the reservoir could be completed (Weaver 1965:2). The full four lanes of the 12-mile segment were open by 1966 (Division of Highways 1966).

The embankment and the overall reroute design were developed by Louis G. Kroeck, District Design Engineer, and the State Division of Highways in cooperation with DWR and Reclamation (Kroeck 1963:49). The California Division of Highways and Kroeck were awarded a bronze plaque and a scroll by the U.S. Congress for Highway 88, a scenic highway, on March 24, 1966 (California Highways and Public Works 1966:28-32).

The B.F. Sisk Dam was constructed between 1963 and 1967, creating the San Luis Reservoir and providing off-stream water storage and hydroelectric power generation for California’s Central Valley. The B.F. Sisk Dam and San Luis Reservoir are contributing elements of the B.F. Sisk Dam/San Luis Reservoir Historic District. The PL-Sisk-04 embankment, which crosses and constrains the Cottonwood Bay portion of the San Luis Reservoir, is a feature of the reservoir and therefore an element of the historic district

#### **NRHP/CRHR Evaluation**

PL-Sisk-04 is a historic period embankment associated with the rerouting of SR 152 along the north of San Luis Reservoir that allows connectivity between Cottonwood Bay and the reservoir. The 12-mile highway reroute

and the embankment across Cottonwood Bay, also referred to as the Cottonwood Fill, were constructed between 1963 and 1965 to support the construction of the B.F. Sisk Dam and the San Luis Reservoir. PL-Sisk-04, the Cottonwood embankment, is evaluated as a feature of the San Luis Reservoir and part of the larger dam and reservoir system under the historic context of *Water Conveyance* in the American Period (see Section 3.3.3) and following JRP's (2018) context for the B.F. Sisk Dam/San Luis Reservoir Historic District.

The B.F. Sisk Dam and its key features were recommended eligible for listing in the NRHP and CRHR under Criterion A/1 as a contributing element to the CVP and SWP and for their contribution to the expansion and sustainability of farmland and municipal and industrial development in the Central Valley (JRP 2018). As a feature within the B.F. Sisk Dam system, PL-Sisk-04 may be regarded as a contributing or non-contributing element under Criterion A/1. A connection to significant historic period events or trends is insufficient, in and of itself, to render a resource eligible for listing in the NRHP/CRHR under Criterion A/1. Rather, the role the resource played in those events or trends must be significant. The dam symbolizes the first and only state-federal collaboration in California water development to be conducted on such a large scale (Autobee 2011). SR 152 originally ran across the footprint of the future reservoir. The SR 152 rerouting was the first necessary step to support the construction of the B.F. Sisk Dam. The Cottonwood embankment was designed and built in a coordinated effort by the State Division of Highways, DWR, and Reclamation to simultaneously reroute the road segment over Cottonwood Creek, provide drainage from Cottonwood Creek into Cottonwood Bay, and provide access between Cottonwood Bay and the main portion of San Luis Reservoir. The PL-Sisk-04 feature was a crucial link between the bay and the reservoir. PL-Sisk-04 is thus regarded as a key feature of the reservoir, which is a contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion A/1.

The SR 152 construction design was developed by Louis G. Kroeck and the Division of Highways in cooperation with Reclamation and DWR. Although Kroeck and the Division of Highways won a Congressional award for a scenic highway (SR 88), their achievement was not connected to the SR 152 roadway segment or the larger B.F. Sisk Dam project. No direct connection between the resource and one or more individuals significant in local, state, or national history could be established. Although the dam is named for former U.S. Congressman Bernice Sisk, that association is commemorative and too tenuous to be regarded as significant under NRHP/CRHR Criterion B/2. PL-Sisk-04 is thus not recommended as a contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion B/2.

The Cottonwood embankment was one of two large fill areas requiring innovative engineering along the SR 152 reroute alignment and the one

most closely linked with the San Luis Reservoir. The embankment required special engineering design to accommodate the stresses of both the road and periodic inundation by the reservoir, as well as necessary storm drainage from Cottonwood Creek (Kroeck 1963:46-47). The engineering solution included a clay materials core, a free draining outer core, and a protective 10-foot rock facing slope to prevent sloughing of the interior core of the embankment. The structural problems for embankment stability required a distinctive engineering design solution, but not one that is unique. Based on the structural engineering design of the Cottonwood embankment, and consistent with other engineered elements within the historic district, PL-Sisk-04 is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion C/3.

As a structural resource, there is little potential to encounter a subsurface cultural component or vertical stratigraphy at PL-Sisk-04, and no surface artifacts associated with the structure have been observed. Much of the research potential for the SR 152 reroute and PL-Sisk-04 embankment may be found through archival documents and historic period photographs rather than through the resource's physical elements. PL-Sisk-04 is recommended as a non-contributing element to the B.F. Sisk Dam system under NRHP/CRHR Criterion D/4.

PL-Sisk-04 is actively used and maintained as a support for SR 152 and as an access point between Cottonwood Bay and the San Luis Reservoir. It remains in good condition with few impacts from minor vegetation growth. The embankment retains integrity of location, design, and workmanship, as the highway and reservoir have not been substantially altered since completion. It retains integrity of setting and association, as the embankment is a direct and integral link between the bay and reservoir, and the associated dam is nearby. The overall integrity of PL-Sisk-04 is good. Although the B.F. Sisk Dam/San Luis Reservoir Historic District does not include the transportation grid as a contributing element, the PL-Sisk-04 embankment is both a support to the road alignment and a feature of the San Luis Reservoir itself (JRP 2018:27-28). As a feature of the reservoir with good integrity, PL-Sisk-04 is recommended as a contributing element to the NRHP/CRHR eligibility of the B.F. Sisk Dam system, recently defined as the B.F. Sisk Dam/San Luis Reservoir Historic District, under Criteria A/1 (JRP 2018).

### **7.4.3 Operation of Dam Raise**

In addition to construction impacts and modifications to SR 152, implementation of the B.F. Sisk Dam Raise Alternative would result in operational impacts to cultural resources, specifically as maximum water levels are increased in the San Luis Reservoir and Cottonwood Bay. Seventeen archaeological sites or historic period built environment resources have been recorded along the San Luis Reservoir and Cottonwood Bay shorelines. These include nine prehistoric sites (CA-MER-15, CA-MER-28, CA-MER-82, CA-MER-83, and CA-MER-130, CA-MER-136, CA-MER-137, CA-MER-517, and PL-Sisk-05), most with midden, lithics, and groundstone; a series of historic period

transmission poles with a debris scatter (CA-MER-484H); three historic period road segments (CA-MER-489H, CA-MER-519H, and P-24-001822); three earthen dams with impound ponds (CA-MER-515H, CA-MER-516H, and CA-MER-518H); and the Cottonwood embankment noted above. Of the nine prehistoric sites that have been recorded along the perimeters of the San Luis Reservoir and Cottonwood Bay, one (CA-MER-136) is listed in the NRHP and CRHR; one (CA-MER-130) has been listed in the NRHP and CRHR as a part of the San Luis Gonzaga Archaeological District (P-24-000489); and seven had not been evaluated for listing in the NRHP or CRHR (CA-MER-15, CA-MER-28, CA-MER-82, CA-MER-83, CA-MER-137, CA-MER-517, and PL-Sisk-05). These sites would be susceptible to mechanical and biochemical impacts from increased wave action and fluctuating water levels following expansion of the San Luis Reservoir and Cottonwood Bay.

The historic period transmission pole alignment and debris scatter (CA-MER-484H) located along the San Luis reservoir shoreline also would be susceptible to increased wave action and fluctuating water levels. Based on the nature of their construction, three historic period earthen dams with impound ponds (CA-MER-515H, CA-MER-516H, and CA-MER-518H) are unlikely to be impacted, but three historic period road segments (CA-MER-489H, CA-MER-519H, and P-24-001822) would be fully or partially inundated as the capacity of the San Luis Reservoir is increased. Survey-level evaluations of these resources are offered below, though resources that have already been determined eligible are not re-evaluated.

	<b>Description</b>
<b>CA-MER-15</b> <b>P-24-000116</b>	CA-MER-15 is a prehistoric site that was first recorded by F.A. Riddell in 1962 as a “small village site among boulders and oaks” with a former quarry on the eastern side of the site area, “several areas cleared among boulders for homes,” several bedrock mortar features, and a lithic scatter (Riddell 1962b). It was later recorded that same year as a bedrock mortar site with numerous pestles, a lithic scatter with chert and obsidian and “a few arrowheads” (Gray-MacDonald 1962). A sketch map included with the later site record indicated that some surface artifacts were collected. In 1965, the site was again recorded by W.H. Olsen as a bedrock mortar, petroglyph and occupation site with “small rock shelters,” one house ring, a pitted boulder, a bowl mortar, “some chippage,” and a “broken fossil bone” (Olsen 1965g). None of the site records for CA-MER-15 from the 1960s include location or sketch maps drawn to scale, though Riddell’s map places the steep break of the hill some distance from the site, which is portrayed as a rocky outcrop among trees. A map of the site (author unknown) depicts some bedrock mortar measurements, a petroglyph, a pictograph, four living areas, and a midden area.
<b>Pending</b> <b>Evaluation for</b> <b>Listing in the</b> <b>NRHP/CRHR</b> <b>under Criteria</b> <b>A/1 and D/4</b>	
<b>Appendix A,</b> <b>Figure A-3</b> <b>Appendix B,</b> <b>Figure B-3</b>	
<b>Operation of Dam</b> <b>Raise (San Luis</b> <b>Reservoir</b> <b>Shoreline – South</b> <b>of Dinosaur Point</b> <b>Boat Launch)</b>	When CA-MER-15 was revisited during the 2016 inventory survey, a complex of 73 rock features (Features 1 through 73) with petroglyphs, bedrock mortars, cupules, and milling surfaces was noted in addition to midden soils, six cleared areas (C1 through C6), 36 flaked stone tools, and a lithic scatter with three loci (Loci A through C). As most recently recorded, the site spans an area measuring 97 meters N/S by 116 meters E/W. The 73 features are spread across 94 modified boulders. Twenty-three boulders have bedrock mortars only; 33 boulders feature cupules but

no bedrock mortars, though five also feature petroglyphs; 29 boulders feature both bedrock mortars and cupules, two with petroglyphs also; and three boulders exhibit one or more milling surfaces, two with petroglyphs also. One boulder contains only petroglyphs, though five boulders with cupules, two boulders with cupules and bedrock mortars, and two boulders with one or milling surfaces also feature petroglyphs. In all, 11 of the boulders exhibit petroglyphs. One large prominent boulder features pecked lines, areas with crosshatch lines, rows of cupules, and a few individual cupules. The 73 features were recorded in the western portion of the site furthest from the San Luis Reservoir waterline.

The eastern portion of CA-MER-15 is dominated by the lithic scatter, cleared areas, and midden soils. The lithic scatter contains three loci, and roughly 50% of the debitage in each was counted and analyzed during inventory survey. Locus A, the southernmost of the three, is spatially associated with three of the cleared areas (CL3 through CL5) and features dark, sandy sediment that may represent eroded midden. The locus sits on two relatively flat, narrow, very rocky benches that are dotted by large boulders that litter the surrounding east-facing slope. Sixty-two pieces of debitage were noted in Locus A, including seven pieces of chalcedony as well as 23 pieces of heat-treated chert; the remaining debitage included white or off-white to red, orange, or brown chert, mostly shatter. One chert core fragment was recorded within the locus in addition to an area with ten small pieces of calcined mammal bone.

Locus B is located roughly 13.5 meters east of Locus C. At least 136 pieces of debitage were noted in the locus, which varied from Locus A in that it also contained purplish-red or blue and white cherts as well as a higher percentage of smaller interior percussion, complex, and bifacial thinning flakes. Several artifacts, including a vesicular basalt bowl fragment (Artifact 24), an obsidian biface fragment (Artifact 25), a unidirectional chalcedony core (Artifact 27), and a unifacial chalcedony scraper (Artifact 28) were found within or near the locus. Locus B rests on a moderately steep, east-facing slope studded with boulders and marked by light brown loamy sand with dense gravels and patches of darker brown soils that may represent redeposited midden or lacustrine sediment.

Locus C is located 24 meters north of Locus A. At least 61 pieces of debitage were noted within the locus, including chalcedony and various colors of chert. The locus is dominated by simple and complex interior percussion flakes followed by bifacial thinning flakes and relatively few pieces of shatter or primary and secondary flakes. Artifacts within the locus included a pestle fragment (Artifact 1), a complete portable milling slab (Artifact 15), a complete basalt handstone (Artifact 16), a complete rhyolite mortar (Artifact 32), a rhyolite handstone fragment (Artifact 33), a late-stage rhyolite biface margin (Artifact 34), and a piece of calcined, possibly polished small mammal bone (Artifact 35). Other calcined bone



fragments were found throughout Locus C, and 75-100 pieces of debitage were observed outside of the three loci but were not analyzed.

The cleared areas at CA-MER-15 range in size from 10 meters N/S by 38 meters E/W (CL1) to just 5.5 meters N/S by 5 meters (E/W) (CL6). These areas correspond to flat areas within the site noted by Olsen in 1965 and the “living areas” plotted on another sketch map by an unknown author. The 36 tools include nine pestles, nine bowl mortars, five cores and/or hammerstones, four handstones, three portable milling slabs, one groundstone fragment, one portable mortar, two bifaces, one uniface, and one polished bone fragment. The nine pestles include three complete artifacts (Artifacts 19, 21, and 30) and five fragments (Artifacts 1, 2, 4, 7, 11, and 17); the nine bowl mortars are all fragmentary (Artifacts 3, 5, 8, 9, 10, 22, 24, 29, and 31) and include two (Artifacts 3 and 24) that have been repurposed with single mortars; there are five complete cores, core tools/hammerstones (Artifact 12, 18, 23, 26, and 27); four handstones, including two complete artifacts (Artifact 13 and 16) and two fragments (Artifacts 14 and 33); one complete portable milling slab (Artifact 36) as well as two fragmentary ones (Artifacts 15 and 20); one groundstone fragment (Artifact 6); one complete portable mortar on a small boulder (Artifact 32); two bifaces fragments (Artifacts 25 and 34); one uniface fragment (Artifact 28); and one polished bone fragment (Artifact 35). Many of these artifacts were found within and around the three loci. The pictographs that were plotted on one of the early site maps could not be relocated and may have been destroyed through inundation or reservoir level fluctuations.

CA-MER-15 is located on the west side of the San Luis Reservoir on an east-facing slope within an oak grassland vegetation community. Grasses, wild oats, star thistle, and cockleburs also mark the site area. Soils range brown to grayish-brown sandy loam to light-brown or medium-brown loamy sand with dense gravels overlain with sporadic patches of dark brown sediment. The dark brown sediment may represent redeposited midden or organic, lacustrine-based sediment. Large and small boulders and angular scree are scattered throughout the site area. Portions of the site sit on narrow, relatively flat, very rocky benches formed by reservoir wave action. The site features an eastern aspect, a slope of approximately 6-8°, and is fully exposed. Ground surface visibility ranges from approximately 40-75%.

#### **NRHP/CRHR Evaluation**

CA-MER-15 is an extensive site containing 73 features with petroglyphs, bedrock mortars, cupules, and milling surfaces as well as midden soils, cleared areas or possible house-pits, flaked and groundstone tools, calcined bone, and a lithic scatter with three loci. Those features and cultural constituents indicate that CA-MER-15 likely represents a permanent habitation site or a temporary habitation site that was occupied repeatedly through time (*see* Section 7.3.1). Permanent habitation sites typically feature

accumulated midden deposits, indicating long-term occupation; numerous, diverse cultural constituents; and house-pits or living areas. Temporary or seasonally occupied habitation sites typically lack some or most of these indicators (*see* Section 7.3.1). An examination of the soils at CA-MER-15 suggests that the site likely contains subsurface deposits or buried cultural constituents. Repeated wave action may have removed, redeposited, or buried site sediments—impacts that may become clearer through subsurface testing. The resource is evaluated under the themes of *Economy, Settlement, and Cultural History and Identity* (*see* Section 7.2), particularly as they relate to prehistoric settlement, foodways, and group identity.

A search of the Sacred Lands Inventory by the NAHC for the CA-MER-15 vicinity did not reveal any information about the site locale, and the resource is not known to have been associated with any significant events in local or regional Native American history. The presence of numerous petroglyphs at the site and the reported presence of pictographs (not relocated) suggest that CA-MER-15 may have been locally significant to its inhabitants as a locus or expression of communal activity, shared identity, and/or ceremonial practice. Further research at CA-MER-15 would be necessary to make a recommendation as to the site's eligibility for listing in the NRHP/CRHR under Criterion A/1. Establishing the site's chronology, for instance, would allow for a better understanding of its use as an episodic or long-term occupation area.

No definitive association with one or more individuals could be established for CA-MER-15, and a literature review did not identify any prominent individuals who may have been associated with the site during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

Despite the presence of 11 petroglyph boulders at CA-MER-15, the site does not exhibit structurally or artistically unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

The potential for CA-MER-15 to reveal subsurface components or vertical stratigraphy is high. The data potential of the site (e.g., its depth, integrity, age, and artifact diversity) thus has not been fully explored. Further investigation of CA-MER-15 may reveal information that could be used to address important research questions about chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (*see* Section 7.2). Based on the data acquired during the 2016 inventory survey, an informed recommendation regarding the eligibility of CA-MER-15 for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If operations associated with the B.F. Sisk Dam Raise Alternative may affect

CA-MER-15, subsurface testing is recommended at the site to determine if it offers the potential to address research questions (*see* Section 7.2).

**CA-MER-28**  
**P-24-000129**

**Pending**  
**Evaluation for**  
**Listing in the**  
**NRHP/CRHR**  
**under Criterion**  
**D/4**

**Appendix A,**  
**Figure A-3**  
**Appendix B,**  
**Figure B-3**

**Operation of Dam**  
**Raise (San Luis**  
**Reservoir**  
**Shoreline – South**  
**of Dinosaur Point**  
**Boat Launch)**

**Description**

CA-MER-28 is a prehistoric site that was first recorded in 1965 by W.H. Olsen as an “occupation deposit on top of knoll” with a “few silicate flakes” (Olsen 1965c). As recorded in 2016, the site consists of midden soils with fire-affected rock, one possible heated rock feature, 31 pieces of debitage, one chert core (Artifact 1), and six groundstone artifacts (Artifacts 2-7) that span an area measuring 75 meters SE/NW by 35 meters SW/NE. The heated rock feature measures 0.5 meters N/S x 0.6 meters E/W and contains over 30 cobbles or fire-affected rocks, all of which measure 10 centimeters or less in diameter. The sediment within the feature appears to be a lighter gray and possibly hardened on the surface, which may indicate firing within an excavated pit. A single large white chert secondary flake was located along the margin of the feature.

The six groundstone artifacts include two handstones (Artifacts 5 and 6) and four groundstone fragments (Artifacts 2, 3, 4, and 7). The debitage is variable in color but is locally sourced and white to off-white and mottled with spots and bands of reddish-brown. The debitage reflects the generally poor quality of the raw material, as 17 of the 31 pieces are broken flakes or shatter. Fifteen of the 31 flakes measure 3-6 centimeters in length or more with no small (<1 centimeters) flakes identified. The single chert core is small (7.1-x-4.5-x-1.9 centimeters) and exhibits at least five flake removals. The core may have come from sandstone outcrops to the west of the site, which feature similar material embedded in the visible strata. It may also have come from the sandstone and cobble conglomerate exposed at the western end of the site near the mouth of a nearby creek. The six pieces of groundstone are all basalt. Dark to very dark gray ashy midden soils occur across the entire site area and include a deposit of eroded fire-affected rock.

CA-MER-28 is located on a gently sloping (1-2°), southeast-facing terrace. It lies at the base of a large hill to the west and just north of an unnamed seasonal drainage that opens broadly from a narrow, V-shaped canyon. A taller, oak-studded, east-trending ridge defines the landform south of the drainage. To the east, the landscape opens up and slopes gently eastward towards the San Luis Reservoir on. The site area is fully exposed but covered in dense, knee-high grasses that offer very poor (10%) surface visibility.

CA-MER-28 contains midden soils with fire-affected rock, a possible heated rock feature, debitage, a chert core, and six groundstone artifacts. Another site, CA-MER-517, was newly discovered 35 meters to the east of CA-MER-28 and to the south of the drainage that borders it. No midden

soils or fire-affected rock was observed at CA-MER-517, though the two sites may have been associated.

### **NRHP/CRHR Evaluation**

CA-MER-28 consists of midden soils with fire-affected rock, a possible heated rock feature, 31 pieces of debitage, one chert core, two basalt handstones and four basalt groundstone fragments. CA-MER-28 may represent a short-term habitation site (*see* Section 7.3.1). Short-term habitation sites are those that were occupied for a short duration or were occupied repeatedly, though on a seasonal or short-term basis. They typically lack accumulated midden deposits, and the cultural constituents present tend to be less diverse or numerous than at permanent habitation sites (*see* Section 7.3.1). Based on the feature and artifacts observed, CA-MER-28 may have been used for short-term food processing. The presence of a possible heated-rock feature, midden, and fire-affected rock suggest that the site contains a subsurface deposit. The resource is evaluated under the themes of *Economy* and *Settlement* (*see* Section 7.2), particularly as they relate to prehistoric subsistence.

Prehistoric temporary habitation sites are relatively common in the foothills of the Diablo Range. Little is known, however, about their relationship to larger, more prominent prehistoric sites located on the western edge of the valley floor or to habitation sites located along major stream courses. A search of the Sacred Lands Inventory by the NAHC did not reveal any information about the CA-MER-28 locale, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for CA-MER-28, and a literature review did not identify any prominent individuals who may have been associated with the site during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-28 does not contain structurally or artistically unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

Given that CA-MER-28 includes midden soils with fire-affected rock, a possible heated rock feature, groundstone, and lithic debitage, the potential for the site to reveal subsurface components or vertical stratigraphy is high. Thus, the data potential of the site (e.g., its depth, integrity, age, and artifact diversity) has not been fully explored. Further investigation of CA-MER-28 may bring to light information regarding its potential to address important research questions about chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (*see* Section 7.2).

Based on the limited data acquired during inventory survey, an informed recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is recommended to determine if CA-MER-28 offers the potential to address important research questions such as those outlined in Section 7.2.

**CA-MER-82  
P-24-000182**

**Pending  
Evaluation for  
Listing in the  
NRHP/CRHR  
under Criterion  
D/4**

**Appendix A,  
Figure A-5  
Appendix B,  
Figure B-5**

**Operation of Dam  
Raise (San Luis  
Reservoir  
Shoreline – West  
Side of San Luis  
Creek Inlet)**

**Description**

CA-MER-82 is a prehistoric site that was first recorded in 1966 by W.H. Olsen as a small occupation deposit on a bench above a creek featuring dark, rocky midden soils as well as lithic debitage and fire-affected rock. As recorded in 2016, the site comprises one edge-modified flake (Artifact 1), eight pieces of chert debitage, and three pieces of groundstone (Artifacts 2-4) along the northern margin of the previously recorded site boundary within an area that measures 30 meters N/S and 62 meters E/W. Several of the artifacts were found in a sandy area in slightly darker soil that may represent the remnants of an eroded midden deposit.

Artifact 1 consists of an edge-modified flake fashioned from dark gray chert that measures 5.2-x-3.1-x-0.8 centimeters and exhibits use wear along its margins. Artifact 2 is a vesicular basalt groundstone fragment that measures 18-x-12-x-3.6 centimeters found in a sandstone conglomerate in close proximity the main area of the site. Both Artifacts 3 and 4 consist of possible millings fragments fashioned from sandstone that measure 3.15-x-14.2-x-7.5 centimeters and 18.2-x-11.4-x-4.0 centimeters.

CA-MER-82 is located on the western side of the San Joaquin Valley along the southwestern edge of the San Luis Reservoir. It is situated within a northeast-facing trough or swale formed by rolling hills to the south, west, and north. Several deeply entrenched seasonal drainages flow into the swale from the south, west, and southwest. The site itself rests on a relatively level, wave-eroded bench that is bordered to the southeast by an unnamed drainage. All artifacts at CA-MER-82 were recorded below the current maximum waterline at an elevation of 400-440 feet amsl and would typically be inundated in non-drought years. On-site vegetation consists of dense knee-high grass, mustard weed, and patches of cocklebur. Several artifacts were found in a sandy area with slightly darker soils and that may represent eroded midden; soils on-site generally consist of tan/orange gravelly sand. The site features a northeastern aspect, minimal slope (1-2°), and is fully exposed.

CA-MER-82 consists of one edge-modified flake, eight pieces of chert debitage, and three pieces of groundstone, including two possible milling slab fragments. Another site, CA-MER-42, was previously recorded approximately 215 meters to the northeast of CA-MER-82 and would have bordered the same seasonal drainage. As originally recorded, it included a rocky midden deposit with lithic debitage (Olsen 1966c); groundstone

artifacts were also observed at the site during the 2016 inventory survey. The site may have been associated with CA-MER-82.

### **NRHP/CRHR Evaluation**

CA-MER-82 consists of eight pieces of debitage and three pieces of groundstone as well as a possible remnant midden soils area. The site may have been a short-term habitation or activity-specific site (*see* Section 7.3.1), though given apparent effects to the site from prior inundation its function may be difficult to distinguish. Short-term habitation sites were occupied for a short duration or occupied repeatedly on a seasonal or limited basis while activity-specific sites tended to be used for a fairly narrow range of tasks (e.g., quarrying for lithic material, food processing). Based on the artifacts observed, CA-MER-82 may have been used for food processing. The presence of possible midden at the site suggests that it may retain a subsurface component. The resource is evaluated under the themes of *Economy* and *Settlement* (*see* Section 7.2), specifically as they relate to prehistoric subsistence.

Prehistoric temporary habitation and activity-specific sites are relatively common in the foothills of the Diablo Range. A search of the Sacred Lands Inventory by the NAHC for the site vicinity did not reveal any information about the CA-MER-82 locale, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is therefore recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for CA-MER-82, and a literature review did not identify any prominent individuals who may have been associated with the site during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

Based on surface evidence from an inventory survey, CA-MER-82 does not contain any unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-82 includes surface artifacts in the form of two possible milling slab fragments, one groundstone fragment, one edge-modified flake, and eight pieces of chert debitage. It may also include the remnants of a midden deposit, evident though an area featuring darker soils as well as several artifacts. The potential for the site to reveal a subsurface component or vertical stratigraphy is considered moderate to high, though the data potential of CA-MER-82 (e.g., its depth, integrity, age, and artifact diversity) has not been fully explored. Further investigation of the site could reveal more about its potential to address important research questions relating to chronology, settlement, economy, and technology in

northern San Joaquin Valley prehistory (*see* Section 7.2). Based on the materials observed during inventory survey, a recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be made. If the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is recommended to determine if CA-MER-82 offers the potential to address important research questions that might render it eligible for listing in the NRHP/CRHR.

**CA-MER-83**  
**P-24-000183**

**Pending**  
**Evaluation for**  
**Listing in the**  
**NRHP/CRHR**  
**under Criterion**  
**D/4**

**Appendix A,**  
**Figure A-5**  
**Appendix B,**  
**Figure B-5**

**Operation of Dam**  
**Raise (San Luis**  
**Reservoir**  
**Shoreline – South**  
**of Dinosaur Point**  
**Boat Launch)**

**Description**

W.H. Olsen first recorded CA-MER-83 in 1966 as a prehistoric “rocky midden deposit on prominence just above stream” (Olsen 1966d). In 2016, the site was recorded as an area of midden soils with fire-affected rock, eight groundstone artifacts (Artifacts 3-8 and 13-14), and six pieces of lithic debitage (Artifacts 1-2 and 9-12) distributed across an area measuring 59 meters N/S by 53 meters E/W. The midden soils are concentrated in the central portion of the site and consist of dark gray or nearly black soils with fire-affected rock. The eight groundstone artifacts include five handstone fragments (Artifacts 3-5 and 13-14), two fragments of indeterminate shape and function (Artifacts 7-8), and one possible milling slab fragment (Artifact 6). The lithic debitage includes three pieces of chert shatter (Artifacts 1, 2, and 9) as well as two chert secondary flakes (Artifacts 10-11) and one chalcedony secondary flake (Artifact 12). The chert debitage is fashioned from white or cream colored material with orange or brown inclusions and the groundstone artifacts are composed of basalt.

CA-MER-83 consists of an area of midden soils with fire-affected rock, eight groundstone artifacts, and six pieces of debitage. Another site, CA-MER-138, was previously recorded approximately 130 meters to the southwest of CA-MER-83 and would have bordered the same seasonal drainage. It was recorded as a large midden site on a knoll (Olsen 1973), and it may have been associated with CA-MER-83. CA-MER-138 was not relocated in 2016 but lay well outside of the B.F. Sisk Dam Raise Alternative APE.

CA-MER-83 is located in an open oak woodland vegetation zone with sparsely scattered oaks. The site area is densely covered with Indian rice grass, wild oats, foxtails, star thistle, and seasonal forbs and grasses that offer very poor (0-10%) surface visibility. The site lies on a flat bench on the south side of an unnamed drainage. CA-MER-83 features a northwestern aspect, a gentle (0-5°) slope, and is fully exposed. Non-midden soils are a rocky, semi-compact, light brown to brown silty clay loam.

**NRHP/CRHR Evaluation**

The site consists of midden soils with fire-affected rock, eight groundstone fragments, and six pieces of debitage. CA-MER-83 may have functioned as a short-term habitation or activity-specific site (*see* Section 7.3.1). Short-

term habitation sites were occupied for a limited duration or occupied repeatedly on a seasonal or short-term basis while activity-specific sites would have been used for a limited range of tasks (e.g., quarrying for lithic material, food processing). The presence of midden and groundstone suggest that CA-MER-83 may have been used for food processing. The presence of possible midden at the site also suggests that it may retain a subsurface component. The resource is evaluated under the themes of *Economy* and *Settlement* (see Section 7.2), with emphasis on prehistoric subsistence.

A search of the Sacred Lands Inventory by the NAHC for the site vicinity did not reveal any information about the CA-MER-83 locale, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is therefore recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for CA-MER-83, and a literature review did not identify any prominent individuals who may have been associated with the site vicinity during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

Based on surface evidence from an inventory survey, CA-MER-83 does not contain any unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-83 includes surface artifacts in the form of one possible milling slab fragment, five handstone fragments, two indeterminate groundstone fragments, six pieces of debitage, and midden soils with fire-affected rock. The site offers moderately high potential to reveal a subsurface component or vertical stratigraphy, though its data potential (e.g., its depth, integrity, age, and artifact diversity) has not been fully explored. Further investigation of the site could reveal more about its potential to address important research questions relating to chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (see Section 7.2). Based on the limited data acquired during inventory survey, a recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If any of the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is recommended to determine if CA-MER-83 offers the potential to address important research questions that might render it eligible for listing in the NRHP/CRHR.



**CA-MER-137**  
**P-24-000227**

**Pending**  
**Evaluation for**  
**Listing in the**  
**NRHP/CRHR**  
**under Criterion**  
**D/4**

**Appendix A,**  
**Figure A-1;**  
**Appendix B,**  
**Figure B-1**

**Operation of Dam**  
**Raise**  
**(Cottonwood Bay**  
**Shoreline)**

**Description**

CA-MER-137 is a prehistoric site that was first recorded by W.H. Olsen in 1971 as a “large occupation site on knoll” with an “extremely high rock content,” including pestle fragments (Olsen 1971b). Olsen also noted a possible housepit depression, which might have been disturbed by cattle. The sketch map for CA-MER-137 is included in Olsen’s contemporaneous site record for prehistoric site CA-MER-136, located approximately 30 meters to the west (Olsen 1971a). The map portrayed the site locations relative to Cottonwood Creek, dirt roads, and SR 152. No scale was included in Olsen’s sketch map, and no details about the interior features of either site were depicted.

When CA-MER-137 was revisited during the 2020 inventory survey of the B.F. Sisk Dam Raise Alternative APE, the site was found to contain midden soils and copious fire-affected rock. The pestle fragments and possible housepit depression noted by Olsen were not observed. The site covered an area measuring 45 meters E/W by 39 meters N/S. Gray midden soils and fire-affected rock were distributed across the entire site area, and no discernible loci or concentrations were observed.

CA-MER-137 is located on a gently sloping, south-facing terrace. It lies at the base of a large hill to the north. To the west, an unnamed drainage flows south into Cottonwood Creek, which flows to the east south of the site. The terrace adjacent to Cottonwood Creek follows the creek to the southeast towards Cottonwood Bay. Above the reservoir high waterline, oak trees dot the perennial grassland; below the high waterline, trees are sparser, and none exist within the boundaries of the site. The site area is fully exposed, and grasses are kept low by periodic inundation and frequent cattle grazing affording excellent (80%) surface visibility.

Two other prehistoric sites have been documented in the vicinity of CA-MER-137. Olsen recorded CA-MER-136 across the unnamed drainage 30 meters to the west in 1971. Pacific Legacy personnel also discovered a new site (PL-Sisk-05) approximately 265 meters to the west.

**NRHP/CRHR Evaluation**

CA-MER-137 consists of midden soils with fire-affected rock and thus may represent a short-term habitation site (*see* Section 7.3.1). Short-term habitation sites were typically occupied for a short duration or were occupied repeatedly, though on a seasonal or short-term basis. They frequently lack accumulated midden deposits, and the cultural constituents present tend to be less diverse or numerous than at permanent, more substantial habitation sites (*see* Section 7.3.1). Given the presence of midden and fire-affected, short-term food processing may have occurred at CA-MER-137, suggesting that the site may contain a subsurface deposit. The resource is evaluated under the themes of *Economy* and *Settlement* (*see* Section 7.2), particularly as they relate to prehistoric subsistence.

Prehistoric temporary habitation sites are relatively common in the foothills of the Diablo Range. Little is known, however, about their relationship to larger, more prominent prehistoric sites located on the western edge of the valley floor or to habitation sites located along major stream courses. A search of the Sacred Lands Inventory by the NAHC did not reveal any information about the CA-MER-137 locale, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for CA-MER-137, and a literature review did not identify any prominent individuals who may have been associated with the site during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-137 does not contain structurally or artistically unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

Given that CA-MER-137 includes midden soils with fire-affected rock, the potential for the site to reveal subsurface components or vertical stratigraphy is high. Thus, the data potential of the site (e.g., its depth, integrity, age, and artifact diversity) has not been fully explored. Further investigation of CA-MER-137 may bring to light information regarding its potential to address important research questions about chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (*see* Section 7.2). Based on the limited data acquired during inventory survey, a recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is recommended to determine if CA-MER-137 offers the potential to address important research questions such as those outlined in Section 7.2.

#### **Description**

CA-MER-484H is a historic period utility pole alignment or telegraph line set into a series of drainages, ridge tops, and slopes. The resource consists of 15 pole bases, three fallen poles, several wood crossbeams, and a large number of glass insulators. The alignment is depicted on the 1940 Pacheco Pass 15-minute USGS topographic map (USGS 1940), but absent from earlier or later maps. It is aligned almost due east-west at a bearing of 178° for approximately 1,680 feet and terminates as it reaches a modern road. The posts are placed between 120-130 feet apart with the exception of the westernmost three posts that are placed 65 feet apart. All poles have been cut close to the ground surface. Pole Location 1 consists of a single cut pole on the flat surface of a finger ridge. It measures 7¼ inches in diameter

**CA-MER-484H  
P-24-001974  
PL-SLLP-A-001**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-3**

**Operation of Dam  
Raise (Reservoir  
Shoreline –  
Dinosaur Point)**

and is made of treated wood; it is cut at 4½ inches above the ground surface. A northeast-southwest trenching dirt road that eventually connects with Dinosaur Point Road lies approximately 60 feet to the west of the poles. A modern power pole is located 111 feet to the south, which marks the point from which a modern power line continues southward. Modern trash lies scattered across the ridge top close to the dirt road. Historic period glass insulators and fragments were noted at four pole locations, but no other historic period artifacts were noted.

CA-MER-484H is located on the northwestern side of San Luis Reservoir to the west of a boat ramp and to the north of the 1920s-era alignment of SR 152. Steep-sided, flat-topped finger ridges surround CA-MER-484H. Vegetation along the utility pole alignment includes dry grasses, blue oaks, and seasonal shrubs. Ground surface visibility ranges from 20-35%, and the alignment is roughly 30% exposed.

**Archival Research Summary**

CA-MER-484H is located in Township 10 South, Range 7 East in the unsectioned San Luis Gonzaga Land Grant. The site area was patented on May 16, 1871 to Juan Pérez Pacheco (Doc #PLC 234, BLM # CACAAA 094227). An 1879 GLO plat map shows only the area not covered by the land grant. A later 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga depicts a stage route through the rancho but no utilities or similar features. The 1920 Pacheco Pass 15-minute USGS topographic map does not portray the utility pole alignment but does depict a road to the north of its location. The utility pole alignment appears on the 1940 Pacheco Pass 15-minute USGS topographic map but is missing from the later 1955 Pacheco Pass 7.5-minute USGS topographic map (USGS 1940, 1955). Thus, based on historic period map evidence, CA-MER-484H was constructed and removed within a span of less than 37 years. Based on marks noted on the glass insulators, the site was likely constructed between 1921 and 1939 (Meier 2016; Whitten 2016a, 2016b).

**NRHP/CRHR Evaluation**

CA-MER-484H, which comprises 15 cut pole bases, three fallen poles, and several glass insulators, represents the fragment of a larger utility pole alignment that was likely constructed between 1921 and 1939. The first telegraph line across Pacheco Pass was built in 1859 (Mountain-charlie1850.org 2016), and there is no evidence that CA-MER-484H was connected with that early alignment. CA-MER-484H was not the first utility alignment to bridge Pacheco Pass, nor did it appear to be a historically significant one tied to events of local or regional importance. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

This utility pole alignment could not be linked to one or more individuals, historically significant or otherwise. CA-MER-484H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

The site features 15 cut telegraph poles and 3 fallen poles. These features and the alignment they were once a part of are not unusual or distinctive in terms of engineering, architecture, or artistry. CA-MER-484H is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-484H includes approximately 25 scattered glass insulator fragments representing five insulators that were associated with several of the utility poles. Two manufacturing marks were noted on these insulator fragments that indicated the alignment was likely constructed between 1921 and 1939 (Meier 2016; Whitten 2016a, 2016b). No other artifacts or features were recorded in conjunction with the utility pole alignment. The resource does not offer sufficient research potential to contribute to our knowledge of communications, the economy, technology, or other potential research themes and questions. CA-MER-484H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The utility pole alignment retains integrity of location and materials. Its integrity of design, materials, and workmanship has been diminished by the removal of the poles, wires, and insulators that would have been integral to its function and appearance. Aspects of setting and feeling have been diminished by the construction of the boat ramp, Dinosaur Point Road, and the San Luis Reservoir, which truncates the utility pole alignment. Association and feeling are also diminished by the lack of any clear association with a specific utility company, which may have provided further context for the resource prior to the rerouting of SR 152. The remnant alignment no longer carries any clear historic period association and, overall, it has poor integrity. CA-MER-484H is recommended not eligible for listing in the NRHP/CRHR.

#### **Description**

CA-MER-489H consists of a historic period graded dirt road segment with a hard-packed surface that crosses a steep-sided valley below Dinosaur Point Road. It then ascends a hillside to the south and continues north beyond the APE into the San Luis Reservoir. There are small berms on either side of the road segment as it crosses the valley in addition to 3-foot deep cuts into the hillslopes that follow the road. The northwest side of the road (downslope) is also built up slightly in some areas. CA-MER-489H measures approximately 2,450 feet in length and varies between 10-15 feet in width depending on the extent to which it has been eroded. It passes to the south of a historic period earthen dam and impound pond that are bordered by prehistoric deposits (CA-MER-26/H), a substantial prehistoric habitation site with surface and subsurface deposits (CA-MER-94), and another historic period road segment (CA-MER-477H).

**CA-MER-489H**  
**P-24-001979**  
**PL-SLLP-A-013**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-3**

**Operation of Dam  
Raise (San Luis  
Reservoir  
Shoreline –  
Dinosaur Point)**

CA-MER-489H is located along the western shore of the San Luis Reservoir below the average waterline. Soils within the resource area have been heavily impacted by erosion and wave action, and only sparse non-native grasses and cockleburs grow in the area. Portions of the eastern end of the road segment have been destroyed by the slumping of the hillside over the road, while the western end of the resource has been washed out by an ephemeral drainage. The resource area is fully exposed, offers good (60%) ground surface visibility, and features a variable slope and aspect.

**Archival Research Summary**

CA-MER-489H is located in the unsectioned San Luis Gonzaga Land Grant in Township 10 South, Range 7 East. The land grant was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM #CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts only the area not covered by the land grant. A 1909 GLO sketch map of Rancho San Luis Gonzaga shows a stage route through the rancho, but it is unclear if the stage route may have corresponded to the CA-MER-489H road segment (BLM 2016).

The 1920 Pacheco Pass 15-minute USGS topographic map does not depict the road segment (USGS 1920), though the 1940 Pacheco Pass 15-minute USGS topographic map does portray a telegraph or utility line that crossed the road location (USGS 1940). The 1955 Pacheco Pass 7.5-minute USGS topographic map depicts the road segment, which is also clearly shown on a 1946 aerial photograph of the area (USGS 1955; Fairchild Aerial Surveys 1946). The aerial photograph depicts CA-MER-489H to the south of the 1920s-era SR 152 alignment, and it may have served as an alternate, roughly parallel route. No other buildings, structures, or sites were noted proximate to the CA-MER-489H road segment on any historic period maps, and it did not appear to be associated with the historic period earthen dam and stock pond at CA-MER-26/H.

**NRHP/CRHR Evaluation**

CA-MER-489H is a historic period graded dirt road segment that was established by 1946. It is evaluated under the historic context of *Transportation Development* in the American Period (*see* Section 3.3.3). The construction date of CA-MER-489H and its period of use remain indeterminate, however it may have served as an alternate route associated with the 1920s-era alignment of SR 152 (Fairchild Aerial Surveys 1946; USGS 1920). The road segment did not appear to be linked to any other buildings, structures, or sites within the vicinity, and it was not noted in association with an account of Merced County history (Tinkham 1923). CA-MER-489H does not appear to have been linked to any significant local or regional events or developments. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No links could be established between CA-MER-489H and any individuals significant in local, regional, or state history. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-489H is a graded road segment that could not be definitively linked to other known resources within the vicinity. The road segment is not structurally unique and does not exemplify distinctive characteristics of a type, period, or method of construction. CA-MER-489H is not eligible for listing in the NRHP/CRHR under Criterion C/3.

As an isolated road segment, there is little potential to encounter a subsurface component or vertical stratigraphy at CA-MER-489H. The resource offers limited potential to address important research questions about *Transportation Development* in the American Period (see Section 3.3.3). Thus, CA-MER-489H is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

CA-MER-489H does not appear to be maintained or in active use. It remains in fair condition despite apparent impacts from erosion and inundation and retains integrity of location, design, feeling, materials, and workmanship. It lacks integrity of association, however because it could not be linked to a particular time, event, individual, or use and could not be clearly associated with any known resources. It lacks integrity of setting, as the original alignment of SR 152 has been rerouted and the construction of the San Luis Reservoir has greatly altered the surrounding area. CA-MER-489H possesses fair overall integrity. It is recommended not eligible for listing in the NRHP/CRHR.

**CA-MER-515H**  
**P-24-002160**  
**PL-SLLPIP-16-09**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-3**

**Operation of Dam  
Raise (San Luis  
Reservoir  
Shoreline –  
South of SR 152)**

#### **Description**

CA-MER-515H is an earthen dam that spans a small inlet of the San Luis Reservoir. The dam is oriented northeast-southwest and impounds water on the western side, forming a pond. The southern end of the dam is truncated by a drainage that flows out of the impound pond; it may be an intentional breach that was formed when the dam was built. The dam measures 275 feet NE/SW by 140 feet NW/SE at the base. The top of the dam is approximately 15-18 feet wide. The eastern side of the dam stands roughly 35-40 feet high from the base to the top. Including the impound pond, the total dimensions of the resource measure approximately 510 feet NW/SE by 320 feet NE/SW. The dam is flat on top and pedestrian accessible, though dead and dying trees along the western base of the dam make it less accessible. No additional artifacts or features were noted at CA-MER-515H.

CA-MER-515H is located on the northwestern side of the reservoir to the north of a boat ramp and the original alignment of SR 152. The site area is characterized by oak woodland and riparian vegetation. Oak trees are sparsely scattered near the drainage with wild oats, cheatgrass, thistle, bursage, datura, mustard, and seasonal grasses. Willow trees, grasses, wild

oats, cheatgrass, and several unidentified perennials border or are proximate to the pond. Soils, where visible, consist of light tan, rocky clay loam.

### **Archival Research Summary**

CA-MER-515H is located in the unsectioned San Luis Gonzaga Land Grant in Township 10 South, Range 7 East. The resource area was patented on May 16, 1871 to Juan Pérez Pacheco (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts only the area not covered by the land grant. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho as well as two alternate stage routes but does not depict the earthen dam or impound pond (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not show the dam or impound pond but do depict the 1920s-era SR 152 alignment to the south (USGS 1920, 1940a). The 1940 map also depicts a 104kV PG&E line to the north of the resource location. The 1955 Pacheco Pass 7.5-minute USGS topographic map shows the San Luis Reservoir and the realigned route of SR 152. The “Boat Ramp” road depicted on the 1955 map appears to be an existing segment of the original SR 152 alignment; the dam and impound pond are shown as present but abandoned features, thus they would have been constructed by 1955 but had evidently fallen into disuse by 1971 (USGS 1955). A 1946 aerial photograph of the resource location does not show the dam or pond, thus CA-MER-515H likely post-dates 1946 and pre-dates 1955 (Fairchild Aerial Surveys 1946).

Francisco Pérez Pacheco, who inherited the San Luis Gonzaga Rancho upon the death of his son Juan, had one daughter, Lola. She married Mariano Malarin, and they in turn had two daughters: one married Dr. Ramon Roca, while the other married Dr. Luis Fatjo. The Fatjos and their children inherited the Merced portion of the rancho. In 1949, Paula Fatjo, the great-great granddaughter of Francisco Pérez Pacheco, moved to the rancho and remodeled the original 1843 adobe that once stood on the property (Pierce 1977: 107). San Luis Gonzaga, or San Luis Ranch, was an operating cattle ranch during Paula Fatjo’s time, though she also bred and boarded Arabian horses (Pierce 1977: 107-111). If construction of the dam and impound pond do post-date 1946 and pre-date 1955, they may have been associated with Fatjo’s tenure on the property. The resource was almost certainly associated with agricultural or ranching activities and could have functioned as a stock watering locale.

### **NRHP/CRHR Evaluation**

CA-MER-515H is a historic period earthen dam and impound pond with no other associated features, structures, or surface artifacts. Based on historic period map and aerial photographic evidence, the resource appears to have been constructed prior to 1955 but after 1946 (Fairchild Aerial Surveys 1946; USGS 1955). While the resource was likely associated with ranching or farming activities, it could not be linked to particular historic

period events, significant or otherwise. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

Although CA-MER-515H may be associated with Paula Fatjo's tenure at the San Luis Ranch, no clear link could be established between her or any other individual and the construction or use of the resource. CA-MER-515H could not be linked to one or more individuals significant in local, regional, state, or national history. It is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

As a historic period earthen dam and impound pond, CA-MER-515H consists of a single engineered feature. That feature is not unique and does not exemplify distinctive characteristics of a type, period, or method of construction, nor does it embody innovative construction techniques. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-515H contains no artifacts or materials that might be used to link the resource to a particular time period. It lacks the data potential to address important research questions regarding early farming or ranching activities, water conveyance, or other important research themes. The resource is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-515H remains in good condition and has not been greatly impacted by erosion. It retains integrity of location, design, materials, workmanship, feeling, and association. The resource's integrity of setting has presumably been impacted by the development and inundation of the San Luis Reservoir. Overall, the resource possesses good integrity. CA-MER-515H is recommended not eligible for listing in the NRHP/CRHR.

### **Description**

CA-MER-516H is an earthen dam constructed across an east-flowing seasonal drainage that emanates from between two prominent hills to the west. The dam is oriented north-south, and the base measures approximately 65 feet in length and 20 feet in width. The top of the dam measures 10 feet in width and is marked by a barbed wire fence with T-posts that is in poor condition. The impound area behind the dam measures roughly 100 feet in diameter and does not retain any water due to a breach 8 feet from the northern end. As a whole, the resource measures 150 feet NW/SE by 100 feet NE/SW.

CA-MER-516H lies within an oak woodland vegetation community with sparsely scattered oaks and seasonal grasses as well as wild oats, cheatgrass, thistle, bursage, datura, and mustard. Visible soils within the resource area consist of light tan, very rocky clay loam. The resource is fully exposed and features a variable slope (0-15°). The canyon upstream from CA-MER-

**CA-MER-516H**  
**P-24-002161**  
**PL-SLLPIP-16-10**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-3**



**Operation of Dam  
Raise (San Luis  
Reservoir  
Shoreline – South  
of SR 152)**

516H quickly narrows and contains a dense stand of oaks. The canyon opens into a narrow mouth that forms an inlet of the San Luis Reservoir.

**Archival Research Summary**

CA-MER-516H is located in Township 10 South, Range 7 East in the unsectioned San Luis Gonzaga Land Grant. The resource area was patented to Juan Pérez Pacheco on May 16, 1871 (Doc #PLC 234, BLM # CACAAA 094227) (BLM 2016). An 1879 GLO plat map depicts only the area not covered by the land grant. A 1909 GLO sketch map of the diseño of Rancho San Luis Gonzaga shows a stage route through the rancho but does not depict the earthen dam or impound pond (BLM 2016). The 1920 and 1940 Pacheco Pass 15-minute USGS topographic maps do not depict the dam or impound pond, though the 1940 map does show the original 1920s-era SR 152 alignment to the north (USGS 1920, 1940a). The 1955 Pacheco Pass 7.5-minute USGS topographic map shows the San Luis Reservoir and a “Boat Ramp” road to the northwest but does not portray the dam or impound pond (USGS 1955). A 1946 aerial photograph of the resource location does not show the CA-MER-516H features, thus they likely post-date 1946 and pre-date 1963 when construction began for the dam and reservoir (Fairchild Aerial Surveys 1946).

Francisco Pérez Pacheco, who inherited the San Luis Gonzaga Rancho upon the death of his son Juan, had one daughter, Lola. She married Mariano Malarin, and they in turn had two daughters: one married Dr. Ramon Roca, while the other married Dr. Luis Fatjo. The Fatjos and their children inherited the Merced portion of the rancho. In 1949, Paula Fatjo, the great-great granddaughter of Francisco Pérez Pacheco, moved to the rancho and remodeled the original 1843 adobe that once stood on the property (Pierce 1977: 107). San Luis Gonzaga, or San Luis Ranch, was an operating cattle ranch during Paula Fatjo’s time, though she also bred and boarded Arabian horses (Pierce 1977: 107-111). It is likely that the earthen dam and impound pond supported ranching and/or farming, but it could not be definitively associated with a specific landowner such as Paula Fatjo or with a specific function such as stock watering.

**NRHP/CRHR Evaluation**

CA-MER-516H is a historic period earthen dam and impound pond with no other associated features, structures, or surface artifacts. Based on historic period map and aerial photographic evidence, the resource appears to have been constructed prior to the dam and reservoir (1963-1967) but after 1946 (Fairchild Aerial Surveys 1946) and perhaps after 1955 (USGS 1955). While the resource was likely associated with ranching or farming activities, it could not be linked to particular historic period events, significant or otherwise. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-516H could not be linked to one or more individuals significant in local, regional, state, or national history. The resource may have been

associated with Paula Fatjo and her time at the San Luis Ranch, or it may have been associated with an unknown individual or lease holder. CA-MER-516H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

As a historic period earthen dam and impound pond, CA-MER-516H consists of a single engineered feature. That feature is not unique and does not exemplify distinctive characteristics of a type, period, or method of construction, nor does it embody innovative construction techniques. CA-MER-516H is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-516H contains no artifacts or materials that might be used to link the resource to a particular time period. It lacks the data potential to address important research questions regarding early farming or ranching activities, water conveyance, or other potential research themes. The resource is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-516H remains in fair condition and has not been measurably impacted by erosion. The dam features a major breach, however, and the barbed wire fence that spans the top of the dam is in poor condition. CA-MER-516H retains integrity of location, design, materials, workmanship, and feeling. The resource's integrity of setting has presumably been impacted by the development of the San Luis Reservoir, while the aspect of association is impacted because the resource could not be linked to a particular landowner/ranch complex, function, or time period. The resource possesses fair overall integrity. CA-MER-516H is recommended not eligible for listing in the NRHP/CRHR.

#### **Description**

CA-MER-517 is a prehistoric site with groundstone and flaked stone artifacts that measures 35 meters N/S by 65 meters E/W. The site features four complete basalt milling slabs (Artifacts 1, 5, 9, and 10), one complete sandstone milling slab (Artifact 6), and one fragmentary basalt milling slab (Artifact 13). Seven chert cores (Artifacts 2, 3, 4, 7, 8, 11, and 12) and ten pieces of chert debitage also were noted. Six pieces of debitage consist of larger specimens (>3 centimeters diameter), including two primary and three secondary flakes, though one is a smaller (1-2 centimeter) bifacial thinning flake. Most of the debitage is white to off-white and mottled and banded with red and orange; two pieces are a light pinkish-brown and appear to represent higher quality material. CA-MER-28, a previously recorded prehistoric site with midden soils, fire-affected rock, a possible heated rock feature, groundstone artifacts, and debitage, is located just 40 meters to the northwest on the other side of a steep drainage. Its association with CA-MER-517 is unclear.

**CA-MER-517**  
**P-24-002162**  
**PL-SLLPIP-16-11**

**Pending**  
**Evaluation for**  
**Listing in the**  
**NRHP/CRHR**  
**under Criterion**  
**D/4**

**Appendix B,**  
**Figure B-3**

**Operation of Dam  
Raise  
(San Luis  
Reservoir  
Shoreline – South  
of Dinosaur Point  
Boat Launch)**

CA-MER-517 is situated on a broad, slightly sloping (3-4°) north and north-northeast facing terrace that overlooks a deep east-flowing creek immediately to the north of the site. Across the drainage to the north, the slope rises up towards a fenceline located mid-slope. To the east, the landform opens up out of the hills towards the San Luis Reservoir. To the south, a series of dissected hills rises steeply. To the west, the hills constrict into a narrow V-shaped canyon. A large rock outcrop is located immediately south of the site, though no evidence of grinding surfaces or other cultural materials were noted. The site is covered with relatively sparse, low grasses that offer fair to good visibility (50-60%). Tall, knee-high grasses dominate the area around the site and may obscure additional cultural materials. Two large cottonwood trees are present in the creek bottom, and oaks form dense stands upslope to the south. Soils in the site area are a very rocky, light brown sandy loam. No midden soils were observed. The majority of the surface rock in the area comprises sandstone slab fragments and rounded cobbles, likely from sandstone conglomerate outcrops located upslope.

**NRHP/CRHR Evaluation**

CA-MER-517 contains six whole or fragmentary milling slabs, seven chert cores, and ten pieces of chert debitage. CA-MER-517 may represent a short-term habitation site (*see* Section 7.3.1). Short-term habitation sites are those that were occupied for a short duration or were occupied repeatedly, though on a seasonal or short-term basis. They typically lack accumulated midden deposits, and the cultural constituents present tend to be less diverse or numerous than at permanent habitation sites (*see* Section 7.3.1). Based on the cultural constituents observed, CA-MER-517 may have been used for short-term food processing. Although no midden soils or fire-affected rocks were observed, the presence of groundstone milling slabs suggests that the site may contain a subsurface deposit. The resource is evaluated under the themes of *Economy* and *Settlement* (*see* Section 7.2), particularly as they relate to prehistoric subsistence.

Prehistoric temporary habitation sites are relatively common in the Diablo Range foothills. Little is known, however, about their relationship to larger, more prominent prehistoric sites located on the western edge of the valley floor or to habitation sites located along major stream courses. A search of the Sacred Lands Inventory by the NAHC for the site vicinity did not reveal any specific information about the CA-MER-517 area, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for CA-MER-517, and a literature review did not identify any prominent individuals who may have been associated with the site during

the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

CA-MER-517 does not contain structurally or artistically unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

Although no midden soils were observed at CA-MER-517, the site includes six groundstone artifacts and may have the potential to reveal intact subsurface components and vertical stratigraphy. The data potential of the site (e.g., its depth, integrity, age, and artifact diversity) thus has not been fully explored. Further investigation of the site may yield information that can be used to address important research questions about chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (*see* Section 7.2). Based on the limited data acquired during inventory survey, an informed recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is recommended to determine if CA-MER-517 offers the potential to address important research questions such as those outlined in Section 7.2. CA-MER-517 is recommended not eligible for listing in the NRHP/CRHR under Criteria A/1, B/2, and C/3 but remains pending evaluation under Criterion D/4.

### **Description**

CA-MER-518H is an earthen dam constructed across a north-flowing seasonal drainage that flows into San Luis Creek. The earthen dam is oriented east-west and measures approximately 160 feet in length at the top and 30-35 feet in width at the base, forming an impound pond to the southern side of the dam. The northern side of the dam stands 25 feet high while the southern side stands 12-15 feet above the pond. The water impound area is roughly triangular, measuring 225 feet N/S by 100 feet E/W. A historic period dirt road (CA-MER-519H) segment is located approximately 735 feet to the north of CA-MER-518H and across the current San Luis Reservoir spillway.

CA-MER-518H lies to the north of the mouth of San Luis Creek at the far southern end of the San Luis Reservoir. It is situated within an oak woodland vegetation community with sparsely scattered oaks and seasonal grasses. The resource area features a variable slope (0-15°) and is fully exposed. Soils, where visible, are a light tan, very rocky and compact silty clay loam.

### **Archival Research Summary**

CA-MER-518H is located in Township 11 South, Range 8 East in the northeast quarter of Section 18, though current USGS topographic maps depict the land as unsectioned (USGS 1956, 1969). No land patent

**CA-MER-518H**  
**P-24-002163**  
**PL-SLLPIP-16-12**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-7**

**Operation of Dam  
Raise (San Luis  
Reservoir  
Shoreline – South  
side of San Luis  
Creek Inlet)**

information is available for the resource area, which is approximately 1.2 miles to the south of the San Luis Gonzaga Rancho. Adjacent areas were patented to Daniel T. Haley on June 2, 1919, including the southeast quarter of the northeast quarter and the northwest quarter of the southeast quarter of Section 18 (Doc # 011232, BLM # CASF 0011232) (BLM 2016). On December 18, 1922, George Haley, Daniel's brother, patented the southeast quarter of the northwest quarter of Section 8 (Doc # 08821, BLM # CASF 0008821) (BLM 2016), which is roughly 0.75 miles to the northeast.

The *History of Merced County, California* (Outcalt 1925) notes that Daniel T. Haley was the son of Esther Byrne and William Haley, an Irish immigrant who settled in San Francisco in 1850 and started the Dairy Delivery Company. Esther and William had eight children together. Daniel was born in 1854, and he followed his father into the dairy delivery business. Daniel settled in Gustine and managed a local plant that distributed 85-100 ten-gallon cans of cream to San Francisco each day for processing. Roughly 10,000 gallons of milk were then distributed to customers throughout the San Francisco and Burlingame areas (Outcalt 1925: 762). William Haley appears to have managed distribution for the family's company while Daniel managed supply. Daniel Haley married Grace Truit and was elected mayor of Gustine when it was incorporated in 1915. The Town of Gustine is located approximately 7 miles northeast of the site area, so it is not clear how much time Daniel may have spent in the San Luis flat area.

The 1922<sup>5</sup> and 1940<sup>6</sup> Quien Sabe 15-minute USGS topographic maps show the resource vicinity as sectioned land. Both depict a dirt road (CA-MER-519H) to the north of the resource but do not show the earthen dam or impound pond (USGS 1922b, 1940b). The 1956<sup>7</sup> Quien Sabe 15-minute USGS topographic map also shows the site vicinity as sectioned, and "Haley Ranch" is depicted roughly 0.75 miles to the northeast in Section 8 in the same quarter that was patented by George Haley in 1922 (USGS 1956, BLM 2016). The dirt road first depicted on the 1922 map remains unchanged (USGS 1956). The 1969<sup>8</sup> Mariposa Peak 7.5-minute USGS topographic map no longer depicts the road to the north of the resource but does depict a road to the south; the earthen dam and impound pond are still not shown and the site vicinity is shown as unsectioned land (USGS 1969b). Although map evidence failed to indicate a likely date range for CA-MER-518H, its construction probably predated construction

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<sup>5</sup> The 1922 Quien Sabe 15-minute USGS topographic map was surveyed in 1917-1918.

<sup>6</sup> The 1940 Quien Sabe 15-minute USGS topographic map was revised using aerial photographs in 1939-1940.

<sup>7</sup> The 1956 Quien Sabe 15-minute USGS topographic map revised from aerial photographs taken 1949-1950; field checked 1956.

<sup>8</sup> The 1969 Mariposa Peak 7.5-minute USGS topographic map is based on aerial photographs taken in 1967; field checked in 1969.

of the B.F. Sisk Dam and San Luis Reservoir. No clear tie could be made between CA-MER-518H and Daniel or George Haley, though it seems likely that the resource was used as a stock watering locale, perhaps as a part of the Haley dairy operation.

#### **NRHP/CRHR Evaluation**

CA-MER-518H is an earthen dam and impound pond with no other associated features, structures, or surface artifacts. Historic period map evidence failed to indicate a date range for the resource, but it likely pre-dates the construction of the B.F. Sisk Dam and San Luis Reservoir. While the resource was likely associated with ranching or farming activities, perhaps with the Haley family dairy operation, it could not be linked to significant historic period events or trends. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

Although CA-MER-518H may be associated with Daniel and George Haley who patented nearby parcels in 1919 and 1922, no clear link could be established between the Haleys and the resource location. Because the resource could not be linked to one or more individuals significant in local, regional, state, or national history, CA-MER-518H is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

As a historic period earthen dam and impound pond, CA-MER-518H consists of a single engineered feature. That feature is not unique and does not exemplify distinctive characteristics of a type, period, or method of construction. The resource does not embody innovative construction techniques, nor does it represent the work of a master. CA-MER-518H is thus recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

CA-MER-518H contains no artifacts or materials that might be used to link the resource to a particular time period. It lacks the data potential to address important research questions regarding early farming or ranching activities, water conveyance, or other potential research themes. The resource is recommended not eligible for listing on NRHP/CRHR under Criterion D/4.

CA-MER-518H remains in good condition and has not been heavily impacted by erosion. It retains integrity of location, design, materials, workmanship, feeling, and association. The resource's integrity of setting has presumably been affected by the development and inundation of the San Luis Reservoir. Overall, the resource possesses good integrity. CA-MER-518H is recommended not eligible for listing in the NRHP/CRHR.

#### **Description**

CA-MER-519H is a historic period dirt road that includes four discontinuous segments (Segments A-D) that were observed during the 2016 inventory survey as well as one digitized segment that was noted on

**CA-MER-519H**  
**P-24-002164**  
**PL-SLLPIP-16-13**

**Recommended  
Not Eligible for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figures B-5  
and B-7**

**Operation of Dam  
Raise  
(San Luis  
Reservoir  
Shoreline –San  
Luis Creek Inlet)**

historic period USGS topographic maps and is now largely inundated. The digitized segment extends south from the 1920s-era alignment of SR 152 through a broad flat and the center of what is currently a spillway for the San Luis Reservoir. The northernmost end of the digitized road segment begins roughly 1 mile west of Basalt Hill and descends south for 2.4 miles before curving northwest to follow the contour of San Luis Creek for another 0.6 miles. Most of the alignment is under water or no longer evident on the ground. A historic period earthen dam and impound pond (CA-MER-518H) are located roughly 750 feet south of the southernmost point along the digitized alignment of CA-MER-519H. The four discontinuous road segments that were observed during the 2016 inventory survey begin near the southwestern end of the main alignment and continue northwest for 0.43 miles up the San Luis Creek Canyon. Each measure 375-500 feet in length and approximately 10 feet in width. These segments are bordered by steep 10-15 foot high road cuts and steep drop-offs towards the adjacent drainage, allowing passage along a narrow, single-track corridor.

CA-MER-519H is situated largely within an oak woodland vegetation community with sparsely scattered oaks and dense seasonal grasses. The road alignments themselves feature a moderate grade of 0-5°, though the areas that border them feature a variable slope of up to 45°. Soils, where visible, comprise light tan, very rocky, and compact silty clay loam. The recorded road segments border the southern side of San Luis Creek and terminate near its confluence with Portuguese Creek.

**Archival Research Summary**

According to current USGS topographic maps, CA-MER-519H is located in Section 32 in Township 10 South, Range 8 East and in Section 5 and unsectioned lands in Township 11 South, Range 8 East. Historic period maps, however, indicate that currently unsectioned lands encompassing the southernmost portion of the resource were previously designated as Sections 7 and 8 of Township 11 South, Range 8 East. The southernmost portion of the digitized alignment lay in both, while the four segments identified during inventory survey were noted in Section 7 (USGS 1940b). A GLO plat from 1875 for the site vicinity depicts a road from the north that descends towards northern Los Banos Valley, which may reflect portions of the CA-MER-519H alignment (BLM 2016). The 1922 Quien Sabe 15-minute USGS topographic map shows the main alignment of CA-MER-519H terminating near the confluence of San Luis and Portuguese Creeks (USGS 1922b). The 1940 Quien Sabe 15-minute USGS topographic map (USGS 1940b) shows an ephemeral road or trail segment continuing further south-southwest along Portuguese Creek to end at a structure. At least portions of the road, therefore, appear to have been in place by 1922. The 1956 Quien Sabe 15-minute USGS topographic map mirrors the 1940 map but also appears to show the four discontinuous road segments continuing from near the southern end of the main alignment as a jeep trail (USGS 1956). The 1969 Mariposa Creek 7.5-

minute USGS topographic map depicts the inundated San Luis Reservoir and no longer depicts the CA-MER-519H road segments but does depict a road from the east that skirts the southern edge of the spillway before turning southwest to border Portuguese Creek and continue west (USGS 1969b).

Land patent information for Township 11 South, Range 8 East indicates that George Haley patented the southeast quarter of the northwest quarter of Section 8 on December 18, 1922 (Doc # 08821, BLM # CASF 0008821) (BLM 2016). Neighboring areas were patented to Daniel T. Haley on June 2, 1919, including the southeast quarter of the northeast quarter and the northwest quarter of the southeast quarter of Section 18 (Doc # 011232, BLM # CASF 0011232) (BLM 2016). No information was available for lands surrounding the structure near the end of the main road alignment as it appears on the 1956 Quien Sabe 15-minute USGS topographic map (USGS 1956). It is possible that the main road alignment of CA-MER-519H was established to bridge the 1920s-era alignment of SR 152 with the Haley's lands or with the lands of other unknown ranchers or farmers. The History of Merced County, California (Outcalt 1925:762) notes that Daniel T. Haley was the son of William Haley, the owner of the San Francisco Dairy Delivery Company. Daniel followed his father into the dairy business, concentrating his efforts on production and supply while his father focused on delivery within the San Francisco and Burlingame areas. Daniel settled in and became the mayor of Gustine, so it is unclear how much time he may have actually spent on lands near San Luis Creek.

#### **NRHP/CRHR Evaluation**

CA-MER-519H is a historic period dirt road that consists of one main alignment detectable mostly through historic period topographic maps and four discontinuous road segments that appear to have come into use prior to 1956. All appear to have been abandoned by the time the San Luis Reservoir was inundated. The resource was likely associated with local ranching or farming activities, perhaps with the Haley family dairy operation, though it could not be linked to particular historic period events or uses. The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

CA-MER-519H may be associated with the Haley family dairy operation, though no clear link could be established between Daniel or George Haley and the construction or use of the main road alignment or its offshoots. The resource could not be clearly linked to one or more individuals significant in local, regional, state, or national history and CA-MER-519 H is therefore recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

The CA-MER-519H road segments could not be clearly linked to any other buildings, structures, or sites within the vicinity. They are not



structurally unique and do not exemplify distinctive characteristics of a type, period, or method of construction. Thus, the resource is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

As isolated road segments, there is little potential to encounter a subsurface component or vertical stratigraphy along CA-MER-519H. It offers limited potential to address important research questions about Transportation Development in the American Period (see Section 3.3.3). The resource is recommended not eligible for listing in the NRHP/CRHR under Criterion D/4.

The four visible, discontinuous portions of CA-MER-519H do not appear to be maintained or in active use, and the main alignment of the road is now inundated by the San Luis Reservoir. Despite impacts from erosion, the visible road segments are in fair condition and retain integrity of location, design, materials, and workmanship. They lack integrity of feeling and association, however because they cannot be clearly linked to a particular time or purpose, and because the main road alignment of which they were presumably a part retains only integrity of location. As a whole, CA-MER-519H possesses poor integrity. CA-MER-519H is recommended not eligible for listing in the NRHP/CRHR.

**PL-SISK-05**

**Pending  
Evaluation for  
Listing in the  
NRHP/CRHR**

**Appendix B,  
Figure B-1**

**Operation of Raise  
Dam (Cottonwood  
Bay Shoreline)**

**Description**

PL-Sisk-05 is a prehistoric midden site or mound with fire-affected rock that measures 29 meters (N/S) by 28 meters (E/W). It is located inside a bend on the south bank of Cottonwood Creek. The site is located over 200 meters upstream from two similar prehistoric sites, CA-MER-136 and CA-MER-137, that were first recorded by W.H. Olsen in 1971. All three sites were characterized by gray midden soils, abundant fire-affected rock, and few other artifacts. Two groundstone artifacts were encountered at PL-Sisk-05: Artifact 1, a groundstone pestle, and Artifact 2, a battered stone. Both were discovered in rodent burrows, suggesting that the site may feature a subsurface component. The area surrounding PL-Sisk-05 is relatively level with an eastern aspect. It is below the high waterline of Cottonwood Bay in a non-native grassland community mixed with thistles. A metagraywacke wall responsible for the bend in Cottonwood Creek also shelters the site from wind. Live oak trees dot the landscape above the high waterline but are scarce below. The site exhibits impacts from erosion, cattle grazing, rodent bioturbation, road grading, and vehicle use.

**NRHP/CRHR Evaluation**

PL-Sisk-05 consists of midden soils with fire-affected rock and two groundstone tools that may represent a short-term habitation site (*see* Section 7.3.1). Short-term habitation sites were occupied for a short duration or were occupied repeatedly on a seasonal or short-term basis. These sites typically lack accumulated midden deposits, and the cultural constituents tend to be less numerous or diverse than at permanent

habitation sites (*see* Section 7.3.1). Given the presence of midden and fire-affected rock, short-term food processing may have occurred at PL-Sisk-05, suggesting that the site contains a subsurface deposit. The presence of two groundstone artifacts discovered in rodent burrows further suggests a subsurface component. The resource is evaluated under the themes of *Economy* and *Settlement* (*see* Section 7.2), particularly as they relate to prehistoric subsistence.

Prehistoric temporary habitation sites are relatively common in the foothills of the Diablo Range. Little is known, however, about their relationship to larger, more prominent prehistoric sites located on the western edge of the valley floor or to habitation sites located along major stream courses. A search of the Sacred Lands Inventory by the NAHC did not reveal any information about the PL-Sisk-05 locale, and the resource does not appear to have been associated with any significant events in local or regional Native American history. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion A/1.

No definitive association with one or more individuals could be established for PL-Sisk-05, and a literature review did not identify any prominent individuals who may have been associated with the site during the ethnographic period. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion B/2.

PL-Sisk-05 does not contain structurally or artistically unique features and does not exemplify distinctive characteristics of a type, period, or method of construction. The site is recommended not eligible for listing in the NRHP/CRHR under Criterion C/3.

Given that PL-Sisk-05 includes midden soils with fire-affected rock, the potential for the site to reveal subsurface components or vertical stratigraphy is high. Thus, the data potential of the site (e.g., its depth, integrity, age, and artifact diversity) has not been fully examined. Further investigation of PL-Sisk-05 may reveal information regarding its potential to address important research questions about chronology, settlement, economy, and technology in northern San Joaquin Valley prehistory (*see* Section 7.2). Based on the limited data acquired during inventory survey, an informed recommendation regarding the eligibility of the site for listing in the NRHP/CRHR under Criterion D/4 cannot be offered. If the B.F. Sisk Dam Raise Alternative is implemented, subsurface testing is advocated to determine if PL-Sisk-05 offers the potential to address important research questions such as those outlined in Section 7.2.

## 7.5 Summary and Recommendations

Pacific Legacy personnel completed intensive pedestrian inventory surveys of approximately 4,454 acres within the 5,028-acre B.F. Sisk Dam Raise Alternative APE between 2012 and 2020 (*see* Appendix B, Figures B-1 through B-7 and Appendix C). Forty-three cultural resources were documented within the APE, including 11 previously recorded resources, 22 newly identified archaeological sites or historic period built environment resources, and ten isolated finds (*see* Table 6-2). Ten resources noted through archival and record searches could not be relocated within the APE or were found to be non-cultural.

The 11 previously recorded resources relocated within the APE include seven prehistoric sites (CA-MER-15, CA-MER-28, CA-MER-82, CA-MER-83, and CA-MER-130, CA-MER-136, and CA-MER-137), most with midden, lithics, and groundstone; one historic period water tank and trough (CA-MER-521H); one historic period ranch complex (CA-MER-451H); one historic period road (CA-MER-477H); and key features of the B.F. Sisk Dam/San Luis Reservoir Historic District. Two of these known resources (CA-MER-83 and CA-MER-477H) were originally plotted outside of the APE but were noted within it during inventory surveys. The 22 newly identified archaeological sites or historic period built environment resources include a series of historic period transmission poles with a debris scatter (CA-MER-484H); two industrial sites (CA-MER-492H and CA-MER-509H) associated with B.F. Sisk Dam construction; eight historic period road segments (CA-MER-489H, CA-MER-491H, CA-MER-493H, CA-MER-494H, CA-MER-495H, CA-MER-513H, CA-MER-519H, and PL-Sisk-01); a concrete equipment pad (CA-MER-510H); a corral and water tank (CA-MER-511H); a helicopter pad (CA-MER-512H); a ditch segment (CA-MER-514H); three earthen dams with impound ponds (CA-MER-515H, CA-MER-516H, and CA-MER-518H); two prehistoric middens, one with lithics and groundstone (CA-MER-517) and the other with fire-affected rock (PL-Sisk-05); a series of survey markers and monitoring wells (CA-MER-520H) associated with the B.F. Sisk Dam; and the Cottonwood embankment (PL-Sisk-04), which is a feature of the San Luis Reservoir and wider B.F. Sisk Dam/San Luis Reservoir Historic District. The ten isolated finds include a historic period well head (P-24-002166), metal can (P-24-002167), concrete foundation (P-24-002172), two watering troughs (P-24-002169 and P-24-002170); a bottle (P-24-002171); one isolated prehistoric core (P-24-001990); one biface fragment (P-24-001991); one cobble and flake (P-24-002168); and one displaced cupule boulder (PL-Sisk-ISO-02).

Two of the previously recorded prehistoric sites (CA-MER-130 and CA-MER-136) are listed in the NRHP and CRHR, as is a prehistoric district (P-24-000489/San Luis Gonzaga Archaeological District) that intersects the APE but is characterized by no physical markers. JRP (2018) recommended the B.F. Sisk Dam and its key facilities eligible for listing in the NRHP and CRHR as contributing elements to the B.F. Sisk Dam/San Luis Reservoir Historic District, though not eligible as individual facilities. Pacific Legacy produced survey-level evaluations for most of the cultural resources within the B.F. Sisk Dam Raise Alternative APE by drawing on information from inventory surveys and site-specific documentary research (*see* Section 7.4). Two industrial resources associated with construction of the B.F. Sisk Dam system (CA-MER-492H and CA-MER-509H) are recommended not eligible for listing in the NRHP or CRHR and are considered non-contributing elements of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018). The Cottonwood embankment (PL-Sisk-04), newly recorded as a feature of the San Luis Reservoir in 2020, is considered a key feature of the reservoir and thus a component part of a contributor to the historic district (JRP 2018). Seven historic period resources (CA-MER-510H, CA-MER-511H, CA-MER-

512H, CA-MER-513H, CA-MER-514H, and CA-MER-520H, CA-MER-521H) have been determined not eligible for inclusion in the NRHP with concurrence from the SHPO and recommended not eligible for listing in the CRHR (Polanco 2018). Twelve historic period resources (CA-MER-477H, CA-MER-484H, CA-MER-489H, CA-MER-491H, CA-MER-493H, CA-MER-494H, CA-MER-495H, CA-MER-515H, CA-MER-516H, CA-MER-518H, CA-MER-519H, and PL-Sisk-01) are recommended not eligible for listing in the NRHP and the CRHR. Seven prehistoric archaeological sites (CA-MER-15, CA-MER-28, CA-MER-82, and CA-MER-83, CA-MER-137, CA-MER-517, and PL-Sisk-05) remain pending evaluation for listing in the NRHP and CRHR.

Based on the NRHP/CRHR evaluations and assessments presented above, 17 archaeological sites or built environment resources within the B.F. Sisk Dam Raise Alternative APE associated with Construction of Dam Raise impacts should require no additional evaluation efforts (*see* Table 7-1). The B.F. Sisk Dam/San Luis Reservoir Historic District, specifically the Cottonwood embankment recorded as PL-Sisk-04 during the 2020 inventory survey, also lies within the SR 152 Modifications area and will be critical to the elevation of the roadway as a part of the B.F. Sisk Dam Raise Alternative. Similar to alterations to the height of the dam, however, the elevation of the embankment and roadway is not expected to have an adverse effect on the significance of the feature or the district as a whole (JRP 2018). Eight archaeological sites or historic period built environment resources within the B.F. Sisk Dam Raise Alternative APE associated with Operation of Dam Raise impacts should require no additional evaluation efforts, either because they have been previously evaluated and listed in the NRHP/CRHR or because they have been subject to survey-level evaluation and recommended not eligible for listing in either register. Seven prehistoric archaeological sites that may be subject to Operation of Dam Raise impacts may require further evaluation efforts if the B.F. Sisk Dam Raise Alternative is implemented (*see* Table 7-1). These sites would be susceptible to mechanical and biochemical impacts from increased wave action and fluctuating water levels following expansion of the San Luis Reservoir and Cottonwood Bay and may be found to meet criteria as potential historic properties, historical resources, or tribal cultural resources.

**Table 7-1. Evaluations Summary for Cultural Resources within the Area of Potential Effects for the B.F. Sisk Dam Raise Alternative.**

Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
Construction of Dam Raise				
CA-MER-451H P-24-001876	Historic period ranch complex	Potential Construction Staging Area – South of B.F. Sisk Dam	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-477H P-24-001822	Fourteen historic period road segments	Dinosaur Point Boat Launch Modification Area; Reservoir Shoreline – Dinosaur Point Area	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended

B.F. Sisk Dam Raise and Reservoir Expansion  
Appendix I: Cultural Resources Report

Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
CA-MER-491H P-24-001985 PL-SLLP-A-010	Historic period road segment	Potential Construction Staging Area – West of Goosehead Point	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-492H P-24-001986	Historic period industrial site used in construction of the B.F. Sisk Dam	Potential Construction Staging Area – West of Goosehead Point	Recommended not eligible for listing in the NRHP/CRHR and a non-contributing element of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018)	No additional evaluation efforts recommended
CA-MER-493H P-24-001987 PL-SLLP-A-014	Historic period road segment	Potential Construction Staging Area – West of Goosehead Point	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-494H P-24-001988 PL-SLLP-A-015	Historic period road segment	Basalt Hill Borrow Area; Potential Construction Staging Area – West of Goosehead Point; Access Road Area	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-495H P-24-001989 PL-SLLP-A-016	Historic period road segment	Potential Construction Staging Area – West of Goosehead Point	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-509H P-24-002154 PL-SLLPIP-16-01	Historic period Basalt Hill Quarry, part of the industrial complex used in construction of B.F. Sisk Dam system	Basalt Hill Borrow Area; Access Road Area	Recommended not eligible for listing in the NRHP/CRHR and a non-contributing element of the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018)	No additional evaluation efforts recommended

Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
CA-MER-510H P-24-002155 PL-SLLPIP-16-02	Historic concrete equipment pad near O'Neill Forebay	Borrow Area 6 - South of O'Neill Forebay	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
CA-MER-511H P-24-002156 PL-SLLPIP-16-03	Historic metal water tank on railroad ties in a corral area near O'Neill Forebay	Borrow Area 6 - South of O'Neill Forebay	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
CA-MER-512H P-24-002157 PL-SLLPIP-16-05	Historic helicopter pad located east of the BF Sisk Dam	Potential construction staging areas – block east of B.F. Sisk Dam	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
CA-MER-513H P-24-002158 PL-SLLPIP-16-06	Historic asphalt road segment	Potential construction staging areas – block east of B.F. Sisk Dam	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
CA-MER-514H P-24-002159 PL-SLLPIP-16-07	Historic ditch segment	Potential construction staging areas – block east of B.F. Sisk Dam	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended

B.F. Sisk Dam Raise and Reservoir Expansion  
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Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
CA-MER-520H P-24-002165 PL-SLLPIP-16-14	Historic period survey markers and monitoring wells associated with construction and maintenance of the B.F. Sisk Dam	Downstream Stability Berms/Fill Impact Areas; Potential Construction Staging Areas	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
CA-MER-521H P-24-002173 SLTP-B-11	Historic water tank and trough	Borrow Area 6 - South of O'Neill Forebay	Not eligible for listing in the NRHP with SHPO concurrence (Polanco 2018), recommended not eligible for listing in the CRHR	No additional evaluation efforts recommended
PL-SISK-01	Historic period dirt road segment	Basalt Hill Borrow Area; Potential Construction Staging Area – West of Goosehead Point; Access Road Area	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
SR 152 Modification Area / Construction of Dam Raise				
B.F. Sisk Dam/San Luis Reservoir Historic District	Historic period B.F. Sisk Dam and facilities, includes the Cottonwood embankment (PL-Sisk-04), recorded as a feature of the San Luis Reservoir	Downstream Stability Berms/Fill Impact Areas; Expanded Embankment; Reservoir Shoreline	Recommended eligible for listing in the NRHP/CRHR as the B.F. Sisk Dam/San Luis Reservoir Historic District (JRP 2018); key elements of the district not individually eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended

Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
Operation of Dam Raise				
CA-MER-15 P-24-000116	Prehistoric pictographs, bedrock mortars, cupules, cleared areas midden soil, lithic scatter	San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site
CA-MER-28 P-24-000129	Prehistoric occupation site with lithic scatter	San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site
CA-MER-82 P-24-000182	Prehistoric lithic scatter with groundstone	San Luis Reservoir Shoreline – West side of San Luis Creek Inlet	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site
CA-MER-83 P-24-000183	Prehistoric midden soil with lithic scatter and groundstone	San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site
CA-MER-130 P-24-000220	Prehistoric midden soil with two bedrock mortar features with five mortars and groundstone	San Luis Reservoir Shoreline – North of Dinosaur Point Boat Launch	Listed in the NRHP/CRHR as a contributing element to the San Luis Gonzaga Archaeological District	No additional evaluation efforts recommended
CA-MER-136 P-24-000226	Prehistoric midden deposit with pestle fragments	Cottonwood Bay Shoreline	Listed in the NRHP/CRHR (code 1D)	No additional evaluation efforts recommended
CA-MER-137 P-24-000227	Prehistoric large occupation site on knoll with pestle fragments	Cottonwood Bay Shoreline	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site



B.F. Sisk Dam Raise and Reservoir Expansion  
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Site Number	Description	APE Location	NRHP/CRHR Status	Recommended Evaluation Measures
CA-MER-484H P-24-001974 PL-SLLP-A-001	Historic period transmission poles and debris scatter	San Luis Reservoir Shoreline – Dinosaur Point Area	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-489H P-24-001979 PL-SLLP-A-013	Historic period road segment	San Luis Reservoir Shoreline – Dinosaur Point Area	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-515H P-24-002160 PL-SLLPIP-16-09	Historic period earthen dam with impound pond	San Luis Reservoir Shoreline – South of SR 152	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-516H P-24-002161 PL-SLLPIP-16-10	Historic period earthen dam with impound pond	San Luis Reservoir Shoreline – South of SR 152	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-517 P-24-002162 PL-SLLPIP-16-11	Prehistoric lithic scatter with midden and groundstone	San Luis Reservoir Shoreline – South of Dinosaur Point Boat Launch	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site
CA-MER-518H P-24-002163 PL-SLLPIP-16-12	Historic period earthen dam with impound pond	San Luis Reservoir Shoreline – South side of San Luis Creek Inlet	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
CA-MER-519H P-24-002164 PL-SLLPIP-16-13	Historic period dirt road segments	San Luis Reservoir Shoreline – San Luis Creek Inlet	Recommended not eligible for listing in the NRHP/CRHR	No additional evaluation efforts recommended
PL-SISK-05	Prehistoric midden site with fire-affected rock	Cottonwood Bay Shoreline	Pending evaluation for listing in the NRHP/CRHR under Criterion D/4	If resource cannot be avoided, subsurface testing is recommended to further evaluate the site

As was noted in Section 2.2.3, Late Holocene landforms in and around the San Luis Reservoir are highly sensitive for buried cultural resources that may become exposed during drought years or periods of significant drawdown. Mechanical and biochemical impacts associated with a fluctuating reservoir shoreline also can have a pronounced effect on cultural resources and can act to cover, expose, erode, or alter both archaeological sites and built environment resources (*see* Section 6.2.3). If the maximum water level of the San Luis Reservoir is increased under the B.F. Sisk Dam Raise Alternative, three known resources (CA-MER-130, CA-MER-484H, and CA-MER-136) may be newly affected. Other resources located along the existing shoreline that have been subject to prior mechanical and biochemical impacts also may be affected in new ways. For instance, additional resource areas may become inundated, subject to wave action, or buried by redeposited sediment. Based on field observations and controlled experiments, Ware (1989) formulated a model for the management of cultural resources in reservoir environments based on three major impact zones. If the current Project is authorized and the B.F. Sisk Dam Raise Alternative is selected, that model might provide an effective tool in managing historic properties or historical resources affected by an increase in reservoir storage capacity.

A Draft EIR/SEIS has been prepared by Reclamation and the Authority that addresses potential impacts of the B.F. Sisk Dam Raise Alternative to cultural resources under CEQA. Given the information available, adverse effects to significant cultural resources (i.e., historic properties) may result from implementation of the B.F. Sisk Dam Raise Alternative. Mitigation measures to resolve adverse effects on historic properties, pursuant to Section 106 of the NHPA, cannot be determined until all cultural resources in the APE for the undertaking have been fully evaluated for NRHP eligibility and consultations are conducted under Section 106 of the NHPA. This will not occur until after the submission of a Project Feasibility Report and SEIS/EIR to the Office of Management and Budget and the authorization of a Project by Congress. When a Project is authorized, efforts to evaluate potential historic properties would continue, a Section 106 finding of effect for the undertaking would be made, and any adverse effects to historic properties would be resolved through completion of the Section 106 process.

The resolution of adverse effects to historic properties occurs through the implementation of measures agreed on through consultation with the SHPO, ACHP, and other Section 106 consulting parties as stipulated in a formal agreement document (i.e., Memorandum of Agreement or Programmatic Agreement). Generally, significant impacts to cultural resources under NEPA would also be mitigated through the measures agreed to through the Section 106 process. Cultural resources that are formally determined not eligible for inclusion in the NRHP or the CRHR would require no further management prior to Project implementation. It should be noted that some cultural resources may not meet NRHP eligibility criteria, but still may be CRHR-eligible. Such resources would be managed per CEQA requirements.

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B.F. Sisk Dam Raise and Reservoir Expansion  
Appendix I: Cultural Resources Report

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- 2007a Archaeological Survey Report, Basalt Campground Restroom 1 & 2, Project #8370, San Luis Reservoir State Recreation Area. Produced by the California Department of Parks and Recreation. Study ME-006535 on file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.
- 2007b Site record update for CA-MER-261H (P-24-000351). Produced by the California Department of Parks and Recreation. On file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.
- 2007c Site record update for CA-MER-437 (P-24-001859). Produced by the California Department of Parks and Recreation. On file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.
- 2008a Archaeological Survey Report, 2007-8 Deferred Maintenance Program Projects, Sewage Lift Stations and Water Treatment Facilities, San Luis Reservoir State Recreation Area, Merced County, California. Produced by the California Department of Parks and Recreation. ME-006474 on file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.
- 2008b Site record for CA-MER-451H (P-24-001876). Produced by the California Department of Parks and Recreation. on file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.
- 2009 Archaeological Survey Report, Basalt Trail Accessibility Improvements, San Luis Reservoir State Recreation Area, Merced County, CA. Produced by the California Department of Parks and Recreation. Study ME-008185 on file at the Central California Information Center, California State University Stanislaus Department of Anthropology, Turlock, California.

### **Youtube**

- 2016 August 18, 1962-President John F. Kennedy-Groundbreaking ceremony for the San Luis Dam, Los Banos. Accessed August 2016. Available at <https://www.youtube.com/watch?v=kMSbh01YQvg>.

### **Zaugg, J.**

- 2008 Medeiros Area Vault Toilets (3). Study ME-06836 on file at the Central California Information Center, California State University, Stanislaus, Turlock, CA.



**Ziesing, G., B. Eastman, K. Hattersley-Drayton, M. Praetzellis, E. Solari,  
and S. Stewart**

1997 From Rancho to Reservoir: History and Archaeology of the Los Vaqueros Watershed, California. Accessed January 2010. Available on the Contra Costa Water District website: [www.ccwater.com/publications/index.asp?sec=r2r](http://www.ccwater.com/publications/index.asp?sec=r2r).

# **Appendix A**

## **Archival and Records Search Maps**

**CONFIDENTIAL - REDACTED**

# **Appendix B**

## **Inventory Survey Maps**

**CONFIDENTIAL - REDACTED**

**Appendix C**  
**Confidential Cultural Resource Records**  
**Associated with the B.F. Sisk Dam Raise**  
**Alternative**

**CONFIDENTIAL - REDACTED**

**Previously Recorded Archaeological Sites or Built Environment  
Resources**

**Newly Discovered Archaeological Sites or Built Environment  
Resources**

## **Newly Recorded Isolated Finds**

**Previously Recorded Archaeological Sites or Built Environment  
Resources, Not Relocated**



# **Appendix D**

## **Organizational Contact Documentation**

## Sacred Lands File & Native American Contacts List Request

### NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95501  
(916) 373-3710  
(916) 373-5471 – Fax  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

*Information Below is Required for a Sacred Lands File Search*

Project: San Luis & Delta Mendota Water Authority Reservoir Expansion Project (3639-01)

County: Merced

#### USGS Quadrangle

Name: Los Banos Valley (1969), Mariposa Peak (1969), Pacheco Pass (1955), San Luis Dam (1969)

Township: - Range: - Section(s): please see attached

#### Company/Firm/Agency:

Pacific Legacy, Inc.

Contact Person: Lisa Holm

Street Address: 900 Modoc Street

City: Berkeley, California Zip: 94707

Phone: (510) 524-3991 Extension: 102

Fax: \_\_\_\_\_

Email: holm@pacificlegacy.com

#### Project Description:

On behalf of the San Luis & Delta Mendota Water Authority and US Bureau of Reclamation, we are conducting a cultural resources investigation for the San Luis Reservoir Expansion and BF Sisk Dam Raise project (3639-01), which will be centered on the San Luis Reservoir in western Merced County. The project would involve expanding the capacity of the reservoir and raising the height of the dam. Potential impact locations include the existing reservoir shoreline, which may become inundated if the storage capacity of the San Luis Reservoir is increased, borrow areas, levee modification and raise areas, downstream fill impact areas, haul roads, and potential construction staging areas. The project area will span approximately 5,022 acres. We would like to request a search of the Sacred Lands File for the project area (please see Figure 1, attached) as well as a list of Native American Tribal representatives for Merced County who may have an interest in or knowledge of the project area. The Authority and/or Reclamation will be contacting these parties for further consultation. If you could also please send us a CEQA Tribal Consultation List (AB 52) for the project area (if separate from the above) it would be much appreciated. Thank you for your assistance.

Project Location Map is attached

<b>USGS 7.5-Minute Quadrangle</b>	<b>Township/Range</b>	<b>Sections</b>
Los Banos Valley	Township 11 South, Range 8 East	4, 5, unsectioned
Mariposa Peak	Township 11 South, Range 8 East	6, unsectioned
	Township 11 South, Range 7 East	6
Pacheco Pass	San Luis Gonzaga Land Grants, Civil Colonies	
	Township 9 South, Range 7 East	36
	Township 9 South, Range 7 East	25
	Township 9 South, Range 8 East	31
	Township 9 South, Range 8 East	36
	Township 10 South, Range 7 East	25, 36, unsectioned
	Township 10, South, Range 8 East	25, 29, 30, 31, 32, unsectioned
	Township 11 South, Range 7 East	6
	Township 11 South, Range 8 East	5, 6, 31, 32
San Luis Dam	San Luis Gonzaga Land Grants, Civil Colonies	
	Township 9 South, Range 8 East	31
	Township 10 South, Range 8 East	13, 24, 25, 26, 27, 28, 29, 32, 33, 34, 35
	Township 10 South, Range 9 East	7, 13, 18
	Township 11 South, Range 8 East	4, 5, 32, 33



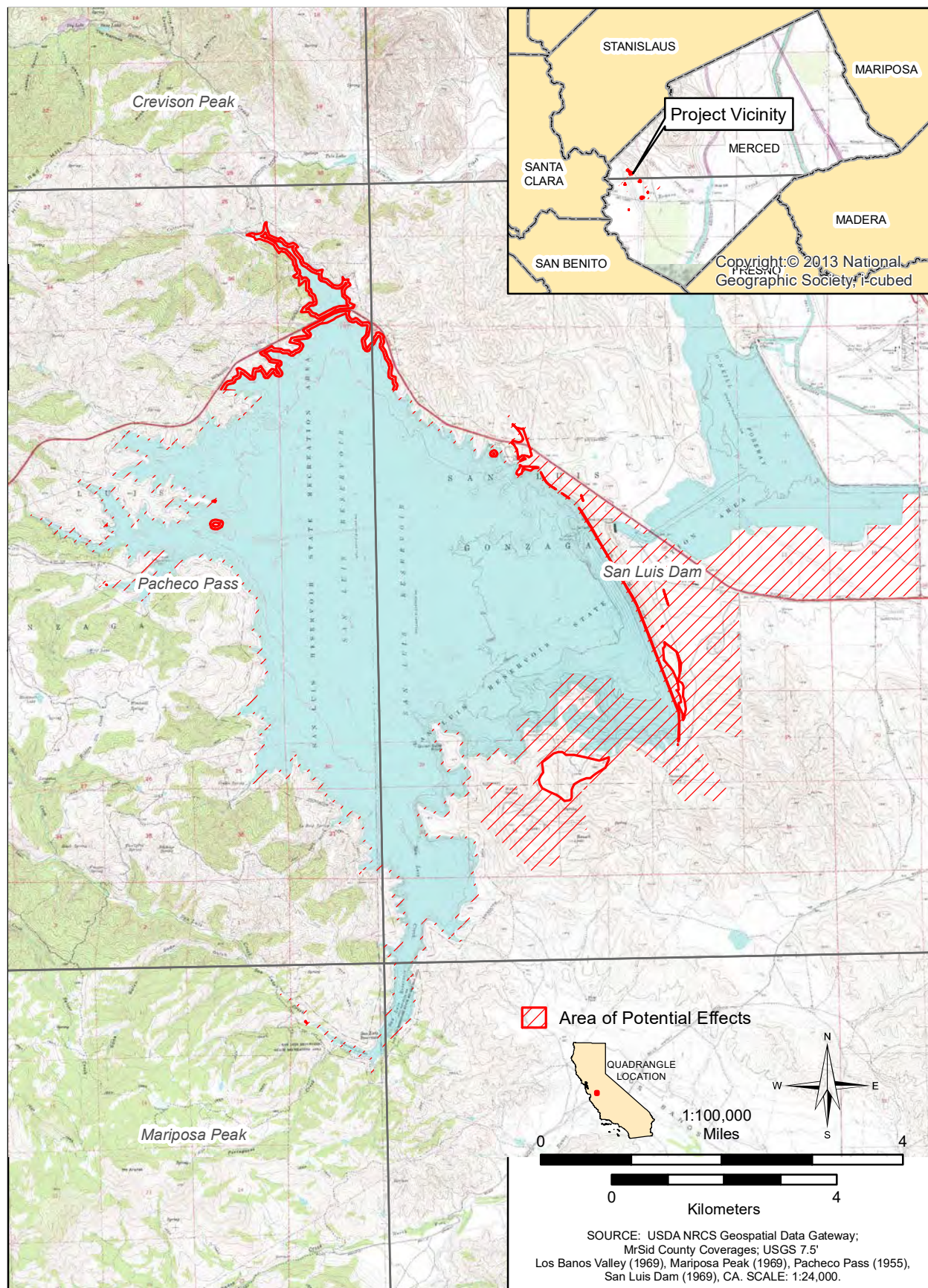


Figure 1. San Luis & Delta Mendota Water Authority Reservoir Expansion Project (3639-01) Location and Vicinity Map.

## NATIVE AMERICAN HERITAGE COMMISSION

February 25, 2020

Lisa Holm

Pacific Legacy, Inc.

Via Email to: holm@pacificlegacy.com

**Re: San Luis & Delta Mendota Water Authority Reservoir Expansion Project (3639-01), Merced County**

Dear Ms. Holm:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: [Nancy.Gonzalez-Lopez@nahc.ca.gov](mailto:Nancy.Gonzalez-Lopez@nahc.ca.gov).

Sincerely,



Nancy Gonzalez-Lopez  
Cultural Resources Analyst

Attachment



CHAIRPERSON  
**Laura Miranda**  
Luiseño

VICE CHAIRPERSON  
**Reginald Pagaling**  
Chumash

SECRETARY  
**Merri Lopez-Keifer**  
Luiseño

PARLIAMENTARIAN  
**Russell Attebery**  
Karuk

COMMISSIONER  
**Marshall McKay**  
Wintun

COMMISSIONER  
**William Mungary**  
Paiute/White Mountain  
Apache

COMMISSIONER  
**Joseph Myers**  
Pomo

COMMISSIONER  
**Julie Tumamait-Stenslie**  
Chumash

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
**Christina Snider**  
Pomo

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

**Native American Heritage Commission  
Native American Contact List  
Merced County  
2/25/2020**

***Amah Mutsun Tribal Band***

Valentin Lopez, Chairperson  
P.O. Box 5272  
Galt, CA, 95632  
Phone: (916) 743 - 5833  
vlopez@amahmutsun.org

Costanoan  
Northern Valley  
Yokut

***Dumna Wo-Wah Tribal  
Government***

Robert Ledger, Chairperson  
2191 West Pico Ave.  
Fresno, CA, 93705  
Phone: (559) 540 - 6346  
ledgerrobert@ymail.com

Foothill Yokut  
Mono

***North Valley Yokuts Tribe***

Katherine Perez, Chairperson  
P.O. Box 717  
Linden, CA, 95236  
Phone: (209) 887 - 3415  
canutes@verizon.net

Costanoan  
Northern Valley  
Yokut

***Southern Sierra Miwuk Nation***

William Leonard, Chairperson  
P.O. Box 186  
Mariposa, CA, 95338  
Phone: (209) 628 - 8603

Miwok  
Northern Valley  
Yokut  
Paiute

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed San Luis & Delta Mendota Water Authority Reservoir Expansion Project (3639-01), Merced County.



Native American Tribal Representative and Additional Consulting Party Contact Information	Federally Recognized	California Native American Heritage Commission	Bureau of Indian Affairs	U.S. Department of Housing and Urban Development	National Association of THPOS	Letter Sent	Certified Mail Tracking No.	Delivered	Emailed/ Called	Comments
Jennifer Ruiz, Chairperson Picayune Rancheria of Chukchansi Indians 8080 Palm Ave, Suite 207 Fresno, California 93711 Phone: <a href="tel:5594125590">559) 412-5590</a>	x		x			5/18/20	7017 0190 0000 8399 0251	In Transit		Note, tribal website lists Claudia Gonzales as Chairperson, Joshua Herr as Vice Chairman. TDAT lists Reggie Lewis as Chairperson and Mary Motola as THPO. TDAT phone: (559) 370-4141 BIA website lists Jennifer Ruiz as Chairperson, physical address as 49260 Chapel Hill Drive, Oakhurst, CA 93644 And local PO Box as P.O. Box 2146, Oakhurst, CA 93644
Tara Estes-Harter, Cultural Director/Tribal Historic Preservation Officer Picayune Rancheria of Chukchansi Indians 49260 Chapel Hill Drive Oakhurst, CA 93644 <a href="mailto:Tharter@chukchansi-nsn.gov">Tharter@chukchansi-nsn.gov</a>	x				x	5/18/20	7017 0190 0000 8399 0152	5/21/20		
Leo Sisco, Chairperson Santa Rosa Rancheria Tachi Yokut Tribe P.O. Box 8 Lemoore, California 93245 Phone: (559) 924-1278 <a href="http://www.tachi-yokut-nsn.gov/">http://www.tachi-yokut-nsn.gov/</a>	x		x			5/18/20	7017 0190 0000 8399 0268	5/21/20		See also Santa Rosa Indian Community of the Santa Rosa Rancheria, California or Santa Rosa Rancheria and/or Tachi Yokut Tribe
Shana Powers, Cultural Director Santa Rosa Rancheria Tachi Yokut Tribe P.O. Box 8 Lemoore, California 93245 <a href="mailto:SPowers@tachi-yokut-nsn.gov">SPowers@tachi-yokut-nsn.gov</a> <a href="http://www.tachi-yokut-nsn.gov/">http://www.tachi-yokut-nsn.gov/</a>	x					5/18/20	7017 0190 0000 8399 0244	5/21/20		See also Santa Rosa Indian Community of the Santa Rosa Rancheria, California or Santa Rosa Rancheria and/or Tachi Yokut Tribe
Brenda D. Lavell, Chairperson Table Mountain Rancheria P.O. Box 410 Friant, CA 93626-0410 Phone: (559) 822-2587	x		x			5/18/20	7017 0190 0000 8399 0176	5/20/20		
Bob Pennell, Cultural Resources Director Table Mountain Rancheria P.O. Box 410 Friant, CA 93626-0410 Phone: 559-325-0351 Cell: 559-217-9718	x					5/18/20	7017 0190 0000 8399 0213	5/20/20		

Native American Tribal Representative and Additional Consulting Party Contact Information	Federally Recognized	California Native American Heritage Commission	Bureau of Indian Affairs	U.S. Department of Housing and Urban Development	National Association of THPOS	Letter Sent	Certified Mail Tracking No.	Delivered	Emailed/ Called	Comments
Octavio Escobedo III, Chairperson Tejon Indian Tribe P.O. Box 640 Arvin, CA 93203-0640 <a href="mailto:oescobedo@tejonindiantribe-nsn.gov">oescobedo@tejonindiantribe-nsn.gov</a>	x		x			5/18/20	7017 0190 0000 8399 0145	5/20/20		BIA give address as 1731 Hasti Acres Drive Suite 108, Bakersfield, CA 93309
Neil Peyron, Chairperson Tule River Indian Tribe P.O. Box 589 Porterville, CA 93258 Phone: (559) 781-4271 <a href="mailto:Neil.Peyron@Tulerivertribe-nsn.gov">Neil.Peyron@Tulerivertribe-nsn.gov</a> <a href="http://tulerivertribe-nsn.gov/enviromental/">http://tulerivertribe-nsn.gov/enviromental/</a>	x		x			5/18/20	7017 0190 0000 8399 0237	In Transit		Note zip code on Reclamation mailing list showed zip code as 93528 (93258 correct). Tracking indicates must schedule redelivery, option not available online; likely will return to San Luis & Delta-Mendota Water Authority. USPS confirms address is correct with 93258 zip code.
Kerri Vera, Department of Environmental Protection Director Tule River Indian Tribe P.O. Box 589 Porterville, CA 93258 <a href="mailto:tuleriverenv@yahoo.com">tuleriverenv@yahoo.com</a> or <a href="mailto:kerri.vera@tulerivertribe-nsn.gov">kerri.vera@tulerivertribe-nsn.gov</a> <a href="http://tulerivertribe-nsn.gov/enviromental/">http://tulerivertribe-nsn.gov/enviromental/</a>	x					5/18/20	7017 0190 0000 8399 0282	In Transit		Note zip code on Reclamation mailing list showed zip code as 93528 (93258 correct). Tracking indicates must schedule redelivery, option not available online; likely will return to San Luis & Delta-Mendota Water Authority. USPS confirms address is correct with 93258 zip code.
Valentin Lopez, Chairperson Amah Mutsun Tribal Band P.O. Box 5272 Galt, CA, 95632 Phone: (916) 743 - 5833 <a href="mailto:vlopez@amahmutsun.org">vlopez@amahmutsun.org</a> <a href="http://amahmutsun.org/">http://amahmutsun.org/</a>		x				5/18/20	7017 0190 0000 8399 0206	5/20/20		
Edward Ketchum, Tribal Historian and Natural Resource Coordinator Amah Mutsun Tribal Band 35867 Yosemite Avenue Davis, CA 95616 <a href="http://amahmutsun.org/">http://amahmutsun.org/</a>						5/18/20	7017 0190 0000 8399 0169	5/20/20		
Keith Turner Dumna Wo-Wah Tribal Government P.O. Box 306 Auberry, CA 93602 <a href="mailto:keithturner@dumnaindians.org">keithturner@dumnaindians.org</a>						5/18/20	7017 0190 0000 8399 0275	Available for pickup 5/27/20		



Native American Tribal Representative and Additional Consulting Party Contact Information	Federally Recognized	California Native American Heritage Commission	Bureau of Indian Affairs	U.S. Department of Housing and Urban Development	National Association of THPOS	Letter Sent	Certified Mail Tracking No.	Delivered	Emailed/ Called	Comments
Robert Ledger, Chairperson Dumna Wo-Wah Tribal Government 2191 West Pico Avenue Fresno, CA 93705 Phone: (559) 540 - 6346 <a href="mailto:ledgerrrobert@ymail.com">ledgerrrobert@ymail.com</a>		x				5/18/20	7017 0190 0000 8399 0183	5/20/20		
Katherine Erolinda Perez, Chairperson North Valley Yokuts Tribe P.O. Box 717 Linden, CA 95236-0717 Phone: (209) 887 - 3415 <a href="mailto:canutes@verizon.net">canutes@verizon.net</a>		x				5/18/20	7017 0190 0000 8399 0220	5/20/20		
William Leonard, Chairperson Southern Sierra Miwuk Nation P.O. Box 186 Mariposa, CA 95338-0186 Phone: (209) 628 – 8603 <a href="https://www.southernsierramiwuknation.org/">https://www.southernsierramiwuknation.org/</a>		x				5/18/20	7017 0190 0000 8399 0190	5/21/20		

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Octavio Escobedo III, Chairperson  
Tejon Indian Tribe  
P.O. Box 640  
Arvin, CA 93203-0640

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Escobedo:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

The Authority and Reclamation are preparing a Draft Environmental Impact Report (EIR) and a Draft Supplemental Environmental Impact Statement (SEIS) for the Project and have analyzed a range of management measures and alternatives aimed at meeting its main objectives. Criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening resulted in two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the EIR/SEIS.

### **Project Information**

The No Action/No Project Alternative will include implementation of the Crest Raise Action under the B.F. Sisk Dam Safety of Dams Modification Project, which was examined by Reclamation and the State of California Department of Water Resources (DWR) in a 2019 Final EIS/EIR. Under the Crest Raise Action, which has been funded by the U.S. Congress and is scheduled to begin in 2021, the height of the B.F. Sisk Dam will be raised by 12 feet to reduce the likelihood of overtopping if slumping or deformation of the dam occurs as a result of seismic activity. This will allow the San Luis Reservoir to continue operating at its current maximum storage capacity while protecting the downstream public.

The Non-Structural Alternative would entail operational changes only and would result in no significant changes to reservoir water elevations. It is expected to have no impacts to cultural resources if implemented and was previously analyzed by the Authority and Reclamation in a 2019 Revised EIR/Supplemental EIS for the Long-Term Water Transfers Program.

The B.F. Sisk Dam Raise Alternative, which is centered on the San Luis Reservoir in western Merced County, has the potential to result in significant impacts to cultural resources if implemented and is the main focus of cultural resource studies conducted for the Project. The B.F. Sisk Dam Raise Alternative would increase the height of the dam by a further 10 feet and expand the storage capacity of the San Luis Reservoir by 130 thousand acre-feet. It would build upon the No Action/No Project Alternative and rely on the use of the same access roads and borrow, construction, and staging areas to implement construction. Collectively, these areas total 3,914 acres. The B.F. Sisk Dam Raise Alternative also would require additional construction activities to accommodate the proposed increase in reservoir storage capacity. These include elevating the Dinosaur Point and Goosehead Point boat launches by 10 feet; elevating the berm or levee at the Pacheco Pumping Plant by 10 feet; and elevating portions of State Route 152 between Cottonwood Bay and the San Luis Reservoir to prevent the roadway from becoming inundated. Figure 1 depicts the proposed Area of Potential Effects (APE) for the B.F. Sisk Dam Raise Alternative.

In addition to construction impacts to cultural resources, implementation of the B.F. Sisk Dam Raise Alternative is expected to result in operational impacts as the maximum water elevation of the San Luis Reservoir is increased. For cultural resources along the expanded reservoir shoreline, these operational impacts would include inundation and/or wave activity and erosion. The APE for the B.F. Sisk Dam Raise Alternative therefore includes not only the 3,914 acres that would be used to support construction of the No Action/No Project Alternative, but also construction areas specific to the alternative as well the Luis Reservoir and Cottonwood Bay shorelines. Cumulatively, the total APE for the alternative spans 5,022 acres.

### **Known Cultural and/or Historic Records**

On behalf of the Authority and Reclamation and under contract to CDM Smith, Pacific Legacy, Inc. performed a cultural resources investigation for the B.F. Sisk Dam Raise Alternative that included archival and record searches for the APE and a surrounding 0.5-mile radius, contact with the Native American Heritage Commission, and cultural resource inventory surveys. As of April 30, 2020, all safely accessible areas within the B.F. Sisk Dam Raise Alternative APE (4,454 acres) have been subject to intensive pedestrian inventory surveys. Forty-three cultural resources were documented within the APE, including 11 previously recorded resources, 22 newly identified archaeological sites or historic period built environment resources, and ten isolated finds. Ten resources noted through archival and record searches could not be relocated within the APE or were found to be non-cultural.

The 11 previously recorded resources relocated within the B.F. Sisk Dam Raise Alternative APE include seven prehistoric sites, most with midden, lithics, and groundstone; one historic period water tank and trough; one historic period ranch complex; one historic period road; and key features of the B.F. Sisk Dam/San Luis Reservoir Historic District. The 22 newly identified archaeological sites or historic period built environment resources include two prehistoric midden sites, one with lithics and groundstone and the other with fire-affected rock; a series of historic period transmission poles with a debris scatter; two industrial sites associated with B.F. Sisk Dam construction; eight historic period road segments; a concrete equipment pad; a corral and water tank; a helicopter pad; a ditch segment; three earthen dams with impound ponds; a series of survey markers and monitoring wells associated with the B.F. Sisk Dam; and the Cottonwood embankment, which is a feature of the San Luis Reservoir and wider B.F. Sisk Dam/San Luis Reservoir Historic District. The ten isolated finds include one isolated prehistoric core, one biface fragment, one cobble and flake, one displaced cupule boulder, one historic period well head, one metal can, a single concrete foundation, two watering troughs, and one bottle.

Construction activities beyond those included under the No Action/No Project Alternative are expected to impact one historic period road near the Goosehead Point Boat Launch as well as the Cottonwood embankment supporting State Route 152 between Cottonwood Bay and the San Luis Reservoir. The historic period road has been recommended not eligible for listing in the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR), and the embankment is considered an element of the B.F. Sisk Dam/San Luis Reservoir Historic District, which has been recommended eligible for listing in the NRHP and CRHR. Nine prehistoric sites and eight historic period built environment resources recorded along the San Luis Reservoir and Cottonwood Bay shorelines are expected to be subject to operational impacts if the alternative is implemented. Two of these prehistoric sites are listed in the NRHP and CRHR and seven have not yet been evaluated.

May 18, 2020

Page 4 of 4

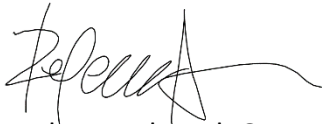
No known tribal cultural resources as defined under PRC §21074(a) have been reported within the B.F. Sisk Dam Raise Alternative APE, and a search of the NAHC Sacred Lands File for the APE yielded negative results. If you have any interest in or knowledge of cultural resources in the Project vicinity, other concerns about the Project, or an interest in consulting with the Authority about the proposed Project, please do not hesitate to contact the Authority's Chief Operating Officer, Pablo Arroyave, using the contact information below:

15990 Kelso Road  
Byron, California 94514  
[Pablo.arroyave@sldmwa.org](mailto:Pablo.arroyave@sldmwa.org)  
(209) 832-6200

### **Due Date for Comments**

Pursuant to PRC §21080.3.1 (d) and Executive Order N-54-20, you have sixty (60) days from the receipt of this letter to request consultation, in writing, with the Authority. Please send your request to Mr. Arroyave using the contact information above. If you have any questions prior to submitting a written request, please contact Mr. Arroyave at (209) 832-6200 or [pablo.arroyave@sldmwa.org](mailto:pablo.arroyave@sldmwa.org). If the Authority does not receive such a request within the specified time period, it will conclude the consultation period and provide written confirmation to you that it has done so.

Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Ms. Tara Estes-Harter, Cultural Director/Tribal Historic Preservation Officer  
Picayune Rancheria of Chukchansi Indians  
49260 Chapel Hill Drive  
Oakhurst, CA 93644

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Estes-Harter:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

The Authority and Reclamation are preparing a Draft Environmental Impact Report (EIR) and a Draft Supplemental Environmental Impact Statement (SEIS) for the Project and have analyzed a range of management measures and alternatives aimed at meeting its main objectives. Criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening resulted in two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the EIR/SEIS.

### **Project Information**

The No Action/No Project Alternative will include implementation of the Crest Raise Action under the B.F. Sisk Dam Safety of Dams Modification Project, which was examined by Reclamation and the State of California Department of Water Resources (DWR) in a 2019 Final EIS/EIR. Under the Crest Raise Action, which has been funded by the U.S. Congress and is scheduled to begin in 2021, the height of the B.F. Sisk Dam will be raised by 12 feet to reduce the likelihood of overtopping if slumping or deformation of the dam occurs as a result of seismic activity. This will allow the San Luis Reservoir to continue operating at its current maximum storage capacity while protecting the downstream public.

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May 18, 2020

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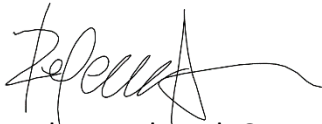
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Jennifer Ruiz, Chairperson

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Edward Ketchum, Tribal Historian and Natural Resource Coordinator  
Amah Mutsun Tribal Band  
35867 Yosemite Avenue  
Davis, CA 95616

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Ketchum:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

The Authority and Reclamation are preparing a Draft Environmental Impact Report (EIR) and a Draft Supplemental Environmental Impact Statement (SEIS) for the Project and have analyzed a range of management measures and alternatives aimed at meeting its main objectives. Criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening resulted in two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the EIR/SEIS.

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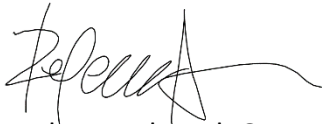
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Valentin Lopez, Chairperson

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
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May 18, 2020

***VIA U.S. MAIL***

Ms. Brenda D. Lavell, Chairperson  
Table Mountain Rancheria  
P.O. Box 410  
Friant, CA 93626-0410

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Lavell:

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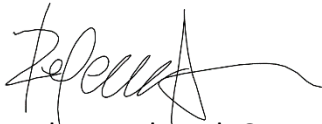
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Bob Pennell, Cultural Resources Director

**San Luis & Delta-Mendota Water Authority**



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May 18, 2020

***VIA U.S. MAIL***

Mr. Robert Ledger, Chairperson  
Dumna Wo-Wah Tribal Government  
2191 West Pico Avenue  
Fresno, CA, 93705

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No known tribal cultural resources as defined under PRC §21074(a) have been reported within the B.F. Sisk Dam Raise Alternative APE, and a search of the NAHC Sacred Lands File for the APE yielded negative results. If you have any interest in or knowledge of cultural resources in the Project vicinity, other concerns about the Project, or an interest in consulting with the Authority about the proposed Project, please do not hesitate to contact the Authority's Chief Operating Officer, Pablo Arroyave, using the contact information below:

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Byron, California 94514  
[Pablo.arroyave@sldmwa.org](mailto:Pablo.arroyave@sldmwa.org)  
(209) 832-6200

### **Due Date for Comments**

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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Keith Turner

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. William Leonard, Chairperson  
Southern Sierra Miwuk Nation  
P.O. Box 186  
Mariposa, CA 95338

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Leonard:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

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### **Project Information**

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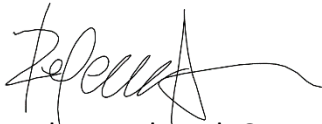
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Valentin Lopez, Chairperson  
Amah Mutsun Tribal Band  
P.O. Box 5272  
Galt, CA 95632

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Lopez:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

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### **Known Cultural and/or Historic Records**

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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Edward Ketchum, Tribal Historian and Natural Resource Coordinator

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Bob Pennell, Cultural Resources Director  
Table Mountain Rancheria  
P.O. Box 410  
Friant, CA 93626-0410

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Pennell:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

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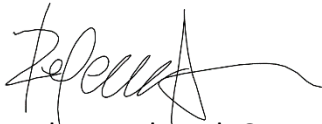
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Brenda D. Lavell, Chairperson

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Ms. Katherine Perez, Chairperson  
North Valley Yokuts Tribe  
P.O. Box 717  
Linden, CA 95236

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Perez:

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May 18, 2020

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(209) 832-6200

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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Neil Peyron, Chairperson  
Tule River Indian Tribe  
P.O. Box 589  
Porterville, CA 93528

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Peyron:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

The Authority and Reclamation are preparing a Draft Environmental Impact Report (EIR) and a Draft Supplemental Environmental Impact Statement (SEIS) for the Project and have analyzed a range of management measures and alternatives aimed at meeting its main objectives. Criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening resulted in two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the EIR/SEIS.

### **Project Information**

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May 18, 2020

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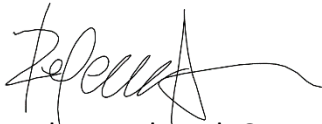
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Kerri Verra, Department of Environmental Protection Director

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Ms. Shana Powers, Cultural Director  
Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA 93245

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Powers:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

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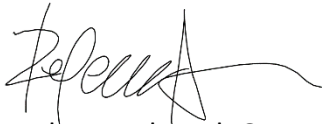
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Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Leo Sisco, Chairperson

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
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May 18, 2020

***VIA U.S. MAIL***

Ms. Jennifer Ruiz, Chairperson  
Picayune Rancheria of Chukchansi Indians  
8080 Palm Ave, Suite 207  
Fresno, CA 93711

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Ruiz:

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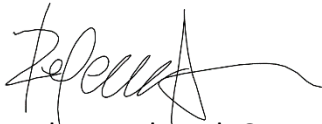
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15990 Kelso Road  
Byron, California 94514  
[Pablo.arroyave@sldmwa.org](mailto:Pablo.arroyave@sldmwa.org)  
(209) 832-6200

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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Tara Estes-Harter, Cultural Director/Tribal Historic Preservation Officer

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Leo Sisco, Chairperson  
Santa Rosa Rancheria Tachi Yokut Tribe  
P.O. Box 8  
Lemoore, CA 93245

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Sisco:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

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May 18, 2020

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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Shana Powers, Cultural Director

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Mr. Keith Turner  
Dumna Wo-Wah Tribal Government  
P.O. Box 306  
Auberry, CA 93602

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Mr. Turner:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

**Project Purpose**

The Authority and Reclamation are preparing a Draft Environmental Impact Report (EIR) and a Draft Supplemental Environmental Impact Statement (SEIS) for the Project and have analyzed a range of management measures and alternatives aimed at meeting its main objectives. Criteria used to evaluate these measures include the extent to which the measure addresses the needs and purpose of the Project, its cost-effectiveness, and the acceptability of its potential environmental impacts. Measures that remained after initial screening resulted in two main action alternatives: the Non-Structural Alternative and the B.F. Sisk Dam Raise Alternative. A No Action/No Project Alternative also is examined in the EIR/SEIS.

### **Project Information**

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May 18, 2020

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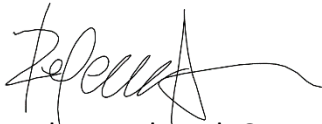
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Robert Ledger, Chairperson

**San Luis & Delta-Mendota Water Authority**



P.O. Box 2157  
Los Banos, CA 93635  
Phone: (209) 826-9696  
Fax: (209) 826-9698

May 18, 2020

***VIA U.S. MAIL***

Ms. Kerri Verra, Department of Environmental Protection  
Director Tule River Indian Tribe  
P.O. Box 589  
Porterville, CA 93528

**Re: Tribal Outreach under the California Environmental Quality Act, Assembly Bill 52, for the B.F. Sisk Dam Raise and Reservoir Expansion Project, Merced County, California**

Dear Ms. Verra:

As a part of the B.F. Sisk Dam Raise and Reservoir Expansion Project (Project), the San Luis & Delta-Mendota Water Authority (Authority) and the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) are examining potential strategies or alternatives aimed at increasing the flexibility and reliability of water deliveries to contractors and consumers south of the Sacramento-San Joaquin Delta. Below, please find a description of the proposed Project, a figure depicting the location of the proposed Project construction alternative, and the name of the Project point of contact for the Authority pursuant to Public Resources Code (PRC) §21080.3.1. This letter serves as formal notification of consultation under Assembly Bill 52.

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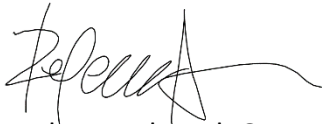
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Regards,



Rebecca Akroyd, General Counsel  
San Luis & Delta-Mendota Water Authority

cc: Pablo Arroyave  
Neil Peyron, Chairperson



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City, State, ZIP+4		

PS Form 3800, April 2019

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**Appendix E**  
**Photographic Documentation of 2020**  
**Survey Areas**

## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

**Photograph No. 1**  
**Direction:** Southwest  
**Date:** 3/30/20  
**Location:**  
PL-Sisk-01  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1368) View of  
road PL-Sisk-01.



**Photograph No. 2**  
**Direction:** Northeast  
**Date:** 3/30/20  
**Location:**  
PL-Sisk-01  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1369) View of  
road PL-Sisk-01 with  
B.F. Sisk Dam in  
background.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 3

**Direction:** North

**Date:** 3/30/20

**Location:**  
PL-Sisk-02

**Photographer:**  
M. O'Neill

**Description:**

(DSCF1370) Overview of cupule boulder on slope.



### Photograph No. 4

**Direction:** North

**Date:** 3/30/20

**Location:**  
PL-Sisk-02

**Photographer:**  
M. O'Neill

**Description:**

(DSCF1372) Detail of cupule arrangement on cupule boulder PL-Sisk-02.



## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 5

**Direction:** Northwest

**Date:** 3/30/20

**Location:**

San Luis Reservoir  
survey area

**Photographer:**

M. O'Neill

**Description:**

(DSCF1388) Drainage  
area west of PL-Sisk-  
01, unsurveyed  
because of steep  
terrain.



### Photograph No. 6

**Direction:** Southwest

**Date:** 3/31/20

**Location:**

CA-MER-494H

**Photographer:**

M. O'Neill

**Description:**

(DSCF1392) Survey  
crew on survey corridor  
along road CA-MER-  
494H.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

**Photograph No. 7**  
**Direction:** East  
**Date:** 3/31/20  
**Location:** CA-MER-494H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1396) Overview of road CA-MER-494H and surrounding terrain.



**Photograph No. 8**  
**Direction:** Northeast  
**Date:** 3/31/20  
**Location:** CA-MER-509H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1399) Overview of conveyor beltway alignment (Feature 4) with San Luis Reservoir in background. A buried timber tie is flagged in foreground, and a crew member stands at the concrete slab.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 9

**Direction:** Detail

**Date:** 3/31/20

**Location:** CA-MER-509H

**Photographer:**  
M. O'Neill

#### **Description:**

(DSCF1401) Close-up of concrete slab within conveyor beltway alignment (Feature 4). A bolt and a piece of wire are flagged.



### Photograph No. 10

**Direction:** East

**Date:** 3/31/20

**Location:** CA-MER-509H

**Photographer:**  
M. O'Neill

#### **Description:**

(DSCF1420) Intersection of roads PL-Sisk-01 (left) and CA-MER-494H (background). The concrete gravity sorter (Feature 3) of CA-MER-509H is visible above right.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 11

**Direction:** West

**Date:** 3/31/20

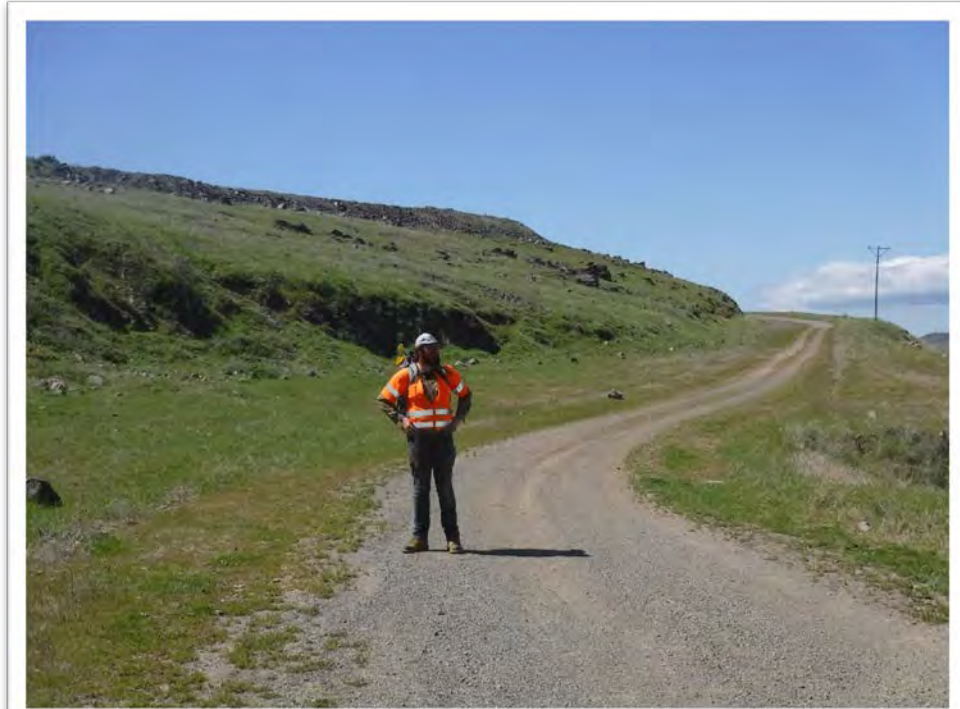
**Location:** PL-Sisk-01

**Photographer:**

M. O'Neill

**Description:**

(DSCF1424) View of road PL-Sisk-01 heading west and curving around south toward CA-MER-509H.



### Photograph No. 12

**Direction:** South-southwest

**Date:** 4/1/20

**Location:** CA-MER-509H

**Photographer:**

M. O'Neill

**Description:**

(DSCF1446) View of concrete footings of Feature 4 of CA-MER-509H, concrete gravity sorter (Feature 3) in background right.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

**Photograph No. 13**  
**Direction:** Southeast  
**Date:** 4/1/20  
**Location:** CA-MER-509H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1434) Smaller rectangular concrete footing of Feature 4 of CA-MER-509H.



**Photograph No. 14**  
**Direction:** North-northwest  
**Date:** 4/1/20  
**Location:** CA-MER-509H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1438) Larger triangular concrete footing of Feature 4 of CA-MER-509H.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

**Photograph No. 15**  
**Direction:** Northeast  
**Date:** 4/1/20  
**Location:** CA-MER-509H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1448) View from concrete footings of Feature 4 along conveyor beltway. Crew stands on road shoulder. Alignment passes right of lone tree in distance.



**Photograph No. 15**  
**Direction:** Detail  
**Date:** 4/1/20  
**Location:** CA-MER-509H  
**Photographer:**  
M. O'Neill

**Description:**  
(DSCF1449) Close-up of chain fragment, likely associated with the conveyor beltway (Feature 4).





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 17

**Direction:** West

**Date:** 4/1/20

**Location:** San Luis Reservoir survey area

**Photographer:**

M. O'Neill

**Description:**

(DSCF1460)

Southernmost end of survey area.



### Photograph No. 18

**Direction:** South-southeast

**Date:** 4/1/20

**Location:** CA-MER-451H

**Photographer:**

M. O'Neill

**Description:**

(DSCF1467) View from feature 7a to Feature 7b with crew standing on slope at latter feature.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

**Photograph No. 19**  
**Direction:** Southeast  
**Date:** 4/2/20  
**Location:** P-24-002184  
**Photographer:**  
M. O'Neill



**Description:**  
(DSCF1471) View of SR 152 crossing Cottonwood Fill (Map Reference No. 4).

**Photograph No. 20**  
**Direction:** North  
**Date:** 4/3/20  
**Location:** CA-MER-137  
**Photographer:**  
M. O'Neill



**Description:**  
(DSCF1492) View of CA-MER-137, with crew member standing at northern bound of site.



## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 21

**Direction:** East

**Date:** 4/3/20

**Location:** CA-MER-137

**Photographer:**  
M. O'Neill

**Description:**

(DSCF1494) View of CA-MER-137, with crew member standing on eastern bound of site.



### Photograph No. 22

**Direction:** East

**Date:** 4/3/20

**Location:** CA-MER-136

**Photographer:**  
M. O'Neill

**Description:**

(DSCF1505) View of CA-MER-136, from west end, looking toward Cottonwood Creek.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 23

**Direction:** East

**Date:** 4/3/20

**Location:** CA-MER-137

**Photographer:**

M. O'Neill

**Description:**

(DSCF1508) View from CA-MER-136 across small, unnamed drainage, to crew member at CA-MER-137.



### Photograph No. 24

**Direction:** Detail

**Date:** 4/3/20

**Location:** PL-Sisk-05

**Photographer:**

M. O'Neill

**Description:**

(DSCF1526) Close-up of Artifact 1 (complete pestle) in animal burrow at PL-Sisk-05.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 25

**Direction:** South

**Date:** 4/3/20

**Location:** PL-Sisk-05

**Photographer:**

M. O'Neill

**Description:**

(DSCF1541) View of PL-Sisk-05 from creek, with crew member standing at road through site.



### Photograph No. 26

**Direction:** South-southwest

**Date:** 4/3/20

**Location:** CA-MER-136

**Photographer:**

M. O'Neill

**Description:**

(DSCF1548) Artifact 2 (battered stone) in animal burrow adjacent to road at PL-Sisk-05.





## Appendix E: Photographic Documentation

Client: CDM Smith

Prepared by: Pacific Legacy, Inc.

### Photograph No. 27

**Direction:** North

**Date:** 4/23/20

**Location:** O'Neill  
Forebay survey area

**Photographer:**  
M. O'Neill



### Description:

(DSCF1633) View of  
O'Neill Forebay  
shoreline survey area.

### Photograph No. 28

**Direction:** North

**Date:** 4/3/20

**Location:** O'Neill  
Forebay survey area

**Photographer:**  
M. O'Neill



### Description:

(DSCF1643) View from  
southeast corner of  
survey area, SR 33 to  
the right.

# **B.F. Sisk Dam Raise and Reservoir Expansion Project Environmental Impact Report/ Supplemental Environmental Impact Statement**

**Appendix N: Geology, Seismicity, and Soils Supporting  
Information**



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# **Appendix N Geology, Seismicity, and Soils**

## **Supporting Information**

This appendix presents the project's potential effects related to geology, soils, and geologic hazards, including earthquakes and landslides. Discussions on paleontological and mineral resources are also included in this appendix. Related discussions about water-related and air-related soil erosion are presented in Section 4.1, Water Quality, and Section 4.3, Air Quality.

### **N.1 Area of Analysis**

The area of analysis is based on the location of potential impacts, which for geology, seismicity, and soil impacts is within Merced County. Figure 1 depicts the area of analysis.

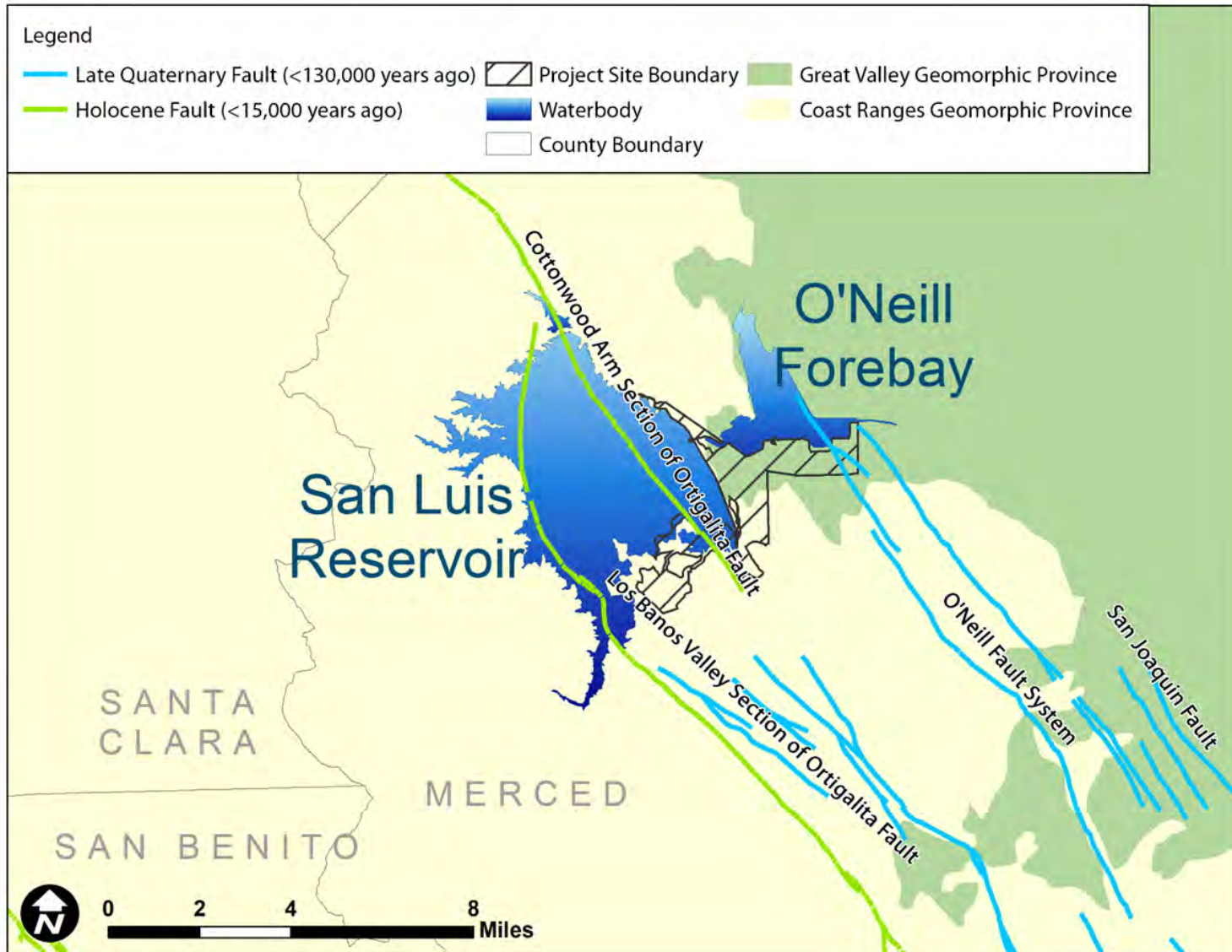
### **N.2 Affected Environment/ Environmental Setting**

The following sections describe some general soil properties as well as the existing geology, seismicity, and soils conditions within the area of analysis.

#### **N.2.1 Soils**

Soil types in the area of analysis include expansive soils, dispersive soils, and soils susceptible to hydro compaction. Dispersive soils and soils susceptible to hydro compaction are present east of B.F. Sisk Dam. Dispersive clays have been problematic along United States Department of Interior, Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR)'s canals and other features in the vicinity of B.F. Sisk Dam.

Expansive soils are soils with the potential to experience considerable changes in volume, either shrinking or swelling, with changes in moisture content. Shrink-swell classes are based on the change in the length of an unconfined clump as its moisture content is decreased or increased. This change is often expressed as a percent and the value is called a linear extensibility percent. In soil surveys, the percent represents the overall change for the whole soil (United States Department of Agriculture [USDA], Natural Resources Conservation Service [NRCS] Nd.).



Source: California Geological Survey 2002a; United States Geological Survey 2017

**Figure 1. Geology, Faults, and Soils Area of Analysis**

Soils composed primarily of sand and gravel are not considered expansive (i.e., the soil volume does not change with a change in moisture content). Soils containing silts and clays may possess expansive characteristics. The magnitude of shrink-swell capacity in expansive soils is influenced by:

- Amount of expansive silt or clay in the soil;
- Thickness of the expansive soil zone;
- Thickness of the active zone (depth at which the soils are not affected by dry or wet conditions);
- Climate (variations in soil moisture content as attributed to climatic or man-induced changes); and
- Confining pressure.

Soils are classified as having low, moderate, high, and very high potential for volume changes. The linear extensibility is expressed by percentages; the range of valid values is from 0 to 30 % (USDA, NRCS Nd.). Table 1 summarizes shrink-swell classes and the associated linear extensibility percentage. If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures (USDA, NRCS Nd.).

**Table 1. Shrink-Swell Class and Linear Extensibility**

Shrink-Swell Class	Linear Extensibility
Low	< 3%
Moderate	3-6%
High	6-9%
Very High	≥ 9%

Source: USDA, NRCS Nd.

## **N.2.2 Regional**

### **N.2.2.1 Geology and Topography**

San Luis Reservoir and O’Neill Forebay are near the boundary of the Great Valley (San Joaquin Valley portion) and the Coast Ranges geomorphic provinces (California Geological Survey [CGS] 2002a). The Coast Ranges Province is a northwest-trending region that ranges in elevation between 2,000 to 4,000 feet above sea level with some areas reaching 6,000 feet above sea level (CGS 2002a). It extends approximately 50 miles in an east-west direction from the Pacific Ocean to the Great Valley. The Coast Ranges run sub parallel to the San Andreas Fault, which is more than 700 miles long. The San Andreas Fault re-emerges in the Coast Ranges at Shelter Cove and extends northward on land for approximately 7 miles. This segment is referred to as the “Shelter Cove Section” (CGS 2002a).

The Great Valley Province is an alluvial plain about 50 miles wide and 400 miles long in the central part of California (CGS 2002a). The Great Valley is geologically monotonous and forms a trough in which sediments have been deposited almost continuously since the Jurassic period (about 160 million years ago). The valley represents the alluvial, flood, and delta plains of its two major rivers, the Sacramento and San Joaquin, and their tributaries (Fuller et al. 2015). The only two topographic breaks in the province are remnants of an isolated Pliocene volcano located in the Sacramento

Valley (CGS 2002a), and the Kettleman Hills on the western and southern sides of the San Joaquin Valley (Fuller et al. 2015). The southern and southwest portions of the San Joaquin Valley contain oil fields.

The boundary between these two provinces is roughly marked by the Ortigalita Fault and the O'Neill Fault System, which pass underneath and to the south of the San Luis Reservoir and O'Neill Forebay, see Figure 1 (Jennings and Bryant 2010; United States Geological Survey [USGS] 2011). The Ortigalita fault separates bedrock units of the upper Cretaceous marine and Plio-Pleistocene non-marine and the Recent overlying fan and basin deposits of the Great Valley (located to the east of the fault) from the upper Jurassic/lower Cretaceous Franciscan Complex bedrock units that make up the Diablo Range portion of the Coast Ranges Province (located to the west of the fault) (Dibblee 1975, Rogers 1966). These and other geologic units in the San Luis Reservoir region are described in more detail below. Faults and other potential geologic hazards in the region are described in more detail below in Section N.2.3.3, Geologic Hazards.

### **N.2.2.2 Paleontological Resources**

Paleontological resources include fossilized remains and the geologic context in which they occur, providing information about the history of life on earth (City of San Jose 2011). Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined using a qualitative measurement of fossil data, including rock type, history of the geologic unit in producing significant fossils, and fossil localities that are recorded from that geologic unit. In areas of high sensitivity, full-time monitoring by a professionally trained paleontologist is recommended during any type of ground disturbance (City and County of San Francisco 2005).

The western side shoreline of San Luis Reservoir lies within the Franciscan Formation, from the Jurassic or Cretaceous Period 80 million to 200 million years ago (Reclamation and CDPR 2013). This formation consists of a thick assemblage of sedimentary, igneous, and metamorphic rocks and has been ranked at low sensitivity due to the general lack of recorded vertebrate fossils (City and County of San Francisco 2005). The Panoche Formation makes up most of the eastern shore of San Luis Reservoir, from the late Cretaceous Period about 65 million years ago (Reclamation and CDPR 2013). The Panoche Formation consists of shale and thinly bedded sandstone, approximately 25,000 feet thick and has been ranked as moderately sensitive due to the discovery of noteworthy invertebrate marine fossils (California High Speed Rail Authority 2004).

## **N.2.3 Merced County - San Luis Reservoir Region**

### **N.2.3.1 Geology**

The *San Luis Reservoir State Recreation Area (SRA) Resource Management Plan (RMP)/General Plan (GP) Environmental Impact Assessment/Environmental Impact Report (EIS/EIR)*, describes the four geologic formations in the area around San Luis Reservoir. These include:

- **The Franciscan formation:** This formation is along the entire western side and southern tip of the reservoir's shoreline. This rock formation is the oldest in western Merced County and is composed of a thick assemblage of sedimentary, igneous, and metamorphic rocks. The sedimentary rocks consist of sandstone, shale, chert, and small amounts of conglomerate.
- **The Panoche formation:** This formation is along most of the eastern shore of the San Luis Reservoir with some intrusion of the Plio-Pleistocene nonmarine and fan deposits of the

Great Central Valley. Portions of B.F. Sisk Dam is founded on the Panoche formation. The formation consists of arenaceous shale and thinly bedded sandstone, approximately 25,000 feet thick. The sedimentary sequence of the formation consists of lenses of coarse-grained conglomerate of boulders, cobbles, and pebbles of porphyritic and granite rock.

- **The Tulare formation:** This formation is found on the shore of O'Neill Forebay and adjacent to the forebay dam. This section of the formation varies in depth from 8 to 42 feet and overlies all of the older formations. In addition, the central portion of B.F. Sisk Dam is founded in the Tulare formation. The formation is approximately 150 feet thick below the maximum section of B.F. Sisk Dam. The Tulare formation consists of nonmarine gravel, sand, silt, and clay and is derived from rocks from the Franciscan formation. Stream terraces are also found in this formation. Briggs (1953 as cited in Herd 1979) also noted a dark gray to light gray colored diatomaceous clay in the O'Neill Forebay area.

### **N.2.3.2 Soils**

There are several soil associations that occur around the San Luis Reservoir. The *RMP/GP* for the San Luis Reservoir SRA describes that Denverton, Kettleman, and Altamont clay associations occupy 2,650 acres of the lands surrounding the reservoir (Reclamation and California Department of Parks and Recreation [CDPR] 2013). Rough stony land is the second most common soil type in the reservoir area, occupying approximately 2,000 acres mostly on the western side of the reservoir. Other minor soil associations include the Rincon-Pleasanton association composed of Pleasanton gravelly sandy loam, Los Banos clay loams, Rincon clay, and Rincon loam; Altamont-Kettleman loam to the northeast shore of O'Neill Forebay; Sobrante, Vallecitos, and Contra Costa loams; Herdlyn clay loam and Solano silt loam; Herdlyn clay loam on the southern and eastern shores of O'Neill Forebay; and Sorrento, Mocho, and Esparto loams in scattered areas at the reservoir (Reclamation and CDPR 2013). The reservoir area *RMP/GP* also describes that the majority of developed lands in the vicinity of the reservoir, including most recreation areas, have slight or moderate erosion potential. Many of the undeveloped areas along the western, northern, and southern shorelines are categorized as having severe erosion hazard.

The USDA, Soil Conservation Service (SCS; renamed the NRCS) published the most recent soil survey of western Merced County in 1990. The general soil map defines the following soils on the alluvial fans, foothills, and terraces of the San Joaquin Valley, and the foothills, mountains, and valleys of the Coast Range. The following soils all occur in the vicinity of San Luis Reservoir (USDA, SCS 1990).

- **Woo-Stanislaus:** These soils are to the east of O'Neill Forebay. They are very deep, nearly level to gently sloping, well drained soils and are located on alluvial fans. These soils have a loam, clay loam, sandy clay loam, and clay surface texture and mainly used for irrigated agriculture. The main limitations of these soils are the high shrink-swell potential.
- **Damluis-Bapos-Los Banos:** These soil units are along the eastern and southern shores of O'Neill Forebay. They are very deep, nearly level to strongly sloping, well drained soils and are located on terraces. Surface textures in this soil group include clay loam, and sandy clay loam. Smaller areas are comprised of soils with surface textures of extremely gravelly, gravelly clay loam, gravelly sandy loam, sandy loam, and loam. These soils are mainly used for irrigated and non-irrigated crops, rangeland, and recreation. The main limitation of these soils is the high shrink-swell potential.

- **Oneil-Apollo:** The Oneil-Apollo soil unit is along the eastern shore of San Luis Reservoir extending to the north and south. These soils are moderately deep and deep, gently sloping to steep, and well-drained with high organic matter content. The surface texture of these soils is a combination of calcareous silt loam, clay loam, clay, sandy clay loam, and sandy loam. These soils are generally used for rangeland with some areas suitable for agriculture, recreation, and wildlife habitat. These soils are not noted for high shrink-swell potentials.
- **Arburua-Wisflat:** These soils are south of San Luis Reservoir in the vicinity of Los Banos Reservoir. They are shallow and moderately deep, gently sloping to very steep, and well drained soils located along the foothills. The surface texture includes loam, sandy loam, clay loam, and calcareous clay. These soils are mainly used for rangeland and wildlife habitat and the main limitations are erosion hazards and steepness of slope. These soils are not noted for having high shrink-swell potentials.
- **Franciscan-Quinto-Rock outcrop:** These soils are to the north of San Luis Reservoir. They described as being shallow and moderately deep, steep to very steep, and found on rock outcrops and mountains. The surface texture is sandy loam, gravelly sandy loam, clay, and loam. The soils are mainly used for rangeland and wildlife habitat. The main limitation of these soils is steepness and erosion hazard. These soils are not noted for having high shrink-swell potentials.
- **Millsholm-Fifield-Honker:** These soils border the western edge of San Luis Reservoir and are described as shallow and moderately deep, and moderately sloping to very steep. They are generally well drained soils located on mountains. The surface texture is comprised of loam, sandy loam, and very stony clay. The soils are mainly used for rangeland and wildlife habitat and the main limitation is steepness of slope. These soils are not noted for having high shrink-swell potentials.
- **Peckham-Ararat-Laveaga:** There is a small area of these soils bordering the southern end of San Luis Reservoir. They are also found to the west of the reservoir along the border between Merced County and San Benito County and are found on volcanic mountains. This soil group is moderately deep and deep, gently sloping to very steep and well drained. The surface textures of the soils in this group include cobbly loam, extremely stony loam, sandy clay loam, clay loam, very stony clay loam and clay, clay, and clay loam. These soils are mainly used for rangeland and wildlife habitat and the main limitations are steepness of slope and a stony and cobbly surface. These soils are not noted for having high shrink-swell potentials.

Figure 2 depicts the arrangement of the major soil textures in the area of analysis. Figure 3 depicts the shrink-swell potential of soils in the area of analysis.



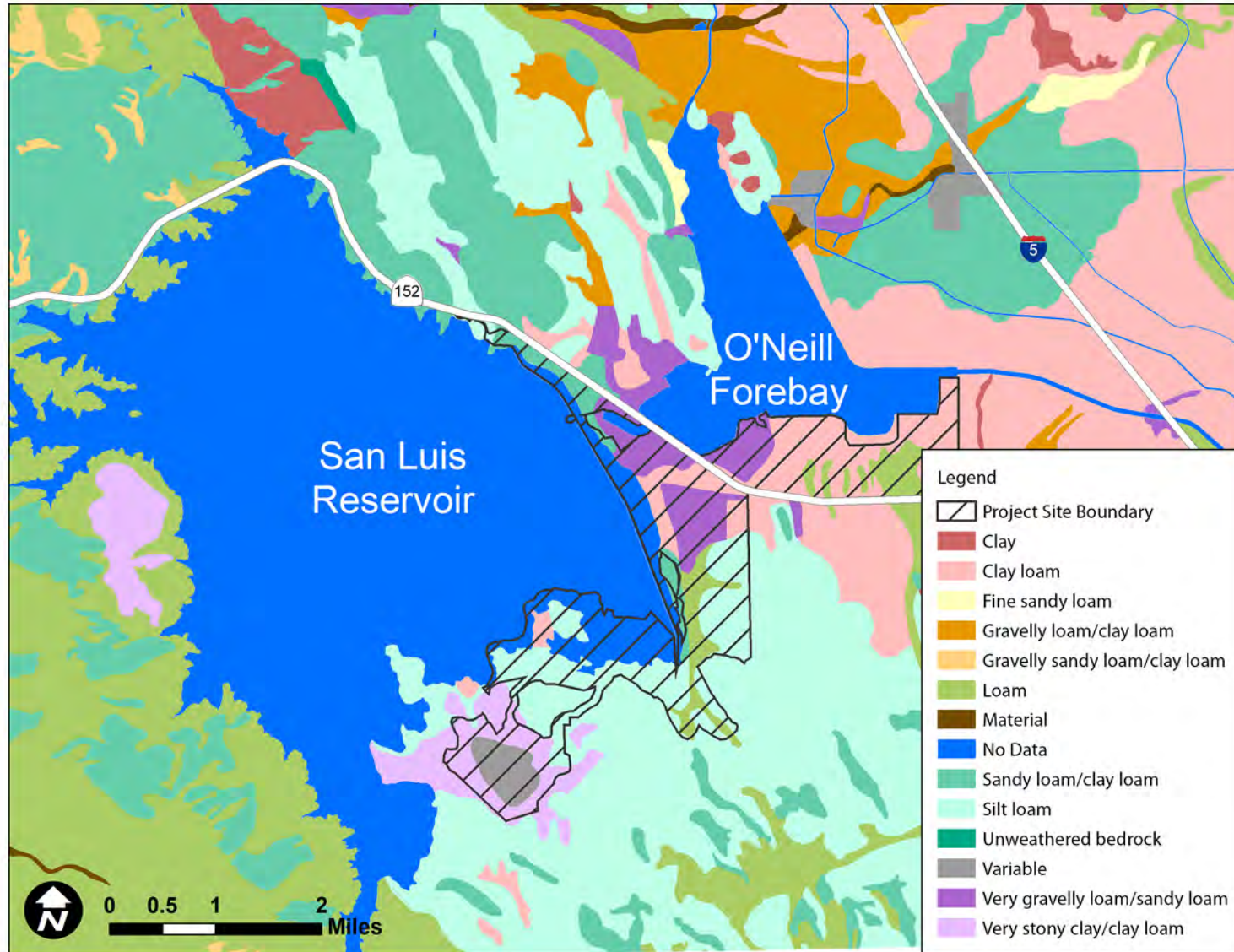
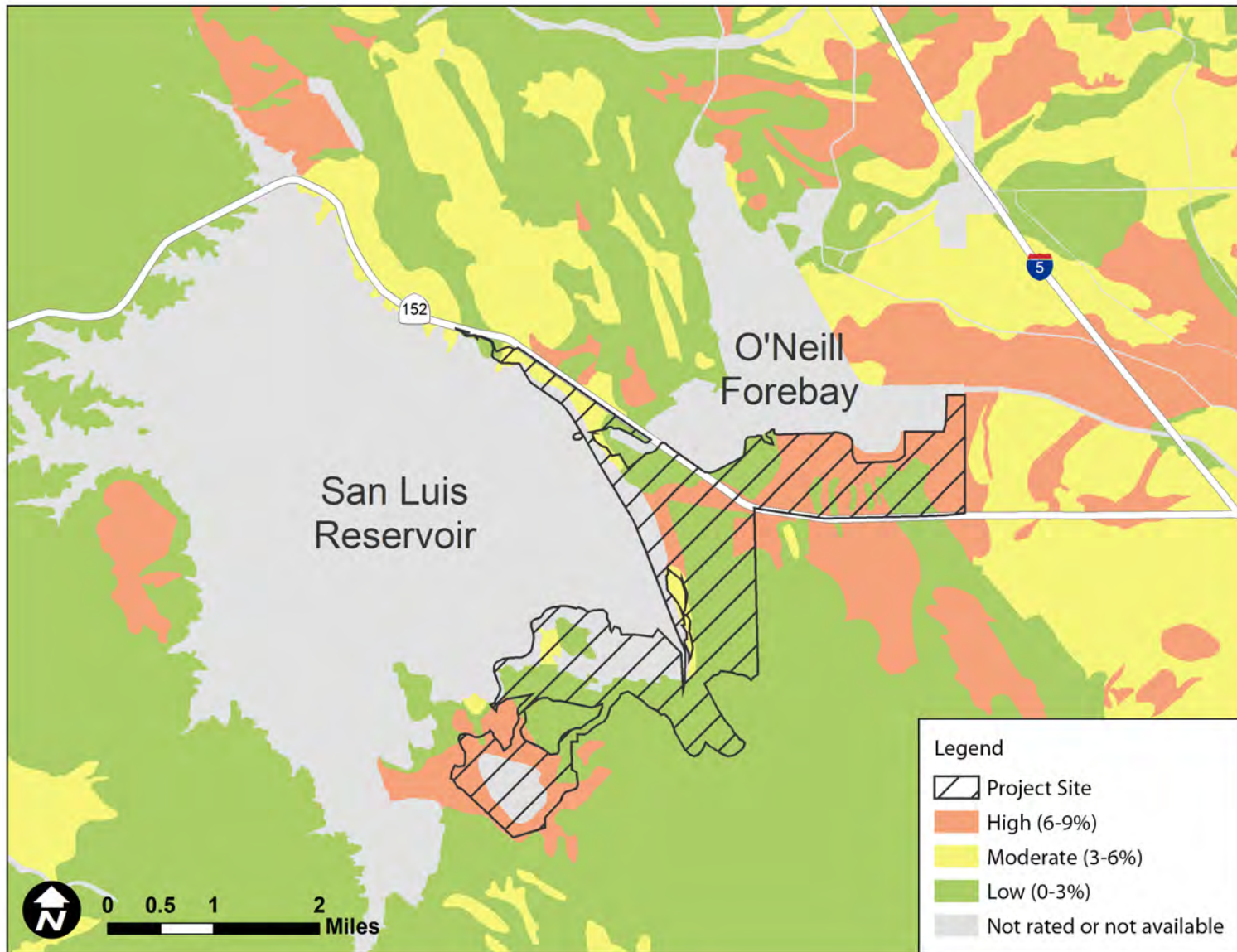


Figure 2. San Luis Reservoir SRA Use Area Map





**Figure 3. Shrink-Swell Potentials – Merced County**

Soil types on the reservoir floor were characterized in geologic borings conducted by Reclamation in 1959. The San Luis and Cottonwood Creeks once flowed beneath the central area of B.F. Sisk Dam. The creeks meandered and deposited fluvial alluvium, creating the Patterson and San Luis Rach formation. These two formations consist of alternating layers of clayey soils and sandy/gravelly soils. Directly underlying these two formations is the Los Banos formation (alluvium) and/ or Tulare formation (alluvium and lacustrine deposits), which also consist of alternating layers of clayey soils and sandy/gravelly soils. The Panoche formation (bedrock), consisting of alternating layers of sandstone, shale, and conglomerate, underlies the Tulare formation. The maximum section of the dam is founded on soils from the four alluvial and lacustrine formations. Coarse grained soils from these formations are susceptible to liquefaction, that could cause the dam embankment to slump/ deform and be overtopped by reservoir water. Fine grained clayey soils from these formations may be sufficiently weak such that they could shear and allow the dam embankment to slide (given a sufficient shaking during a seismic event). Furthermore, portions of the dam embankment are founded on clayey colluvium (slopewash), that presents the same seismic risk as fine-grained clayey soils (Reclamation 2010).

### **N.2.3.3 Geologic Hazards**

San Luis Reservoir is in a seismically active area and is close to several faults and fault systems. The Ortigalita fault passes under the reservoir in two locations, one is along the western shore of the reservoir crossing over Lone Oak Bay to the east and the other runs from Cottonwood Bay close to the eastern shore of the reservoir on the eastern side of Basalt Hill, shown above in Figure 1 (Reclamation and CDPR 2013 and USGS 2020). A detailed geologic study to characterize all the potential seismic sources<sup>1</sup> in the area of B.F. Sisk and O'Neill Forebay dams was conducted by Reclamation in 1999 and 2000. That study identified 9 faults as being potentially significant sources of seismic shaking, including:

- Strike Slip faults of the Ortigalita and San Andreas faults;
- West-dipping bedding-plane reverse faults within the Great Valley Sequence; and
- West-dipping blind thrust faults along the uplift margin of the Diablo Range (Reclamation 2009).

Reclamation also performed an evaluation of Quaternary Stratigraphy and Possible Quaternary Fault Displacement for B.F. Sisk Dam in Technical Memorandum (TM) 86-68330-2009-01 (Reclamation 2010). According to TM 86-68330-2009-01, the numerous faults and shears present in the dam foundation are thought to be older than late Quaternary (130,000 years). There is no evidence of repeated seismic activity in the Quaternary (less than 2.6 million years ago), which was taken into consideration for this probabilistic analysis (Reclamation 2010).

Located in the eastern part of the San Andreas Fault system, the Ortigalita Fault in the vicinity of the reservoir has two sections, the Los Banos Valley section and the Cottonwood Arm section, see Figure 1 (roughly corresponding to the locations described above [USGS 2011 and Bryant and Cluett 2000a]). The Los Banos Valley section is in Merced County. Bryant and Cluett (2000b) do not

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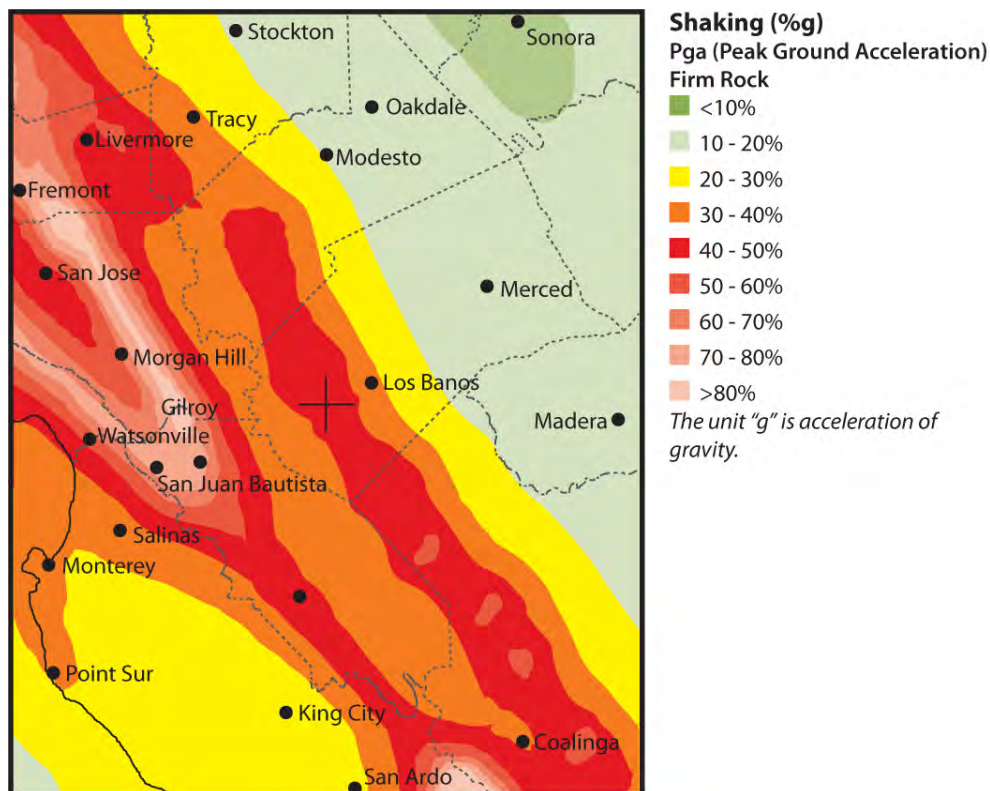
<sup>1</sup> CGS describes seismic sources (faults) as (1) Active, which describe historical and Holocene faults with displacements within the past 11,000 years; (2) Potentially Active, which describes faults with evidence of displacements during the Quaternary (the past 1.6 million years); (3) Inactive, which are pre-Quaternary age. Seismic events and displacements may still take place along an inactive fault; however, the chance of that happening are considered low

report any recent (historic) earthquakes and the most recent prehistoric deformation (defined as the most recent prehistoric surface rupturing or surface deforming earthquake) was the latest Quaternary (around 15,000 years ago). The Cottonwood Arm section is in Merced and Stanislaus Counties. There are no records of recent earthquake activity along this section of the Ortigalita fault zone. The most recent prehistoric deformation was around 15,000 years ago (Bryant and Cluett 2000a).

The O'Neill Fault System runs south and east of O'Neill Forebay and south of San Luis Reservoir, see Figure 1 (USGS 2011). The most recent prehistoric deformation at this fault system was around 130,000 years ago (USGS 2011).

The Calaveras and San Andreas faults are 23 and 28 miles away, respectively (Reclamation and CDPR 2013). These faults can cause earthquakes at or near San Luis Reservoir given that fault offsets can take place either along a single, or multiple fault planes. During a seismic event, secondary fault rupture and displacements can take place on neighboring faults, which had been considered to be less than active.

The California Geologic Survey (CGS) publishes maps of the probabilistic seismic hazards in the state. Figure 4 shows the probabilistic seismic ground shaking in Merced County near San Luis Reservoir. The peak ground acceleration in firm rock in the area of the reservoir is approximately 0.4g ("g" is the acceleration of gravity). As illustrated in the figure, the western part of Merced County would be subject to higher ground shaking than the eastern part of the county in the case of an earthquake. This peak acceleration has a 10 % probability of being exceeded in 50 years.



Source: CGS 2012.

**Figure 4. Site Peak Ground Acceleration – Merced County**

The 2007 Working Group on California Earthquake Probabilities developed earthquake rupture forecasts to predict the likelihood of a magnitude 5 or greater earthquake occurring in the next 30 years (USGS, California Department of Conservation [California DOC] and CGS 2008). Table 2 summarizes the group’s findings relative to Type A faults (defined as faults known to be active) in the area of analysis.

**Table 2. 30-Year Probability of Magnitude 6.7 Events on Type A Faults**

Fault	Mean Probability
South San Andreas	59%
Calaveras	7%

Source: USGS and CGS 2008

The GP notes that B.F. Sisk Dam is the one dam in the county that has the possibility of being subject to seismic activity; however, the siting of the dam in the vicinity of the Ortigalita fault has been compensated for by structural design (Merced County 2013). The dam was constructed to withstand a magnitude 8.3 occurrence; however, this does not completely eliminate the possibility of dam failure and related flooding (Merced County 2013). A 2009 study by Reclamation investigated the unconsolidated Quaternary geologic units that large portions of B.F. Sisk Dam was built on and the potential for liquefaction of these deposits during a seismic event and concluded that “it seem[ed] prudent to assume that limited ‘secondary’ fault displacement could occur within the foundation of B.F. Sisk Dam during a major earthquake on either the Ortigalita fault or a nearby buried thrust fault” (Reclamation 2009). The study further concluded that the probability of fault displacement in the foundation “appear[ed] to be low, primarily because of the abundant evidence which indicates that no major Quaternary faults, and probably no faults with late Quaternary displacement, are present within the dam foundation” (Reclamation 2009).

The B.F. Sisk Dam inundation area extends from the dam northeast and southeast covering the towns of Santa Nella, Los Banos, and Gustine. The dam inundation area for O’Neill Forebay is somewhat smaller following a western arch over Santa Nella and then north running along the western side of Gustine (Merced County 2013).

The *2030 Merced County General Plan Background Report* notes that there is potential for liquefaction and related hazards throughout the San Joaquin Valley area where unconsolidated sediments and a high water table coincide. These areas include the county’s wetland areas which are generally adjacent to the San Joaquin River and extend west to the Southern Pacific Railroad and east toward State Highways 99 and 59 south (Merced County 2013). There are two wetland areas identified in the *2030 Merced County General Plan Background Report*; however, these are located to the southwest of the reservoir (Merced County 2013). As described above, other wetland areas are closer to State Highways 99 and 59 in the eastern part of the county and not in the area of analysis.

Liquefaction can also occur as a result of earthquakes, if susceptible sediments are saturated during ground shaking. If the soil liquefies, it loses its ability to support structures and they may settle into the ground causing damage that can range from minor displacement to total collapse (Merced County 2013).

In 2006, as a response to studies that determined B.F. Sisk Dam poses a potential risk of seismic failure, Reclamation initiated a B.F. Sisk Dam Safety of Dams (SOD) Modification Project with

DWR to determine a course of action to reduce the risk of dam failure, resulting in the development of this Environmental Impact Report/Supplemental Environmental Impact Statement (EIR/SEIS).

Landslides are common within the Coast Ranges, specifically, the west side of Merced County due to steep slopes, unstable terrain and proximity to earthquake faults (Merced County 2013). As mapped by the county, the eastern portion of San Luis Reservoir including O'Neill Forebay is in a low potential landslide zone while the western portion of the reservoir is in a medium potential landslide zone (Merced County 2013).

#### **N.2.3.4 Naturally Occurring Asbestos**

There are no reported asbestos occurrences, former asbestos mines, or former asbestos prospects mapped in Merced County.

The United States Geologic Survey (USGS), CGS, and California DOC, Division of Oil, Gas & Geothermal Resources (DOGGR) have mapped historic mines and natural occurrences of asbestos throughout California (California DOC, DOGGR 2000; USGS, DOC and CGS 2011). There are known occurrences of ultramafic rock outcrops in the western part of the county. Ultramafic rocks are formed in high temperatures below the surface of the earth and change to metamorphic rock by the time they are exposed at the surface by uplift or erosion. These rocks can then form chrysotile asbestos or tremolite-actinolite asbestos in bodies of ultramafic rock or along their boundaries (California DOC, DOGGR 2000). Ultramafic rock is known to occur in Merced County near the border of Stanislaus County north of San Luis Reservoir and near the border of Fresno County to the south of the reservoir (California DOC, DOGGR 2000; USGS, DOC and CGS 2011). Neither of these sites would be within the area of construction for the Crest Raise Alternative.

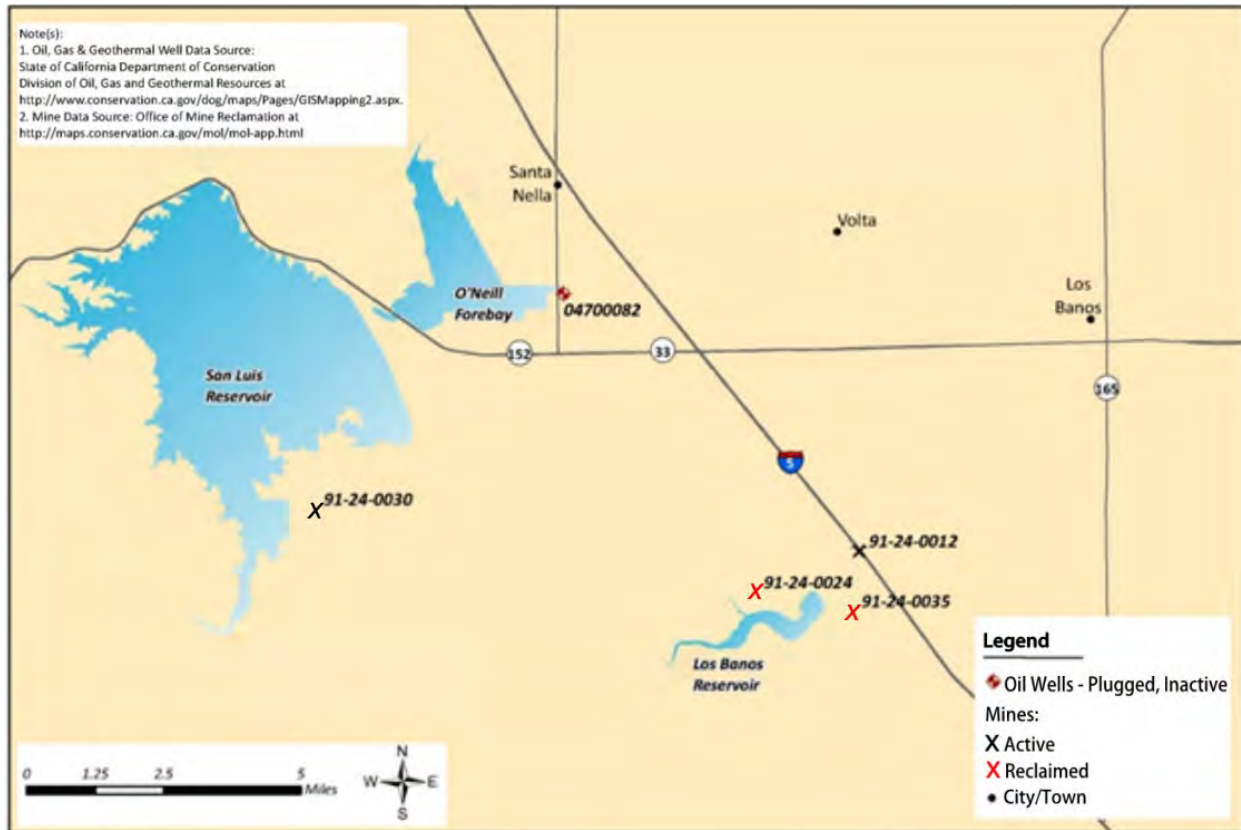
#### **N.2.3.5 Mineral Resources**

As part of the Surface Mining and Reclamation Act of 1975 (described in Chapter 28, Consultation, Coordination, and Compliance), the CGS produces mineral land classification maps and reports. Part of the mineral land classification involves the mapping of aggregate availability throughout the state. Aggregate is defined as construction aggregate which is composed of alluvial sand and gravel or crushed stone that meets standard specifications for use in Portland cement concrete or asphalt concrete (Kohler 2006a). The statewide map of aggregate availability shows the location of aggregate mines in Merced County; however, none are located in the vicinity of San Luis Reservoir. The general location of the mine(s) is southwest of Los Banos on the east side of Interstate 5 (Kohler 2006b).

The CGS also maps the location of historic and active gold mines throughout the state (CGS 2002b and 2000). There are no active gold mines in Merced County. Historically active gold mines are located in the far eastern area of the county and are not near San Luis Reservoir (CGS 2000).

The California DOC, DOGGR identified one dry hole well near the eastern edge of the O'Neill Forebay near the connection to the California Aqueduct. This well was abandoned in 1937 (California DOC, DOGGR 2010). Figure 5 shows the location of this abandoned well.





**Figure 5. Abandoned Wells and Mines near San Luis Reservoir**

The Office of Mine Reclamation maps inactive and active mines throughout the state. There is one mine in the vicinity of San Luis Reservoir and three mines located near Los Banos SRA (California DOC, Office of Mine Reclamation 2016). Table 3 summarizes the information about the mines in Merced County near the area of analysis.

**Table 3. Mine Sites Near Area of Analysis – Merced County**

Mine ID	Latitude/ Longitude	Location	Description	Status	Commodity
91-24-0030	37° 1' 19.9194"/ -121° 5' 49.92"	Southern shore of San Luis Reservoir	Basalt Quarry – DWR Resources	Active	Rock
91-24-0024	37° 0' 0"/ -120° 57' 38.1594"	North of Los Banos SRA	San Luis Water District	Reclaimed	Sand and Gravel
91-24-0035	36° 59' 30.12"/ -120° 55' 0.12"	East of Los Banos SRA	Pfizer Pit	Reclaimed	Rock
91-24-0012	37° 0' 21.96"/ -120° 54' 57.96"	East of Los Banos SRA	Canyon Rock Pit	Active	Sand and Gravel

Source: California DOC, Office of Mine Reclamation 2016

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Draft Environmental Impact Report/Supplemental Environmental Impact Statement

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# **B.F. Sisk Dam Raise and Reservoir Expansion Project Environmental Impact Report/ Supplemental Environmental Impact Statement**

**Appendix O: Cumulative Effects Analysis Approach**

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# Appendix O Cumulative Effects Analysis Approach

This appendix describes, in detail, the cumulative effects analysis completed in this Environmental Impact Report/Supplemental Environmental Impact Study (EIR/SEIS). Included here are descriptions of the regulatory requirements, methodology, and cumulative projects considered. Resource-specific cumulative effects analyses are presented in Chapter 5.

Cumulative effects are those environmental effects that on their own, may not be considered adverse, but when combined with similar effects over time, result in substantial adverse effects. Cumulative effects are an important part of the environmental analysis because they allow decision makers to look not only at the impacts of an individual proposed project, but the overall impacts to a specific resource, ecosystem, or human community over time from many different projects. This section describes the cumulative effects analysis for the action alternatives proposed in this EIR/SEIS including the regulatory requirements, the methodology, the projects considered in the analysis, and the potential cumulative effects for each environmental resource.

## O.1 Regulatory Requirements

This section provides an overview of the regulatory setting associated with cumulative effects.

### O.1.1 Regulatory Setting

Both the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) require consideration of cumulative effects in an EIR or EIS.

#### O.1.1.1 California Environmental Quality Act

Cumulative effects are defined in the CEQA Guidelines as:

“Two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”

1. The individual effects may be changes resulting from a single project or a number of separate projects.
2. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355).”

According to the CEQA Guidelines, a Lead Agency must discuss the cumulative impacts of a project when the cumulative effect is significant and the project’s incremental contribution to the cumulative effect would be “cumulatively considerable,” that is, when the incremental effects of a

project would be significant when viewed in connection with the effects of past, present, and probable future projects (CEQA Guidelines Section 15065[a][3]; Section 15130[a]).

If the combined cumulative impact associated with the project's incremental effect and the effects of other projects would not be significant, an EIR should briefly indicate why the cumulative impact is not significant (CEQA Guidelines Section 15130[a][2]).

Additionally, an EIR can determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and therefore not significant. A project's contribution can also be less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The Lead Agency must identify facts supporting this conclusion (CEQA Guidelines Section 15130[a][3]).

### **0.1.1.2 National Environmental Policy Act**

As defined by NEPA, a "Cumulative impact is 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 actions (40 Code of Federal Regulations [CFR] Section 1508.7)."

NEPA regulations require an analysis of direct, indirect, and cumulative effects and define "effects" as:

- “(a) Direct effects, which are caused by the action and occur at the same time and place.
- (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial (40 CFR Section 1508.8)."

In addition, the NEPA regulations state that when determining the scope of an EIS:

- “(a) Actions (other than unconnected single actions) which may be:
  - (1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:
    - (i) Automatically trigger other actions which may require environmental impact statements.
    - (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.

- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.
- (2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement (40 CFR Section 1508.25[a][1] and [2]).”

## O.2 Methodology for Assessing Cumulative Effects

This section provides an overview of the methodology used to analyze cumulative effects.

### O.2.1 Area of Analysis

Table 1 describes the specific cumulative effects area of analysis for each resource area.

**Table 1. Cumulative Effects Area of Analysis**

Section	Resource	Area of Analysis
4.1	Water Quality	San Luis Reservoir and the Delta
4.2	Surface Water Supply	Same as Section 4.1 with the addition of South-of-Delta CVP Contractors (SLDMWA)
4.3	Air Quality	Merced County and SJVAB
4.4	Greenhouse Gases	Regional and global
4.5	Visual Resources	San Luis Reservoir, O’Neill Forebay, and SR 152
4.6	Noise and Vibration	San Luis Reservoir and Merced County
4.7	Traffic and Transportation	Roadways in Merced County and local roads in the Cities of Gustine and Los Banos
4.8	Hazards and Hazardous Materials	San Luis Reservoir and SRA
4.9	Aquatic Resources	San Luis Reservoir and SRA, CVP and SWP facilities, and the Delta
4.10	Terrestrial Resources	San Luis Reservoir and Merced County
4.11	Recreation	San Luis Reservoir and SRA, and Pacheco State Park in Merced County; Anderson Reservoir and Anderson Lake County Park (Anderson Park) in Santa Clara County
4.12	Cultural Resources	San Luis Reservoir and Merced County
4.13	Geology, Seismicity, and Soils	Merced County
4.14	Public Utilities, Services, and Power	Merced County

Key: CVP = Central Valley Project; SJVAB = San Joaquin Valley Air Basin; SLDMWA = San Luis and Delta-Mendota Water Authority; SR = State Route; SRA = State Recreation Area; SWP = State Water Project; WTP = water treatment plant

## **O.2.2 Timeframe for Cumulative Effects Analysis**

The timeline for the cumulative effects analysis with the exception of greenhouse gases (GHGs) and traffic and transportation, is 8 to 10 years for all short-term construction-related impacts. These impacts would be temporary and would only occur during construction. The timeframe for all long-term impacts is 20 years, which represents the planning horizon addressed in this EIR/SEIS. The analysis in Section 5.1.3 relies on a 30-year timeframe for long-term impacts consistent with the Bay Area Air Quality Management District (BAAQMD) emission amortization guidelines. The analysis in Section 5.1.7 utilizes a 25-year timeframe for long-term impacts consistent with the Merced County Transportation Authority analysis guidelines.

## **O.2.3 Identifying Past, Present, and Future Actions and Projects Contributing to Cumulative Effects**

CEQA guidelines Section 15130(b)(1) identifies two methods that may be used to analyze cumulative impacts:

1. “A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency,” and/or
2. “A summary of projections contained in an adopted local, regional, or statewide plan or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan (GP), regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the Lead Agency.”

This EIR/SEIS analyzes cumulative impacts using both CEQA methods identified above. These methods are sufficient to satisfy CEQA and NEPA requirements for identifying past, present, and future actions and projects that may contribute to cumulative effects. Most Environmental Impact Statement/Environmental Impact Report (EIS/EIR) resources use one method or the other, but several resource areas use a combination of both methods.

A variety of federal, state, county, and local government sources were reviewed to identify and collect information on past, present, and reasonably foreseeable actions in the project area that could contribute to cumulative effects. These include

- City and county GPs
- Future population, housing, traffic, and other projections found in existing city and county GPs
- Published reports, documents, and plans
- Biological management plans (biological opinions, habitat conservation plans [HCPs], etc.)
- Environmental documents (such as EIS/EIRs)
- Scoping comments
- Consultation with federal, state, and local agencies

Sections O.2.4 and O.2.5 below describe the projects and projections considered for this cumulative effects analysis.

## **O.2.4 Cumulative Projects Considered for All Resources**

This section describes the past, present, and reasonably foreseeable future cumulative actions and projects considered in this cumulative effects analysis. Table 2 describes the projects considered for cumulative analysis under each resource area.

### **O.2.4.1 Delta Conveyance Project**

The Delta Conveyance Project is currently being analyzed by California Department of Water Resources (DWR) and several State Water Contractors.

The Delta Conveyance Project planning process began in 2006, when the Bureau of Reclamation (Reclamation) and DWR, along with several state and federal water contractors including, Kern County Water Agency, Metropolitan Water District of Southern California, San Luis and Delta-Mendota Water Authority (SLDMWA), Santa Clara Valley Water District, Westlands Water District, and the Zone 7 Water Agency (collectively referred to as Potential Authorized Entities) initially proposed the BDCP. The BDCP envisioned updating the State Water Project (SWP) and Central Valley Project (CVP) by adding new points of diversion in the north Delta and by providing for large-scale species conservation through a 50-year HCP/natural communities conservation plan (NCCP). The HCP/NCCP was intended to comply with Section 10 of the federal Endangered Species Act and to achieve compliance with the California Endangered Species Act through the California Natural Community Conservation Planning Act. A Draft EIS/EIR was released in December 2013.

Following release of the Draft EIS/EIR, Reclamation and DWR issued a Supplemental Draft EIS/Partially Recirculated Draft EIR that included for consideration three additional alternatives that would update SWP and CVP without the large-scale conservation efforts in an HCP/NCCP. The Lead Agencies proposed that one of these non-HCP alternatives, known as California WaterFix Alternative 4A, be identified as the preferred alternative in replacement of the BDCP alternative (DWR and Reclamation 2015). The preferred WaterFix alternative (4A) consisted of three new diversion points in the north Delta, tunnel conveyance and ancillary facilities, operational elements, restoration measures, and an adaptive management program (DWR and Reclamation 2015). The Supplemental Draft EIS/Partially Recirculated Draft EIR also included updates to the BDCP alternative and other revisions and updates to the 2013 Draft EIR/EIS analyses. In addition, the state proposed as a separate program, California EcoRestore, to provide restoration efforts for species conservation independent of the SWP and CVP facility upgrades.

The Final EIS/EIR for the BDCP/California WaterFix that identified the California WaterFix for implementation was released in December 2016. Biological opinions for the California WaterFix were released in June 2017.

In May 2019, DWR rescinded all permits, permit applications, bond authorizations, and CEQA documentation for California WaterFix and announced that it was working with public water agencies on a new environmental review process for a single tunnel project. The Delta Conveyance Project remains reasonably foreseeable given that an April 2019 Executive Order regarding how California intended to secure clean and dependable water supplies included direction to plan and modernize conveyance through the Bay-Delta with a new single tunnel project.



#### **O.2.4.2 California High-Speed Rail Project**

The California High Speed Rail Authority (CHSRA) and the United States Department of Transportation Federal Railroad Administration completed a programmatic EIS/EIR for the San Francisco to Central Valley portion of an approximately 800- mile-long high-speed rail network connecting San Francisco to San Diego. The track alignments considered in the EIS/EIR included one configuration traversing Pacheco Pass adjacent to State Route (SR) 120 and San Luis Reservoir. The railway is being designed to support train speeds greater than 125 miles per hour and would construct both at-grade and tunnel sections through Pacheco Pass (CHSRA 2012).

The Final Partially Revised Programmatic EIS/EIR was released by CHSRA on April 6, 2012. With a 20-year timeframe, the EIS/EIR identified the Pacheco Pass Network Alternative as the preferred alternative for consideration in future project-level engineering and environmental compliance (CHSRA 2012).

The San Jose to Merced project section is part of the first phase of the California High-Speed Rail System that will provide a critical rail link between the Silicon Valley and the Central Valley. The approximately 84 mile project section would travel between stations in San Jose and Gilroy and (after passing through the Central Valley Wye) north to Merced or south to Fresno (CHSRA 2017).

#### **O.2.4.3 San Luis Reservoir State Recreation Area Resource Management Plan/General Plan**

The California Department of Parks and Recreation (CDPR), in partnership with Reclamation, manages the majority of the San Luis Reservoir State Recreation Area (SRA). CDPR's planning process is integrated with Reclamation's Resource Management Planning Process. CDPR, in partnership with Reclamation, has developed and adopted the *San Luis Reservoir State Recreation Area Resource Management Plan (RMP)/GP* (Reclamation and CDPR 2013), to direct the future development, operations, and maintenance of the SRA. The plan was officially adopted in 2013 and has a life expectancy of 25 years. CDPR and Reclamation continue to collaborate on the area's RMP/GP to guide future growth.

The plan area consists of 27,000 acres owned by Reclamation and includes the water surfaces of San Luis Reservoir, O'Neil Forebay, Los Banos Reservoir, and adjacent recreation lands near Los Banos, California. The project area was built as part of the water storage and delivery system of reservoirs, aqueducts, power plants, and pumping stations operated under the SWP and CVP. Lands managed by CDPR for recreation are part of the state park system and comprise the SRA.

The plan's primary objective is to identify general areas in which future development may occur for recreation management. The plan includes an overview of existing conditions, including a summary of opportunities and constraints, a plan for future use and management of the project area, and the associated environmental analysis pursuant to CEQA and NEPA (Reclamation and CDPR 2013).

**Table 2. Projects Being Considered for Cumulative Analysis Under Each Resource Area**

Resource Area	Delta Conveyance Project	California High-Speed Rail Project	San Luis Reservoir SRA RMP/GP	San Luis Transmission Project	San Luis Solar Project	2018 Bay-Delta Plan Update for the Lower San Joaquin River and Southern Delta	Gonzaga Ridge Wind Repowering Project	State Water Project Supply Allocation Settlement Agreement	Pacheco Reservoir Expansion Project	Los Vaqueros Reservoir Expansion Project	San Luis Low Point Improvement Project	San Joaquin River Restoration Program
	Cumulative Projects											
Water Quality	X	X	X			X			X		X	
Surface Water Supply	X	X				X		X	X		X	
Air Quality	X	X		X	X		X		X	X	X	
Greenhouse Gas Emissions												
Visual Resources		X		X	X		X				X	
Noise and Vibration		X		X	X		X		X		X	
Traffic and Transportation		X		X	X		X		X		X	
Hazards and Hazardous Materials			X	X	X							
Aquatic Resources	X	X		X	X	X		X		X		X
Terrestrial Resources		X	X	X	X						X	
Recreation			X	X	X						X	
Cultural Resources		X	X	X	X				X		X	
Geology, Seismicity, and Soils		X	X	X	X							
Public Utilities and Power		X		X	X							

#### **O.2.4.4 San Luis Transmission Project**

The San Luis Transmission Project will develop approximately 95 miles of new transmission lines connecting the Tracy Substation and the Dos Amigos Substation with segments crossing O'Neill Forebay and connecting to the San Luis Substation. Additional components of the San Luis Transmission Project will include two new 500-kilovolt (kV) substations, substation improvements, communication facilities, improvements to existing access roads, and new permanent access roads (Western and SLDMWA 2016). The Final EIS/EIR for the San Luis Transmission Project was released in March 2016, with construction scheduled for 2018 through 2021.

#### **O.2.4.5 San Luis Solar Project**

The San Luis Solar Project will allow a 30-year land use authorization to access, install, operate, maintain, and remove a 26-megawatt (MW) alternating current solar facility. The project will be constructed on three sites along O'Neill Forebay and adjacent to the San Luis Reservoir SRA, to the northwest of the SR 152/SR 33 interchange. The three sites will cover a total of 159 acres and consist of solar photovoltaic panels, racks to hold the panels, and electrical infrastructure (Reclamation 2018a). The Final Environmental Assessment and Plan of Development for the San Luis Solar Project was released in May 2018, with construction scheduled for 2018.

#### **O.2.4.6 Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary 2018 Update for the Lower San Joaquin River and Southern Delta**

The State Water Resources Control Board (SWRCB) is updating the 2006 Bay-Delta Water Quality Control Plan (WQCP) in three phases (SWRCB 2018):

- Phase 1: The first amendment focused on San Joaquin River flows and southern Sacramento-San Joaquin Delta (Delta) salinity. In December 2018, the SWRCB adopted amendments to the water quality objectives for the Lower San Joaquin River and Stanislaus, Tuolumne, and Merced rivers to protect the beneficial use of fish and wildlife and in the southern Delta to protect the beneficial use of agriculture.
- Phase II: Focuses on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), Delta outflows, and interior Delta flows. In July 2018, the SWRCB released a framework for the Phase II update that described changes that will likely be proposed through a formal SWRCB staff report and supporting environmental document.
- Phase III: Focuses on implementing the amendments adopted during the first two phases. This Phase has not formally begun; however, several parties have been engaged in discussions on voluntary agreements that would implement the amendments through a package of flow and non-flow measures.

#### **O.2.4.7 Gonzaga Ridge Wind Repowering Project**

The Gonzaga Ridge Wind Repowering Project (25-year lease) will allow for the decommissioning and removal of existing wind turbines and overhead energy collection system at Gonzaga Ridge Wind Farm to allow for the installation of modern wind turbines, with a generating capacity of up to 100 MW. In contrast to the originally permitted 166 turbines, the Gonzaga Ridge Wind Repowering Project would consist of up to 40 turbines. The Gonzaga Ridge Wind Repowering Project would continue use of an existing 70 kV transmission line located west and north of San Luis Reservoir

and would require construction of an additional 70 kV transmission line on land owned by Reclamation, Merced County, and private owners. Construction has been divided into two phases, with Phase II construction starting between 2021 and 2023/24. The Draft Environmental Impact Report (EIR) was released by CDPR in October 2019 (CDPR 2019).

#### ***O.2.4.8 State Water Project Supply Allocation Settlement Agreement***

DWR is proposing to approve four separate settlement agreements and amendments related to the agreements to SWP long-term water supply contracts with Solano County Water Agency, the Napa County Flood Control and Water Conservation District, City of Yuba City, and the County of Butte. Implementing this project would result in modifying SWP allocations to improve SWP water delivery reliability and modify the volume of SWP water that may be delivered to each of the above stated agencies. All lease extensions will terminate on December 31, 2035. The Final Initial Study/Negative Declaration was released by DWR in September 2013 (DWR 2013).

#### ***O.2.4.9 San Luis Low Point Improvement Project***

Reclamation and Santa Clara Valley Water District (Valley Water) are proposing to address water supply reliability and service interruption issues associated with low water levels in San Luis Reservoir. The Draft EIS/EIR was released in July 2019 and identified the Pacheco Reservoir Expansion Alternative as the CEQA Proposed Project. The Pacheco Reservoir Expansion Alternative includes removal of the existing dam, development of a new reservoir (located 0.5 mile upstream of the existing North Fork Dam along Pacheco Creek), a new earthen dam and spillway, new pipelines and tunnels, a new pump station, and associated channel modifications, a new regulating tank at Pacheco Pumping Plant, and access improvements. The Final EIS/EIR, planned for release in 2020, will identify a NEPA preferred alternative. Construction is planned to start in 2024 (Reclamation and Valley Water 2019).

#### ***O.2.4.10 Pacheco Reservoir Expansion Project***

Valley Water, the San Benito County Water District and the Pacheco Pass Water District are proposing to increase Pacheco Reservoir's operational capacity from 5,500 acre-feet (AF) to up to 140,000 AF, in order to reduce the frequency and severity of water shortages during droughts (Valley Water 2020). The project would construct new conveyance infrastructure to segments of the CVP San Felipe Division in Merced and Santa Clara counties, and deliver water supply to up to eight South-of-Delta wildlife refuges in Merced County. Construction is planned to begin mid-2027 (California Water Commission 2020). If the Pacheco Reservoir Expansion Alternative is implemented under the San Luis Low Point Improvement Project (described above in Section O.2.4.9), then the Pacheco Reservoir Expansion Project will no longer be analyzed or implemented.

#### ***O.2.4.11 Los Vaqueros Reservoir Expansion Project***

Los Vaqueros Reservoir is an off-stream reservoir in the Kellogg Creek watershed to the west of the Delta. The Los Vaqueros Reservoir initial construction was completed in 1997 as a 100,000 AF off-stream storage reservoir owned and operated by Contra Costa Water District (CCWD) to improve delivered water quality and emergency storage reliability to their customers. In 2012, the Los Vaqueros Reservoir was expanded to a total storage capacity of 160,000 AF (Phase 1) to provide additional water quality and supply reliability benefits, and to adjust the timing of its Delta water diversions to accommodate the life cycles of Delta aquatic species, thus reducing species impact and providing a net benefit to the Delta environment. As part of the Storage Investigation Program described in the CALFED Bay Delta Program ROD, additional expansion up to 275,000 AF (Phase

2) is being evaluated by CCWD, DWR, and Reclamation. The alternatives considered in the evaluation also consider methods to convey water from Los Vaqueros Reservoir to the South Bay Aqueduct to provide water to Zone 7 Water Agency, Alameda County Water District, and Valley Water. The Final EIS/R was released by Reclamation and CCWD in March 2010. Reclamation approved and released the Record of Decision (ROD) in March 2011. Construction is planned to begin as early as 2021, with a 6- year construction period (Reclamation 2018b).

#### **O.2.4.12 San Joaquin River Restoration Program**

The San Joaquin River Restoration Program (SJRRP) is a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from restoration flows. The restoration program is the product of more than 18 years of litigation, which culminated in a Stipulation of Settlement on the lawsuit known as Natural Resource Defense Council (NRDC), et al., v. Kirk Rodgers, et al. The settling parties reached agreement on the terms and conditions of the settlement, which was subsequently approved by Federal Court on October 23, 2006. The settling parties include the Natural Resources Defense Council, Friant Water Users Authority, and the U.S. Departments of the Interior and Commerce. The settlement's two primary goals are to:

- Restore and maintain fish populations in “good condition” in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish, and;
- Reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the settlement.

The settlement requires specific releases of water from Friant Dam to the confluence of the Merced River, which are designed primarily to meet the various life stage needs for spring- and fall-run Chinook salmon. The release schedule assumes continuation of the current average Friant Dam release of 116,741 AF, with additional flow requirements depending on the year type. Interim flows began in October 2009, and full restoration flows would begin no later than January 2014. Salmon will be reintroduced in the upper reaches no later than December 31, 2012. There are many physical improvements within and near the San Joaquin River that will be undertaken to fully achieve the river restoration goal. The improvements will occur in two separate phases that will focus on a combination of water releases from Friant Dam, as well as structural and channel improvements.

The project was authorized and funded with the passage of San Joaquin River Restoration Settlement Act, part of the Omnibus Public Land Management Act of 2009 (Public Law 111-11) (SJRRP 2019).

#### **O.2.5 Cumulative Projections Considered for All Resources**

This section describes the specific projections that have been used for the cumulative effects analysis.

**O.2.5.1 Merced County General Plan – Background Report**

The Background Report for the *2030 Merced County GP* was released in December 2013. This document presents population and employment projections through 2030. The projections have been developed by the California Department of Finance (DOF).

Table 3 shows both past and projected population estimates from the GP’s projections from 2013. The current California DOF (2017) population projection for Merced County in 2030 has been revised downward, to 326,574, but the use of a higher population projection provides a more conservative cumulative impact analysis. Additionally, the table displays average annual growth rates for each period. As indicated in Table 3, the county’s population had an average annual growth rate of 3.1% from 2000 to 2005 and 2.7% from 2005 to 2010, and a projected growth rate of 2.6% from 2010 to 2030 (Merced County 2013). Utilizing these population projections, the Background Report identifies an estimated population increase from 2010 to 2030 of approximately 141,000 people that will require housing within the county (Merced County 2013).

**Table 3. Past and Projected Population Estimates Merced County and California (2000–2030)**

Year	Merced County	
	Population	Average Annual Growth Rate
2000	210,544	--
2003	225,115	2.3%
2005	243,700	4.1%
2010	276,200	2.7%
2020	340,800	2.3%
2030	417,200	2.2%

Source: Merced County 2013

Employment growth projections presented in the Background Report identified approximately 27,600 jobs that would be added in Merced County between 2005 and 2030. Table 4 shows these employment projections for both unincorporated and incorporated areas within the county from 2005 to 2030.

**Table 4. Past and Projected Employment Estimates Merced County (1990–2030)**

Year	Observed/ Projected	Total Jobs	Average Annual Growth Rate
1990	Observed	77,300	--
2004	Observed	86,500	0.9%
2005	Projected	87,400	1.0%
2030	Projected	115,000	2.1%

**O.2.5.2 Total Estimated and Projected Population for California and Counties**

Table 5 presents projections through 2040 for the State of California and the counties that could be affected by the proposed alternatives. Each of these communities has predicted an increase in population by 2040.

**Table 5. Population Projections 2010–2040**

	2010	2020	2030	2040
California	37,333,583	40,719,999	44,019,846	46,884,801
Alameda	1,515,338	1,708,594	1,878,556	2,032,262
Contra Costa	1,051,525	1,184,094	1,314,573	1,426,050
Fresno	932,628	1,033,068	1,145,646	1,256,572
Imperial	175,107	196,540	220,459	243,975
Kern	841,887	929,787	1,067,631	1,213,558
Kings	152,175	154,403	170,105	187,048
Los Angeles	9,837,011	10,451,759	10,885,337	11,161,569
Madera	150,193	162,814	186,761	212,229
Merced	256,803	286,397	326,574	369,193
Orange	3,014,962	3,260,659	3,434,157	3,558,718
Riverside	2,196,137	2,506,739	2,863,260	3,165,363
San Benito	55,401	60,170	66,796	73,535
San Bernardino	2,044,228	2,235,282	2,483,568	2,735,646
San Diego	3,100,529	3,406,126	3,638,609	3,830,210
San Joaquin	687,827	783,572	895,240	996,379
San Luis Obispo	269,013	286,416	302,323	310,367
Santa Barbara	423,552	461,916	492,495	516,163
Santa Clara	1,790,301	2,018,257	2,230,564	2,443,718
Stanislaus	515,888	572,155	638,995	699,177
Tulare	442,551	488,293	541,140	594,348
Ventura	824,467	871,960	922,001	961,828

Source: California DOF 2017

**O.2.5.3 Population and Housing**

Table 6 presents population projections through 2030 for each of the communities that could be affected by the proposed alternatives. Each of these communities has predicted an increase in population by 2030.

**Table 6. Population Projections 2016–2030**

Community	2016 <sup>1</sup>	2030	2030 Population Projection Source
Los Banos	36,847	67,100	Merced County 2013
Gilroy	51,649	57,000	LAFCO Santa Clara County 2015
Newman	10,667	16,525	Stanislaus County 2016
Gustine	5,658	9,000	Merced County 2013
Santa Nella	1,965	N/A	N/A

<sup>1</sup> Source: United States Census Bureau 2016

Key:

LAFCO = Local Area Formation Committee; N/A = Not Available

According to the most recent data from Merced County Association of Governments (MCAG), the total housing need to accommodate future growth in Merced County from 2014 through 2023 is estimated to be 15,850 units, with 2,473 needed in Los Banos and 320 needed in Gustine (MCAG 2015)<sup>1</sup>. According to the Association of Bay Area Governments (ABAG), Santa Clara County is expected to require a total of 58,836 new housing units to accommodate future growth, including 1,088 in Gilroy, from 2014 through 2022 (ABAG 2013). Stanislaus County is expected to require 21,330 new housing units, with 778 housing units in Newman for 2014 through 2023 (Stanislaus Council of Governments 2014).

All of the cities have recognized the potential for future increases in population and the corresponding need for new housing. In response, they have enacted goals and policies in the housing elements of their general plans to accommodate for this growth.

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<sup>1</sup> Data regarding population and housing projections beyond 2023 are not available for Merced County and Stanislaus County.



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# **B.F. Sisk Dam Raise and Reservoir Expansion Project Environmental Impact Report/ Supplemental Environmental Impact Statement**

**Appendix P: Supplemental Material**

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# Appendix P Supplemental Material

## P.1 List of Preparers

This Environmental Impact Report/ Supplemental Environmental Impact Statement (EIR/SEIS) was prepared by San Luis and Delta-Mendota Water Authority (SLDMWA) and United States Department of Interior, Bureau of Reclamation (Reclamation). A list of persons who prepared various sections of the EIR/SEIS, significant background materials, or participated to a significant degree in preparing this EIR/SEIS is presented below in Tables 1 through 3.

**Table 1. CEQA Lead**

Preparers	Agency	Role In Preparation
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Frances Mizuno	SLDMWA	Project objective identification, alternative formulation,
Federico Barajas	SLDMWA	Project objective identification, alternative formulation

Key: EIR/SEIS= Environmental Impact Report/ Supplemental Environmental Impact Statement, SLDMWA = San Luis Delta-Mendota Water Agency

**Table 2. NEPA Lead**

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Key: EIR/SEIS= Environmental Impact Report/ Supplemental Environmental Impact Statement, Reclamation = United States Department of Interior, Bureau of Reclamation

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Preparers	Degree(s)/Years of Experience	Experience and Expertise	Role In Preparation
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Key; AICP= Association of Certified Planners, ASQ= American Society of Quality, B.A.= Bachelor of Arts, B.S.= Bachelor of Science, CA= Certified Arborist, CERP= Certified Ecological Restoration Practitioner, CHMM= Certified hazardous Materials Manager, CQA= Certified Quality Auditor, CWB= Certified Wildlife Biologist, M.S.= Masters of Science, Ph.D.=Doctor of Philosophy, RCA= Registered Consulting Arborist

## P.2 Acronyms

AADT	Annual Average Daily Traffic
AB	Assembly Bill
APE	area of potential effects
AQMD	Air Quality Management District
B	beneficial
BMP	best management practices
CalRecycle	California Department of Resources Recycling and Recovery
CalSim II	California Simulation Model II
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDEC	California Data Exchange Center
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Parks and Recreation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH <sub>4</sub>	methane
CHRIS	California Historical Resources Information System
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent
CRHR	California Register of Historical Resources
CRLF <sub>s</sub>	California red-legged frogs
CVP	Central Valley Project
D	Dry
dB	decibels
dBA	A-weighted dB
Delta	Sacramento-San Joaquin River Delta
DMC	Delta-Mendota Canal
DO	Dissolved Oxygen
DOC	Department of Conservation
DOGGR	Division of Oil, Gas & Geothermal Resources
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources

EC	Electrical Conductivity
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
GGERP	Greenhouse Gas Emissions Reduction Plan
GHG	greenhouse gas
HASP	Health and Safety Plan
HCP	habitat conservation plan
Hwy	Highway
I-5	Interstate 5
LOS	Level of Service
LSZ	low salinity zone
LTS	less than significant
LTWT	Long-Term Water Transfers
LUST	leaking underground storage tank
M&I	municipal and industrial
MAF	million acre-feet
MTCO <sub>2</sub> e	metric tons CO <sub>2</sub> e
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plan
NCP	Noise Control Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NI	no impact
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O <sub>3</sub>	ozone
Pb	lead
PM	particulate matter
PPV	peak particle velocity
PRC	Public Resources Code
Reclamation	United States Department of the Interior, Bureau of Reclamation

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ROC on LTO	Reinitiation of Consultation on the Coordinated Long-Term Operations of CVP and SWP
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
S significant	
SBCWD	San Benito County Water District
SCVWD	Santa Clara Valley Water District
SJKF	San Joaquin kit fox
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Air Pollution Control District
SLDMWA	San Luis and Delta-Mendota Water Authority
SLPIP	San Luis Low Point Improvement Project
SO <sub>2</sub>	sulfur dioxide
SOD	Safety of Dams
SOI	Secretary of the Interior
SR	State Route
SRA	State Recreation Area
SU	significant and unavoidable
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant
TAF	thousand acre-feet
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VELB	Valley Elderberry Longhorn Beetle
WTP	Water Treatment Plant

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#### **Chapter 6 – Disclosures, Consultation, and Coordination**

No References.