Appendix D:

Historic Resources Evaluation
CULTURAL RESOURCES ASSESSMENT REPORT
Garaventa Hills Project
Livermore, Alameda County, California

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Cover Photo: Overview of Garaventa Hills, view to the northwest.
Management Summary

William Self Associates, Inc. (WSA) has been contracted by Lamphier-Gregory on behalf of the City of Livermore to perform a cultural resource assessment of the proposed Garaventa Hills Project (Project). The Project will develop a 76-unit residential subdivision on a 31.7-acre site of vacant grazing land in the northern part of the City of Livermore, Alameda County, California. As the Project will involve a realignment of Altamont Creek, which would affect waters of the United States, the Project proponent must meet requirements of Section 404 of the Clean Water Act, and therefore, is seeking a permit from the U.S. Army Corps of Engineers (ACOE), Sacramento District. Under the jurisdiction of the ACOE, the project must comply with Section 106 of the National Historic Preservation Act (NHPA), in addition to the cultural and paleontological resources provisions of the California Environmental Quality Act (CEQA). This report was prepared pursuant to those requirements.

WSA implemented a records search, conducted by the Northwest Information Center (NWIC) at Sonoma State University in Rohnert Park, California, of a ¼-mile radius surrounding the proposed Project area. Results indicate that no archaeological sites have been previously recorded within ¼-mile of the Project area, no historic buildings have been recorded within ¼-mile of the Project area, and no buildings located within ¼-mile of the Project area are listed in the Office of Historic Preservation (OHP) Historic Properties Directory. WSA archaeologists Matthew Russell and David Buckley conducted a pedestrian field survey of the Project area on December 19, 2011. No historic properties, historical resources, or unique archaeological resources were observed. WSA also conducted a paleontological resources assessment to address potential Project impacts to paleontological resources, and found that there is a high potential for significant fossils to be present within the Project area.

This Cultural Resources Assessment Report (CRAR) defines the Project area, presents the results of the records search and Native American consultation, describes the field survey of the Project area and presents the results, assesses the significance of the findings, and proposes mitigation measures for cultural and paleontological resources. The proposed Project will not have a substantial adverse change in the significance of any historic properties, historical resources, or unique archaeological resources. Should any previously unknown cultural resources be discovered during construction, their significance would have to be determined in relation to the criteria for eligibility for the National Register of Historic Places (NRHP) and the California Register of Historic Places (CRHP).
1.0 Introduction

William Self Associates, Inc. (WSA) has been contracted by Lamphier-Gregory to perform a cultural resource assessment of the proposed Garaventa Hills Project (Project). The Project will develop a 76-unit residential subdivision on a 31.7-acre parcel of vacant grazing land in north Livermore, Alameda County, California.

WSA implemented a records search, conducted by the Northwest Information Center (NWIC) at Sonoma State University in Rohnert Park, California, of a ¼-mile radius surrounding the proposed Project area. Results indicate that no archaeological sites have been previously recorded within ¼-mile of the Project area, no historic buildings have been recorded within ¼-mile of the Project area, and no buildings located within ¼-mile of the Project area are listed in the Office of Historic Preservation (OHP) Historic Properties Directory. WSA archaeologists Matthew Russell and David Buckley conducted a pedestrian field survey of the Project area on December 19, 2011. No historic properties, historical resources, or unique archaeological resources were observed. WSA also conducted a paleontological resources assessment to address potential Project impacts to paleontological resources, and found that there is a high potential for significant fossils to be present within the Project area.

This Cultural Resources Assessment Report (CRAR) presents the results of research conducted to identify and evaluate potential cultural and paleontological resources within the Project area. The report defines the Project area, presents the results of the records search and Native American consultation, describes the field survey of the Project area and presents the results, assesses the significance of the findings, and proposes mitigation measures for cultural and paleontological resources. As the Project will involve a realignment of Altamont Creek, which would affect waters of the United States, the Project proponent must meet requirements of Section 404 of the Clean Water Act, and therefore, is seeking a permit from the U.S. Army Corps of Engineers (ACOE), Sacramento District. Under the jurisdiction of the ACOE, the project must comply with Section 106 of the National Historic Preservation Act (NHPA), in addition to the cultural and paleontological resources provisions of the California Environmental Quality Act (CEQA). The City of Livermore is the lead agency for the Project.

1.1 Project Location

The proposed Project is located on a 31.7-acre parcel north of Interstate-580, east of Vasco Road, and west of Laughlin Road in the City of Livermore, Alameda County. The Project area is an undeveloped parcel consisting predominantly of non-native grassland habitat. It falls within Township 2 South, Range 2 East, Section 26, as depicted on the 1953 (Revised 1981) Altamont U.S. Geological Survey 7.5 minute topographic quadrangle (Figures 1-3).
(U.S. Geological Survey [USGS] 1953). The parcel is bordered by open space along the northern, western and immediate eastern boundaries, and is adjacent to existing residential developments to the south and east. The topography of the property is moderately steeply sloping. Altamont Creek, an intermittent stream channel, is located immediately outside the southern boundary of the parcel. A ridgeline in the center of the property forms a natural watershed divide, with runoff draining either towards the north or south. The ridgeline forms a connection between the two prominent knolls that dominate the parcel.

1.2 Project Description

The Project will develop a 76-unit residential subdivision that would be known as Garaventa Hills. The proposed subdivision would consist of an internal looped circulation plan circumscribing the prominent knolls, with a number of smaller cul-de-sacs accessing the corners of the property. The looped roadway system would be connected to the south across Altamont Creek by a new bridge crossing at Hawk Street that would connect to the developed properties to the south, and by the planned extension of Bear Creek Drive, which ultimately connects to Laughlin Road to the east. Construction of the bridge would require modification of the streambed. Ultimate development will include 76 residential lots of approximately 6,500 square feet in size each, and construction of associated roadways and utilities. Each lot will contain one single-family home supported by a shallow foundation system. Lots and roadways will comprise approximately 62% of the site only, with the remaining land reserved for open space slopes at the edges, undeveloped knolls with trails, and a detention basin. The Project includes a planned bridge extending Hawk Street north into the Project parcel, and will re-route the adjacent creek bank on either side of the planned bridge.

2.0 Regulatory Context

This section describes the regulatory setting for cultural and paleontological resources, including federal and state regulations.

2.1 Federal Regulations (Section 106)

Section 106 of the NHPA and its implementing regulations (36 CFR 800, as amended 2004) require federal agencies to consider the effects of their undertakings, or those they fund or permit, on historic properties and cultural resources that are eligible for listing or that are listed in the National Register of Historic Places (NRHP). The 36 CFR Part 60.4 regulations describe the criteria to evaluate cultural resources for inclusion in the NRHP. Such resources are required to retain integrity and must exhibit an association with broad patterns of our history, be associated with an important person, embody a distinctive characteristic, or yield information important to prehistory or history.
In the context of a federal undertaking, the legal significance of cultural resources (i.e., NRHP eligibility) determines whether or not the properties are considered for protection from destruction or impairment (36 CFR 60.2). The Archaeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines (48 CFR 44716-44742) outlines the process by which such determinations are made.

2.2 **State Regulations**

CEQA details appropriate measures for the evaluation and protection of cultural resources in §15064.5 of the CEQA Guidelines. For the purposes of CEQA, “historical resources” are those cultural resources that are: (1) listed in or eligible for listing in the California Register of Historical Resources; (2) listed in a local register of historical resources (as defined in PRC 5020.1(k)); (3) identified as significant in a historical resource survey meeting the requirements of §5024.1(g) of the Public Resources Code; or (4) determined to be a historical resource by a project's lead agency (§15064.5(a)). The subsection further states that “A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment” (§15064.5(b)).

CEQA applies to effects on archaeological sites (§15064.5(c)). CEQA requires a lead agency to determine if an archaeological cultural resource fits into one of three legal categories (14 CCR §15064.5(c)(1-3)). A lead agency, in this case the City of Livermore, applies a two-step screening process to determine if an archaeological site meets the definition of a historical resource, a unique archaeological resource, or neither. Prior to considering potential impacts, the lead agency must determine whether a cultural resource meets the definition of a historical resource in §15064.5(a). If the cultural resource meets the definition of a historical resource, then it is treated like any other type of historical resource in accordance with §15126.4. If the cultural resource does not meet the definition of a historical resource, then the lead agency applies the second criterion to determine if the resource meets the definition of a unique archaeological resource as defined in §21083.2(g). Should the archaeological site meet the definition of a unique archaeological resource, then it must be treated in accordance with §21083.2. If the archaeological site does not meet the definition of a historical resource or a unique archaeological resource, then effects to the site are not considered significant effects on the environment (§15064.5(c)(4)).

Public Resources Code (PRC) §5097.5 provides for the protection of cultural resources. PRC §5097.5 prohibits the removal, destruction, injury, or defacement of cultural features on any lands under the jurisdiction of State or local authorities.

Paleontological resources are afforded protection under CEQA (Appendix G, Part V of the CEQA Guidelines), which indicates that a project would have a significant impact on
paleontological resources if it will disturb or destroy a unique paleontological resource or site or unique geologic feature. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, California Penal Code Section 622.5 sets the penalties for damage or removal of paleontological resources.

3.0 Project Setting

3.1 Environmental Setting

The Garaventa Hills Project area is situated within the eastern part of Livermore Valley, in northeastern Alameda County. The Project area, located in the northern part of the City of Livermore, comprises a series of low, rolling hills that rise in some places to more than 600 ft. above mean sea level (amsl). Altamont Creek, with its source to the east in the Altamont Pass, is aligned southeast-northwest and is located immediately outside the southern boundary of the Project area.

Annual precipitation in the broader region varies from 6 to 29 inches, with precipitation concentrated in the fall, winter and spring months. This climate is much like that found in the Mediterranean: mild, rainy winters, and hot, dry summers. After the first rain at the end of October or early November, the vegetation becomes green and remains green, but not growing, until late February, when the grasses begin to grow rapidly. By early June, the area has usually changed to dry golden-colored grasses, and stays that way until fall. Temperatures in the summer are high, often reaching over 38°C (100°F) (Brown 1985: 87).

Within the Project area, plant communities are dominated by California annual grassland. The most common flora is non-native herbaceous plants and annual grasses, such as ryegrass, wild oats, and soft chess, which are the result of long-term grazing and cultivation in the area. Some native perennial grasses, such as purple needlegrass and creeping wildrye may be present. Saltgrass may be found in the seasonal wetlands bordering Altamont Creek (Brushy Peak Regional Preserve n.d.).

The most likely grassland wildlife species present in the Project area is the ground squirrel, whose burrows may be inhabited by amphibians, reptiles, badgers, burrowing owls, and possibly the San Joaquin kit fox. Altamont Creek and the associated wetlands may provide habitat for federally protected California red-legged frogs and the California tiger salamanders. Other native amphibian species that may be present include the Western toad and Pacific tree frog (Brushy Peak Regional Preserve n.d.).
3.2 Paleoenvironment

3.2.1 Development of the Bay and Delta System

During the last glacial maximum, the San Francisco Bay was a broad inland valley, referred to as the ‘Franciscan Valley.’ The runoff from the Sacramento and San Joaquin Rivers converged to form the ‘California River’ that flowed through the Carquinez Straits, into the Franciscan Valley. Runoff from smaller streams and rivers draining this valley merged into the river, and emptied into the Pacific Ocean near the current location of the Farallon Islands. The melting of the ice sheets and concurrent rising of the oceans pushed the California coastline eastwards. Between 11,000 and 8,000 calibrated years before present (cal B.P.), rising sea levels inundated the lower areas of the Franciscan Valley and California River. Sediments carried by the California River were deposited on the floor of the valley. Continued rising of the sea level resulted in the development of freshwater marshes (Praetzellis 2004:9).

Between 7,000 and 6,000 cal B.P. there was a decline in the rate of sea level rise worldwide, and flooding of the Franciscan Valley continued more gradually. This more gradual rise permitted the development of extensive tidal-marsh deposits during the middle Holocene. It was during this period that the extensive saltwater/freshwater tidal marshland of the Sacramento-San Joaquin Delta began to develop. Large alluvial floodplains were also formed at this time as a result of accumulated materials spilling from the lower reaches of streams and river channels onto existing fans and floodplains. As a result of these changes, bay and marsh deposits now covered several previously stable Holocene-age land surfaces. Throughout the late Holocene, the San Francisco Bay grew in size, marshlands expanded, and large tidal mudflats and peat marshes were formed. This promoted the continued deposition of sediment around the Bay margins (Praetzellis 2004:11; Ziesing 2000:29).

Studies within the Bay region confirm that several late Pleistocene and early Holocene land surfaces were covered by alluvium that was generally deposited within the last 6,000 years. These deposits average 2 to 3 m in thickness but can exceed 10 m thick in a few areas. They often exhibit well-developed buried soil profiles (paleosols) that show a marked stratigraphic boundary. Archaeological deposits older than 6,000 years would likely have been inundated by sea level rise and/or buried by sediment deposition (Praetzellis 2004:11).

Although the timing of lowlands development surrounding the Sacramento-San Joaquin Delta is not well dated, it is thought to have followed the same basic pattern as the San Francisco Bay Area. Water, sediment, and marsh plants began to be deposited on the lowlands following a period of non-deposition during the late Pleistocene and early Holocene. This raised the base level of streams and rivers flowing into the Delta during the mid-Holocene, causing active channels to change alignments and depositing a large amount
of sediment onto older land surfaces. These active channels caused the formation of large alluvial fans and levee deposits. These Holocene deposits range in thickness from an estimated 3 m near the Delta and Bay margins to approximately 15 m near the heads of alluvial fans (Meyer and Rosenthal 1997:II.7).

### 3.3 Cultural Setting

#### 3.3.1 Prehistoric Background

Research into local prehistoric cultures began in the early 1900s with the work of N. C. Nelson of the University of California at Berkeley. Nelson documented 425 shellmounds along the bay shore and adjacent coast when the bay was still ringed by salt marshes three to five miles wide (Nelson 1909:322-331). He maintained that the intensive use of shellfish, a subsistence strategy reflected in both coastal and bay shoreline middens, indicated a general economic unity in the region during prehistoric times, and he introduced the idea of a distinct San Francisco Bay archaeological region (Moratto 1984:227). Three sites, in particular, provided the basis for the first model of cultural succession in Central California, the Emeryville Shellmound (CA-ALA-309), the Ellis Landing Site (CA-CCO-295), and the Fernandez Site (CA-CCO-259) (Moratto 1984:227).

Investigations into the prehistory of California’s Central Valley, presaged by early amateur excavations in the 1890s, began in earnest in the 1920s. In the early 20th century, Stockton-area amateur archaeologists J. A. Barr and E. J. Dawson separately excavated a number of sites in the Central Valley and made substantial collections. On the basis of artifact comparisons, Barr identified what he believed were two distinct cultural traditions, an early and a late. Dawson later refined his work and classified the Central Valley sites into three “age-groups” (Schenck and Dawson 1929:402).

Professional or academic-sponsored archaeological investigations in central California began in the 1930s, when J. Lillard and W. Purves of Sacramento Junior College formed a field school and conducted excavations throughout the Sacramento Delta area. By seriating artifacts and mortuary traditions, they identified a three-phase sequence similar to Dawson’s, including Early, Intermediate, and Recent cultures (Lillard and Purves 1936). This scheme went through several permutations (see Lillard et al. 1939; Heizer and Fenenga 1939). In 1948 and again in 1954, Richard Beardsley refined this system and extended it to include the region of San Francisco Bay (Beardsley 1948, 1954). The resulting scheme came to be known as the Central California Taxonomic System (CCTS) (Fredrickson 1973; Hughes 1994:1). Subsequently, the CCTS system of Early, Middle, and Late Horizons was applied widely to site dating and taxonomy throughout central California.
As more data were acquired through continued fieldwork, local exceptions to the CCTS were discovered. The accumulation of these exceptions, coupled with the development of radiocarbon dating in the 1950s and obsidian hydration analysis in the 1970s, opened up the possibility of dating deposits more accurately. Much of the subsequent archaeological investigation in central California focused on the creation and refinement of local versions of the CCTS.

In the 1960s and 1970s, archaeologists including Ragir (1972) and Fredrickson (1973) revised existing classificatory schemes and suggested alternative ways of classifying the prehistory of California. Fredrickson (1973:113-114) proposed four “major chronological periods” in prehistoric California: the Early Lithic Period (described as hypothetical), a Paleoindian Period, an Archaic Period, and an Emergent Period. The Archaic and Emergent Periods were further divided into Upper and Lower periods. Subsequently, Fredrickson (1974, 1994) subdivided the Archaic into Lower, Middle, and Upper. Milliken et al. (2007) have recently updated and further refined this scheme.

A series of “patterns,” emphasizing culture rather than temporal periods, can be identified throughout California prehistory. Following Ragir, Fredrickson (1973:123) proposed that the nomenclature for each pattern relate to the location at which it was first identified, such as the Windmiller, Berkeley, and Augustine Patterns.

Various modifications of the CCTS (e.g., Bennyhoff and Hughes 1987; Fredrickson 1973, 1974; Milliken and Bennyhoff 1993) sustain and extend the system’s usefulness for organizing our understanding of local and regional prehistory in terms of time and space. The cultural patterns identified in the Bay Area that in a general way correspond to the CCTS scheme are the Berkeley and Augustine patterns (for information on the Berkeley and Augustine Patterns see Fredrickson 1973, Milliken et al. 2007, Moratto 1984 and Wiberg 1997). Dating techniques such as obsidian hydration analysis or radiometric measurements can further increase the accuracy of these assignments.

Most recently, Milliken et al. (2007:99-123) developed what they term a “hybrid system” for the San Francisco Bay Area, combining the Early-Middle-Late Period temporal sequence with the pattern-aspect-phase cultural sequence. Dating of the cultural patterns, aspects, and phases was based on Dating Scheme D of the CCTS, developed by Groza (2002). Groza directly dated over 100 Olivella shell beads, obtaining a series of AMS radiocarbon dates representing shell bead horizons. The new chronology he developed has moved several shell bead horizons as much as 200 years forward in time.
Milliken et al.’s (2007) San Francisco Bay Area Cultural Sequence includes:

- Early Holocene (Lower Archaic) from 8000 to 3500 B.C.
- Early Period (Middle Archaic) from 3500 to 500 B.C.
- Lower Middle Period (Initial Upper Archaic) from 500 B.C. to A.D. 430
- Upper Middle Period (Late Upper Archaic) from A.D. 430 to 1050
- Initial Late Period (Lower Emergent) from A.D. 1050 to 1550
- Terminal Late Period, post-A.D. 1550

No archaeological evidence dating to pre-8000 B.C. has been located in the Bay Area. Milliken et al. (2007) posit that this dearth of archaeological material may be related to subsequent environmental changes that submerged sites, buried sites beneath alluvial deposits, or destroyed sites through stream erosion. A brief summary of the sequence presented by Milliken et al. (2007) follows.

A “generalized mobile forager” pattern marked by the use of milling slabs and handstones and the manufacture of large, wide-stemmed and leaf-shaped projectile points emerged around the periphery of the Bay Area during the Early Holocene Period (8000 to 3500 B.C.). Beginning around 3500 B.C., evidence of sedentism, interpreted to signify a regional symbolic integration of peoples, and increased regional trade emerged. This Early Period lasted until ca. 500 B.C. (Milliken et al. 2007:114, 115).

Milliken et al. (2007:115) identify “a major disruption in symbolic integration systems” circa 500 B.C., marking the beginning of the Lower Middle Period (500 B.C. to A.D. 430). Bead Horizon M1, dating from 200 B.C. to A.D. 430, is described by Milliken et al. (2007:115) as marking a ‘cultural climax’ within the San Francisco Bay Area.

The Upper Middle Period (A.D. 430 to 1050) is marked by the collapse of the Olivella saucer bead trade in central California, abandonment of many Bead Horizon M1 sites, an increase in the occurrence of sea otter bones in those sites that were not abandoned, and the spread of the extended burial mortuary pattern characteristic of the Meganos complex into the interior East Bay. Bead Horizons M2 (A.D. 430 to 600), M3 (A.D. 600 to 800), and M4 (A.D. 800 to 1050) were identified within this period (Milliken et al. 2007:116).

The Initial Late Period, dating from A.D. 1050 to 1550, is characterized by increased manufacture of status objects. In lowland central California during this period, Fredrickson (1973, 1994) noted evidence for increased sedentism, the development of ceremonial integration, and status ascription. The beginning of the Late Period, (ca. A.D. 1000) is marked by the Middle/Late Transition bead horizon. The Terminal Late Period began circa A.D. 1550 and continued until European settlement of the area.
3.3.2 Ethnographic Background

The Project area lies within the region occupied by the Ohlone or Costanoan group of Native Americans at the time of historic contact with Europeans (Kroeber 1970:462-473). This section provides a brief summary of the ethnography of the Project vicinity and is intended to provide a general background only. More extensive reviews of Ohlone ethnography are presented in Bocek (1986), Cambra et al. (1996), Kroeber (1970), Levy (1978), Milliken (1995), and Shoup et al. (1995).

Although the term Costanoan is derived from the Spanish word Costaños, or “coast people,” its application as a means of identifying this population is based in linguistics. The Costanoans spoke a language now considered one of the major subdivisions of the Miwok-Costanoan, which belonged to the Utian family within the Penutian language stock (Shipley 1978:82-84). Costanoan actually designates a family of eight languages.

Tribal groups occupying the area from the Pacific Coast to the Diablo Range and from San Francisco to Point Sur spoke the other seven languages of the Costanoan family. Modern descendants of the Costanoan prefer to be known as Ohlone. The name Ohlone is derived from the Oljon group, which occupied the San Gregorio watershed in San Mateo County (Bocek 1986:8). The two terms (Costanoan and Ohlone) are used interchangeably in much of the ethnographic literature.

On the basis of linguistic evidence, it has been suggested that the ancestors of the Ohlone arrived in the San Francisco Bay area about A.D. 500, having moved south and west from the Sacramento-San Joaquin Delta. The ancestral Ohlone displaced speakers of a Hokan language and were probably the producers of the artifact assemblages that constitute the Augustine Pattern previously described (Levy 1978:486).

Although linguistically linked as a family, the eight Costanoan languages actually comprised a continuum in which neighboring groups could probably understand each other. However, beyond neighborhood boundaries, each group’s language was reportedly unrecognizable to the other. Each of the eight language groups was subdivided into smaller village complexes or tribal groups. These groups were independent political entities, each occupying specific territories defined by physiographic features. Each group controlled access to the natural resources of its territory, which also included one or more permanent villages and numerous smaller campsites used as needed during a seasonal round of resource exploitation. Chochenyo or East Bay Costanoan was the language spoken by the estimated 2,000 people who occupied the “east shore of San Francisco Bay between Richmond and Mission San Jose, and probably also in the Livermore Valley” (Levy 1978:485).
Leadership was provided by a chief, who inherited the position patrilineally and could be either a man or woman. The chief and a council of elders served mainly as community advisers. Specific responsibility for feeding visitors, providing for the impoverished and directing ceremonies, hunting, fishing, and gathering fell to the chief. Only during warfare was the chief’s role as absolute leader recognized by group members (Levy 1978:487).

Extended families lived in domed, conical structures built of thatched grass (Levy 1978:492). Semi-subterranean men's houses, also using grass and earth cover, were built at the larger village sites (Kroeber 1970:468).

Acorns of the coast live oak, valley oak, tanbark oak, and California black oak were an important staple in the Ohlone diet. Seeds and berries, roots and grasses, and the meat of deer, elk, grizzly, rabbit, and squirrel also contributed to the Ohlone diet. Careful management of the land through controlled burning served to ensure a plentiful, reliable source of all these foods (Levy 1978:491).

The Ohlone usually cremated a corpse immediately upon death but, if there were no relatives to gather wood for the funeral pyre, interment occurred. Mortuary goods comprised most of the personal belongings of the deceased (Levy 1978:490).

The Ssaoam tribe of the Ohlone peoples was probably the most closely linked to the Project area. The Ssaoam lived in the surrounding dry hills and valleys around Brushy Peak and nearby Altamont Pass, which separates the Livermore Valley from the San Joaquin Valley (Milliken 1995:255). Ssaoam populations may have dispersed in the dry summer months, and reconverged at various camps throughout the rest of the year. The triblet reportedly hosted trade feasts in the area, acting as brokers in a regional trade network with the Volvons, a tribelet of the Bay Miwok, and the Tameans of the Northern Valley Yokuts. The Ssaoam's ability to prosper may have had as much to do with their occupying this strategic trading location as with their ability to use the area’s food and limited water resources (Brushy Peak Regional Preserve n.d.).

The arrival of the Spanish explorers in 1772 threatened the cultural and political organization of these native groups. The Franciscan priests were intent upon changing the native people of California into Catholic agriculturists, which led to a rapid and major reduction in native Californian populations. The native peoples living in the Mount Diablo region (including the present-day Project area) suffered a complete Spanish takeover of their lands by the end of the eighteenth century. The Spaniards founded Mission San Francisco de Asis (now called Mission Dolores) in 1776, Mission Santa Clara the following year, and Mission San Jose in 1797. While some natives were drawn to the mission life by their interest in Spanish technology and religion, others were opposed to the Spanish settlement and most were eventually forced to join the missions, retreat into the hinterlands, or were killed (Milliken
Brought into the missions, the surviving Ohlone, along with the Esselen, Yokuts, and Miwok, were transformed from hunters and gatherers into agricultural laborers (Levy 1978; Shoup et al. 1995).

Under Spanish missionization of the San Francisco Bay Area, native populations decreased dramatically in numbers. Seven missions were eventually established in what was once Ohlone territory and those natives who were living and working under the authority of the missions were baptized as Catholics (Levy 1978). Between 1803 and 1807, 108 Ssaoam people, the entirety of the surviving Ssaoam population, were converted at Mission San Jose (Milliken 1995:255). By the autumn of 1806 all members of the Ssaoam tribelets had been removed to the missions or had passed away. Higher mortality rates from introduced diseases, social strain from disrupted trading networks, and environmental pressures resulting from encroachment of livestock on what were formally Native American lands served to largely eradicate aboriginal life ways (Milliken 1997a:88).

By 1832, the Native population had decreased to less than one-fifth of its number at the time of initial contact with the Spanish (Levy 1978). Only 9 of the original Ssaoam neophytes and 11 Ssaoam descendents were living at Mission San Jose at the close of 1836 (Milliken 1997b:137). Many of the surviving “converted” natives worked as vaqueros for the missions and spent much time grazing cattle.

Beginning in the mid-1830s, the missions became secularized resulting in more than 800 patents of land that comprised more than 12 million acres that were issued to individuals by the Mexican government in what is now California (Ziesing 1997). After missionization, Native Americans dispersed and were often lost to historical record keeping. Native Americans had few choices, and limited or no legal rights, once the mission system broke down. Under Spanish, and later Mexican, law, mission lands and stock were to be allocated to the mission Indians following disbandment of the mission. This almost never happened and much of the mission lands, including those areas previously used for cattle-grazing, were quickly divided up among elite Mexican families, leaving the remaining Indian population with nothing. As a result, many native peoples migrated back to their homelands and began working as vaqueros or servants for the new owners of the land. Others did not join the system and lived apart from the ranchers, occasionally stealing livestock, especially horses (Milliken 1997b:137, 138).

Milliken notes that extensive research on the history of Ssaoam descendents into the late 19th and 20th centuries has not yet been conducted. Due to large gaps in record keeping, this is likely to be a very difficult process (Milliken 1997b:144). Beginning in the early 1900s, academic interest in the fast-disappearing cultures of the Californian Native Americans resulted in a number of ethnographic and linguistic studies, primarily by staff and students of the Anthropology Department at the University of California, Berkeley. However, their
research focused on the reconstruction of pre-contact lifeways, rather than on what was happening contemporaneously (Davis, Hitchcock and Mertz 1997:156-157).

In the 1990s, some Ohlone groups (e.g., the Muwekma, Amah, and Esselen further south) submitted petitions for federal recognition (Esselen Nation 2007; Muwekma Ohlone Tribe 2007). Many Ohlone are active in preserving and reviving elements of their traditional culture and are active participants in the monitoring and excavation of archaeological sites.

3.3.3 Historical Background

The history of Northern California, Alameda County, and the Project area, can be divided into several periods of influence. To establish a historic context from which to assess the potential significance of historic sites in the Project area, various periods and local sub-periods, some of which overlap, are defined below. These include:

Spanish Period 1772 - 1822
Mexican Period 1822 - 1848
American Period 1848 - present
Ranching and Farming ca. 1840s – present

SPANISH PERIOD (1772-1822)

The earliest historical accounts of the Livermore Valley come from the Spanish explorers who ventured into the region in the late 18th century. The Spanish period in the Mount Diablo region began with the Fages expedition of 1772. The expedition traveled from Monterey along the eastern shore of San Francisco Bay through what are now Milpitas, San Lorenzo, Oakland, and Berkeley, and finally reached Pinole on March 28, 1772 (Cook 1957:131). From there they traveled through the locations of today’s Rodeo and Crockett to Martinez, made a brief foray into the delta region of the Central Valley, and then camped somewhere near Pittsburg or Antioch. On March 31, the Fages party began the return journey to Monterey. They traveled to the vicinity of today’s Walnut Creek, turned south, and then made their way to the Danville area, where they spent the night. On April 1st, they passed through today’s Livermore Valley, finally arriving back in the area of Milpitas on the following day. In 1775, Captain Juan Manuel Ayala's expedition studied the San Francisco Bay and ventured up the Sacramento and San Joaquin rivers. Other Spanish expeditions in the ensuing years passed near the Project area, including the 1811 expedition of Ramon Abella, the 1813 expedition of Jose Arguello, and the 1817 expedition of Narciso Duran and Luis Arguello (Beck and Haase 1974:21). The most significant impact of the European presence on the local California Indians, however, was not felt until the Spanish missions were established in the region (Cook 1957:132).
The first Spanish mission in the region was established in 1776 with the completion of Mission San Francisco de Asis (Mission Dolores) in San Francisco. Mission Santa Clara followed in 1777, and the founding of Mission San Jose in 1797 marked the start of European influence in the Livermore Valley (Praetzellis et al. 1997:15). Settlements were established inland for maintenance of the Mission system’s expanding grazing lands, and these settlements extended into the Livermore Valley. At that time, the control of the Missions was focused around the more accessible San Francisco Bay. It was not until after Mexico’s secession from Spain in 1821 that land was granted to private citizens, a practice that increased significantly after the 1833 act of the Mexican legislature that established the secularization of the missions.

The Mission era lasted approximately 60 years and proved to be detrimental to the native inhabitants of the region, who were brought to the missions to be assimilated into a new culture as well as to provide labor for the missionaries. Diseases introduced by the early explorers and missionaries, and the contagions associated with the forced communal life at the missions, killed a large number of local peoples, while changes in land use made traditional hunting and gathering practices increasingly difficult. Cook (1976) estimates that by 1832, the Costanoan population had been reduced from a high of over 10,000 in 1770 to less than 2,000.

MEXICAN PERIOD (1822-1848)

The Mexican War of Independence, from 1810 to 1821, resulted in Mexico separating from Spain. During the Mexican Period, rapid secularization of the Spanish mission system occurred. Between 1835 and 1836 the Mexican government began offering grants of Mission grazing land primarily to Californios (both Spanish speaking descendants of European settlers, and Mestizo and Europeanized Natives) and Mexican colonists. In 1836, Mission San Jose shut down, freeing the Indian neophytes to return to their villages, or take up work on the newly granted ranches. The secularization of the Missions was intended to be the final step of the process to make the Indians Spanish (Rawls and Bean 1998:26-27), after which the neophytes living in the communities surrounding Mission San Jose were to be granted half of the Mission land (Rawls and Bean 1998:59). However, this policy was never properly implemented and many neophytes were reduced to raiding horses from the local ranches, which resulted in violence and Mexican reprisals against them, as well as a general opposition to them settling near the San Joaquin Valley (Stewart 1994:57-59).

By 1845, the last of the mission land holdings had been relinquished, opening the way for the large ranchos common to California in the mid-1800s. The dominant land-use of the ranchos was livestock grazing and some farming.
It was not until 1839 that the Project area was granted as part of a rancho (Willard 1988:18-19). Rancho Las Positas was granted to Don Salvio Pacheco in April that year, who in turn transferred his interest to Robert Livermore and Jose Noriega (Baker 1914:44). The Rancho consisted of an area of approximately 2 leagues (8,857 acres), and was bounded by property owned by Francisco Alviso, Antonino Higuera, and Manuel Miranda (Cañada de Los Vaqueros) to the north, and Antonio Maria Pico, Agustín Bernal, Juan Pablo Bernal, and María Dolores Bernal de Suñol (Valle de San Jose) to the west (Beck and Haase 1974:30). The land grant was intended to be a place for the owners to graze their herds while they resided further to the west in more populated regions (Ziesing 1997:27).

The Englishman Robert Livermore, originally a merchant marine by trade, was known amongst the landed families of the area with whom he had associated since his arrival in Monterey in 1829 (Praetzellis et al. 1997:25). He had married Josepha Higuera-Molina (daughter of a Santa Clara County ranchero), and Livermore had known Jose Noriega since his early days in the area; the two had met at Mission San Jose in 1830. In 1835 they agreed to establish their own rancho, and in 1839 received the land grant for what would become Las Positas (Praetzellis et al. 1997:25). Livermore moved to the valley that would later bear his name in 1839, and there he raised cattle for hides and tallow, as well as horses, and sheep. In 1844, Livermore planted a vineyard and orchard, the first outside Mission San Jose (Baker 1914:45;Willard 1988:18-19). He also grew wheat, the first produced in the valley (Baker 1914:45). Livermore and Noriega filed a claim for Las Positas in February of 1852, and in February of 1854 the Board of Land Commissioners confirmed their claim to the rancho (Baker 1914:37).

Deterioration of relations between the United States and Mexico resulted in the Mexican War, which ended with Mexico relinquishing California to the United States under the Treaty of Guadalupe Hidalgo of 1848. With the formation of the new State of California, and the onset of the American Period, rapid changes were in store for the region.

AMERICAN PERIOD (1848-present)

The discovery of gold in the Sierra Nevada in 1848 produced a major population increase in the northern half of California as gold miners poured into the region. The population explosion led to land use changes as livestock grazed native grasses to extinction, woodlands were cut for lumber, railroad ties and mining timbers, and vast parcels of arable land were tilled for agricultural development. Following the U.S. takeover of Alta California from Mexico in 1848, rancho lands began to be divided up and generally overrun by Anglo immigration to the area that was coincident with the land boom following the Gold Rush of 1849. Rancho Las Positas suffered the fate of most Mexican land grants in northern California, with squatters taking quasi-legal title to lands, and the courts denying title to the original grantees (Hendry and Bowman 1940).
During the Mexican Period, ranching and stock raising were the primary concerns, with farming undertaken on a small-scale to provide subsistence for the ranchos. With the advent of the American Period, farming on a large-scale was introduced. In general, Alameda County passed through three stages of development: (1) a predominant cattle raising industry, primarily for hides and tallow, from the Spanish Period until 1862; (2) a period where cattle-raising gave way to large-scale production of grain, from approximately 1862 to 1882; and (3) an era where fruit, primarily grapes in the Livermore Valley, were the most important crops, from approximately 1882 into the 20th century (Baker 1914:177).

Alameda County was formed in 1853 from portions of Santa Clara and Contra Costa Counties, and six townships were established. Eastern Alameda County, including the Livermore Valley, was part of the Murray Township. Within the Murray Township, the town of Livermore had its beginnings in 1855 when Alphonso Ladd built a hotel near Robert Livermore’s home, and called the new community Laddville. In 1869, William Mendenhall, a long-time friend of Livermore, donated 20 acres west of Laddville for a railroad depot, and surveyed the surrounding lands for a community that he called Livermore, in honor of his friend. The town of Livermore was founded in 1869 when the Central Pacific Railway reached the area, and Livermore was officially incorporated in 1876 with a population of 830 (Baker 1914:441; Willard 1988:29).

During the mid-1860s, settlers began moving into the Livermore Valley in ever-increasing numbers. The problem with this influx of new residents was the uncertainty of land titles because of the ambiguity of the original Rancho Las Positas boundaries. The U.S. patent for the land grant, issued in February 1859, granted “two leagues, more or less,” within specified boundaries. The boundaries described, however, included more than 11 leagues (48,700 acres). In March 1871, the matter was settled in court and two leagues (8,800 acres) were confirmed. This opened much of the valley to pre-emption (rights granted to individuals already living on federal lands) and, along with the recently completed railroad through the valley, helped to increase the population considerably (Baker 1914:48).

Ranching and Farming (ca. 1840s-present)

At the beginning of the American Period, cattle raising was still the most important enterprise in the Livermore Valley. Soon thereafter, however, within eastern Alameda County and the Livermore Valley, growing wheat and barley, and later fruit trees (including oranges, lemons, peach, pear, plum, apple, and apricot) and grape vines, superseded the cattle industry.

Wheat became the dominant crop in the Livermore Valley beginning in the mid-1850s. In 1857, Joseph Black and two brothers named Carrick began raising wheat in west Livermore Valley, and in 1860, Hiram Bailey planted 80 acres on the Las Positas land grant, 3 mi. north
of Livermore. Livermore Valley soon became one of the best grain and hay districts in the state. Livermore hay grown on the Altamont hills was highly regarded and was regularly shipped overseas. In the 1860s and 1870s, grain growing was conducted on a large scale in the Livermore Valley, and it was still an important industry into the 1880s and 1890s. Even into the early 20th century, Livermore valley hay was still recognized as the “best in the world and is sent in immense quantities by rail and vessel to distant points” (Baker 1914:190-191). Although hay and grain continued to be produced well into the 20th century, it was quickly overtaken wine grapes and other fruit, which became the valley’s most important product (Baker 1914:34, 47, 178-180, 184, 186, 443).

By the mid-1880s, the potential for fruit growing in many regions of California was realized—foremost among these was Alameda County, and the Livermore Valley in particular. While many thought the land too arid for more than mining and grazing, by 1885 fruit from the Livermore Valley was regularly being shipped across the country (Baker 1914:182). Vineyards began to replace wheat and barley fields in 1880-1881. In 1882, 880 acres of grapes were planted in the Livermore Valley. By 1885, the number of acres of vines had grown to more than 4,000. From 1881 to 1885, 4,200 acres of cereal and hay land in the Livermore Valley were converted to orchards and vineyards. Viticulture was now one of the primary enterprises in the Livermore Valley, and grape production increased steadily each year. By the turn of the 20th century, it was widely recognized that the Livermore Valley was the most important grape growing region in the county (Baker 1914:179-182, 189, 442).

In the first decade of the 20th century, the Livermore Valley became known as the “gold medal section” of the state, as it won numerous prizes at fairs around the country not only for its wine grapes, for which it was most well-known, but also hay, grain, fruit, barley, olives, almonds, and walnuts (Baker 1914:191).

3.3.4 Site Specific Historical Background of Project Area

Land patent records, which document the transfer of land ownership from the federal government to individuals, indicate that the S½ SE¼ of Township 2S, Range 2E Section 26 (the legal land description of the parcel that includes the Project area) was purchased by George W. Harlan on February 5, 1875 (Bureau of Land Management n.d.). When the public lands were sold, land "patents" were issued—deeds transferring land ownership from a sovereign (the U.S. Government) to a buyer. Land patent records include the information recorded when ownership was transferred. The land patent for the parcel that includes the Project area indicates that Harlan purchased both the 80-acre tract in question, as well as the adjacent 80-acre parcel in the N½ NE¼ of Township 2S, Range 2E Section 35 at that time. This ownership is also reflected in 1880 Oakland Daily and Weekly Tribune Map of Alameda County prepared in 1874, which depicts the parcel including the Project area as
owned by G.W. Harlan (Allardt 1874). It also suggests that Harlan occupied the land before it was formally sold to him by the U.S. Government.

A map of Alameda County published by Thompson & West (1878:53) depicts the 80-acre parcel that includes the Project area labeled “Mrs. Harlan, 80A” (Figure 4). The adjacent 80-acre tract to the south, which was also purchased by George W. Harlan in 1875, is labeled as “Geo. May, 80A.” While details are unknown, it is evident that Harlan sold ownership of half his tract to George May, and ownership of the remaining half, which includes the Project area, was transferred to (presumably) his wife.

Details about Mr. and Mrs. George W. Harlan are hazy. They are likely related to the large Harlan family that immigrated to California in 1846, many of whom settled farther west in Alameda County. Archival research indicates that a number of individuals named George Harlan were present in Alameda County and the surrounding area in the late-19th century. The most likely identification of the George W. Harlan listed in the land patent records is actually George Alonzo Harlan, who was listed on the 1870 United States Federal Census for Murray Township, Alameda County, as Geo. Harland, with his wife listed simply as Mrs. Harland (U.S. Census Bureau 1870). Harlan was a farmer with interests throughout Alameda County, although he and his wife, Mary, resided in Murray Township in the 1870s. They later moved to Centerville in Washington Township, Alameda County (California State Library n.d.). Mary died in 1895, while George passed away in 1911, both in Irvington, Alameda County. It is unknown when the Harlans sold their property in the Livermore Valley, but records indicate that by the turn of the century the parcel had changed ownership.

The 80-acre parcel owned by Mrs. Harlan was acquired by the Anspacher Brothers sometime before 1900 (Nusbaumer and Boardman 1900). The Anspacher Brothers were originally commission merchants who amassed large amounts of land in the northern Livermore Valley through speculation during the final decades of the 19th century. Many of their properties were also acquired through loan defaults (Wiberg and Dean 2000:31). Before 1910, the property changed hands again and it was acquired by L. A. Myers and Company, indicated as owner on the 1910 Map of Murray Township (Haviland 1910).

By 1912, ownership of the parcel including the Project area had changed hands again as the Garaventa family acquired it. The Garaventa Hills Project is named for the Garaventa family, who moved to the Livermore Valley in the late-19th century. Domingo Garaventa moved to the United States from Italy in 1870 at about the age of 18, and he worked as a farm laborer in Livermore for a number of years. Garaventa’s wife, Mary, came to this country from Italy in 1886, and they were married later that year. The Garaventas had five children, although only three survived to adulthood, including their daughter Amelia (born in 1886), and sons Louis (born in 1891) and Henry (born in 1897). During the 1880s, Garaventa bought 160 acres of farmland in the Green School District, which encompasses the Project area (Faulkner...
Later, in the 1890s, Garaventa bought additional farmland on the first of three parcels north of what became Interstate 580 (U.S. Census Bureau 1880, 1900; Garaventa Wetlands Preserve n.d.).

Although no specific deeds or other transaction documents could be located for this Project, Garaventa presumably bought the parcel that includes the present Project area from L. A. Myers and Company around 1910. Domingo Garaventa passed away about that time, and his widow Mary became the head of household. The Garaventa’s sons, Louis and Henry Garaventa, worked as laborers on the family farm while Amelia Garaventa worked as a milliner (hatmaker) (U.S. Census Bureau 1910). On the 1912 Map of Murray Township, the 80-acre parcel that includes the Project area, along with the adjoining 80-acre parcels to the west, south, and southwest, are indicated as owned by M. Garaventa – presumably Mary Garaventa (Haviland 1912).

Mary Garaventa passed away during the 1920s, and the land, commonly known as the Vasco Property, passed in equal ownership to Amelia, Louis, and Henry Garaventa (Superior Court of the State of California 1996). Louis and Henry Garaventa continued to farm in the valley—eventually the family owned one-third of Township 2 South Range 2 East (including the Project area), as well as 85 acres on the west side of what became Vasco Road (U.S. Census Bureau 1920, 1930; Garaventa Wetlands Preserve n.d.). The family farmed wheat, barley and oats on their lands until the 1940s when they moved elsewhere, although they retained ownership of the Vasco Property. Henry Garaventa’s children, Alwin Garaventa and Valeta Albright (née Garaventa) inherited ownership of the land after Amelia, Louis, and Henry Garaventa all passed away during the 1970s (Superior Court of the State of California 1996; Garaventa Wetlands Preserve n.d.). Alwin Garaventa, Sharon Lee Albright, and Karen Jean Red Elk are the current landowners (ENGEIO 2010:Appendix B).

Topographic maps and aerial images of the Project area date from the early-20th century. Maps and photographs of the Garaventa Hills Project area indicate the property was never developed, but has remained vacant grazing and farmland throughout its history. The earliest U.S. Geological Survey (USGS) map, the 1907 Tesla 15-minute USGS topographic map, indicates a single structure within the Project area (Figure 5), but the structure is not depicted on any later maps (see Figure 3) (USGS 1907 [Photorevised 1948]; USGS 1953 [Photorevised 1968 and 1981]). Historical research could not determine the purpose of this structure, and no traces of it were observed during the field survey (see below). The earliest aerial image of the Project area, dating to 1940, shows vacant land with no visible structures, as do later aerial images from 1958 to 2005 (ENGEIO 2010:Appendix D).
4.0 Results of the Literature and Records Search

On behalf of WSA, staff at the California Historical Resources Information System, Northwest Information Center (NWIC) at Sonoma State University conducted a records search of the Project vicinity on December 6, 2011 (File No. 11-0601). The records search involved a review of records and maps on file at the NWIC. Results of the records search indicate there are no recorded sites within ¼-mile radius of the Project area. Information on previous archaeological studies within a ¼-mile radius of the Project area was also provided. Relevant pages from the Office of Historic Preservation (OHP) Historic Properties Directory, which includes information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys, were included with the search results, and no properties within ¼-mile of the Project area are listed. There were also no listings on the California Inventory of Historical Resources or the OHP Archaeological Determinations of Eligibility within ¼-mile of the Project area. Copies of the appropriate sections of the 1907 Tesla 15-minute and the 1953 Altamont 7.5-minute USGS topographic maps were also included in the results.

4.2 Previous Cultural Resource Studies

Two cultural resource studies have been undertaken that include all or part of the Project area, and one additional study has been conducted within ¼-mile of the Project area. These are summarized in Table 1.

The North Livermore survey conducted by Basin Research Associates in 1998 included a small section in the northern part of the current Project area. No cultural resources were observed during that project (Busby 1998). In 2000, Holman and Associates conducted a large-scale survey in north Livermore that also included the current Project area. At that time,

<table>
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<th>Authors</th>
<th>Date</th>
<th>Study Type</th>
<th>Title</th>
<th>Location</th>
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<td>Wiberg and Dean</td>
<td>2000</td>
<td>Survey</td>
<td>Cultural Resources Study for the Vasco-Laughlin Specific Plan and Open Space/Resource Conservation Program, City of Livermore, Alameda County, California</td>
<td>Covers Project area</td>
</tr>
<tr>
<td>S-023047</td>
<td>Busby</td>
<td>1998</td>
<td>Survey</td>
<td>Cultural Resources Review, North Livermore Project, City of Livermore, Alameda County, California</td>
<td>Covers portion of Project area</td>
</tr>
<tr>
<td>S-023054</td>
<td>Hill</td>
<td>1998</td>
<td>Assessment</td>
<td>Cultural Resources Assessment, Frick and Cornel Subareas, North Livermore Project, City of Livermore, Alameda County, California</td>
<td>Within ¼ mile</td>
</tr>
</tbody>
</table>
the entire parcel was covered with a pedestrian field survey completed on 20 to 40 m transects. No archaeological material was observed during the survey (Wiberg and Dean 2000).

4.3 Previously Recorded Archaeological Resources

There are no previously recorded archaeological sites within ¼-mile of the Project area, and no historic buildings have been recorded within the records search area.

5.0 Native American Consultation

On November 28, 2011, WSA contacted the Native American Heritage Commission (NAHC) by letter to request information on known Native American sacred lands within the Project area and to request a listing of individuals or groups with a cultural affiliation to the Project area. As a response from the NAHC was not received, WSA resent the letter on December 16, 2011. No response to that letter was received. In response to a Notice of Preparation (NOP) sent to the NAHC by the City of Livermore, however, the NAHC provided a list of Native American contacts for the Project area. On December 16, 2011, WSA sent letters to the following 11 contacts identified by the NAHC, requesting comment on the Project: Jakki Kehl; Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area; Andrew Galvan, The Ohlone Indian Tribe; Katherine Erolinda Perez; Ramona Garibay, Representative, Trina Marine Ruano Family; Irene Zwierlein, Chairperson, Amah/Mutsun Tribal Band; Don Hankins; Joseph Mondragon, Tribal Administrator, Amah/Mutsun Tribal Band; Melvin Ketchum III, Environmental Coordinator, Amah/Mutsun Tribal Band; Jean-Marie Feyling, Amah/Mutsun Tribal Band; and Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan. No responses were received. WSA placed follow-up phone calls on January 3 and January 9, 2012. Copies of this correspondence are provided, and the results of the follow-up telephone calls are summarized, in Appendix A.

6.0 Results of the Archaeological Survey

Although the Project area was previously surveyed in 2000, that survey was part of a larger project and the survey was conducted at a much broader scale than the current survey. Investigators in 2000 surveyed the Project area using 20 to 40 m (65 to 130 ft.) transects (Wiberg and Dean 2000), as compared to the 10 m (33 ft.) transects used for the current survey. In addition, during historic background research for the Project, evidence was found on one of the historic maps that there might have been a structure present on the parcel in 1907. Because this structure was not specifically mentioned in the previous study, it was decided that the Project area should be re-surveyed for this Project.
In accordance with NHPA Section 106, to ensure that no significant cultural resources were missed during the previous survey, and as a means of evaluating potential impacts to cultural resources, WSA archaeologists, Matthew Russell, Ph.D. and David Buckley, B.A. conducted an intensive pedestrian survey of the entire 31.7-acre Project area on December 19, 2011 (see Figure 3). This intensive survey was designed to meet the requirements of Section 106 and was conducted using transect widths of no more than 10 meters (33 ft.). Ground surface visibility throughout the survey area was generally good, with greater than 50% visibility throughout the Project area. Areas of high visibility included drainage channels, exposed rock outcroppings, and abundant rodent burrowing sites.

No prehistoric cultural material was observed during the field survey, and no new archaeological sites were recorded. Twentieth-century material observed during the survey included a plywood target used in aerial mapping that likely dates to the latter part of the 20th century, a barb wire fence dating to the first half of the 20th century, and a small concentration of debris observed at the bottom of an empty cow pond, including broken glass, cow bones, a steel wheel rim, a rubber shoe sole, and an aluminum can, dating to the mid-20th century (Figures 6-8). These were evaluated relative to eligibility criteria for the NRHP and CRHR, and none are recommended as being potentially significant.

![Figure 6. Plywood target for aerial mapping.](image)
Figure 7. Barb wire fence located in the southern part of Project area.

Figure 8. Debris scatter located in the bottom of a dry pit.
The areas adjacent to Altamont Creek were considered a high priority during the survey due to the possibility of prehistoric sites near the creek. The creek bank and adjacent areas in the vicinity of the proposed bridge over Altamont Creek, as well as the proposed realignment of the creek, were thoroughly examined and there were no indications of archaeological materials visible on the surface. Although no pre-construction testing of proposed bridge footings was conducted in the location, based on our observations it is unlikely that cultural resources are present.

7.0 Results of Paleontological Resources Assessment

WSA’s Paleontologist conducted a paleontological resources assessment of the Project area. The paleontologist identified the geological units within the Project area based on existing geological mapping, the ENGEO Phase I geotechnical report, and readily available data. This section addresses potential Project impacts to paleontological resources that may be present in the Project area.

The Project area is underlain by the fossiliferous late Miocene, marine San Pablo Group sandstone bedrock known to contain important, non-renewable paleontological resources of extinct marine vertebrate and invertebrate fauna. In addition, there are Pleistocene deposits in the Project area that overlie the San Pablo Group along angular unconformity. These deposits are known to contain significant non-renewable paleontological resources, including mammoth, mastodon, sabre cat and camel. The San Pablo Group bedrock and Pleistocene deposits within the Project area are regarded as having a “high potential” to contain significant fossils based on the Society of Vertebrate Paleontologists Guidelines (1995). It is recommended that a professional Paleontologist prepare a paleontological mitigation plan outlining a paleontological monitoring and salvaging plan during construction excavation and ground-disturbing activities for the Project. The full paleontological resources assessment report for the Project area is included in Appendix B.

8.0 Evaluation Under NHPA and CEQA

8.1 NRHP Evaluation Criteria

The NRHP, created under NHPA, is the federal list of cultural resources worthy of preservation. Resources listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, prehistory, architecture, archaeology, engineering, and culture. The NRHP is maintained by the Keeper of the National Register within the National Park Service. To guide the selection of properties included in the NRHP, the Advisory Council on Historic Preservation has developed the National Register Criteria for Evaluation (36 CFR Part 60.4). The criteria are standards by which every property that is nominated to the NRHP is judged. The quality of significance in American
history, architecture, archaeology, and culture is possible in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association, and meet one of the following criteria:

- **Criterion A**: A property is associated with events that have made significant contributions to the broad patterns of the history of the United States;
- **Criterion B**: A property is associated with the lives of people significant in United States history;
- **Criterion C**: A property embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic value; or represents a significant and distinguishable entity whose components may lack individual distinction; or
- **Criterion D**: A property has yielded, or may be likely to yield, information important in prehistory or history (36 CFR Part 60.4).

All categories of properties—districts, sites, buildings, structures, and objects—may be judged in relation to any or all of these criteria. Typically, the eligibility to the NRHP of archaeological properties is determined by application of Criterion D, which evaluates the importance of the information the property might contain. Archaeological sites can also be eligible under Criteria A, B and C, which assess the intrinsic value that a property possesses either by virtue of its historical association with an important person or event or as a surviving example of an important type of property. In order to determine the importance of the information a property might contain (i.e., does it meet Criterion D?), a historic context and research design are prepared. The historic context provides the historical background against which any given find can be judged by the NRHP eligibility criteria, establish a period of significance, and possible historical associations. The research design identifies the research questions that can be addressed by the kind of data the property might contain and that cannot be satisfactorily addressed using data from other sources alone.

**Integrity.** The integrity of a property refers to the property’s ability to convey its significance (National Park Service [NPS] 1990:44). The integrity of archaeological sites is evaluated differently from the integrity of architectural resources. For an archaeological resource to contain the level of integrity that is required for NRHP eligibility under Criterion D, the criterion under which resources discovered under this CRAR were evaluated, it “is important that the significant data contained in the property remain sufficiently intact to yield the expected important information” (NPS 1990:23). A fragmentary property type (e.g., a portion of an archaeological site) can be determined to be legally important if the remains are of an identifiable property type that has potential for contributing information to the research questions posed in the research design.
No prehistoric cultural resources were observed or recorded within the Project area. Twentieth-century features and debris observed during the survey were evaluated relative to NRHP eligibility and none are recommended as being potentially significant. No NRHP eligible historic properties are present within the Project area.

8.2 **CEQA Evaluation Criteria**

CEQA defines significant historical resources as “resources listed or eligible for listing in the California Register of Historical Resources (CRHR)” (Public Resources Code Section 5024.1). A resource may be considered historically significant if it meets the following criteria for listing on the CRHR:

1. it is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage; or
2. it is associated with the lives of persons important to California’s past; or
3. it 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; or
4. it has yielded or is likely to yield information important in prehistory or history (Public Resources Code Section 5024.1).

In order to meet one or more of the criteria listed above, a cultural resource must possess integrity to qualify for listing in the CRHR. Integrity is generally evaluated with reference to qualities including location, design, materials, workmanship, setting, feeling, and association. A potentially eligible site must retain the integrity of the values that would make it significant. Typically, integrity is indicated by evidence of the preservation of the contextual association of artifacts, ecofacts, and features within the archaeological matrix (Criterion 4) or the retention of the features that maintain contextual association with historical developments or personages that render them significant (Criteria 1, 2, or 3). Evidence of the preservation of this context is typically determined by stratigraphic analysis and analysis of diagnostic artifacts and other temporal data (e.g., obsidian hydration, radiocarbon assay) to ascertain depositional integrity or by the level of preservation of historic and architectural features that associate a property with significant events, personages, or styles.

Integrity refers both to the authenticity of a property’s historic identity, as shown by the survival of physical characteristics that existed during its historic period and to the ability of the property to convey its significance. This is often not an all-or-nothing scenario (determinations can be subjective); however, the final judgment must be based on the relationship between a property’s features and its significance.
Section 15064.5 of the CEQA Guidelines indicates a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an "historical resource" or a "unique archaeological resource" as defined or referenced in CEQA Guidelines Section 15064.5[b, c] (revised October 26, 1998). Such changes include "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines 1998 Section 15064.5 [b]).

No prehistoric cultural resources were observed or recorded within the Project area. Twentieth-century features and debris observed during the survey were evaluated relative to CRHR eligibility and none are recommended as being potentially significant. No historical resources or unique archaeological resources as defined by CEQA are present within the Project area.

### 9.0 Impacts and Mitigation

#### 9.1 Previously Undiscovered Archaeological Resources

Although the likelihood of encountering intact cultural resources is considered low, there is the possibility that buried archaeological resources may be located during construction activities. Site preparation, grading, and construction activities could adversely impact previously undiscovered archeological resources. Implementation of the following mitigation measure would reduce potential impacts to undiscovered archaeological resources to a less-than-significant level under CEQA.

**Mitigation Measure CULT-1:** If prehistoric or historic cultural resources are encountered during Project activities, all work within 25 feet of the discovery will be stopped and a qualified archeologist meeting federal criteria under 36 CFR 61 will be contacted to assess the resources and make recommendations.

While prehistoric or historic cultural resources should be avoided by Project activities, if the resources cannot be avoided, they will be evaluated for their potential historic significance in consultation with the City of Livermore and the ACOE. If the resources are recommended to be non-significant, avoidance is not necessary. If the resources are recommended as potentially significant or eligible to the NRHP, they will be avoided. If avoidance is not feasible, Project impacts will be mitigated in accordance with the recommendations of the evaluating archaeologist, Section 106 of the NHPA, and CEQA Guidelines §15126.4 (b)(3)(C), which require development and implementation of a data recovery plan that would include recommendations for the treatment of the discovered archaeological materials. The data recovery plan will be submitted to the City of Livermore and the ACOE for review and approval. Upon approval and completion of the data recovery program, Project construction
activity within the area of the find may resume, and the archaeologist will prepare a report documenting the methods and findings. The report will be submitted to the City of Livermore and the ACOE. Once the report is reviewed and approved by the City of Livermore and the ACOE, a copy of the report will be submitted to the NWIC.

9.2 Previously Undiscovered Paleontological Resources

There is a high potential that important, non-renewable paleontological resources may be located during construction activities. Site preparation, grading, and construction activities could adversely impact previously undiscovered paleontological resources. Implementation of the following mitigation measure would reduce potential impacts to undiscovered paleontological resources to a less-than-significant level under CEQA.

Mitigation Measure CULT-2: If paleontological resources are encountered during Project activities, all work within 25 feet of the discovery will be stopped and a qualified Paleontologist will be contacted to assess the resources and make recommendations.

While paleontological resources should be avoided by Project activities, if the resources cannot be avoided, they will be evaluated for their potential significance in consultation with the City of Livermore and the ACOE. If the resources are recommended to be non-significant, avoidance is not necessary. If the resources are determined to be potentially significant, they will be avoided. If avoidance is not feasible, Project impacts will be mitigated in accordance with the recommendations of the evaluating Paleontologist and CEQA Guidelines (Appendix G, Part V), which require development and implementation of a data recovery plan that would include recommendations for the treatment of the discovered paleontological resources. The data recovery plan will be submitted to the City of Livermore and the ACOE for review and approval. Upon approval and completion of the data recovery program, Project construction activity within the area of the find may resume, and the Paleontologist will prepare a report documenting the methods and findings. The report will be submitted to the City of Livermore and the ACOE.

9.3 Previously Undiscovered Human Remains

Ground disturbing activities associated with site preparation, grading, and construction activities could disturb human remains, including those interred outside of formal cemeteries. The potential to uncover Native American human remains exists in locations throughout California. Although not anticipated, human remains may be identified during site-preparation and grading activities, resulting in a significant impact to Native American cultural resources. Implementation of the following mitigation measure would reduce potential adverse impacts to human remains to a less-than-significant level.
Mitigation Measure CULT-3: Section 7050.5(b) of the California Health and Safety code will be implemented in the event that human remains, or possible human remains, are located during Project-related construction excavation. Section 7050.5(b) states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the NAHC within 24 hours. The Commission has various powers and duties, including the appointment of a Most Likely Descendant (MLD) to the Project. The MLD, or in lieu of the MLD, the NAHC, has the responsibility to provide guidance as to the ultimate disposition of any Native American remains.
10.0 References

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Milliken, Randall

Milliken, Randall, and James A. Bennyhoff


Milliken, Randall, Richard T. Fitzgerald, Mark G. Hylkema, Randy Groza, Tom Origer, David G. Bieling, Alan Leventhal, Randy S. Wiberg, Andrew Gottsfield, Donna Gillette, Viviana Bellifemine, Eric Strother, Robert Cartier and David A. Fredrickson


Moratto, Michael J.


Muwekma Ohlone Tribe


National Park Service


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Ragir, Sonia
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Willard, Ruth Hendricks

Ziesing, Grace H. (ed.)

Appendix A

Native American Heritage Commission Consultation
Native American Heritage Commission  
915 Capitol Mall, Room 364  
Sacramento, CA 95814  
(916) 653-4082; Fax (916) 657-5390  

November 28, 2011  

_RE: GARAVENTA HILLS PROJECT, LIVERMORE, ALAMEDA COUNTY, CA_  

Dear Native American Heritage Commission:

William Self Associates, Inc. (WSA) has been contracted to assess potential impacts to cultural resources as part of the Garaventa Hills Project, in Livermore, Alameda County, California. The project area is within Township 2 South, Range 2 East, Section 26, as depicted on the Altamont US Geological Survey 7.5 minute topographic quadrangle (1997). The proposed project will include construction of a 76-unit residential development on a 31.7-ac site of vacant grazing land in north Livermore.

We bring this project to the attention of the Native American Heritage Commission with the desire to obtain, from your office, pertinent information regarding prehistoric, historic and/or ethnographic land use and sites of Native American traditional or cultural value that might be known to exist within the project vicinity, as depicted in the Sacred Lands database or other files. We would also appreciate obtaining a list of interested Native American tribal entities or individuals for the project area. We have contacted the Northwest Information Center at Sonoma State University, Rohnert Park to review their files as part of the background research on the project.

We would appreciate a response, at your earliest convenience, should you have information relative to this request. Should you have any questions, I can be reached at (925) 253-9070.

Thank you again for your assistance.

Sincerely,

James Allen, Ph.D., RPA  
Principal  
Attachment
The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archaeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- Contact the appropriate regional archaeological information center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological information center.
- Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check: USGS 7.5 minute quadrangle name, township, range and section required.
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. Native American Contacts List attached.
- Lack of surface evidence of archaeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archaeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposal of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7080.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Kathy Sanchez
Program Analyst
(916) 653-4040

cc: State Clearinghouse
Native American Contact List
Alameda County
December 5, 2011

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024
arms@indiancanyon.org
831-637-4238

Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94062
amah_mutsun@yahoo.com
(650) 851-7747 - Home
(650) 851-7489 - Fax

Jakkie Kehl
720 North 2nd Street
Patterson, CA 95363
jakkie@bigvalley.net
(209) 892-1060

Ohlone/Costanoan

Don Hankins
P.O. Box 627
Forest Ranch, CA 95942
530-343-3489 - phone/fax

Katherine Erolinda Perez
PO Box 717
Lindon, CA 95236
canutes@verizon.net
(209) 887-3415

Ohlone/Costanoan
Northen Valley Yokuts
Bay Miwok

Aman/Mutsun Tribal Band
Joseph Monragon, Tribal Administrator
882 Bay view Avenue
Pacific Grove, CA 94062
831-372-9015
831-372-7078 - fax

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City, CA 94587
sacpcoctmo@msn.com
510-972-0645-home
209-688-4753-cell

Ohlone/Costanoan
Bay Miwok
Plain Miwok
Patwin

Amah/Mutsun Tribal Band
Melvin Ketchum III, Environmental Coordinator
7273 Rosanna Street
Gilroy, CA 95020
408-642-3220

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7850.5 of the Health and Safety Code, Section 8387.94 of the Public Resources Code and Section 686.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SIC# 201111.0045 Garavant Hills Project; Alameda County.
Native American Contact List
Alameda County
December 5, 2011

Muwekma Ohlone Indian Tribe of the SF-Bay Area
Rosemary Cambra, Chairperson
2574 Seaboard Avenue
San Jose    CA 95131
muwekma@muwekma.org
408-205-9714
510-581-5194

Amah/Mutsun Tribal Band
Jean-Marie Fayling
18350 Hunter Court
Redding    CA 96003
jmfgmc@sbcglobal.net
530-243-1633

The Ohlone Indian Tribe
Andrew Galvan
PO Box 3152
Fremont    CA 94539
chochenyo@AOL.com
(510) 882-0527 - Cell
(510) 687-9393 - Fax

Ohlone / Costanoan

Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7059.5 of the Health and Safety Code, Section 5097.34 of the Public Resources Code and Section 5097.36 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 201112048 Garavent Hills Project; Alameda County.
December 16, 2011

Ms. Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan
P.O. Box XXX
Hollister, CA 95024

RE: GARAVENTA HILLS PROJECT, LIVERMORE, ALAMEDA COUNTY, CA

Dear Ms. Sayers:

William Self Associates, Inc. (WSA) has been contracted to assess potential impacts to cultural resources as part of the Garaventa Hills Project, in Livermore, Alameda County, California. The project area is within Township 2 South, Range 2 East, Section 26, as depicted on the attached Altamont US Geological Survey 7.5 minute topographic quadrangle (1997). The proposed project will include construction of a 76-unit residential development on a 31.7-acre site of vacant grazing land in north Livermore.

We would appreciate receiving any comments you may have regarding cultural resources or sacred sites issues within the immediate project area. If you could provide your comments in writing to the address below, or call me, we will make sure the comments are provided to our client as part of this project.

We would appreciate a response, at your earliest convenience, should you have information relative to this request. Should you have any questions, I can be reached at (925) 253-9070.

Thank you again for your assistance.

Sincerely,

James Allan, Ph.D., RPA
Principal

Attachment
<table>
<thead>
<tr>
<th>Native American Contact</th>
<th>Date of Notification Letter</th>
<th>Response to Letter (Date)</th>
<th>Date of Phone Contact</th>
<th>Date of Follow-Up Phone Contact</th>
<th>Comments</th>
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<td>Ms. Jakki Kehl</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>No comments specific to Project area, but would like opportunity to comment on DEIR</td>
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<td>Ms. Rosemary Cambra</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Voicemail box full. Could not leave message.</td>
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<td>Chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
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<td>Mr. Andrew Galvan</td>
<td>12/16/11 (letter)</td>
<td>No response</td>
<td>01/09/12</td>
<td>01/12/12</td>
<td>Left voicemail</td>
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<tr>
<td>The Ohlone Indian Tribe</td>
<td>12/16/11 (email)</td>
<td>No response</td>
<td>01/09/12</td>
<td>01/12/12</td>
<td>Left voicemail</td>
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<tr>
<td>Ms. Katherine Erolinda Perez</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Left voicemail</td>
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<tr>
<td>Ms. Ramona Garibay</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>n/a</td>
<td>No comments</td>
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<tr>
<td>Representative, Trina Marine Ruano Family</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Left voicemail</td>
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<td>Ms. Irene Zwierlein</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Left voicemail</td>
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<td>Chairperson, Amah/Mutsun Tribal Band</td>
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<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
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<td>Ms. Ann Marie Sayers</td>
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<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Left voicemail</td>
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<td>Chairperson, Indian Canyon Mutsun Band of Costanoan</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
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<td>Left voicemail</td>
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<td>Mr. Don Hankins</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>n/a</td>
<td>No comments specific to Project area, but concerned about visibility from Brushy Peak, Vasco Caves and other sacred sites in the area.</td>
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<td>Mr. Joseph Mondragon</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>01/09/12</td>
<td>Left voicemail and message.</td>
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<td>Tribal Administrator, Amah/Mutsun Tribal Band</td>
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<td>No response</td>
<td>01/03/12</td>
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<td>Left voicemail</td>
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<td>Mr. Melvin Ketchum III</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
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<td>Environmental Coordinator, Amah/Mutsun Tribal Band</td>
<td>12/16/11</td>
<td>No response</td>
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<td>Ms. Jean-Marie Feyling</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>n/a</td>
<td>No comments</td>
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<td>Amah/Mutsun Tribal Band</td>
<td>12/16/11</td>
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<tr>
<td>Ms. Jean-Marie Feyling</td>
<td>12/16/11</td>
<td>No response</td>
<td>01/03/12</td>
<td>n/a</td>
<td>No comments</td>
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<td>Amah/Mutsun Tribal Band</td>
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<td>No response</td>
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</table>
Appendix B

Paleontological Resources Assessment Report
January 12, 2012

To: Matthew A. Russell, Ph.D., RPA
Project Manager
William Self Associates
Pacific Region Office
PO Box 219261-D
Avenida de Orinda
Orinda, CA 94563
Ph. 925-253-9070

From: James R. Allen, M. Sci., PG #8335
5300 Iron Horse Pkwy. #369
Dublin, CA 94568
Ph. 925-413-0054

RE: ASSESSMENT OF THE PALEONTOLOGICAL SENSITIVITY FOR THE PROPOSED GARAVANTA HILLS PROJECT LIVERMORE, CALIFORNIA

Dear Dr. Russell:

Per your request, I have conducted and prepared a paleontological resources assessment of the Garaventa Hills Project (Project), a 76-unit residential development on a 31.7-ac site of vacant grazing land in north Livermore, California (Figure 1). In brief, the proposed project site is underlain by the fossiliferous late Miocene, marine San Pablo Group sandstone bedrock known to contain important, non-renewable paleontological resources of extinct marine vertebrate and invertebrate fauna. In addition, there are Pleistocene deposits on site which overlie the San Pablo Group along angular unconformity. These deposits are known to contain significant non-renewable paleontological resources of: rare marine vertebrates, terrestrial vertebrates of mammoth, mastodon, sabre cat and camel to name just a few. The San Pablo Group bedrock and Pleistocene Deposits at the project are regarded as having a "High Potential" to contain significant fossils based on the Society of Vertebrate Paleontologists Guidelines (1995). Construction-related
excavation will impact potentially fossiliferous Pleistocene deposits and Miocene-age sandstone bedrock. It is recommended here that a Professional Geologist prepare a mitigation report outlining a paleontological monitoring plan and salvaging plan/program during any construction excavation and ground-disturbing activities for the project.

Please contact me with questions.

Sincerely,

James R. Allen, M.Sci., PG #8335
5300 Iron Horse Pkwy. #369
Dublin, CA 94568
Cell Ph. 925-413-0054
ASSESSMENT OF THE PALEONTOLOGICAL SENSITIVITY FOR THE PROPOSED GARAVANTA HILLS PROJECT LIVERMORE, CALIFORNIA.

Introduction
James R. Allen, M.Sci., PG #8335, has been contracted by William Self Associates, Inc. (WSA) to perform a paleontological resources assessment for the Garaventa Hills Project (Project), Livermore, California (Figure 1, 2). The project is a 76-unit residential development on a 31.7-ac site of vacant grazing land in north Livermore. The project will involve a ground-disturbing excavations and realignment of Altamont Creek.

Paleontological Records Search
This limited study included reviews of pertinent geological and paleontological literature & locality information at California State University, East Bay on June 9, 2012; United States Geological Survey on June 6, 2012 and at the University of California Berkeley on January 7, 2012.

Regulatory Framework
Fundamental protection for paleontological resources is established at the federal, state and local government level, through the regulations summarized in the paragraphs that follow. Specific approaches for implementing these protections are provided by implementing guidelines set by the Society of Vertebrate Paleontology.

The measures and methods outlined herein are designed to meet the requirements of the National Environmental Policy Act (NEPA), and the state law protecting fossils, the California Environmental Quality Act (CEQA), regarding impacts to paleontological resources and if implemented during construction of the Project, will ensure compliance. Proposed monitoring and mitigation methods are in part derived from the Society of Vertebrate Paleontology (SVP) standard guidelines (1995, 1996). These measures and
Source: USGS: Altamont 7.5-minute Topographic Quadrangle Map

Location Map of Project
Paleontological Assessment Study Area

Lamphier-Gregory Garaventa Hills Project
Livermore, CA

Figure 1
methods have been widely used in California and have proven to be successful in protecting and preserving significant paleontological resources while allowing for the timely completion of construction work. This paleontological assessment report prepared herein is designed to ensure compliance and meet the requirements of:

- The National Environmental Policy Act (NEPA) does not provide specific guidance regarding paleontological resources, but the NEPA requirement that federal agencies take all practicable measures to “preserve important historic, cultural, and natural aspects of our national heritage” (NEPA Section 101[b][4]) is interpreted as applying to paleontological materials.

- Destruction of a “unique paleontological resource or site or unique geologic feature” constitutes a significant impact under CEQA (CEQA Guidelines Appendix G). Appendix G provides a checklist of questions a lead agency should address. The question on the checklist with respect to paleontology is: "Would the project directly or indirectly destroy a unique paleontological resource?" The treatment of paleontological resources under CEQA generally requires an evaluation of resources in a project’s area of potential effect; an assessment of potential impacts on significant or unique resources; and the development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery or avoidance (or both).

- Several sections of the California Public Resources Code (PRC) are designed to offer protection to paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under state, county, city, district, or public authority jurisdiction or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.
Geologic Explanation:
Qhfp: Alluvial terrace deposits (Holocene; 8,000 years old- Recent)
Qpaf: Alluvial Fans and Fluvial Deposits (Pleistocene, 2.8 Million years to 8,000 years)
br: San Pablo Group marine sandstone (late Miocene, 12 Million years to 9 Million years old)

Source:
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<tr>
<th>EON</th>
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<th>PERIOD</th>
<th>EPOCH</th>
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USGS Time Scale from: http://3dparks.wr.usgs.gov/coloradoplateau/timescale.htm

Geologic Time Scale of Project Geology
Paleontological Assessment Study Area

Lamphier-Gregory Garaventa Hills Project
Livermore, CA

Figure 3
The Federal Antiquities Act of 1906 (16 United States Code [USC] 431–433) was enacted with the primary goal of protecting cultural resources in the United States. As such, it prohibits appropriation, excavation, injury, or destruction of “any historic or prehistoric ruin or monument, or any object of antiquity” located on lands owned or controlled by the federal government, without permission of the secretary of the federal department with jurisdiction. It also establishes criminal penalties, including fines or imprisonment, for these acts, and sets forth a permit requirement for collection of antiquities on federally owned lands. Neither the Antiquities Act itself nor its implementing regulations (43 Code of Federal Regulations [CFR] 3) specifically mentions paleontological resources. However, several federal agencies—including the National Park Service, U.S. Bureau of Land Management, and U.S. Department of Agriculture Forest Service (Forest Service)—have interpreted objects of antiquity as including fossils. Consequently, the Antiquities Act represents an early cornerstone for efforts to protect the nation’s paleontological resources.

The Archaeological and Paleontological Salvage Statute (23 USC 305) amended the Antiquities Act of 1906 via the following text: Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in that state in compliance with the Act entitled “An Act for the preservation of American Antiquities,” approved June 8, 1906 (PL 59-209; 16 USC 431-433), and State laws where applicable.

The Federal-Aid Highway Act of 1935 (20 USC 78) provides specific authority to use federal funds for salvage of paleontological sites impacted by highway projects.
Site Geology and Paleontology

The geology of the proposed Project site consists of the Miocene San Pablo Group exposed in the central portion of the Project and overlain by remnant Pleistocene deposits along the margins of the Project (Figures 2 and 3). Both sedimentary units were deposited in either a submerged, near-shore marine environment for the San Pablo Group and a fluvio-lacustrine system (rivers and lakes) for the Pleistocene Deposits. The San Pablo Group sandstone was deposited in a shallow marine sea that connected to the Pacific Ocean during the Miocene (~10-15 million years ago) and before Mt. Diablo/East Bay Hills had been uplifted. Later in time (from 2 – 10 million years ago), during slow tectonic uplift of the East Bay Hills, as strike-slip faulting propagated northward through this area and subduction-related tectonics ceased, a new terrestrial environment was created. The San Pablo sea rolled westward as streams and rivers began pouring from the newly uplifting East Bay Hills and Diablo Range area into paleo alluvial valleys and floodplains, ushering in a new paleoenvironment for which now extinct, latest Miocene to Pleistocene vertebrates, dominated the landscape. The geology and paleontology is briefly discussed below.

Pleistocene Deposits

Holocene deposits (Qhfp) of loosely consolidated sands and gravels are not regarded paleontologically significant because their age is too young. The deposits mapped as “Qpaf” on Figure 2 are described by Helley and Graymer (1994) as “Alluvial Fans and Fluvial Deposits and are Pleistocene in age (approximately 10,000 years to 2 Million years old; Figure 3). Helley and Graymer (1997) describe this unit as brown dense gravely and clayey sand or clayey gravel that fines upward to sandy clay. They locally contain fresh water mollusks and extinct late Pleistocene vertebrate fossils. I recently discovered mammoth remains in Qpaf deposits similar to that of the Project area. These consisted of tusks, skull and leg bones near Fallon Road, in east Dublin, California (see photographs below). Significant paleontological resources from this unit also include other Ice Age fossils such as plants (pines, sycamore, willow, oak, cattail), invertebrates (fresh water mussel, clam, snail), and vertebrates (sunfish, sucker, minnow, stickleback, salamander, bull frog, mallard, turkey, peeper frog, toad, turtle, lizard, snake, goose,
owls, shrew, mole, woodrat, ground squirrel, gopher, cottontail, sabercat, jaguar, wolf, coyote, fox, bear, badger; camel, antelope, deer, ox, peccary, mammoth, mastodon, giant ground sloth and horse (Savage, 1951)). This surficial deposit overlies the fossil-rich Briones Formation (Trask, 1922; Conduit, 1938; Hall, 1958).

Photograph of cross-section cut across Mammoth tusk, along the short axis in Pleistocene deposits, Dublin, California. Portion of skull bone located above the rock hammer.

Photograph of cross-section cut across Mammoth tusk, along the short axis in Pleistocene deposits, Dublin, California.
Example Pleistocene Mastodon fossil

Drawing shows a side view and a top view of a (Mammut americanum) typical upper third molar of an American mastodon.

Geologists and Paleontologists recovering Pleistocene fossil mammoth (Left) and mammoth tusk (Right) from the Irvington Formation near Saber Cat road in Fremont, CA.
Pleistocene fossil *Smilodon californicus* (saber tooth tiger) on left. Artist rendition on right.

**San Pablo Group**

The sedimentary formation mapped as “br” on Figure 2 is the ~10-15 million Year Old San Pablo Group and this formation is exposed on the hill within the Project limits. It underlies Pleistocene-age Qpaf deposits on the flanks of the hill and flat areas along the margins of the hill. The San Pablo Group consists of sandstone, siltstone, minor conglomerate and fossil shell breccia bedrock. The San Pablo Group contains a tuffaceous layer with a K/Ar age of 14.5±0.4 Ma (Lindquist and Morganthaler, 1991). Vertebrate paleontological ages coupled with the volcanic age date suggest an age range of ~10 to 15 million years ago for the timing of deposition of the Briones Formation.

*Desmostylus* fossil similar what was collected in the Briones Formation of the San Pablo Group in the Mission Peak area (Left). Artist rendition of *Desmostylus* during the Miocene.
Typical near-shore, marine, fossil shell-rich sandstone of the San Pablo Group.

**Standards of Significance**

The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources (Conformable Impact Mitigation Guidelines Committee 1995). The following is taken from Committee for Conformable Impact Mitigation Guidelines found at [http://www.vertpaleo.org/society/polstatconformimpactmigig.cfm](http://www.vertpaleo.org/society/polstatconformimpactmigig.cfm) and serves herein as guidelines to evaluate the paleontological sensitivity of the proposed site. Impacts on paleontological resources were evaluated following guidelines published by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). This analysis reflects professional judgment in light of information available from the published geologic and paleontologic literature and museum databases.
Vertebrate Fossils are significant nonrenewable paleontological resources that are afforded protection by federal, state and local environmental laws and guidelines. The potential for destruction or degradation by construction impacts to paleontological resources on public lands (federal, state, county, or municipal) and land selected for development under the jurisdiction of various governmental planning agencies is recognized. The sensitivity of rock units in which fossils occur may be divided into three operational categories:

I. HIGH POTENTIAL  Rock units from which vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a potential for containing significant nonrenewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. UNDETERMINED POTENTIAL. Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

III. LOW POTENTIAL. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils. Such units will be poorly represented by
specimens in institutional collections. These deposits generally will not require protection or salvage operations.

Table 1 below lists the geologic units known to contain sensitive paleontological material or units that have the potential to contain sensitive paleontological material. This table is intended to evaluate their paleontological sensitivity based on the SVP’s criteria. Impacts on paleontological resources were evaluated following guidelines published by the SVP (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). This analysis reflects professional judgment in light of information available from the published geologic and paleontological literature and museum databases. Construction excavation will impact potential fossiliferous surficial deposits and sandstone bedrock.

Table 1: Sedimentary Geology and Paleontology of the Project area.

<table>
<thead>
<tr>
<th>Geologic Unit*</th>
<th>Age</th>
<th>Fossil Content and Paleontological Sensitivity**</th>
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</thead>
<tbody>
<tr>
<td>Pleistocene Deposits (Qpaf)</td>
<td>10,000 years old to 2.8 Million years old</td>
<td>plants (pines, sycamore, willow, oak, cattail), invertebrates (fresh water mussel, clam, snail), and vertebrates (sunfish, sucker, minnow, stickleback, salamander, bull frog, mallard, turkey, peeper frog, toad, turtle, lizard, snake, goose, owls, shrew, mole, woodrat, ground squirrel, gopher, cottontail, sabercat, jaguar, wolf, coyote, fox, bear, badger; camel, antelope, deer, ox, peccary, mammoth, mastodon, giant ground sloth and horse (Savage, 1951)). This surficial deposit overlies the fossil-rich Briones Formation (Trask, 1922; Conduit, 1938; Hall, 1958).</td>
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<tr>
<td>San Pablo Group (br)</td>
<td>Late Miocene</td>
<td>Contains reported fossil localities of unique invertebrate and rare, unique and significant vertebrate fossils (Hall, 1956, 1958). Some reported fossils: gastropods (snails); pelecypods (clams), paleobotanical (plant materials) and micropaleontological specimens (small snails)</td>
</tr>
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</table>
Paleontological sensitivity was evaluated using the criteria of the Society of Vertebrate Paleontology (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995; Stirton, 1939; Savage, 1951 and Ham, 1952).

Impacts, Paleontological Sensitivity Evaluation and Recommendations

Construction excavation will impact the geologic formations and deposits with the Project. Fossils have been reported from localities in close proximity to the proposed project from the San Pablo Group, which underlies the proposed project and Pleistocene deposits. The proposed project area is classified here as "High Potential" to contain rock units from which vertebrate or significant invertebrate fossils have been recovered and are considered to have a potential for containing significant non-renewable fossiliferous resources.

Vertebrate content alone would indicate that these geologic formations and deposits should be considered highly sensitive for paleontological resources (e.g., Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). The excavations for the proposed project will disturb the underlying San Pablo Group bedrock and Pleistocene deposits, and there is a high probability that potentially fossiliferous sediments will be affected. Based on the limited literature and fossil locality reviews conducted, it is determined here that the proposed project may directly or indirectly destroy a unique paleontological resource due to the presence of the fossiliferous San Pablo Group bedrock and Pleistocene deposits at the proposed project. A mitigation plan outlining paleontological monitoring during construction activities and a paleontological salvage program should be developed by a Professional Geologist.

Limitations

The geologic and paleontological information and recommendations contained within are based on the geologic and paleontological resources available to James R. Allen at the time of this report. When plans for this project are more complete, James R. Allen should be notified in case this report requires modifications or addendums. If James R.
Allen is not retained to perform this function, James R. Allen cannot be responsible for the impact that a lack of final review might have on a successful project. The findings, recommendations, specifications, or professional advice contained herein have been made in general accordance with generally accepted professional paleontological practices in the local area at the time. No other warranties are implied or expressed.
References

Aarons, B.L., 1958, Geology of a portion of the Las Trampas Ridge and Hayward quadrangles, California: Berkeley, University of California, M.A. thesis.


File Report 97-97, includes plotfiles for 2 sheets, scale 1:100,000, database description pamphlet, 13 pp, geologic description and interpretation pamphlet, 8 pp.


Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee. 1995. Assessment and mitigation of adverse impacts to nonrenewable


