

F. CULTURAL RESOURCES

1. Introduction

This section describes the cultural resources setting and existing conditions as they relate to the San Francisco BART to Livermore Extension Project, discusses the applicable regulations, and assesses the potential impacts to cultural resources from construction and operation of the Proposed Project and Alternatives.

CEQA Guidelines Section 15064.5(a) defines historical resources as including but not limited to any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or that is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered to be “historically significant” if it meets the criteria for listing in the California Register of Historical Resources (California Register).¹

Historical resources refer to significant historic-era architectural resources and both prehistoric and historic-era archaeological resources, as described below. Historic-era resources refer to resources that are 45 years old or older; prehistoric resources include areas and artifacts of use and occupation prior to the arrival of Euroamericans to California.

- **Historic-era architectural resources** – includes buildings, structures, objects, and historic districts. Specific examples of architectural resources are residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges.
- **Archaeological resources** – are those dating to prehistoric and historic-era times. Prehistoric archaeological resources consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Historic-era archaeological resources consist of townsites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact-filled wells or privies; and

¹ California Code, Public Resources Code, Section 5024.1.

deposits of metal, glass, and/or ceramic refuse. Under CEQA, archaeological resources can be significant as either historical resources or as unique archaeological resources.

The study area for cultural resources includes the area within a 0.5-mile radius of the collective footprint—the area of ground disturbance for the combined footprints of the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative. In addition, the bus routes and bus infrastructure improvements for the Enhanced Bus Alternative, as well as for the feeder buses for the Proposed Project and other Build Alternatives, which are anticipated to extend along existing streets and within the street right-of-ways, are addressed programmatically in this analysis, as described in Chapter 2, Project Description. The area of ground disturbance includes the surface and subsurface areas that would be disturbed as a result of activities associated with the Proposed Project and Build Alternatives, including construction staging areas and construction work areas. In addition, parcels immediately adjacent to areas of ground disturbance are considered to assess potential visual and vibratory impacts to architectural resources. The study area is used to develop the cultural context and to assess the likelihood for unrecorded cultural resources in the vicinity of the Proposed Project and Build Alternatives based on the distribution of recorded resources.

The cultural resources within the study area are described from west to east along the project corridor and are generally discussed for the geographic subareas described in Section 3.A, Introduction to Environmental Analysis.

No scoping comments pertaining to cultural resources were received in response to the Notice of Preparation for this EIR or during the public scoping meeting held for the EIR.

2. Existing Conditions

This subsection describes the regional context for the study area, including the natural environment and resource setting, and the local setting, including records search and survey results.

a. Regional Overview

(1) Natural Environment

The Proposed Project and Build Alternatives would be located in the Livermore-Amador Valley at the northern end of the Diablo Range, part of the northwest-trending Coast Ranges Geomorphic Province. The Coast Ranges Geomorphic Province contains mountain ranges and valleys that trend northwest, parallel to the San Andreas Fault Zone. The ranges have been intensely uplifted, folded, and faulted and contain profound structural discontinuities. The diverse geologic conditions underlying the Livermore-Amador Valley

and the greater San Francisco Bay Area (Bay Area) are largely defined by the network of major active faults that occur within the region.

The Bay Area and surrounding region contained an abundance of natural resources that would have been used by prehistoric and early historic-era populations. A wide variety of migratory and year-round resident birds used Bay Area creeks and marshes as habitat for nesting and feeding. Salmonid and other fish were historically present in these local creeks. Deer, elk, and waterfowl were plentiful, as were nearby marine resources such as seals, otters, abalone, mussels, oysters, and clams. Franciscan chert was an easily obtainable local raw material for the formation of stone tools. Obsidian was obtained from the Annadel and Napa Glass Mountain quarries to the north.²

(2) Prehistoric Setting

Categorizing the prehistoric period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given timeframe, thereby creating a regional chronology. For the purpose of understanding prehistoric cultural changes in the Bay Area (including the Livermore-Amador Valley), Milliken et al. divide human history into four periods: Paleoindian Period (11,500 to 8000 B.C.), Early Period (8000 to 500 B.C.), Middle Period (500 B.C. to A.D. 1050), and Late Period (A.D. 1050 to 1550).³ Economic and technological types, socio-politics, trade networks, population density, and variations of artifact types are used to differentiate between cultural periods.

The Paleoindian Period (11,500 to 8000 B.C.) was characterized by big-game hunters occupying broad geographic areas. Evidence of human habitation during the Paleoindian Period has not yet been discovered in the Bay Area.

During the Early Period – Lower Archaic (8000 to 3500 B.C.), geographic mobility continued from the Paleoindian Period, and is characterized by the milling slab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are documented in burials during the Early Period – Middle Archaic (3500 to 500 B.C.), indicating the beginning of a shift to sedentism.

During the Middle Period (which includes the Lower Middle Period – Initial Upper Archaic [500 B.C. to A.D. 430] and Upper Middle Period – Late Upper Archaic [A.D. 430 to 1050]),

² Moratto, M.J., 1984. California Archaeology. Smithsonian Press, San Diego.

³ Milliken, Randall, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottfield, Donna Gillette, Vaviana Bellifemine, Eric Strother, Robert Cartier, and David A. Fredrickson, 2007. Punctuated Culture Change in the San Francisco Bay Area, In Prehistoric California: Colonization, Culture, and Complexity. Edited by T.L. Jones and K.A. Klar, pp. 99-124, AltaMira Press.

geographic mobility may have continued, although groups began to establish longer-term base camps from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430, a dramatic cultural disruption occurred, evidenced by the sudden collapse of the Olivella saucer bead trade network.

During the Initial Late Period – Lower Emergent (A.D. 1050 to 1550), social complexity developed toward large central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

(3) Ethnographic Setting

The Livermore-Amador Valley is within the northeastern portion of the territory occupied by the Ohlone-speaking people, but very close to the boundaries of three other ethnographic groups: the Bay Miwok, the Northern Valley Yokuts, and the Plains Miwok.

Based on a compilation of ethnographic, historical, and archaeological data, Milliken describes the group known as the Ohlone.⁴ While traditional anthropological literature portrayed the Ohlone as having a static culture, today it is better understood that many variations of culture and ideology existed within and between villages. While these static descriptions of separations between native cultures of California make it an easier task for ethnographers to describe past behaviors, this masks Native American adaptability and self-identity. California's Native Americans never saw themselves as members of larger cultural groups (as described by anthropologists), but rather as members of specific villages. Although they may have been related to others by marriage or kinship ties, the village was the primary identifier of their origins.

Levy describes the language group spoken by the Ohlone, known as Costanoan.⁵ The term Costanoan derived from a Spanish word designating the coastal peoples of Central California. Today, Costanoan is used linguistically to reference a larger language family (at least eight languages) of the same Penutian language group spoken by distinct sociopolitical groups. The Ohlone once occupied a large territory that ranged from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The Proposed

⁴ Milliken, Randall T., 1995. *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area, 1769-1810*. Ballena Press, Menlo Park.

⁵ Levy, Richard, 1978. *Costanoan In California*, edited by Robert F. Heizer, pp. 485-495. *Handbook of North American Indians*, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Project is in the greater Chochenyo tribal area.⁶ Milliken et al. describes the Souyen, a Costanoan-speaking tribe that occupied the western Livermore Valley area.⁷

Economically, the Ohlone engaged in hunting and gathering. Their territory encompassed both coastal and open valley environments that contained a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, fish, shellfish, a variety of bird species, and small mammals. The Ohlone acknowledged private ownership of goods and songs and village ownership of rights to land and/or natural resources; they appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught.⁸ After European contact, Ohlone society was severely disrupted by missionization, disease, and displacement. Today, the Ohlone still have a strong presence in the greater Bay Area, and have representatives engaged in project planning, including consultation regarding impacts to Native American cultural resources.

(4) Historic Setting

Beginning with the Spanish exploration of California, the historic period includes the Spanish and Mexican Periods (1776–1840s) and the Early American Period to the Present Day (1840s–the Present).

(a) Spanish and Mexican Periods

By the middle of the 16th century, Spain had emerged as a naval and military power in Western Europe, with colonies in North and South America and a network of trading interests throughout the Pacific. The Spanish colonization of California was achieved through a program of military-civilian-religious conquest in which soldiers secured areas for settlement by suppressing Indian and foreign resistance and established fortified structures (presidios) from which the colony would be governed. Civilians established towns (pueblos) and priests established the religious component (missions) of the colonization strategy. The missions had the most profound influence on Native American culture. The priests intended to convert Indians to Catholicism, introduce them to Spanish culture, and discipline them into a productive labor force. Pedro Fages led the first Spanish foray into the Livermore area in 1772. Ohlone in the Livermore area were forced and lured into the mission system, and primarily came to live at Mission San Jose.

⁶ Ibid.

⁷ Milliken, Randall, Laurence H. Shoup, and Beverley R. Ortiz, 2009. Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today. Prepared for National Park Service, Golden Gate National Recreation Area. June.

⁸ Levy, Richard, 1978. Costanoan In California, edited by Robert F. Heizer, pp. 485–495. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

By the beginning of the 19th century, the growth of Spanish California had come to a halt. Embroiled in the Napoleonic wars and a subsequent struggle to throw off French rule, Spain was unable to effectively rule its North American colonies. In 1822, after more than a decade of revolutionary struggle, Mexico achieved independence from Spain, and California became a distant outpost of the Mexican Republic.

Under a program known as secularization adopted by the Mexican congress in 1833, the mission lands were to be subdivided into land grants (ranchos) to be offered to trustworthy citizens. About 500 ranchos were established in California during the Mexican period. The ranchos established in the project vicinity were Rancho San Ramon (inclusive of what is now the city of Dublin), Rancho Valle de San Jose (inclusive of what is now the city of Pleasanton), and Rancho Las Positas (inclusive of what is now the city of Livermore). The rancho economy was based primarily on stock raised for the hide and tallow trade, supplemented by the cultivation of additional food crops such as wheat and smaller numbers of domestic livestock such as sheep and swine. Cattle were driven to coastal locations where they were slaughtered and skinned; the hides and tallow were then processed for transport to trade ships. Former mission Indians performed most of the labor on the ranchos; they worked almost entirely for food and shelter.

As early as the 1820s, British and American mountain men, fur traders, and entrepreneurs ventured into California in search of fortune. The Mexican government was unable to halt this incursion and granted citizenship to foreigners who pledged adherence to Mexican law. Many of the foreigners received generous land grants on which they established grazing and commercial operations, such as the vast New Helvetia rancho granted in 1839 to John Sutter in what is now the city of Sacramento. Within a short period of time, the outsiders came to dominate commercial life in California, thereby posing a challenge to Mexican control of the region.

Beginning in the early 1840s, the steady overland migration of American settlers into the region further threatened Mexico's hold on California. The increased American presence in California was a product of the expansionist impulse that had come to dominate the American imagination and that contributed to a deterioration of relations between Mexico and the United States. War between the U.S. and Mexico broke out in May 1846, and several battles took place in California. The United States eventually prevailed, and the American victory over Mexico was formalized in February 1848 with the Treaty of Guadalupe Hidalgo. In January 1848, just a few days before the signing of the Treaty of Guadalupe Hidalgo, James Marshall discovered gold on the American River. Marshall's discovery triggered the gold rush, a massive influx of fortune seekers into California, which led to the creation of major cities such as San Francisco, Sacramento, and Stockton, as well as numerous smaller settlements and towns in and around the gold-bearing regions of the Sierra Nevada foothills. California was admitted to the United States as the 31st state in the Union on September 9, 1850.

(b) United States Acquisition to Present Day

Alameda County separated from Contra Costa County and a small portion of Santa Clara County in 1853. That same year, the eastern portion of the county, which includes the Livermore Valley, was named Murray Township after early settler Michael Murray.

William Mendenhall, who named the town after his friend Robert Livermore, established the city of Livermore in 1869. Livermore developed primarily as an agricultural community until the Central Pacific Railroad, the first transcontinental railroad, was completed through the city in 1869, also resulting in the establishment of what became the city of Pleasanton (originally called Alisal). By 1870, wheat cultivation had replaced cattle grazing as the dominant economic activity in the project vicinity.

In 1879, the main line of the railroad was moved to a new route across the Carquinez Strait. The railroad line through Livermore remained the principal connection of the area to market for its products. By 1908, the original route of the Central Pacific Railroad (by this time known as the Southern Pacific Railroad), was joined by the Western Pacific Railroad, which ran a parallel line through the Livermore Valley.

By the 1930s, the automobile allowed people to live farther from the city center. The city and surrounding environs began to expand in a low-density pattern. Many of its original farm fields were replaced with residential, shopping, office, and industrial areas, all served primarily by the automobile.

The Western Pacific Railroad was bought by the Union Pacific in 1982, and is used today for freight as well as the Altamont Commuter Express train. The Southern Pacific Railroad abandoned its tracks in 1984, running its trains on the Union Pacific rails. It then pulled up the rails and deeded most of the land to Alameda County.⁹

b. Local Setting

To determine the cultural resources sensitivity of the study area, background research and a survey were completed to document previously recorded and new cultural resources.

(1) Northwest Information Center Records

The California Office of Historic Preservation (OHP) is an information repository for historical resources in California. The OHP administers the California Historical Resources Information System (CHRIS). CHRIS information is disseminated primarily through records searches and reviews of historical resources data files for specific geographic areas.

⁹ Nale, Bill, 2003. Livermore History – Railroads. Available At: www.elivermore.com/photos/Hist_lvr_railroad1.htm, accessed August 5, 2016.

ESA conducted a records search at the Northwest Information Center (NWIC) of the CHRIS on August 6, 2013 (File No. 13-0186) and January 5, 2016 (File No. 15-0943). The records search included reviews of previous surveys, studies, and site records for the study area (defined in the Introduction subsection, above, as the collective footprint and a surrounding 0.5-mile radius). The Historic Property Data File for Alameda County was also reviewed. This file contains information on sites of recognized historical significance—including those evaluated for listing in the National Register of Historic Places (National Register), the California Register, the California Inventory of Historical Resources, California Historical Landmarks, and California Points of Historical Interest. The purpose of these searches was to: (1) determine whether known historical or archaeological resources have been recorded within or near the study area; (2) assess the likelihood of unrecorded historical or archaeological resources based on historical references and the distribution of nearby sites; and (3) develop a context for the identification of historical themes.

Based on the NWIC records review, nearly 90 cultural resources investigations have been completed within the study area. These studies primarily consist of background research and surface surveys. Eight projects, listed below in Table 3.F-1, include large portions of the collective footprint and/or adjacent subsurface survey efforts.

TABLE 3.F-1 PRIOR CULTURAL RESOURCE STUDIES WITHIN OR ADJACENT TO THE COLLECTIVE FOOTPRINT

Study #	Project	Author	Year
6422	Hopyard Road/Route 580 Interchange Project	Margaret Buss	1984
8892	Highway 580 Interchange Improvements Project	Holman and Associates	1985
13870 13871	I-580/First Street Interchange Modifications Project	Basin Research Associates	1991
25781	Vasco Road Interchange Project	William Self Associates	2002
33432 33815	Isabel State Route 84/Interstate 580 Interchange Project	PAR Environmental	2000
31701 33555 37251	I-580 Eastbound High Occupancy Vehicle Lane Project	Rosenthal and Byrd (Far Western)	2006
35826	I-580 Westbound High Occupancy Vehicle Lane Project	Byrd (Far Western)	2008
36350	I-580/Tassajara Road Interchange Project	Basin Research Associates	2001

Source: NWIC, 2016.

Recorded prehistoric and historic-era (i.e., 45 years old or older) cultural resources in the study area include prehistoric sites and isolated prehistoric artifacts, railroad segments, flood and irrigation canals, barns and other structural remnants of ranching and agricultural operations, and historic-era residential and ranch properties. Table 3.F-2 summarizes previously recorded cultural resources within the study area. Pursuant to federal and state law, CHRIS information pertaining to historical resources of an archaeological nature is confidential; therefore, the locations of resources are not provided in this section.

TABLE 3.F-2 CULTURAL RESOURCES PREVIOUSLY IDENTIFIED WITHIN THE STUDY AREA

NWIC Number	Trinomial	Resource Name	Resource Type	Status
Archaeological Resources				
C-1396	–	–	Midden (not relocated)	Not evaluated
P-01-000067	CA-ALA-47	–	Prehistoric isolate artifacts (not relocated)	Not evaluated
P-01-000124	CA-ALA-394		Buried prehistoric midden	Not evaluated
P-01-002108	CA-ALA-430H	Robert Livermore Adobe Site	Historic-era archaeological site	California Historical Landmark
P-01-002122	CA-ALA-516H		Historic-era ranch structures, remains of concrete wall, and associated debris	Not evaluated
P-01-002194	–	–	Historic-era steel-lined feed trough and debris	Not eligible
P-01-002195	CA-ALA-584H		Historic-era building foundations	Not eligible
P-01-002196*	–	Fence	Historic-era barbed-wire fence	Not eligible
P-01-002197	–	Well House	Collapsed historic-era well house and associated elements	Not eligible
P-01-002198	–		Prehistoric isolate artifact	Not eligible
P-01-002199*	–		Prehistoric isolate artifact	Not eligible
P-01-002200	–	–	Prehistoric isolate artifact	Not eligible
P-01-002201	–	–	Prehistoric isolate artifact	Not eligible
P-01-002202	–	–	Prehistoric isolate artifact	Not eligible
P-01-002203*	–		Prehistoric isolate artifact	Not eligible
Architectural Resources				
P-01-000262	–	Unnamed residence	Historic-era residence	Not listed
P-01-000263	–	Unnamed residence	Historic-era residence	Not listed
P-01-000264	–	Unnamed residence	Historic-era residence and barn	Not listed

TABLE 3.F-2 CULTURAL RESOURCES PREVIOUSLY IDENTIFIED WITHIN THE STUDY AREA

NWIC Number	Trinomial	Resource Name	Resource Type	Status
P-01-000265	–	Unnamed residence	House and outbuildings	Not listed
P-01-000266	–	Jerome de Ferrari Farm	Historic-era residence and outbuildings	Not listed
P-01-000267	–	Unnamed residence	Historic-era residence	Not listed
P-01-000268	–	Unnamed residence	Two historic-era residences and outbuildings	Not listed
P-01-002204/5*	–	Gandolfo Ranch Historic District	Historic-era ranch complex and associated features	National Register eligible
P-01-010512	–	Unnamed residence	Historic-era ranch property	Not listed
P-01-010513	–	Unnamed residence	Historic-era ranch house	Not listed
P-01-010514	–	Unnamed residence	Historic-era residence / office	Not listed
P-01-010515	–	Unnamed residence	Historic-era residence / office buildings	Not listed
P-01-010516	–	Unnamed residence	Historic-era residence	Not listed
P-01-010517	–	Unnamed residence	Historic-era residence	Not listed
P-01-010518	–	Unnamed residence	Historic-era residence	Not listed
P-01-010519	–	Unnamed residence	Historic-era residence	Not listed
P-01-010629	–	South Bay Aqueduct	Historic-era water-conveyance conduit	Not listed
P-01-010779	–	Unnamed residence	Historic-era residence and outbuildings	Not listed
P-01-010780	–	–	Historic-era Quonset warehouse	Not listed
P-01-010781	–	Unnamed residence	Historic-era residence and outbuilding	Not listed
P-01-010927	–	Contra Costa Las Positas Transmission Line	Transmission line, crossing above Interstate (I-) 580	Not listed
–*	–	Lincoln Highway	Roadway	Not listed
–*	–	Tassajara Creek Bridge	Bridge	Not listed

Notes: **Bold*** items are in or immediately adjacent to the collective footprint.
 Not listed = Not listed in a historical register; Not evaluated = Not evaluated for significance/listing in a historical register.
 Source: NWIC, 2016.

(2) Native American Coordination

In October 2008—for the BART to Livermore Extension Program EIR—a request was submitted to the Native American Heritage Commission (NAHC) to search its sacred lands file to determine the presence of any Native American cultural resources in the study area. The NAHC indicated that there are no known sacred sites in the immediate area and the NAHC provided a list of Native American organizations and individuals with possible knowledge of cultural resources in the area. Letters were sent to each of the organizations/individuals, and no responses from tribal representatives were received.

On April 19, 2016, an updated search request was sent to the NAHC. Additionally, a description of the Proposed Project and Build Alternatives was sent to each of the organizations/individuals identified by the NAHC in 2008 as Native American organizations and individuals with possible knowledge of cultural resources in the study area. Letters were sent on May 25, 2016 and again on August 17, 2016. No responses were received.

(3) Surveys for Cultural Resource Sensitivity

In July 2013, an architectural historian qualified by the U.S. Secretary of the Interior¹⁰ conducted a reconnaissance-level survey of the collective footprint and parcels immediately adjacent for the accessible portions of all alternatives. The survey included notes and photographs of all buildings and structures potentially 45 years old or older within and adjacent to the collective footprint.

On February 9, 2016, a Registered Professional Archaeologist conducted a pedestrian survey of the accessible portions of the collective footprint, examining areas of open ground surface for indications of cultural occupation, including prehistoric and historic-era artifacts, faunal remains, and soil characteristics consistent with midden deposits. The survey was completed in narrow, zigzag transects (5 to 10 meters wide) to examine all areas of exposed ground surface. While the surface visibility varied, minor ground disturbances, such as rodent holes, were closely examined in areas where vegetation obscured visibility.

The area surveyed included the collective footprint within the Dublin/Pleasanton Station Area, I-580 Corridor Area, Isabel North Area, Isabel South Area, and the Laughlin Road Area. A survey of the Cayetano Creek Area, which has been identified as an area sensitive for archaeological resources due to previously recorded sites in the vicinity, including

¹⁰ The Professional Qualifications Standards are those used by the National Park Service, and have been published in the Code of Federal Regulations, 36 CFR Part 61. The qualifications define minimum education and experience required to perform identification, evaluation, registration, and treatment activities for archaeology and historic preservation.

several prehistoric isolated artifacts (P-01-000067, -002200, -002201, and -002202) (see Table 3.F-2),¹¹ was not completed at this time due to access limitations in that area.

The 2016 survey effort did not identify archaeological resources or other evidence of past prehistoric use or occupation in the accessible portions of the collective footprint. Additionally, no historic-era archaeological resources were identified.

(4) Background Research and Survey Results

The results of the background research and survey are described in detail below for each of the geographic subareas within and adjacent to the collective footprint, organized from west to east along the project corridor. Historic-era architectural resources are described first, followed by archaeological resources (both prehistoric and historic-era).

(a) Historic-era Architectural Resources

Several prior surveys were completed in the study area, which are listed in Table 3.F-1 and summarized below. As shown in Table 3.F-2, this background research completed for previous projects and updated for the Proposed Project and Build Alternatives indicates that 23 historic-era architectural resources have been previously recorded within the study area. Resources within or partially within the collective footprint are described below. Only one of these resources—the Gandolfo Ranch Historic District (P-01-002204/5)—is considered a historical resource for the purposes of CEQA.

During the current survey effort for the BART to Livermore Extension Project, five previously unrecorded historic-era architectural resources were identified—the Collier Canyon Ranch and four residential complexes. As described below, these resources are not eligible for listing in the California Register and therefore are not considered historical resources for the purposes of CEQA.

Findings and resources are described below for the collective footprint and immediately adjacent parcels, from west to east.

Dublin/Pleasanton Station Area. Based on the survey and review of prior studies, there are no historic-era architectural resources in the Dublin/Pleasanton Station Area.

I-580 Corridor Area. Three historic-era architectural resources are located in the I-580 Corridor Area study area as follows: (1) the Lincoln Highway; (2) a bridge over Tassajara

¹¹ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October.

Creek; and (3) the previously unrecorded Collier Canyon Road Ranch complex. However, as described below, these resources are not considered historical resources for the purposes of CEQA based on the California Register criteria.

- **Lincoln Highway.** The Thompson and West Alameda County Map of 1878 shows an east-west county road through Livermore Valley, running roughly parallel to and north of Las Positas Creek, approximating portions of the alignment of today's I-580. This road connected Livermore with Dublin to the west, the Altamont Pass, and ultimately to Stockton to the east. In downtown Livermore, the county road followed the alignment of today's Portola Avenue, Junction Avenue, and First Street. From First Street, the road ran northeast, becoming Altamont Pass Road. By 1913, this road was designated as part of the Lincoln Highway, the country's first transcontinental automobile highway connecting San Francisco with New York. By the 1920s, the road was a paved, two-lane highway referred to as the Lincoln Highway and/or U.S. Highway 50. In 1938, the road through Altamont Pass, from Greenville Road to Grant Line Road near Tracy, was upgraded to a four-lane divided highway (at the location of the existing I-580), bypassing the narrow and winding road through the canyon.¹²

By 1950, a new four-lane highway segment was constructed between Greenville Road and Portola Avenue through previously open land, bypassing downtown Livermore to the north. Portions of the original two-lane road from Portola Avenue westward toward Dublin were also upgraded to a four-lane highway by 1950. Beginning in 1969, the highway was upgraded again to an eight-lane, grade-separated interstate freeway, with the construction of I-580. In 1969, the earlier 1938–1950 highway became today's eastbound I-580, while westbound I-580 was constructed along a new alignment immediately north of and parallel to this earlier highway. New overpasses and interchanges were constructed from the late 1960s and into the mid-1970s. Additional high-occupancy vehicle lanes were added by 2005 and recently in 2015. The former segments of the old Lincoln Highway in the collective footprint do not qualify as a historical resource due to numerous widening efforts and realignments over the past 50 years that have eliminated the integrity of the older highway.¹³

- **Bridge over Tassajara Creek.** The Tassajara Creek bridge over I-580 is a cast-in-place bridge that was originally constructed in 1965 and reconstructed in 1995. The

¹² Bezis, Jason A., 2008. 70 Candles for Altamont Pass Highway, 50 for Vasco Road in Livermore Heritage Guild Volume XXXIX. No. 6. Available at: http://www.livermorehistory.com/Newsletters/2008_09_Sep-Oct%20Newsletter.pdf, accessed August 5, 2013.

¹³ Anderson, Kathy, 2017a. Department of Parks and Recreation Form for the Lincoln Highway. On file, ESA.

Caltrans Historic Bridge Inventory indicates that the bridge is a Category 5 and not eligible for listing in the National Register.¹⁴

- **Collier Canyon Road Ranch.** North of I-580 on Collier Canyon Road is the previously undocumented Collier Canyon Road Ranch complex (Assessor Parcel Number [APN] 99-1331-28), which is partially within the collective footprint. The ranch includes two residences, a barn, several outbuildings, a water tank, and a windmill. The ranch is shown on aerial imagery from as early as 1949 and topographic maps as early as 1952. The two single-story residences are simple wood frame structures with rectangular plans and gable roofs clad in wood shiplap siding and wood frame windows. The barn is wood frame with a rectangular plan vertical wood shiplap siding and gable roof clad in corrugated metal. Two other agricultural outbuildings consist of simple wood frame structures with rectangular plans, vertical wood siding, and gable roofs clad in corrugated metal. A cylindrical wood framed water tank, a small windmill, and an abandoned cattle pen also occupy the property. All of the buildings and structures are in various stages of dilapidation, and the complex appears abandoned. Preliminary research does not associate the Collier Canyon Road Ranch complex with an important event (California Register Criterion 1) or an important person (California Register Criterion 2). The buildings do not represent an architectural style or the work of a master (California Register Criterion 3). In addition, the complex would not provide information important to history (California Register Criterion 4). Finally, the Collier Canyon Road Ranch complex does not retain integrity of materials and workmanship due to the dilapidated condition of the buildings. Although the ranch complex is more than 50 years old, based on a reconnaissance-level survey and background research, the Collier Canyon Road Ranch complex does not appear to qualify for listing in the California Register.¹⁵

Isabel North Area. This area has been used for agricultural and grazing purposes since at least 1906, and possibly earlier. One small structure is shown on the 1906 topographic map. By 1941, this structure is no longer evident, and no other structures were built in the area after this time. The Isabel Station North Area is currently undeveloped open space. Based on the survey and review of prior studies, no historic-era architectural resources are located in this area.

Isabel South Area. This area has been in agricultural use since at least 1906, and possibly earlier. Based on the survey and review of prior studies, there is one historic-era architectural resource approximately 300 feet to the southeast and across East Airway

¹⁴ Caltrans lists five categories to describe the significance of a bridge. Category 5 is “ineligible for National Register listing.” California Department of Transportation. Historical Significance – State Agency Bridges. Website: dot.ca.gov/hq/structur/strmaint/hs_state.pdf.

¹⁵ Anderson, Kathy, 2017b. Department of Parks and Recreation Form for the Collier Canyon Ranch. On file, ESA.

Boulevard from the Isabel South Area—the Gandolfo Ranch Historic District. This resource is partially within the collective footprint. As described below, the Gandolfo Ranch Historic District is considered a historical resource for the purposes of CEQA.

The 1906 USGS 7.5-minute topographic map shows one small structure in the northeastern corner of the Isabel South Area. This structure is no longer evident on the 1941 USGS topographic map. Subsequent USGS maps indicate that, by 1949, a residential ranch complex had been constructed in the approximate center of the Isabel South Area, consisting of four buildings built slightly west of the earlier structure. Two outbuildings were added to the ranch complex by the mid-1970s. By 1987, East Airway Boulevard was constructed along the southern edge of the parcel, and by 1989, the earlier ranch buildings had been removed. By 1993, a BART parking lot was constructed, with access from East Airway Boulevard. The current western edge of the Isabel South Area was created by the realignment of Isabel Avenue in 2010. Currently, there are no buildings or structures in the Isabel South Area. A grove of mature willow trees exists near where the earlier ranch buildings had been, and a heavily vegetated creek runs through the northern portion of the parcel, parallel to Isabel Avenue and I-580.

- **Gandolfo Ranch Historic District.** The Gandolfo Ranch Historic District (P-01-002204/5; APN 905-001-003-02) includes a working ranch with a Victorian-style farmhouse, a Craftsman-style residence, and a collection of barns and other agricultural outbuildings that date from the late 19th and early 20th centuries (see Table 3.F-2). The Gandolfo Ranch Historic District also includes fencing, driveways, pathways, landscaping features, farm equipment, and agricultural fields.¹⁶ The buildings and structures that contribute to the significance of the ranch are in the southern portion of the 25-acre parcel. The evaluation of the ranch complex notes that the 25 acres represent a fraction of the original 200-acre ranch and that “given the integral relationship between the fields and the ranch buildings, the boundaries of the district encompass the whole [...] 25 acres.”¹⁷ The Gandolfo Ranch Historic District has been determined eligible for listing in the National Register at the local level of significance under Criterion A, for its important association with agricultural development of Livermore during its period of significance (1885-1950), and Criterion C, as a 19th century ranch (period of significance between 1885 and 1930). In addition, the circa 1870s residence is also individually eligible at the local level under Criterion C, as a representative example of a Gothic Revival/Folk Victorian

¹⁶ Bakic, Tracy, and Cindy Baker, 2000. Site Record for P-01-002204 – Gandolfo Ranch Historic District. On file, Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California.

¹⁷ Ibid.

farmhouse. The State Historic Preservation Officer (SHPO) determined this property eligible for inclusion in the National Register as a historic district in 2001.¹⁸

The northern-most part of the historic district has been converted to a gravel parking area; the buildings and structures that contribute to the significance of the district are approximately 500 feet to the south of East Airway Boulevard.

In 2001, the SHPO determined the widening of East Airway Boulevard for the Isabel Interchange Project would have an adverse effect on the Gandolfo Ranch Historic District. It was noted that “the loss of land and trees will change a portion of the historic character of the district by reducing the amount of diversified farming open space and eliminating historic vegetation.” Additionally, the elevated overpass would be visible from the ranch buildings, affecting the overall integrity of the setting, feeling, and association.¹⁹ To mitigate this adverse effect, a Historic American Building Survey was proposed to document the existing viewshed from the ranch buildings across the fields and from the fields towards the ranch.

Cayetano Creek Area. This area has been used for agricultural and grazing purposes since at least 1906, and possibly earlier. Most of the area is currently undeveloped open space; however, there are two residences on Hartman Road within the collective footprint, and two residences on immediately adjacent parcels. As described below, these residences are not considered historical resources for the purposes of CEQA based on the California Register criteria.

- **1790 and 1820 Hartman Road.** The two residences at 1790 and 1820 Hartman Road are within the collective footprint.^{20, 21} The residence at 1790 Hartman Road (APN 903-006-004-05) is a ranch-style single-family residence constructed in 1962. The 1,947-square-foot structure is a single-story house with cross-gable roof with composition shingles, an updated two car garage on the eastern façade, and a wide brick chimney on the western façade. The exterior is a combination of stucco and decorative brick along the ground level, with minimal decorative ornamentation under

¹⁸ Office of Historic Preservation (OHP), 2008. Historic Properties Directory Listing by County, On file, Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, updated May 2008; Dr. Knox Mellon, California State Historic Preservation Officer, letter to Michael G. Ritchie, Division Administrator, Federal Highway Administration, California Division, November 15, 2001, regarding determinations of eligibility and effect for the proposed construction of an interchange on I-580 at Isabel Avenue in Livermore, CA, Reference No. FHWA011017A.

¹⁹ Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

²⁰ Anderson, Kathy, 2017c. Department of Parks and Recreation Form for 1790 Hartman Road. On file, ESA.

²¹ Anderson, Kathy, 2017d. Department of Parks and Recreation Form for 1820 Harman Road. On file, ESA.

the eaves. The fenestration consists of modern horizontal sliding vinyl windows and flush wooden doors. The secondary entrance is recessed between the garage and main residence, and consists of three separate entrances into the garage and living space (one on each wall).

The residence at 1820 Hartman Road (APN 903-006-004-01) is a 1,000-square-foot small American house/transitional ranch style single-family residence built in 1958. The property has a rectangular footprint and gable roof, with a small overhang topping the primary entrance on the southern façade and a modern two car garage with cross gable. Review of building permit history indicates that the building's ship shingle roof was replaced with a composite roof in 2002. The exterior consists of horizontal siding along the ground level, stucco, and vertical under-gable siding. A secondary flush wooden door is located adjacent to the garage on the southern façade, and the remaining fenestration consists of modern vinyl horizontal sliding windows and a picture window on the southern elevation next to the primary entrance.

Initial archival review failed to indicate any association between the two houses and significant events or individuals in history (California Register Criteria 1 and 2) (see the Regulatory Framework subsection below for a description of the California Register). The houses represent typical mid-century rural residential development in Alameda County, and do not appear to reflect any significant associations with this trend. Archival review also did not indicate any significant associations with persons important to history. The buildings do not embody the distinctive characters of a type, period, or method of construction, nor do they reflect any high artistic value (California Register Criterion 3). The houses are well maintained, but typical, ranch-style houses that have been updated through new siding, roof materials, new windows, and doors (including installation of modern automatic garage doors). The mixed material of brick and stucco and siding and stucco is typical of mid-century modern development, as is the wide brick chimney on the 1790 Hartman Road residence; however none of these features are prime representatives of the either the ranch or small American house/transitional ranch styles. Additionally the buildings are not anticipated to contribute to greater understanding of prehistory or history (California Register Criterion 4).

Due to their lack of significant associations, as well as the lack of integrity to reflect any potential historical associations, neither residence is recommended eligible for listing in the California Register and are not considered historical resources for the purposes of CEQA.

- **1442 Hartman Road.** The buildings at 1442 Hartman Road (APN 903 -0006-004-04), which is adjacent to the collective footprint, consist of a collection of

ranching/farmstead ancillary buildings dating to 1938 per assessor records.²² The complex appears on historic aerials as early as 1947, and shows the craftsman residence in its current location just south of a large barn structure (significantly different from the extant structure currently on-site). The current outbuilding configuration appears on aerials dating to 2002, and the existing ancillary buildings do not appear to date to the original 1938 construction. As such, the focus of the evaluation is on the 1938 craftsman residence.

Initial archival review failed to indicate any association between the residence and significant events or individuals in history (California Register Criteria 1 and 2). Review of historic county assessor and clerk information, as well review of historic census and city directory information, failed to identify significant individuals associated with the residence.

1442 Hartman Road was included in an East Alameda County Historic Building reconnaissance survey in 2004, and was noted as having good integrity, but likely not individually eligible under California Register Criterion 3 (architectural significance). The report notes the building as dating to 1915, but assessor records indicate the 1938 construction date used in this evaluation. The residence is a well maintained craftsman residence, but does not appear to significantly embody the distinctive characters of a type, period, or method of construction, nor does it reflect any high artistic value. Additionally the buildings are not anticipated to contribute to greater understanding of prehistory or history (California Register Criterion 4).

While the residence has maintained its physical integrity, the building and its associated outbuildings lack significant historical associations. It is not recommended eligible for listing in the California Register and is not considered a historical resource for the purposes of CEQA.

- **1248 Harman Road.** 1248 Hartman Road (APN 903 -0008-001-02), which is adjacent to the collective footprint, consists of a collection of ranching/farmstead ancillary buildings dating to the mid-twentieth century.²³ The complex appears on historic aerials as early as 1947. The single family residence originally associated with these buildings was demolished circa 2009, having last appeared on a 2005 aerial map.

Initial archival review failed to indicate any association between the complex and significant events or individuals in history (California Register Criteria 1 and 2). The outbuildings represent typical early to mid-twentieth century rural development in Alameda County, and do not appear to reflect any significant associations with this trend. Archival review also did not indicate any significant associations with persons

²² Anderson, Kathy, 2017.e Department of Parks and Recreation Form for 1442 Harman Road. On file, ESA.

²³ Anderson, Kathy, 2017f. Department of Parks and Recreation Form for 1248 Harman Road. On file, ESA.

important to history. The buildings do not embody the distinctive characters of a type, period, or method of construction, nor do they reflect any high artistic value (California Register Criterion 3). The barns and sheds are typical utilitarian, vernacular structures: wood frame construction with vertical wooden plank siding. The buildings are in a deteriorated state, with portions of the siding and roofs missing or boarded over. Additionally the buildings are not anticipated to contribute to greater understanding of prehistory or history (California Register Criterion 4).

The buildings lack significant historical associations, as well as lack the physical integrity necessary to reflect any significant historic associations. They are not recommended eligible for listing in the California Register and are not considered historical resources for the purposes of CEQA.

Laughlin Road Area. The Laughlin Road Area was historically used for agricultural and grazing purposes. Aerial imagery of the parcel from 1987–2002 shows a go-cart race track, viewing stands, and associated parking lot, all of which currently exist. Based on the survey and review of prior studies, there are no historic-era architectural resources in the Laughlin Road Area.

(b) Archaeological Resources

Findings and resources are described below for the geographic subareas within the study area, from west to east. Previous surveys that were completed in the collective footprint are listed in Table 3.F-1 and described below. The current survey effort did not identify any new archaeological resources that were not previously described in these studies.

As shown in Table 3.F-2, this background research completed for previous projects and updated for the Proposed Project and Build Alternatives indicates that 16 archaeological resources are recorded within the study area. Within the collective footprint, three archaeological resources were previously recorded: two prehistoric isolated surface artifacts (P-01-002199 and P-01-002203) and a historic-era fence (P-01-002196). As described below, these resources are not eligible for listing in the California Register and are therefore not considered historical resources for the purposes of CEQA.

Dublin/Pleasanton Station Area. Based on the review of prior studies, there are no previously recorded archaeological resources in the Dublin/Pleasanton Station Area. In addition, within this area, the Arnold Road Staging Area is graded and disturbed.

I-580 Corridor Area. Based on the review of prior studies, there are no previously recorded archaeological resources in the I-580 Corridor Area. Information from studies completed in the I-580 Corridor Area is summarized below.

The I-580 Express Lanes Project (Study Numbers 31701, 33555, 35826, and 37251) completed for the Caltrans-approved Archaeological Survey Reports synthesized and augmented several cultural resources studies to provide a comprehensive analysis for the I-580 corridor between approximately San Ramon/Foothills Road in Dublin and Greenville Road in Livermore (including the entire I-580 corridor portion of the collective footprint). The study included a records search, surface survey, and detailed geoarchaeological analysis (described in more detail in the Geologic Context and Analysis for Buried Sites subsection, below), and concluded that no historical or archaeological resources were within the Express Lanes Project area.

In addition, within this area, the North Canyons Parkway Staging Area has light-brown silty clay with artificial fill in disturbed areas. There is disturbed fill from road construction and very low visibility due to dense vegetation. Once vegetation was scraped back, the ground surface soil was revealed as dark-brown clayey silt.

Isabel North Area. Based on the review of prior studies, there are no previously recorded archaeological resources in the Isabel North Area. Information from studies in the Isabel North Area is summarized below.

For the Isabel Exchange Project (Study Numbers 33432 and 33815), two historic-era resources were identified in the vicinity of the Isabel Station Area (a wooden trough [P-01-002194] and a concrete foundation [P-01-002195]). These resources were determined not to be historically significant and the OHP concurred with this recommendation.^{24, 25} For the Isabel Exchange Project Extended Phase I subsurface survey effort, one trench was excavated within the Isabel Station Area.²⁶ There was no indication of any additional archaeological materials that provided evidence of a formal archaeological site.

In addition, the Isabel Avenue North Staging Area consists of medium-brown silty clay with mixed gravel and artificial fill. There is low visibility, and vegetation was periodically scraped back to reveal the ground surface.

²⁴ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October.

²⁵ Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

²⁶ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October.

Isabel South Area. Based on the review of prior studies, there are three prehistoric isolated surface artifacts and a fence line previously recorded in the Isabel South Area; however, these are not considered historical resources for the purposes of CEQA because they do not meet the California Register criteria of significance. Information from studies in the Isabel South Area is summarized below.

The Isabel Interchange Project (Study Numbers 33432 and 33815) conducted prior to construction of the interchange, included all of the Isabel South and North areas on both sides of I-580. Archaeologists identified a historic-era fence line (P-01-002196) in the Isabel South Area and determined that the 1,700-foot-long wooden post and barbed wire fence associated with the former Ramke Ranch was not historically significant.²⁷ The OHP concurred with this recommendation.²⁸

Also identified during the Isabel Interchange Project were three prehistoric isolated surface artifacts within and adjacent to the Isabel South Area (P-01-002198, P-01-002199, and P-01-002203). To explore the potential for encountering subsurface archaeological sites, 13 trenches were excavated as part of an Extended Phase I subsurface survey. Five of the trenches were within the Isabel South Area, and none indicated a buried surface that would have been suitable for human use or occupation (see Geologic Context and Analysis for Buried Sites, below). The survey also concluded that “the scarcity and spatial separation of the 13 isolated surface artifacts [consisting of groundstone tools and fragments or non-diagnostic lithic fragments] made it difficult to label them as a formal archaeological site” and it was determined that they were representative of the general use of the area during the prehistoric period.²⁹ The OHP concurred with the finding of effect for the Isabel Interchange Project and recommended a post-review discovery plan.³⁰

The area of the collective footprint on Kitty Hawk Road is an existing storage yard that is partially paved and graded. Soil is all artificial fill. No archaeological resources were identified during the surface survey.

Cayetano Creek Area. Based on the review of prior studies, there are four prehistoric isolated surface artifacts, an assumed archaeological site, and a well house previously recorded in the Cayetano Creek Area; however, these are not considered historical resources for the purposes of CEQA because they do not meet the California Register

²⁷ Ibid.

²⁸ Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

²⁹ Ibid.

³⁰ Ibid.

criteria of significance.³¹ Information from studies in the Cayetano Creek Area is summarized below.

For the Isabel Interchange Project (Study Numbers 33432 and 33815), four prehistoric isolated surface artifacts were identified in the Cayetano Creek Area (P-01-002200, P-01-002201, P-01-002202, and P-01-002204).³² For the Extended Phase I subsurface survey, three trenches were excavated within the vicinity of the Cayetano Creek Area. As with the trenches excavated in the Isabel South and North areas, there was no indication of a buried surface or any additional archaeological materials that provided evidence of a formal archaeological site. While the isolated archaeological artifacts identified in the Cayetano Creek Area do not constitute a significant archaeological resource or site, given the number of isolates identified the general North of Portola Area has a high sensitivity for prehistoric archaeological resources.

Also in the Cayetano Creek Area is a prehistoric archaeological site (P-01-000067) originally recorded in 1951.³³ Archaeologists were not able to relocate the site during a subsequent survey.³⁴ A collapsed well house with associated objects (P-01-002197) has also been previously recorded in the Cayetano Creek Area. The well house was recommended not eligible for the National Register due to a lack of historic association and integrity; the OHP concurred with this recommendation.^{35, 36}

Laughlin Road Area. Based on the review of prior studies, there are no previously recorded archaeological resources in the Laughlin Road Area. The majority of this area is paved and disturbed from construction of the existing race track and associated structures. Visible

³¹ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October; Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

³² Ibid.

³³ McGeein and Mueller, 1951. Site Record for P-01-000067. On file, Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California.

³⁴ Holman, Miley, 1991. Site revisit of the lands of Lin et al., Location of Archaeological Site ALA-47. On file, Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California.

³⁵ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October.

³⁶ Mellon, 2001. Letter from Knox Mellon, State Historic Preservation Officer, Office of Historic Preservation, with U.S. Department of Transportation. November 15.

soil is medium-brown silty clay. No archaeological resources or other evidence of past human use or occupation were identified in the Laughlin Road area.

(5) Geologic Context and Analysis for Buried Sites

Northern California has undergone dramatic landscape changes since humans began to inhabit the region more than 10,000 years ago. Rising sea levels and increased sedimentation into streams and rivers are among some of those changes.³⁷ In many places, the interface between older land surfaces and Holocene-age landforms are marked by a well-developed buried soil surface, or paleosol. Paleosols preserve the composition and character of the earth's surface prior to subsequent sediment deposition; thus, paleosols have the potential to preserve archaeological resources if the area was occupied or settled by humans.³⁸ Because human populations have grown throughout the Holocene, archaeological sites are predicted to be more frequent in paleosols identified in Late Holocene contexts. Conversely, lower population levels during the early Holocene suggest significantly less likelihood of archaeological resources in older paleosols (early Holocene or Pleistocene). Other criteria used to measure the archaeological sensitivity of a given area include the following:

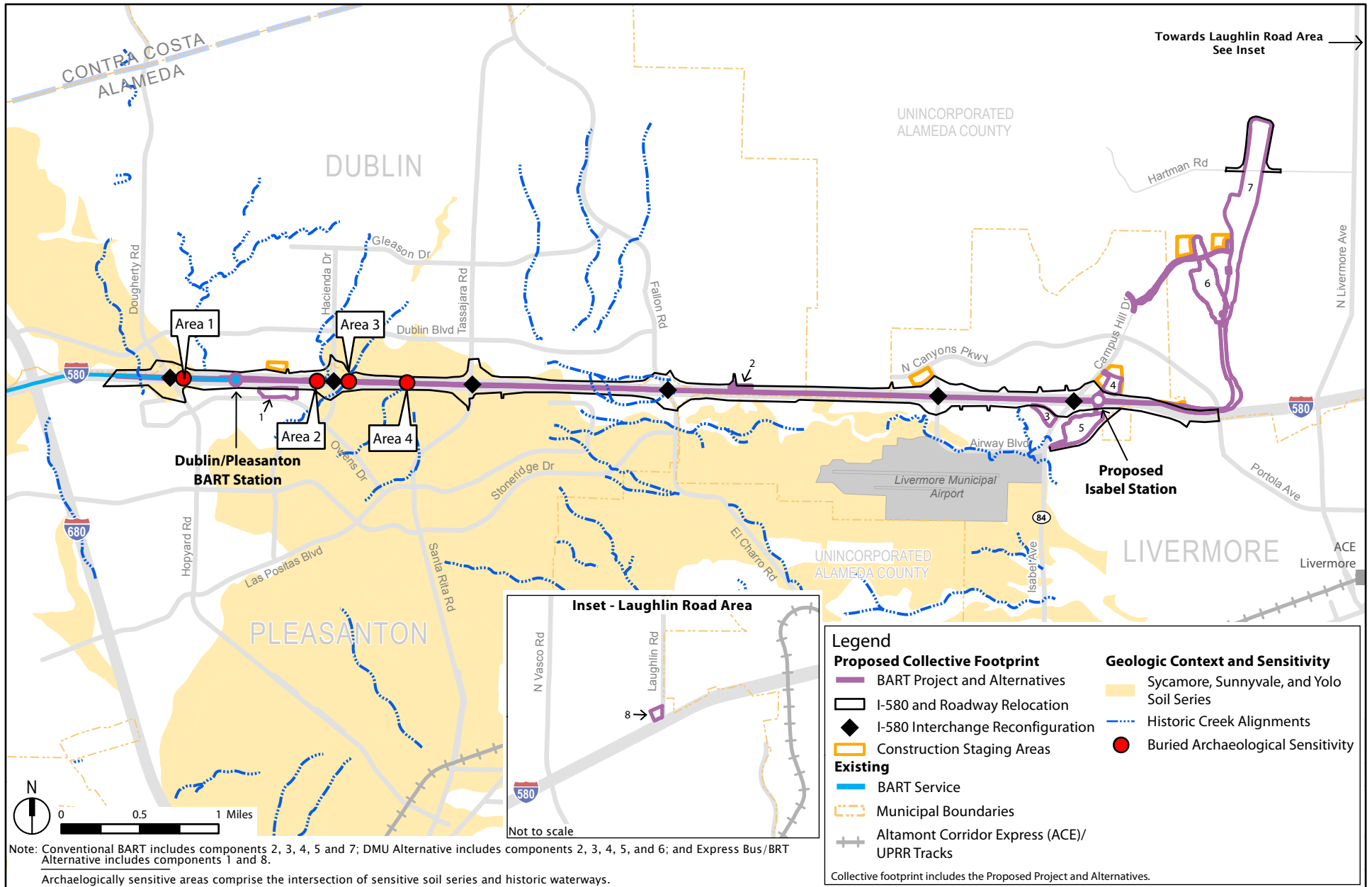
- Archaeological sites tend to be located near perennial water sources.
- Archaeological deposits from successive time periods are more common because the density of human populations increased over time.
- The longer a landform remained at the surface, the greater the likelihood that any one spot on that landform was occupied.³⁹

The study area is primarily located within the extensive Holocene alluvial plain of the Livermore-Amador Valley basin (Figure 3.F-1). The surficial deposits in this area include gravels, sands, silts, and clays that are fluvial in origin and consist of material eroded from the surrounding Coast Ranges that filled the Livermore Valley between the Calaveras fault on the west and the Greenville fault on the east. These deposits are a heterogeneous mixture, the individual components of which vary proportionally to their mode of deposition; coarser materials are from higher energy environments (main channels) and finer materials are from lower energy environments (back waters).

³⁷ Helley, Edward J., K. R. Lajoie, W. E. Spangle, and M. L. Blair, 1979. Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning, Geological Survey Professional Paper 943.

³⁸ Meyer, Jack, and Jeffrey Rosenthal, 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Prepared for Caltrans District 4.

³⁹ Ruby, A., 2010. Draft Archaeological Survey Report for the Monterey Peninsula Light Rail Transit Project. Prepared by Far Western Anthropological Group, Inc. Prepared for Parsons Corporation, San Francisco. On file, ESA.



Source: Arup, 2017; NRCS, 2016.

Figure 3.F-1
 Cultural Resources
 Archaeological Sensitivity

Numerous archaeological sites in the Livermore-Amador Valley have been discovered in a buried context, including CA-ALA-413 and -467 on the edge of the historic Willow Marsh and CA-ALA-483, -554, -555, and -574 at Arroyo de la Laguna.⁴⁰ Portions of the Arroyo de la Laguna sites have been uncovered underneath nearly 9 feet of alluvial sediment. Because buried sites often have no surface indicators, they are only discovered via geoaerchaeological analysis or inadvertently during ground-disturbing activities.

For the I-580 Eastbound HOV Lane Project (Study Numbers 31701, 33555, 37251) (a component of the I-580 Express Lanes Project), a detailed geoaerchaeological analysis of landscape evolution, buried sites, and the structure of the archaeological record in the Livermore-Amador Valley proposed a buried archaeological site sensitivity analysis that encompasses the study area, as follows:

Because buried archaeological sites will only be discovered in landforms that developed during the Holocene, older alluvial fans on the eastern end of the valley have a very low likelihood of containing such sites. These include areas mapped in the Clear Lake, Diablo, Rincon, and San Ysidro soil series. Conversely, as most of the western portion of the study area is composed of late Holocene-age landforms, this area has the highest potential to contain subsurface archaeological sites. Likewise, all of the known buried sites are recorded in landforms on the western end of the valley. To date, buried archaeological sites have only been found in areas of Sycamore Silt Loam and Sunnyvale Clay Loam. As a result, these soils have the highest potential to contain additional buried sites. Due to the recent age of the Yolo Loam, this soil also has a high potential to contain buried sites, particularly those dating older than about 1,400 years.

A review of the distribution of recorded archaeological sites in the valley reveals that all but one site is located within 125 meters of a waterway, and all recorded sites are located within 250 meters of a waterway. *Based on these patterns, the highest potential for buried archaeological sites in the study area occurs within the Sycamore, Sunnyvale, and Yolo soil series within 125 meters of a waterway [emphasis added].*⁴¹

Based on information provided in the previous studies, Figure 3.F-1 shows areas of high archaeological sensitivity for buried sites in the collective footprint. These areas are

⁴⁰ Meyer, Jack, and Jeffrey Rosenthal, 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Prepared for Caltrans District 4.

⁴¹ Rosenthal and Byrd, 2006. Archaeological Survey Report for the I-580 Eastbound High Occupancy Vehicle Lane Project, East of Greenville Road to Hacienda Drive, Livermore Valley, Alameda County, California. On file (S-33555), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California. 2006.

limited to the following four locations, all within the Dublin/Pleasanton Station Area and the I-580 Corridor Area:

- Area 1 – north of I-580 near the intersection of Scarlett Court and Scarlett Drive
- Area 2 – both sides of I-580 at the Hacienda Drive on-ramp
- Area 3 – both sides of I-580 at the Tassajara Creek overcrossing
- Area 4 – both sides of I-580 at the Cottonwood Creek crossing

For the Eastbound and Westbound HOV projects the following was concluded regarding additional subsurface archaeological testing:

Subsurface archaeological testing to locate buried archaeological sites is currently infeasible... due to the nature of the project area [for the HOV projects], which is narrow, often has steep slopes, and typically includes numerous buried utilities. Additionally [for the HOV projects] the anticipated construction work and associated vertical impacts correlated with the depth of prior construction disturbance and existing fill would not extend into undisturbed sediments.⁴²

The collective footprint that extends along the I-580 corridor has similarly been previously disturbed for prior projects, and the potential for buried sites within this corridor is low.

3. Regulatory Framework

This subsection describes the federal and state environmental laws and policies relevant to cultural resources.

a. Federal Regulations

(1) National Historic Preservation Act of 1966

Archaeological resources are considered through the National Historic Preservation Act (NHPA) of 1966, as amended (54 U.S.C. 307103), and its implementing regulations. Section 106 of the NHPA requires federal agencies to consider the effects of an “undertaking” (e.g., federal funding or issuance of a federal permit) on historic properties (those listed or eligible for listing in the National Register) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register. Under the NHPA, a property is considered significant if it meets the National Register listing criteria at 36 Code of Federal Regulations (CFR) 60.4, as stated below:

⁴² Ibid., pp. 60.

The quality of significance in American history, architecture, archaeology, 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 the 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

Federal review of projects is normally referred to as the Section 106 process. This process is the responsibility of the federal lead agency. A Section 106 review normally involves a four-step procedure, as summarized below:

- Identify historic properties in consultation with the SHPO and interested parties
- Assess the effects of the undertaking on historic properties
- Consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation
- Proceed with the project according to the conditions of the agreement

b. State Regulations

The State of California implements the NHPA of 1966, as amended, through its statewide comprehensive cultural resource surveys and preservation programs. The OHP, as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the state's jurisdictions.

(1) California Environmental Quality Act

CEQA, as codified in Public Resources Code (PRC) Sections 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a project would have a significant effect on historical resources, including archaeological resources. The CEQA Guidelines define a historical resource as:

(1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.⁴³

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
- Has a special and particular quality such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person" (PRC Section 21083.2 [g])

The CEQA Guidelines note that, if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

(2) California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for or listed in the National Register.

⁴³ The cities of Dublin, Pleasanton and Livermore do not have local historic registers listed on their city websites or historic preservation planning sites.

To be eligible for the California Register, a historical resource must be significant at the local, state, and/or federal level under one or more of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1[c])

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the National Register criteria may still be eligible for listing in the California Register.

(3) California Public Resources Code

Section 5097 of the PRC provides the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. Section 5097.5 of the code states:

No person shall knowingly and willfully excavate upon, or remove, destroy, injury or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Section 5097.98 further defines the standards for the handling of Native American human remains. Section 5097.993 sets requirements for the unlawful and malicious excavation, removal, destruction, injury, or defacing of a Native American historic, cultural, or sacred site, that is listed or may be eligible for listing in the California Register of Historic Resources.

(4) California Health and Safety Code

Section 7052 of the California Health and Safety Code makes the willful mutilation, disinterment, or removal of human remains a felony. Section 7050.5 requires that the construction or excavation be stopped in the vicinity of discovered human remains until

the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

4. Impacts and Mitigation Measures

This subsection lists the standards of significance used to assess impacts, discusses the methodology used in the analysis, summarizes the impacts, and then provides an in-depth analysis of the impacts with mitigation measures identified as appropriate.

a. Standards of Significance

For the purposes of this EIR, impacts on cultural resources are considered significant if the Proposed Project or one of the Alternatives would result in any of the following:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5
- Disturb any human remains, including those interred outside of formal cemeteries

b. Impact Methodology

The methodology used to evaluate the significance of cultural resource impacts is described below. The Electrical Multiple Unit (EMU) Option would result in the same impacts as the Diesel Multiple Unit (DMU) Alternative, and therefore the analysis and conclusions for the DMU Alternative also apply to the EMU Option.

The analysis of the Enhanced Bus Alternative, which addresses the potential impacts of construction of the bus infrastructure improvements and operation of the bus routes at a programmatic level, would also apply to the bus improvements and feeder bus service under the Proposed Project and other Build Alternatives. Therefore, the analyses and conclusions for the Enhanced Bus Alternative also apply to the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, and are not repeated in the analysis of the Proposed Project and other Build Alternatives.

(1) Architectural Resources

Potential impacts on architectural resources are assessed by identifying the activities (e.g., construction, demolition, or substantial alteration) that could impact those resources identified as historical resources for the purposes of CEQA. As described in the Regulatory Framework subsection, above, individual properties and districts identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their

informational value (California Register Criteria 1, 2, 3, and 4) and that retain sufficient historic integrity to convey their significance. Criterion 4, however, is typically applied to the evaluation of archaeological resources and not to architectural resources, as described below.

Once a resource has been identified as significant, it must be determined whether the impacts of the project would “cause a substantial adverse change in the significance” of the resource (CEQA Guidelines Section 15064.5[b]). A substantial adverse change in the significance of a historical resource means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired” (CEQA Guidelines Section 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource’s physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]).

(2) Archaeological Resources

The significance of most prehistoric and historic-era archaeological sites is often assessed under California Register Criterion 4. This criterion stresses the importance of the information potential contained within the site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in CEQA Guidelines Section 15064.5[a], or they may also be assessed under CEQA as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2). A substantial adverse change in the significance of an archaeological resource is defined similarly to other historical resources—by destroying or materially altering in an adverse manner those physical characteristics of the resource that convey its significance under the appropriate criteria (CEQA Guidelines Section 15064.5[b][2]).

(3) Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and Health and Safety Code Section 7050.5. This analysis considers impacts that include intentional disturbance, mutilation, or removal of interred human remains.

c. Summary of Impacts

Table 3.F-3 summarizes the impacts of the Proposed Project and Alternatives described in the analysis below.

TABLE 3.F-3 SUMMARY OF CULTURAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Construction					
Project Analysis					
Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource during construction	NI	LS	LS	NI	NI
Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource during construction	NI	LSM	LSM	LSM	LSM
Impact CUL-3: Disturb any human remains during construction	NI	LSM	LSM	LSM	LSM
Cumulative Analysis					
Impact CUL-4(CU): Cause a substantial adverse change in the significance of a historical resource, archaeological resources, or disturb human remains during construction under Cumulative Conditions	NI	SU	SU	SU	SU
Operational					
Project Analysis					
Impact CUL-5: Cause a substantial adverse change in the significance of a historical resource, archaeological resources, or disturb human remains during operations	NI	NI	NI	NI	NI

TABLE 3.F-3 SUMMARY OF CULTURAL RESOURCES IMPACTS

Impacts	Significance Determinations ^a				
	No Project Alternative	Conventional BART Project ^b	DMU Alternative (with EMU Option) ^b	Express Bus/BRT Alternative ^b	Enhanced Bus Alternative
Cumulative Analysis					
No cumulative operational impacts. (NI)					

Notes: NI=No impact; LS=Less-than-Significant impact, no mitigation required; LSM=Less-than-Significant impact with mitigation; SU=Significant and unavoidable, even with mitigation or no feasible mitigation available.
 DMU = diesel multiple unit; EMU = electrical multiple unit; BRT = bus rapid transit.
^a All significance determinations listed in the table assume incorporation of applicable mitigation measures.
^b The analysis of the Enhanced Bus Alternative also applies to the feeder bus service and bus improvements under the Proposed Project, DMU Alternative, and Express Bus/BRT Alternative, as described in the Impact Methodology subsection above.

d. Environmental Analysis

Impacts related to project construction are described below, followed by operations-related impacts.

(1) Construction Impacts

Potential impacts pertaining to project construction are described below, followed by cumulative construction impacts.

Construction associated with the Proposed Project and Build Alternatives would permanently affect potential cultural resources through demolition of existing structures and ground disturbance. Therefore, the construction impacts described below are considered to be permanent (rather than temporary), with the exception of vibration impacts associated with construction equipment, as vibration impacts would be temporary and limited to the construction period.

(a) Construction – Project Analysis

Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 during construction.

(No Project Alternative: NI; Conventional BART: LS; DMU Alternative: LS; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

The Proposed Project or Alternatives could result in a significant direct impact if they cause a substantial adverse change to a historical resource. This impact analysis addresses historic architectural resources of the built environment, including buildings, structures, and objects that are eligible for listing in the California Register. This analysis describes potential impacts to resources within the footprints of the Proposed Project and Build Alternatives as well as within immediately adjacent parcels.

Archaeological resources that are also considered historical resources are analyzed below under **Impact CUL-2**.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, planned and programmed transportation improvements for segments of I-580, local roadways and intersections, and core transit service improvements for BART, Altamont Corridor Express, and the Livermore Amador Valley Transit Authority would be constructed. In addition, population and employment increases throughout the Livermore-Amador Valley would result in continued land use development, including construction of both residential and commercial uses. Construction of these improvements and development projects could adversely impact historic architectural resources. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to historic architectural resources. **(NI)**

Conventional BART Project. As described in the Historic-era Architectural Resources subsection, above, the background research and reconnaissance-level survey completed for this analysis indicate that there is one historic architectural resource that qualifies as a historical resource for the purposes of CEQA, which is partially within the footprint of the Proposed Project—the Gandolfo Ranch Historic District. Potential direct and indirect impacts to the historic district are described below.

Construction-related vibration—such as that generated by jackhammers, drill rigs, and vibratory rollers—can cause structural damage to historic-era buildings and structures.⁴⁴ This analysis uses a vibration threshold for historic buildings of 0.12-inch per second

⁴⁴ Wilson, Ihrig & Associates, Inc., 2009. Crystal Springs Pipeline No. 2 Noise and Vibration Study, Impacts and Mitigation Technical Memo (Final). September 24.

(in/sec) peak particle velocity (PPV) at a distance of 25 feet.⁴⁵ Table 3.F-4 presents the distances at which vibratory construction equipment used during project construction would generate vibration levels at the 0.12-in/sec PPV damage threshold based on the Federal Transit Administration’s equation for estimating vibration at different distances using a reference PPV of 25 feet for varying construction equipment.

TABLE 3.F-4 DAMAGE THRESHOLD TO HISTORIC BUILDINGS FROM CONSTRUCTION EQUIPMENT

Equipment Type	Typical PPV at 25 Feet	Distance of Damage Threshold (0.12 PPV in/sec)
Vibratory pile driver	0.730 in/sec	80 feet
Vibratory roller	0.210 in/sec	45 feet
Drill rig	0.120 in/sec	25 feet
Bulldozer	0.089 in/sec	20 feet
Jackhammer	0.035 in/sec	15 feet

Source: Wilson, Ihrig, & Associates et al., 2012.

The vibratory pile driver is piece of the construction equipment that would have the greatest PPV, typically a PPV of 0.73 in/sec at 25 feet.⁴⁶ Using Federal Transit Administration’s equation, at distances greater than 80 feet, the vibration level generated by vibratory pile driving of sheet piles is lower than the 0.12-in/sec PPV damage threshold. For other pieces of equipment, the distance to the damage threshold (0.12-in/sec PPV) would be less: for vibratory rollers, a distance greater than 45 feet would be required; and for a typical drill rig, a distance greater than 25 feet would be required. Beyond the distance of the damage threshold—anticipated to be a distance of 80 feet—no damage to historic buildings or structures is expected.

The proposed parking garage and pedestrian touchdown structure at the Isabel South Area would be approximately 300 feet to the west the buildings and structures that contribute to the significance of the historic district. Thus, these buildings and structures are beyond the distance of the construction vibration damage threshold (beyond 80 feet). Therefore, there would be no impacts resulting from construction-related vibration to the Gandolfo Ranch Historic District.

The relocation of a portion of East Airway Boulevard under the Proposed Project would directly encroach approximately 50 feet onto the northern edge of the historic district, in

⁴⁵ Ibid.; Wilson, Ihrig, & Associates et al., 2012. Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects. September.

⁴⁶ New Hampshire Department of Transportation (New Hampshire), in cooperation with the U.S. Department of Transportation, Federal Highway Administration, 2012. Ground Vibrations Emanating from Construction Equipment – Final Report. September.

an area currently used as a parking lot. The parking lot does not contribute to the integrity of the historic district. Furthermore, the closest resources that contribute to the historic district are approximately 500 feet to the south of the portion of East Airway Boulevard that would be relocated. The encroachment of East Airway Boulevard into the parking lot (a non-contributing element of the historic district) would not result in adverse impacts to the buildings or structures that contribute to the historical significance of the Gandolfo Ranch Historic District.

Additionally, indirect impacts to the Gandolfo Ranch Historic District could result from the construction of the Proposed Project or DMU Alternative if physical changes are made to the setting or viewshed of the historic resource. While the seven-level parking garage and other facilities for the Proposed Project at the Isabel South Area would introduce new structures into the viewshed of the Gandolfo Ranch Historic District, these structures would not adversely affect the historic district. The existing setting does not offer a historic viewshed or contribute to the existing integrity of the historic district as the surrounding historic context and viewshed have been compromised by modern development, including the construction of the Isabel Avenue/I-580 overcrossing as documented by the State Historic Preservation Officer in 2001.⁴⁷ In addition, the proposed garage and facilities would be physically separated from the Gandolfo Ranch Historic District by East Airway Boulevard and located over 300 feet from the buildings and structures that contribute to the significance of the ranch in the southern portion of the district. Furthermore, the existing commercial buildings along East Airway Boulevard and Rutan Drive, constructed in the early 2000s, are intervening structures that visually separate the Isabel South Area from the historic ranch buildings and would reduce the view of the proposed parking garage from the historic district. Therefore, the Proposed Project would not result in indirect adverse impacts to the setting or viewshed of the Gandolfo Ranch Historic District.

For the reasons described above, the Proposed Project would have a less-than-significant impact on historic architectural resources and no mitigation measures are required. **(LS)**

DMU Alternative. Similar to the Proposed Project, there is one historic architectural resource partially within the DMU Alternative footprint—the Gandolfo Ranch Historic District. The potential impacts to the historic district would be the same as described above for the Proposed Project. Similar to the Proposed Project, the DMU Alternative would have a less-than-significant impact on historic architectural resources and no mitigation measures are required. **(LS)**

⁴⁷ Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

Express Bus/BRT Alternative. Based on the results of the background research and reconnaissance-level survey, there are no historic architectural resources in the Express Bus/BRT Alternative footprint or immediately adjacent parcels. Therefore, the Express Bus/BRT Alternative would have a no impact on historic architectural resources and no mitigation measures are required. **(NI)**

Enhanced Bus Alternative. Under the Enhanced Bus Alternative, the proposed bus improvements would be constructed within the existing street rights-of-way and would not be anticipated to directly adversely affect historical resources. Similarly, construction of bus shelters, bus bulbs, messaging boards, and other elements that are generally part of the urban landscape, would not be anticipated to indirectly adversely affect historical resources. Therefore, the Enhanced Bus Alternative would have no impact on historic architectural resources and no mitigation measures are required. **(NI)**

Mitigation Measures. As described above, the Proposed Project and Alternatives would not have significant impacts related to historic architectural resources, and no mitigation measures are required.

Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: LSM)

This section discusses archaeological resources that qualify as historical resources according to CEQA Guidelines Section 15064.5 as well as unique archaeological resources as defined in CEQA Section 21083.2(g). This impact analysis describes potential impacts to resources within the footprints of the Proposed Project and Build Alternatives.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. However, construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could adversely impact known or unknown archaeological resources. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to known or unknown archaeological resources. **(NI)**

Conventional BART Project. Under the Proposed Project, ground disturbing activities would include the relocation of I-580 and associated surface frontage roadways to accommodate the proposed BART alignment within the I-580 median; construction of new BART tracks, the proposed Isabel Station, construction of a new parking facility at the Isabel Station area, and a new storage and maintenance facility.

As described in the Local Setting subsection above, based on the results of the background research and pedestrian survey, there are no known archaeological resources in the footprint of the Proposed Project, with the exception of prehistoric and historic-era archaeological resources that have been identified in the Cayetano Creek Area. Given the general high sensitivity based on previously identified isolated finds in the Cayetano Creek Area, there is the potential for known or unknown archaeological resources to be in the footprint. Due to access limitations, a surface investigation of the Cayetano Creek Area was not conducted during the survey.

The results of the analysis for deeply buried archaeological sites described in the Geologic Context and Analysis for Buried Sites subsection, above, indicate three locations within the footprint of the Proposed Project along I-580 that have a high potential for buried sites due to the geologic context and their proximity to historic waterways (Areas 2, 3, and 4). However, the footprint of the Proposed Project in these areas has been disturbed by prior activities. In addition, the shallow depth of anticipated disturbance for the Proposed Project in these locations (approximately 4 feet below ground surface [bgs]) would limit the possibility of uncovering unknown, deeply buried, prehistoric archaeological sites. Furthermore, while no known sites are present in other locations along the project corridor, the potential for discovery of a previously undiscovered archaeological site cannot be entirely discounted.

Given the potential for archaeological sites that could be considered unique or significant in the vicinity of the Cayetano Creek Area and the potential for discovery of a previously unknown archaeological site during ground-disturbing activity, the Proposed Project could have potentially significant impacts on archaeological resources, including deeply buried sites. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.A**, which includes provisions for archaeological survey in the Cayetano Creek Area and **Mitigation Measure CUL-2.B**, which provides protocols to follow in the event of a discovery of previously unknown archaeological resources. **(LSM)**

DMU Alternative. The areas of ground disturbance for construction of the DMU Alternative would be similar to the Proposed Project. In addition, ground disturbing activities would occur in the Dublin/Pleasanton Station Area.

Similar to the Proposed Project, the results of the background research and pedestrian survey indicate that there are no known archaeological resources in the DMU Alternative

footprint, with the exception of prehistoric and historic-era archaeological resources that have been identified in the Cayetano Creek Area.

In addition, the results of the analysis for deeply buried archaeological sites indicate four locations along I-580 that have a high potential to have buried sites (Areas 1, 2, 3, and 4). However, the footprint of the DMU Alternative in these areas has been disturbed by prior activities. In addition, the shallow depth of anticipated disturbance for the DMU Alternative in these areas of geoarchaeological sensitivity (approximately 4 feet bgs) would limit the potential to uncover unknown, deeply buried, prehistoric archaeological sites.

Given the potential for archaeological sites in the vicinity of the Cayetano Creek Area, and the potential for discovery of previously unknown archaeological sites during ground-disturbing activity, the DMU Alternative could have potentially significant impacts on archaeological resources. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.A**, which includes provisions for archaeological survey in the Cayetano Creek Area and **Mitigation Measure CUL-2.B**, which provides protocols to follow in the event that a previously undiscovered archaeological resource is encountered. (LSM)

Express Bus/BRT Alternative. Ground-disturbing activities under the Express Bus/BRT Alternative would occur primarily within the Dublin/Pleasanton Station Area for the construction of the bus transfer platforms, and associated relocation of I-580 and surface frontage roads, and construction of replacement parking lot/garage at the Dublin/Pleasanton Station, as well as at the Laughlin Road Area for the construction of the new surface parking lot.

As described in the Local Setting subsection above, based on the results of the background research and pedestrian survey, there are no known archaeological resources in the Express Bus/BRT Alternative footprint.

The results of the analysis for buried archaeological sites indicate four locations along I-580 within the footprint of the Express Bus/BRT Alternative with high potential for buried sites (Areas 1, 2, 3, and 4). However, the Express Bus/BRT Alternative footprint has been disturbed by prior activities in these areas. In addition, the shallow depth of anticipated disturbance for the Express Bus/BRT Alternative in areas of geoarchaeological sensitivity (approximately 4 feet bgs) would reduce the potential to uncover unknown, deeply buried, prehistoric archaeological sites.

However, the potential for encountering a previously undiscovered archaeological site cannot be entirely discounted. Therefore, impacts on archaeological resources could be potentially significant. These impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.B**, which provides protocols to follow

in the event of that a previously undiscovered archaeological resource is encountered. **(LSM)**

Enhanced Bus Alternative. Under the Enhanced Bus Alternative, limited ground-disturbing activities to approximately 2 feet below grade would occur within existing street rights-of-way for the installation of bus improvements, including bus shelters, bus bulbs, and signage. Ground disturbance would occur in areas that have been previously disturbed for construction of the roadways and associated street infrastructure.

Given the limited amount of ground disturbance associated with the Enhanced Bus Alternative in areas of geoarchaeological sensitivity there is a low potential to impact buried archaeological resources. Additionally, there is no potential to uncover deeply buried sites. For these reasons, impacts under this alternative would be less than those described above for the Express Bus/BRT Alternative. While unlikely, the potential for the discovery of a previously unknown buried archaeological site cannot be entirely discounted. Therefore, impacts on archaeological resources could be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2.B**, which provides protocols to follow in the event of that a previously undiscovered archaeological resource is encountered. **(LSM)**

Mitigation Measures. As described above, the Proposed Project and DMU Alternative could have potentially significant impacts on archaeological sites in the vicinity of the Cayetano Creek Area. These impacts would be reduced with implementation of **Mitigation Measure CUL-2.A**, which would require a pedestrian surface survey of the Cayetano Creek Area with additional analysis. In addition, the Proposed Project, DMU Alternative, Express Bus/BRT Alternative, and Enhanced Bus Alternative could have potentially significant impacts on currently unknown archeological resources. These potential impacts would be reduced with implementation of **Mitigation Measure CUL-2.B**, which would require that discovery protocols be followed in the event that a previously undiscovered archaeological resource is encountered. With these mitigation measures, potential archaeological impacts would be reduced to a less-than-significant level.

Mitigation Measure CUL-2.A: Archaeological Resources Investigation for the Cayetano Creek Area (Conventional BART Project and DMU Alternative/EMU Option).

Prior to the final design of facilities and any ground disturbing activities in the Cayetano Creek Area, BART shall retain a professional who meets the Secretary of the Interior's Professional Qualification Standards for archaeology to conduct an archaeological resources investigation of the Cayetano Creek Area. The study shall include the following:

1. **Complete a Pedestrian Survey.** An intensive pedestrian survey of the footprint of the adopted project in the Cayetano Creek Area.
2. **Evaluate Archaeological Resources.** In the event of discovery of cultural resources during the pedestrian survey, a formal evaluation of any potentially affected archaeological resources shall be completed to determine if they qualify as historical resources or unique archaeological resources pursuant to Section 15064.5 of the CEQA Guidelines.
3. **Prepare and Implement Avoidance and Treatment Plan.** In the event a significant cultural resource is identified during the pedestrian survey, BART shall implement the following:
 - a. Recommended measures consistent with PRC Section 21083.2(b) to avoid, where feasible, impacts on historical resources or unique archaeological resources—including preservation in place; planning construction to avoid archaeological sites; deeding archaeological sites into permanent conservation easements; or planning parks, green space, or other open space to incorporate archaeological sites.
 - b. Where avoidance or preservation in place is not feasible, data recovery may be recommended as mitigation consistent with PRC Section 21083.2. A qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from the resource prior to any excavation at the site. Treatment resources shall consist of (but not be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan shall include provisions for analysis of data in a regional context; reporting of results within a timely manner; curation of artifacts and data at an approved facility; and dissemination of reports to local and state repositories, libraries, and interested professionals.

The results of the archaeological resources investigation shall be compiled into a technical report, which shall be submitted to BART and the Northwest Information Center of the California Historical Resources Information System. Should the project include federal funding or oversight or otherwise qualify as a federal undertaking, the archaeological study shall be prepared in accordance with Section 106 of the National Historic Preservation Act.

Mitigation Measure CUL-2.B: Discovery of Previously Unknown Archaeological Resources (Conventional BART Project, DMU Alternative/EMU Option, Express Bus/BRT Alternative, and Enhanced Bus Alternative).

1. If prehistoric or historic-era archaeological resources are encountered by construction personnel during project implementation, all construction activities within 100 feet shall halt until a qualified archaeologist, defined as one meeting the Secretary of the Interior's Professional Qualification Standards for archaeology, can assess the significance of the find. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, hand stones, or milling slabs); and battered stone tools, such as hammer stones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.
2. If a find is evaluated and determined to be significant, a mitigation plan shall be developed that recommends preservation in place as a preference or, if preservation in place is not feasible, data recovery through excavation. If preservation in place is feasible, this may be accomplished through one of the following means: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource before building appropriate facilities on the resource site; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from the resource prior to any excavation at the site. Treatment for most resources would consist of (but would not necessarily be limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan shall include provisions for analysis of data in a regional context; reporting of results within a timely manner; curation of artifacts and data at an approved facility; and dissemination of reports to local and state repositories, libraries, and interested professionals.

Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries during construction.

(No Project Alternative: NI; Conventional BART Project: LSM; DMU Alternative: LSM; Express Bus/BRT Alternative: LSM; Enhanced Bus Alternative: LSM)

This impact analysis describes potential impacts to resources within the footprints of the Proposed Project and Build Alternatives.

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with construction of the Proposed Project or any of the Build Alternatives. Construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could adversely impact unknown human remains. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to unknown human remains. **(NI)**

Conventional BART Project and DMU Alternative. Based on the results of the background research and pedestrian surface survey, there are no known archaeological resources, including those with human remains in the footprint of the Proposed Project or DMU Alternative. While no known sites are present, the potential for discovery of previously unknown human remains cannot be entirely discounted.

Several prehistoric isolated surface artifacts have been identified in the Cayetano Creek Area. These resources have been determined to not represent a formal archaeological site.⁴⁸ One additional archaeological site has been recorded in the vicinity; however, in subsequent visits, archaeologists were not able to relocate the site. While there is no indication that the Cayetano Creek Area contain human remains, the potential for discovery of previously unknown human remains cannot be entirely discounted. Therefore, impacts on human remains could be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-3**, which provides protocols to follow in the event of discovery of previously unknown human remains. **(LSM)**

Express Bus/BRT Alternative. There are no known archaeological resources with human remains or locations of isolated human remains that would be directly impacted by the

⁴⁸ PAR Environmental Services, Inc. (PAR), 2000. Historic Property Survey Report for the Isabel State Route 84/Interstate 580 Interchange Project, City of Livermore, Alameda County, California. Prepared for Caltrans District 4. On file (S-33815), Northwest Information Center of the California Historical Resources Information System, Sonoma State University, Rohnert Park, California, October; Office of Historic Preservation (OHP), 2011. Determinations of Eligibility and Effect for the Proposed Construction of an Interchange on Interstate 580 at Isabel Avenue, Livermore, California. Letter to the U.S. Department of Transportation, Federal Highway Administration. November 15.

Express Bus/BRT Alternative. While unlikely, the potential for discovery of previously unknown human remains cannot be entirely discounted. Therefore, impacts on human remains could be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-3**, which provides protocols to follow in the event of discovery of previously unknown human remains. **(LSM)**

Enhanced Bus Alternative. Under the Enhanced Bus Alternative, very limited ground-disturbing activities would occur and these activities would be located within existing street rights-of-way, which have been previously disturbed. While it is unlikely this Alternative could disturb human remains, the potential for discovery of previously unknown human remains cannot be entirely discounted. Therefore, impacts on human remains could be potentially significant. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-3**, which provides protocols to follow in the event of discovery of previously unknown human remains. **(LSM)**

Mitigation Measures. As described above, the Proposed Project, DMU Alternative, Express Bus/BRT Alternative, and Enhanced Bus Alternative could have potentially significant impacts on human remains. With implementation of **Mitigation Measure CUL-3**, which would require protocols be followed in the event of a discovery of human remains, potential impacts would be reduced to a less-than-significant level.

Mitigation Measure CUL-3: Discovery of Previously Unknown Human Remains (Conventional BART Project, DMU Alternative/EMU Option, Express Bus/BRT Alternative, and Enhanced Bus Alternative).

In the event that human remains are encountered during excavation, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains shall be conducted until the provisions of applicable state laws are followed:

1. The Alameda County coroner must be contacted.
2. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent of the deceased Native American (PRC Section 5097.98). The most likely descendent may make recommendations to the land owner (or the person responsible for the excavation work) for the means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

(b) Construction – Cumulative Analysis

The geographic study area for cumulative cultural resource impacts is the Livermore-Amador Valley, including the cities of Dublin, Pleasanton, and Livermore. Cumulative projects in this area include those that involve ground-disturbing activities or physical changes to the setting in the immediately surrounding environment, such as the introduction of a new building or structure.

Impact CUL-4(CU): Cause a substantial adverse change in the significance of a historical resource, archaeological resources, or disturb human remains during construction under Cumulative Conditions.

(No Project Alternative: NI; Conventional BART Project: SU; DMU Alternative: SU; Express Bus/BRT Alternative: SU; Enhanced Bus Alternative: SU)

No Project Alternative. As described in **Impact CUL-1**, **Impact CUL-2**, and **Impact CUL-3** above, the No Project Alternative would have no impacts on prehistoric and historic-era archaeological resources, human remains, and historic-era buildings during construction. Therefore, the No Project Alternative would not contribute to cumulative impacts. **(NI)**

Conventional BART Project and Build Alternatives. Based on previous cultural resource surveys and research, the Livermore-Amador Valley has been inhabited by prehistoric and historic-era peoples for thousands of years. Because all significant cultural resources and human remains are unique and non-renewable members of finite classes, all adverse impacts erode a decreasing resource base.

The Proposed Project and Build Alternatives, in combination with other development in the region, could result in the substantial loss of cultural resources (including prehistoric and historic-era archaeological resources, human remains, and historic-era buildings, structures, and districts). The Proposed Project and DMU Alternative would extend approximately 5.6 to 7.1 miles, respectively, along the I-580 corridor; some areas that would be disturbed have a high sensitivity for historical resources, prehistoric archaeological resources, historic-era archaeological resources, and human remains. The Express Bus/BRT Alternative and Enhanced Bus Alternative could also result in potential impacts on cultural resources, although each to a progressively lesser extent as each of these alternatives would result in less ground disturbance and construction than the prior alternative.

Other projects that could also result in impacts to cultural resources include those described in Section 3.A, Introduction to Environmental Analysis and Appendix E, particularly projects that occur along the I-580 corridor. Specifically, the Isabel Neighborhood Plan (INP), which would be implemented in conjunction with the Proposed Project and DMU Alternative, would involve ground disturbance near the proposed Isabel

Station, resulting in similar impacts to archaeological resources as the Proposed Project and Build Alternatives. Additionally, the INP would impact the Gandolfo Ranch Historic District as the area would be redeveloped with office and residential uses. Because the district is considered a historical resource for the purposes of CEQA, redevelopment of the ranch would be a significant impact. There are no feasible mitigation measures to reduce this impact.

The City of Livermore has advised that the INP is intended to guide development around a potential Isabel Station. The INP would be implemented with the Proposed Project and DMU Alternative. Therefore, the Proposed Project and DMU Alternative would provide a cumulatively considerable contribution to cultural resource impacts. The Express Bus/BRT Alternative and Enhanced Bus Alternative would not be associated with the INP. Even without the INP, however, a substantial amount of development is anticipated to occur in the city of Livermore. Thus, overall, limited ground disturbance for the Express Bus/BRT Alternative and Enhanced Bus Alternative could contribute to increased cumulative impacts to cultural resources associated with sprawl.

Planning and appropriate mitigation measures can help to capture and preserve knowledge of such resources and can provide opportunities for creating an understanding of past environmental conditions and cultures by recording data about sites discovered and preserving artifacts found. Federal and State laws are also in place, as discussed above, that help protect cultural resources. As described in **Impact CUL-2** and **Impact CUL-3**, above, the Proposed Project and DMU Alternative would implement **Mitigation Measure CUL-2.A**, and the Proposed Project and all Build Alternatives would be required to implement **Mitigation Measure CUL-2.B** and **Mitigation Measure CUL-3**. These measures would minimize potential impacts to resources through completion of a pedestrian surface survey of the Cayetano Creek Area (Proposed Project and DMU Alternative only) and implementation of protocols in the event of the discovery of previously unknown archaeological resources or human remains. It is likely that other projects developed under the Cumulative Conditions would also be required to undergo their own environmental review and mitigate potential impacts to cultural resources.

Even so, it is not always feasible to protect cultural resources, particularly when preservation in place or avoidance measures would limit implementation of projects. Furthermore, even though each project reduces its contribution to the cumulative impact, the overall cumulative impact on cultural resources of the Proposed Project and Build Alternatives, in combination with other past, present, and probable future projects, could be significant. While feasible mitigation measures would be applied to the Proposed Project and Build Alternatives, as well as other cumulative projects, it may not be possible to reduce all cumulative impacts to less-than-significant levels. Therefore, cumulative impacts to cultural resources are conservatively considered to remain significant and

unavoidable and the Proposed Project and Build Alternatives could have a cumulatively considerable contribution to significant cultural resources impacts. (SU)

Mitigation Measures. As described above, the Proposed Project and Alternatives would implement project-specific mitigation measures (**Mitigation Measure CUL-2.A, Mitigation Measure CUL-2.B, and Mitigation Measure CUL-3**). Additional mitigation measures are not feasible and would not further reduce the project's contribution. Therefore, the contribution of the Proposed Project and Build Alternatives to significant cultural cumulative impacts would remain significant and unavoidable.

(2) Operational Impacts

Potential impacts related to project operations are described below, followed by cumulative operations impacts.

(a) Operations – Project Analysis

Impact CUL-5: Cause a substantial adverse change in the significance of a historical resource, archaeological resources, or disturb human remains during operations.

(No Project Alternative: NI; Conventional BART Project: NI; DMU Alternative: NI; Express Bus/BRT Alternative: NI; Enhanced Bus Alternative: NI)

No Project Alternative. Under the No Project Alternative, the BART to Livermore Extension Project would not be implemented and there would be no physical changes in the environment associated with the Proposed Project or any of the Build Alternatives. Construction of the planned and programmed transportation improvements and continued land use development, including construction of residential and commercial uses under the No Project Alternative could adversely impact prehistoric and historic-era archaeological resources, human remains, and historic-era buildings during operations. However, the effects of the other projects associated with the No Project Alternative have been or will be addressed in environmental documents prepared for those projects before they are implemented, and the No Project Alternative would not result in new impacts as a consequence of the BART Board of Directors' decision not to adopt a project. Therefore, the No Project Alternative is considered to have no impacts related to prehistoric and historic-era archaeological resources, human remains, and historic-era buildings during operations. (NI)

Conventional BART Project and DMU Alternative. Direct impacts would be caused if the Proposed Project or DMU Alternative were to directly adversely affect a resource during operation. Under the Proposed Project or DMU Alternative, operation would not result in additional ground disturbing activities beyond the ground disturbance required during construction. Therefore, there would be no further impacts to archaeological resources or

human remains during operation beyond than those described for construction in **Impact CUL-2** and **Impact CUL-3** above. During operations, the Proposed Project and DMU Alternative would not result in impacts to cultural resource from vibration, such as from operation of the BART or DMU trains. See Section 3.J, Noise and Vibration, for further discussion of potential vibration impacts. Therefore, the Proposed Project and DMU Alternative would not result in impacts related to prehistoric and historic-era archaeological resources, human remains, and historic-era buildings during operations. **(NI)**

Express Bus/BRT Alternative and Enhanced Bus Alternative. Under the Express Bus/BRT Alternative and Enhanced Bus Alternative there would be no direct or indirect impacts during operation that would adversely affect cultural resources. Operation would not result in additional ground disturbing activities beyond the ground disturbance required during construction, which is analyzed in the Construction Impacts subsection above. Furthermore, these alternatives would not have indirect impacts to cultural resources, as they would not result in changes to the setting or viewshed of any resources. Therefore, the Express Bus/BRT Alternative and Enhanced Bus Alternative would result in no direct or indirect operational impacts to historical resources, archaeological resources, or human remains. **(NI)**

(b) Operations – Cumulative Analysis

As described in **Impact CUL-5** above, the Proposed Project and Alternatives would have no impact during operations. Therefore, the Proposed Project and Alternatives would not contribute to cumulative cultural resources impacts during operations. **(NI)**