

**DETERMINATION OF ELIGIBILITY AND EFFECT
FOR THE JESS RANCH COMPOSTING
FACILITY PROJECT,
ALAMEDA COUNTY, CALIFORNIA**

Prepared by

Melinda A. Peak
Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762
(916) 939-2405

Prepared for

HDR
2365 Iron Point Road, Suite 300
Folsom, California 95630

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INTRODUCTION

Project Background

The owners of Jess Ranch (ranch), Joe and Connie Jess, together with Denali Water Solutions, LLC propose to design, build and operate the Jess Ranch Composting Facility (Project or Proposed Project; compost facility) in eastern Alameda County, California. The Proposed Project would be located within the 160-acre Jess Ranch property located south of Interstate 580 (I-580) at Grant Line Road (Figure 1). Zoning of the property is Large Parcel Agriculture, with a 160-acre minimum.

The owners have been operating the ranch since 1969 and became owners in 1973. Like much of the Altamont area, the 160-acre ranch has historically been used as a cattle grazing operation. The majority of the ranch is currently operated primarily as a cow-calf operation. The current primary use of the ranch is for cattle grazing and breeding. The ranch typically supports approximately 50 head of cattle year-round.

The owners have previously worked with the Natural Resources Conservation Service (NRCS) and the Alameda County Resource Conservation District (ACRCD), and have participated in the NRCS' Environmental Quality Incentives Program (EQIP). In 2007, the owners participated in the preparation of a Comprehensive Resource Management System Plan for the ranch, the Jess Ranch Conservation Plan. In addition, the owners hired private consultants to perform a biological site assessment of the ranch in May of 2005.

Due to the arid nature of this part of Alameda County, the owners have previously brought in biosolids to apply to the grassland. The application of the biosolids had a very positive impact on the quality and growth of the pasture grasses. However, biosolids applications have since been discontinued and will no longer occur at the site.

Due to its remote location and proper site management, there have been no odor complaints from neighbors recorded since the ranch began accepting biosolids for land application in 1992. Any odors that may have occurred at the site were quickly dissipated due to the frequent winds in the Altamont Pass area.

Overview of the Proposed Project

Composting is the controlled decomposition of organic materials, such as biosolids and green material by microorganisms. The result of this decomposition process is compost, a crumbly, earthy-smelling, soil-like material. Composting is one of several methods for treating biosolids to create a marketable product with commercial value and use. The end product of biosolids composting is usually a material (referred to as Class A compost) that can be applied as a soil conditioner and fertilizer to gardens, crops, and rangelands. Compost provides organic matter and nutrients (such as nitrogen and potassium) to the soil, and improves soil texture-- characteristics of a good soil amendment. The U.S. Environmental Protection Agency (EPA) and

the California Integrated Waste Management Board (CIWMB) have determined that Class A biosolids compost is safe to use and generally has a high degree of acceptability by the public.

The Proposed Project would receive and process organic materials, primarily greenwaste, foodwaste and biosolids, as defined below, but would also receive untreated scrap wood, natural fiber products, non-recyclable paper waste, and inert material, such as sediment, gypsum, wood ash, and clean construction debris. Non-hazardous liquid wastes may also be accepted as a substitute for the water that is added for efficient composting. The Proposed Project would utilize an aerated static pile technology, with either positive or negative aeration or a tunnel bioreactor process with a biofilter.

“Green Material” means any plant material that is separated at the point of generation, contains no greater than 1.0 percent of physical contaminants by weight, and meets the requirements of section 17868.5. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, natural fiber products, and construction and demolition wood waste. Green material does not include food material, biosolids, mixed solid waste, material processed from commingled collection, wood containing lead-based paint or wood preservative, mixed construction or mixed demolition debris. (CCR Title 14, Chapter 3.1, Article 1, Section 17852)

“Food Material” means any material that was acquired for animal or human consumption, is separated from the municipal solid waste stream, and that does not meet the definition of "agricultural material." Food material may include material from food facilities as defined in Health and Safety Code section 113785, grocery stores, institutional cafeterias (such as, prisons, schools and hospitals) or residential food scrap collection. (CCR Title 14, Chapter 3.1, Article 1, Section 17852)

“Biosolids” means solid, semisolid, or liquid residues generated during primary, secondary, or advanced treatment of domestic sanitary sewage through one or more controlled processes that reduce pathogens and attractiveness to vectors (flies, mosquitos, rodents). These processes include, among others, anaerobic digestion, aerobic digestion, and lime stabilization. The term “Biosolids” is related to the definition of sewage sludge found in Part 31, Water Resources Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; however biosolids are only that portion of sewage sludge that have undergone adequate treatment to permit their application to land.

As proposed, the Project would begin with a daily throughput of up to 500 tons per day (TPD) and increase up to a maximum of 1,000 TPD, receiving organic materials and producing compost-based soil amendments for agricultural, horticultural, erosion control and land reclamation uses. However, at this time it is uncertain if the facility would receive sufficient materials to actually reach the full build-out volume of 1,000 tons. The facility would process organic material utilizing an aerated static pile system (ASP), covered windrow system, tunnel bioreactor, an in-vessel system or a combination of these technologies.

Greenwaste, foodwaste and other organic feedstock materials would likely be delivered to the site by trucks from regional municipal solid waste collection transfer stations, landscapers, and

other sources. A number of potential sources of greenwaste materials exist within Alameda County and throughout the Bay Area. The operators are planning to negotiate long-term contracts with the routine delivery of sufficient organic material up to 1,000 TPD within the foreseeable future once the facility is permitted and fully operational.

Potential greenwaste sources include local cities, municipal waste transfer stations and landscapers. Foodwaste feedstock materials sources include the many restaurants and supermarkets throughout Alameda County and neighboring jurisdictions. It is anticipated the compost facility would receive approximately fifty percent greenwaste and ten percent, of the material in the form of food waste. Biosolids would likely make up approximately 40% of the feedstock processed at the site.

In addition to the processing of greenwaste, foodwaste, and biosolids, other organic material feedstocks such as wood waste, wood ash and straw would be processed into a high quality compost and soil amendment. Because these feedstocks contain a relatively high moisture content, the compost facility anticipates using a variety of dry bulking agents such as wood waste (from mill shops and cardboard recycling facilities), ground brush, rice hulls and straw. The physical characteristics of these materials greatly affect the quantities that need to be used.

Need for the Proposed Project

The Project is being proposed in response to a series of county and state mandates to increase solid waste diversion from landfills. Because compostable organic materials comprise a large portion of the waste stream, and because organics diversion is critical to achieving a countywide 75 percent landfill waste diversion goal, the Alameda County Waste Management Authority (ACWMA) and the Alameda County Source Reduction and Recycling Board have targeted organic materials for diversion from landfills and have policies and goals to develop composting capacity in Alameda County. The proposed project is consistent with goals of the ACWMA that has endorsed a policy to 1) to implement a public/private program to develop long-term and sustainable composting services for jurisdictions in Alameda County, and 2) the development of up to two composting facilities within Alameda County.

In 2003, the ACWMA adopted the Alameda County Source Reduction and Recycling Plan, Vision 2010: 75% and Beyond (Plan). The Plan identified specific programs, objectives, and strategies for the County to reach a 75 percent and beyond diversion rate, and served as a guiding document together with the Countywide Integrated Waste Management Plan (CoIWMP). The Plan indicated that 416,595 tons per year of compostable organic feedstock were projected to be generated within the County in the year 2010. The Plan also estimated that of the total County waste stream, yard waste represented 7 percent and other organics represented a total of 35.2 percent of the total waste stream. It also stated that by weight, food waste represented approximately 12 percent of the total waste generated in the County. It further stated that of the total waste in the County that is landfilled each year, approximately 184,717 tons (16 percent) is foodwaste which is the top material disposed. A total of 27 percent of material disposed is a combination of contaminated paper and greenwaste. The County's projected composting feedstock alone would generate approximately 1,335 tons per day. The Plan also states that to

reach the 75 percent diversion, targeting programs to divert food waste and contaminated paper and demolition and construction debris are especially important. The Plan called for an additional 110,830 tons of foodwaste to be diverted each year to meet the 75 percent goal.

The San Francisco Bay Area produces approximately 160,000 dry tons of biosolids annually. Currently biosolids are generally beneficially land applied during dry months and used as landfill cover during the rainy season. This Proposed Project would be the only site in the Bay Area that would use biosolids as a compost feedstock and create a Class A product.

Currently, a major portion of Alameda County's potential composting feedstock is being transported out of County to composting facilities such as the Recology Environmental/Grover facility located in Vernalis, Newby Island Landfill composting facility located in Milpitas, and the Redwood Landfill composting facility located in Marin County. Approximately 35 percent of the potential organic composting feedstock is currently disposed of in Alameda County landfills. If the Proposed Project reaches full build-out of 1,000 tons per day, it is anticipated that a significant portion of the feedstock would come from Alameda County. Organic feedstocks would also likely come from Contra Costa County, San Joaquin County and other Bay Area counties. The Proposed Project would accept incoming material approximately 312 days per year (6 days per week). Therefore, the County's projected composting feedstock alone could account for 1,335 tons per day of handling capacity at the compost facility (416,595 tons per year divided by 312 receiving days per year).

The location and design of the Proposed Project have been chosen to serve the anticipated market areas—primarily agricultural uses in the Central Valley —while providing sufficient isolation to minimize the potential for aesthetic concerns, odors and similar effects in residential areas. Transportation distances, both to organic material feedstock to the Project site and to transport composted material to market areas, are balanced with remoteness to minimize adverse effects. The Project site is located within 30 miles of major sources of organic materials, which is generally a lesser distance than organics are currently being transported for reuse.

Project Objectives

Under state law, cities and counties have been mandated to significantly reduce the volume of all solid waste taken to landfills. Specifically, the 1989 Integrated Waste Management Act (IWMA, Assembly Bill (AB) 939, mandated that jurisdictions reduce the volume of waste that is landfilled by 25 percent in 1995 and 50 percent by 2000 as compared to the 1990 baseline disposal levels. The Act also established a hierarchy of preferred waste management practices as follows:

Source reduction, to reduce the amount of waste generated at its source;

Recycling and composting, to divert solid waste from entering landfills; and

Environmentally safe landfill disposal or transformation (incineration of solid waste).

The Alameda County Waste Management Authority (ACWMA) has established a goal of promoting the siting of up to two composting facilities within Alameda County. This goal is established in the 2010 Vision Recycling Plan adopted by both the County Recycling Board and StopWaste. The purpose of in-county facilities is to minimize the transporting of organic materials out of the County and to provide a local site for the purchase of finished compost materials such as mulch. As described above, the majority of the organic waste material generated in the County is currently being landfilled, or is being transported to organics processing facilities outside of the County.

The primary objectives of the Proposed Project are as follows:

Assist jurisdictions in Alameda County in meeting the diversion goals of the 1989 California Integrated Waste Management Act (AB 939) and Alameda County's Measure D by diverting organic materials from landfills;

Assist other jurisdictions in other counties as appropriate in meeting their individual diversion goals;

Facilitate and secure a long-term, in-county, organics processing capacity available to government agencies to increase the diversion of greenwaste and foodwaste materials from the waste stream;

Satisfy local and regional market demands for compost-based amendments; and

Strive to assist in achieving the County's goal of a 75 percent waste reduction countywide by diverting from the waste stream up to 1,000 tons per day of organic materials, including bulking agents such as wood chips, paper products, saw dust and straw.

Project Setting and Location

Regional Project Setting

The Proposed Project is located in the eastern portion of unincorporated Alameda County, at the eastern edge of the San Francisco Bay Area. The Central Valley is immediately to the east. As such, the Project site is conveniently located close to the organic waste generating communities of the Bay Area and the potential agricultural soils amendment markets of the Central Valley. The nearest communities include the City of Livermore, approximately eight miles west of the Project site, and the City of Tracy, approximately eight miles east of the Project site. The California Aqueduct and the Central Valley Project Canal are located approximately 2.5 miles northeast of the Project site. The regional location of the Project site is shown on Figure 1 (Appendix 1).

Project Site

The Proposed Project would be implemented at the Jess Ranch property located east of the Altamont Pass, and would be operated by Denali Water Solutions, LLC. The Project site is bounded on the north by I-580; to the east, south and west by agricultural lands; and to the southwest by the Union Pacific Railroad right-of-way.

Access to the Project site is provided via I-580 and West Grant Line Road, and the I-580/Grant Line Road interchange is located approximately 0.5 mile from the Project site. At the terminus of West Grant Line Road is Jess Ranch Road. The former Southern Pacific Railroad right-of-way crosses through the Jess Ranch property from southeast to northwest for slightly more than 1,500 feet; this right-of-way is 200 feet in width and delineates the southern boundary of the Project site. A gravel road crosses the Project site from north to south, traversing a former biosolids storage area on the southern side. A second gravel/dirt road is located south of the storage area and runs along the southern Project site boundary (Figures 2, 3, and 4, Appendix 1).

Parcels adjacent to the Jess Ranch are both publicly owned and privately owned. Parcels to the west and south are owned by the Contra Costa Water District. The District purchased the property as mitigation for loss of endangered species habitat that resulted from the expansion of the Los Vaqueros Reservoir. The property has been placed in a conservation easement that protects the habitat and prevents any future development of the property. Cattle grazing does continue on the property as part of the management plan for the property. In addition, the adjacent property owned by the Contra Costa Water District contains a residence and a service center structure for wind turbine operators leased by Power Works. The Project site is currently accessed by a number of vehicles daily, for residential use, and to access the Power Works facility.

Other land uses in the general vicinity of the Proposed Project include wind farms, grazing lands and rural residences. The nearest school is the Mountain House School located approximately four miles to the north of the Project site on Mountain House Road.

The Project site is located on the eastern edge of the Altamont Hills, and drains into the San Joaquin Delta watershed by way of Mountain House Creek. The average elevation of the Project site is approximately 500 feet. The rainfall averages 12-14 inches per year, with very high variation. The rangeland ecosystem is predominantly annual grassland.

Seasonal drainages traverse the Project site, carrying water primarily during the rainy season, and drying out during the summer and fall. Perennial vegetation primarily consists of grasses and forbs. The Project site does not have any woody vegetation, typical for the Altamont Hills area. The Project site is located within California's Altamont Pass Wind Resource Area, and at one time included wind-generating turbines on much of its acreage. The wind turbines are no longer in operation and the owners have removed remnant structures.

Cultural Resources

The proposed project will require Clean Water Act (CWA) permitting from the United States Army Corps of Engineers, and the applicant will participate as a consulting party to assist the federal agency in demonstrating compliance with Section 106 of the NHPA (16 U.S.C. 470f; regulations codified at 36 CFR Section 800).

The Project site is located in portions of sections 24 and 25, Township 2 South Range 3 East, and sections 19 and 30, Township 2 South, Range 4 East, mapped on the Midway USGS topographic quadrangle (Figure 5 and 6, Appendix 1).

Melinda A. Peak, senior historian and archeologist with Peak & Associates, Inc. served as principal investigator for the study with archeologist Michael Lawson completing the field survey.

REGULATORY CONTEXT

The Section 106 review process is implemented using a five step procedure: 1) identification and evaluation of historic properties; 2) assessment of the effects of the undertaking on properties that are eligible for the National Register; 3) consultation with the State Historic Preservation Office (SHPO) and other agencies for the development of a memorandum of agreement (MOA) that addresses the treatment of historic properties; 4) receipt of Advisory Council on Historic Preservation comments on the MOA or results of consultation; and 5) the project implementation according to the conditions of the MOA.

The Section 106 compliance process may not consist of all the steps above, depending on the situation. For example, if identification and evaluation result in the documented conclusion that no properties included in or eligible for inclusion are present, the process ends with the identification and evaluation step.

FRAMEWORK FOR EVALUATION

Decisions regarding management of cultural resources hinge on determinations of their significance (36 CFR 60.2). As part of this decision-making process the National Park Service has identified components which must be considered in the evaluation process, including:

- o criteria for significance;
- o historic context; and
- o integrity.

Criteria for Significance

Significance of cultural resources is measured against the National Register criteria for evaluation:

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

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Historic Context

The historic context is a narrative statement “that groups information about a series of historic properties based on a shared theme, specific time period, and geographical area.” To evaluate resources in accordance with federal guidelines, these sites must be examined to determine whether they are examples of a defined “property type.” The property type is a “grouping of individual properties based on shared physical or associative characteristics.” Through this evaluation, each site is viewed as a representative of a class of similar properties rather than as a unique phenomenon.

A well-developed historical context helps determine the association between property types and broad patterns of American history. Once this linkage is established, each resource's potential to address specific research issues can be explicated.

Integrity

For a property to be eligible for listing in the National Register it must meet one of the criteria for significance (36 CFR 60.4 [a, b, c, or d]) and retain integrity. Integrity is defined as “the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period.”

The following discussion is derived from National Register Bulletin 15 (“How to Apply the National Register Criteria for Evaluation”).

Within the concept of integrity, there are seven aspects or qualities that define integrity in various combinations. The seven aspects are: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a property will possess several or usually most of these aspects. The retention of specific aspects is necessary for a property to convey this significance.

Determining which of the seven aspects are important involves knowing why, where and when the property is significant.

The prescribed steps in assessing integrity are as follows:

- define the essential physical features that must be present for a property to represent its significance;
- determine whether the essential physical features are visible enough to convey their significance;
- determine whether the property needs to be compared with similar properties; and,
- determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present.

Ultimately, the question of integrity is answered by whether or not the property retains the identity for which it is significant.

All properties change over time. It is not necessary for a property to retain all its historic physical features or characteristics. However, the property must retain the essential physical features that enable it to convey its historic identity. The essential physical features are those features that define why a property is significant.

A property's historic significance depends on certain aspects of integrity. Determining which of the aspects is most important to a particular property requires an understanding of the property's significance and its essential physical features. For example, a property's historic significance can be related to its association with an important event, historical pattern or person. A property that is significant for its historic association is eligible for listing if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or person.

A property important for association with an event, historical pattern, or person ideally might retain some features of all seven aspects of integrity. Integrity of design and workmanship, however, might not be as important to the significance, and would not be relevant if the property were an archeological site. A basic integrity test for a property associated with an important event or person is whether a historical contemporary would recognize the property as it exists today. For

archeological sites that are eligible under criteria A and B, the seven aspects of integrity can be applied in much the same way as they are to buildings, structures, or objects.

In sum, the assessment of a resource's National Register eligibility hinges on meeting two conditions:

- o the site must possess the potential to be eligible for listing in the National Register under one of the evaluation criteria either individually or as a contributing element of a district based on the historic context that is established; and
- o the site must possess sufficient integrity, i.e. it must retain the qualities that make it eligible for the National Register.

For the National Register, “a district possesses a significant concentration, linkage, or continuity of ... objects united historically or aesthetically by plan or physical development.” The identity of a district derives from the relationship of its resources, which can be an arrangement of functionally related properties.

California Register of Historical Resources

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource, which is defined as any site which:

- (A.) Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and
- (B.) Meets any of the following criteria:
 - 1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 - 2. Is associated with the lives of persons important in our past;
 - 3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 - 4. Has yielded, or may be likely to yield, information important in prehistory or history.

CULTURAL SETTING

Archeology

Early archeological work in the Bay Area concentrated on shell mounds around the shores of San Francisco Bay and San Pablo Bay. By the time archeological interest began to be directed toward the interior valleys, early urbanization and even earlier agricultural use of the land had destroyed or seriously altered much of the archeological record. It is only in relatively recent years that techniques of archeological analysis and the volume of excavation work done in the area, largely as a result of environmental laws, have allowed a synthesis of regional prehistory.

Major archeological projects by the Corps of Engineers (Walnut Creek area), the Department of Water Resources (Los Vaqueros Reservoir area) and others have greatly expanded our knowledge of the archeology of the East Bay interior. This has led to a fairly detailed description of the archeological sequences of coastal and most of interior Contra Costa and Alameda counties.

The early phases of prehistory, before about 4000 B.C., are not very well represented in the Bay Region, probably due in part to fluctuations in mean sea level. By that date the Bay Area was occupied by a relatively sparse population that did not make efficient use of the marine resources available in the area. In interior Contra Costa County, the earliest dated component is Stratum C at the Stone Valley site, CA-CCO-308, where a radiocarbon date of 2500 ± 400 B.C. (UCLA 259) was associated with flexed burials and artifacts that reflected both the later cultures of the Bay Area (the Berkeley Pattern) and early cultures of the Central Valley (the Windmill Pattern). The excavator concluded that the component, along with bayshore sites of similar time depth, represented very early Berkeley Pattern and that this either derived from Windmill or was heavily influenced by contemporaneous Windmill people. Others (c.f. Banks et al. 1984) considered CCO-308 to represent very late Windmill Pattern, Stone Valley Aspect. As more radiocarbon dates became available, Fredrickson's view seemed more likely, since the earliest dated Windmill Component in the Central Valley was about 2450 B.C. at the Blossom Site in San Joaquin County.

Over the long time span when Berkeley Pattern cultures occupied the Bay Area (the pattern lasts until about A.D. 500) there was a gradual elaboration of material culture along with local and regional variations. The main characteristics of the material culture, however, remained essentially unchanged over this time span, which is why it can be described as a Pattern. These characteristics include the use of primarily non-stemmed projectile points with the dart and atlatl (throwing board), the predominance of grinding implements over hunting implements and the predominance of the cobble pestle with minimally shaped mortar over other grinding implements. As compared to the Windmill Pattern, the polished stone industry is minimal but, over time, the industry in bone becomes much more elaborate. The greater density and depth of sites suggests a higher population for Berkeley Pattern. Long range trade relationships, on the other hand, do not appear to be very well established. There are relatively fewer trade goods and these almost always arrive as finished artifacts rather than raw material. The mortuary complex is characterized by flexed burials within the village and few, if any, grave goods (Fredrickson 1973).

Over time, Berkeley Pattern sites become more numerous in the Bay Area and the material culture becomes more elaborate, appearing to reflect a relatively mobile population moving into the area and then becoming sedentary and developing a more elaborate culture. Using radiocarbon dates for initial occupation of Berkeley Pattern sites, Moratto (1984:278-281) sees a movement of Utian people from the Delta to interior Contra Costa County then to the East Bay and finally to the coast, spreading north into the San Francisco peninsula and south to the Monterey Bay region. A similar expansion is also seen on the north side of San Pablo Bay and extending finally to the Bodega Bay vicinity and the Napa Valley. If this view is correct, by the end of Berkeley Pattern times Utian speakers occupied essentially the same territory that they controlled at the time the Spanish arrived more than a thousand years later.

King (1974) has proposed a mechanism that may account for the Utian expansion. Initial settlement in an area would have been at a location with a maximum of resource zones within easy reach of the population, typically, a bay-side or marsh location near a freshwater stream. As the population of this settlement grew, smaller settlements in less ideal ecological settings would be established. As the population approached the carrying capacity of the environment, given the technology available to exploit the environment, pressure would grow for more formal, non-egalitarian social systems to organize the population for more efficient resource exploitation.

The final result of the type of development hypothesized by King can take several forms, such as: a stagnant society that has reached an equilibrium with the environmental carrying capacity that does not allow for growth or substantial change, a collapse and reordering of the mature social pattern, or introduction of new technologies or social systems that allow for a different and more efficient pattern of resource use. In the Bay Area the latter solution was found, resulting in the Augustine Pattern.

The Augustine Pattern in the Bay Area develops out of the Berkeley Pattern with no evidence of movement of people into the area. Socially, trends observed in the later Berkeley Pattern continue and are intensified. These trends include development of status distinctions based on wealth, emergence of group-oriented religions (as opposed to individualistic shamanism), greater complexity of exchange systems to equalize access to resources and regularization of trade relationships between different populations (Fredrickson 1974). Archeologically, the transition to the Augustine Pattern is marked by the introduction of the bow and arrow, resulting in a sudden change in projectile point styles at about A.D. 500. The greater complexity of the ordering of society continues through this period until interrupted by the arrival of the Spanish.

Ethnography

The Native Americans who occupied much of the San Francisco Bay area were known to early ethnographers as Costanoan. The designation "Costanoan" derives from the Spanish term for coastal people and was not used by the Indian people. Today, most of them prefer to be called Ohlone, after an important village in the San Francisco area.

Ancestors of the Ohlone people moved into the San Francisco and Monterey Bay areas from the Delta of the San Joaquin and Sacramento rivers about A.D. 500. The Ohlone territory extended

from the Carquinez Strait in the northeast to just south of Chalome Creek in the southeast and from San Francisco to the Sur River along the Coast. This vast territory was broken into eight different language based zones. These eight branches of the Ohlone language family were separate languages, not dialects.

The group that inhabited the project vicinity were the *Ssaoam* tribelet of the Ohlone according to Milliken (1996:11-20). This little known group held the far northeastern portion of Costanoan territory and were bordered by Coast Miwok and Yokuts speakers as well as other Ohlone tribelets.

The Ohlone preferred to situate their permanent villages on high ground above seasonal marshes that were inundated by highwater for a few months of the year. Access to fresh drinking water was a criterium for selecting a village location. The tribelet was the basic unit of Ohlone political organization. Territorial boundaries of tribelets were defined by physiographic features. Tribelet chiefs might be either men or women. The office was inherited patrilineally, usually passing from father to son. When there were no male heirs, the position went to the man's sister or daughter. Accession to the office of chief required approval of the community. The chief was responsible for feeding visitors, providing for the impoverished, directing ceremonial activities, caring for captive grizzly bears and coyote, and directing hunting, fishing, gathering, and warfare expeditions. In all these matters the chief acted as the leader of a council of elders. The chief and council served mainly as advisors to the community (Levy 1978:487).

Ohlone had mixed relations with various peoples. Wars were waged both among the various Ohlone tribelets and with Esselen, Salinan, and Northern Valley Yokuts. At the same time, however, they traded with the Plains Miwok, Sierra Miwok, and Yokuts. They augmented the wealth of locally-available resources by trading with the Miwok and Yokuts. The Ohlone supplied mussels, abalone shells, salt, and dried abalone to the Yokuts, bows to the Plains Miwok, and olivella shells to the Sierra Miwok. In return, they received piñon nuts from the Yokuts and probably clam shell disk beads from the Miwok (Levy 1978:488-489, 493).

The Ohlones followed a seasonal round of subsistence activities, gathering plant and animal foods and materials for baskets and other manufactures. They insured a sustained yield of plant and animal foods by careful management of the land. Large mammals consumed by the Ohlones included black-tailed deer, Roosevelt elk, antelope, grizzly bear, mountain lion, sea lion, and whale. Other mammals eaten included dog, wildcat, skunk, raccoon, brush rabbit, cottontail, jackrabbit, tree squirrel, ground squirrel, woodrat, mouse, and mole. Some of the types of fowl they ate include the Canadian goose, snow goose, pintail mallard, and the mourning dove. In addition to animals, the Ohlones also ate seeds including acorns and buckeye, and berries including blackberries, strawberries, and wild grapes among others (Levy 1978:491).

Religion and ceremony played important roles in life and death. Ohlones observed rituals at important life events such as birth, puberty, and death. Treatment of the dead varied, with northern Ohlone groups, including the *Karkin*, reportedly cremating their dead except when there were no kinsman to gather wood for a funeral pyre, in which case the corpse was buried (Kroeber 1925:469; Levy 1978:490).

Shamans controlled the weather and could cause rain to start or stop. They cured disease by cutting the skin of the patient, sucking out the disease objects and exhibiting them to onlookers. Shamans also used herbs in curing disease and conducted performances to insure good crops of acorns, an abundance of fish, or the stranding of whales (Levy 1978:490).

Spanish explorers of coastal California between 1767 and 1776 described the Ohlones living a traditional existence. Between 1770 and 1797, the Franciscans established seven missions in Ohlone territory and effectively changed the Indian way of life. Unwilling recruits to the missions resisted control by Franciscans. In 1793, a runaway neophyte named Charquin began a three-year struggle during which tribes in the northeast Bay Area engaged in sporadic warfare with the Spanish. The Ohlones also mounted resistance against Mission San Jose in 1800 (Castillo 1978:103). Levy (1978:486) reports that “mission baptismal records demonstrate that the last Ohlone tribelets living an aboriginal existence had disappeared by 1810,” and that by 1832 the Ohlone population had decreased to one-fifth or less than its pre-contact size.

After the Mexican government secularized the missions (between 1834 and 1836), some Ohlones returned to traditional religious and subsistence practices while others worked on Mexican ranchos. Former mission residents formed multi-tribal Indian communities in Pleasanton and other locations within Ohlone territory. Although the Ohlone languages were probably extinct by 1935, it has been estimated that more than 200 persons of Ohlone descent were living in 1973 (Levy 1978:487). In addition, there is an on-going program among modern Ohlone to revive their languages to the extent possible.

Historic Context

The lands of the Project site are still in use for the same purpose as they have since the earliest non-Native occupancy of the region: cattle grazing. To the south, the missions ran herds of cattle in the grassy valley and surrounding hills.

The various maps available show little development ever in this region. Most of the Project site was held in large tracts by various landowners, who sold to adjacent owners at different points in time. The 1857 General Land Office plats, Official County maps and other maps dating to 1874, 1878, 1880, 1889, 1900, 1907, 1914 and 1917 have been reviewed, with each showing section 25, containing the major portion of the Project site, as a 640 acre single owner holding. The 1880 agricultural schedule for the federal census for Murray Township indicates that most landowners had at least 800 acres of land, with most holding 3,000-5,000 acres. No buildings or structures are indicated to exist within the Project site.

As the grasses died back in the spring and summer months, cattle apparently were taken to other locations, such as to Delta islands. The cattle would have been brought back to the home ranges after the rainy season began and grass re-grew for grazing (McGlinchey diary).

An early branch line of the Central Pacific Railroad crosses section 25 to the south of the Project site, completed in 1869. The line was the route from Sacramento to Niles. This railroad later was

taken over by the Southern Pacific Railroad.

The community closest to the Project site is the small village of Mountain House in Alameda County. The Elk Horn post office, which operated from 1852 to 1853, was reported to be located in this small community (Frickstad 1955).

RESEARCH

A record search was conducted for the project area at the Northwest Information Center of the California Historical Resources Information System on February 1, 2016 (RS#15-0976; Appendix 2). The NWIC reported that the major portion of the Project area had been completely surveyed in 1981 by Miley Holman, with only a small acreage in the southeast corner of section 24 not covered by any previous study. Holman did not find any prehistoric or historic period resources in the Project site. The railroad line to the south of the Project has been formally recorded as P-01-001783. Crossing the Project area is another recorded resource: the Pittsburg-Tesla transmission line (P-01-010947), constructed in 1959-1960. This resource is not eligible for the National Register of Historic Places nor for the California Register of Historical Resources.

SCWA completed a records search and paleontological study for a portion of the Project site; the report was not filed with the NWIC.

NATIVE AMERICAN CONSULTATION

The Native American Heritage Commission (NAHC) was contacted by Peak & Associates to request a review of their sacred land files and to provide the names of individuals and/or organizations in the area that may have knowledge concerning cultural resources in the project vicinity (Appendix 3).

The NAHC replied February 4, 2016. Letters were sent to all groups requested information or concerns regarding the project on February 6, 2016, including: Irene Zweirlein, Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista; Tony Cerda, Chairperson, Coastanoan Rumsen Carmel Tribe; Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Coastanoan; Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe of SF Bay Area; and Andrew Galvan. The correspondence to Tony Cerda, Chairperson, Coastanoan Rumsen Carmel Tribe was returned as “undeliverable.” No replies have been received to date.

Any information provided by the Native American groups will be forwarded to the review agencies.

FIELD ASSESSMENT

Michael Lawson, an experienced archeological field archeologist, completed the survey of the Project area, open foothill terrain adjacent to I-205 on January 30, 2016. The Project site is a mostly in natural state, with the exception of a few modern industrial and agricultural buildings, cattle feeders, gravel roads, stored earth moving equipment, and an abandoned house trailer.

The south end has been leveled and has at least two reservoirs excavated next to the flat area, near the equipment and trailer. The north end of the property has been leveled to house an industrial building. A 30' line of chicken sheds sits next to the access road close I-205. The terrain is similar throughout project area with dark brown sandy loam soil, occasional stone content, and thick grass and weed growth. Grazing cattle and a large ground squirrel population have disturbed the soil enough to provide fair to good visibility in the thickest vegetation areas.

In the center and north of the project area are rock outcroppings with small ledges, flat spots, and cobble scatters. All of these formations were carefully scrutinized for artistic, food processing, quarrying or any other sort of modification with negative results.

Two small seasonal drainages run through the parcel, not deep enough to expose stone for human use.

Pedestrian survey employed 10 to 15 meter wide transects in sloped areas, and more closely spaced along drainages, in flat areas or near rock outcroppings. The survey confirmed the previous negative survey results for the property: there are no prehistoric or historic period resources in the Project area.

EFFECTS OF THE PROPOSED PROJECT

As a result of the identification and evaluation efforts, an agency official may find that there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in Section 800.16 (i).

If the agency official finds there are historic properties that may be affected by the undertaking, the agency official shall apply the criteria of adverse effect. "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (Section 800.5 (a)).

There are three possible findings:

- **Finding of no historic properties affected:** There is no effect of any kind on the historic

properties.

- **Finding of no adverse effect:** There could be an effect, but the effect would not be harmful to the characteristics that qualify the property for inclusion in the National Register; or
- **Adverse effect:** There could be an effect, and that effect could diminish the integrity of such characteristics.

There were no historic properties recorded within the Project area. With regard to Section 106 of the NHPA, it is recommended that the agency seek concurrence from the California SHPO with a finding of “no historic properties affected” per § 800.4(d) (1).

For the purposes of CEQA, we conclude that there will be no impact to important cultural resources from implementation of the project.

PALEONTOLOGICAL STUDY

A study designed to determine if paleontological remains was completed by C. Bruce Hanson in February 2016, and is appended as Appendix 4. The study recommended that monitoring be conducted at the site during excavation activities.

REFERENCES

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

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APPENDIX 1

Project Figures

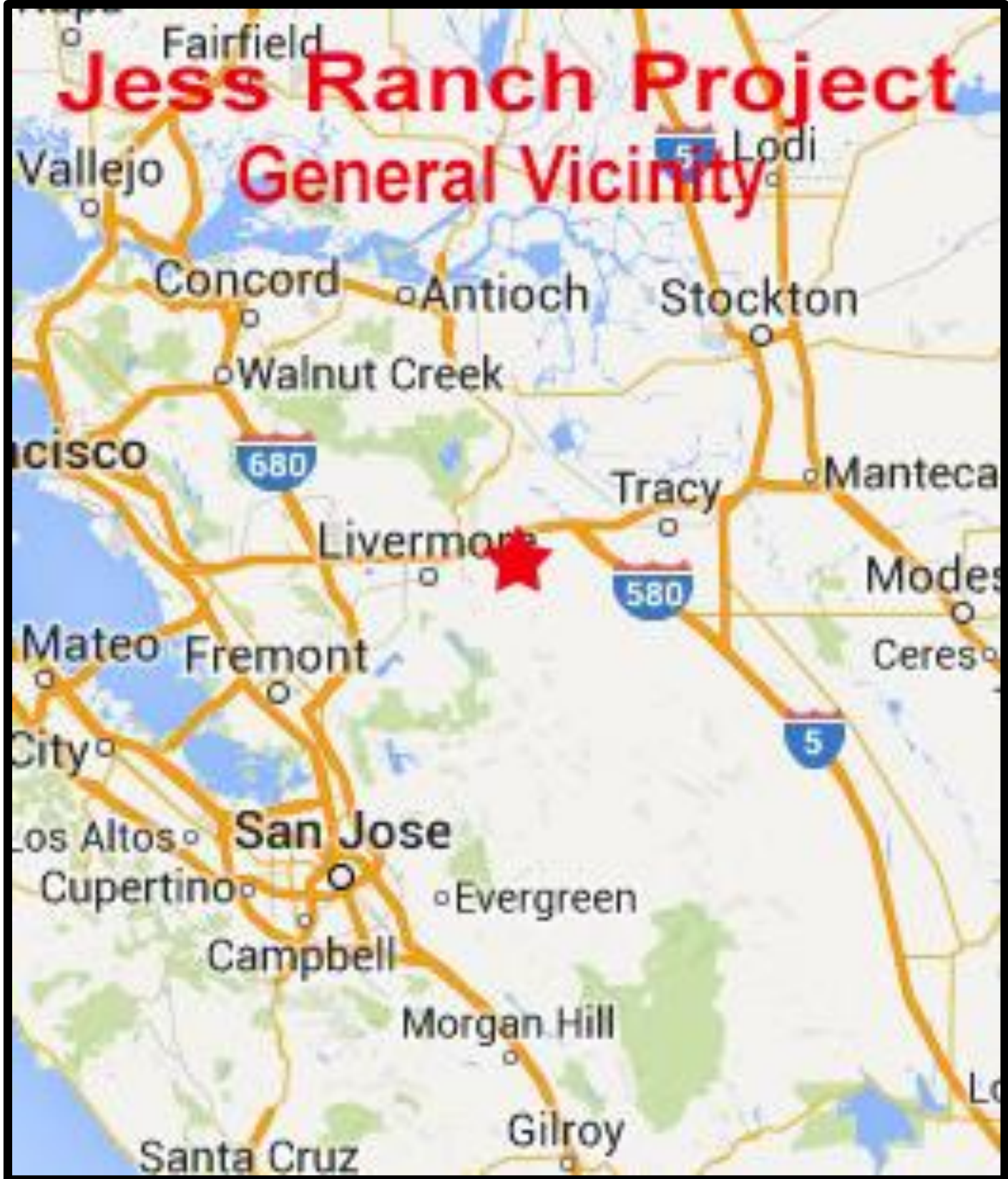
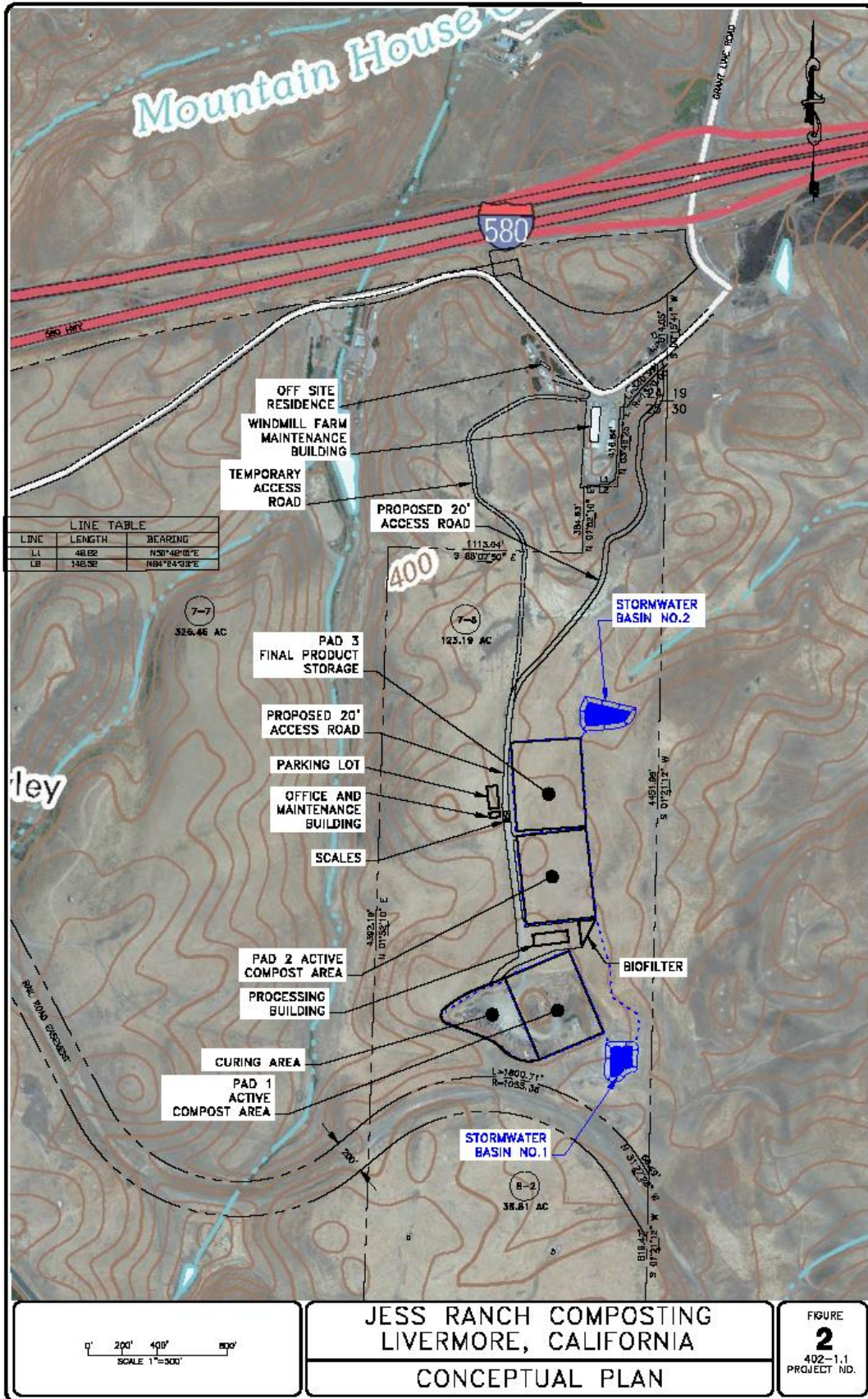
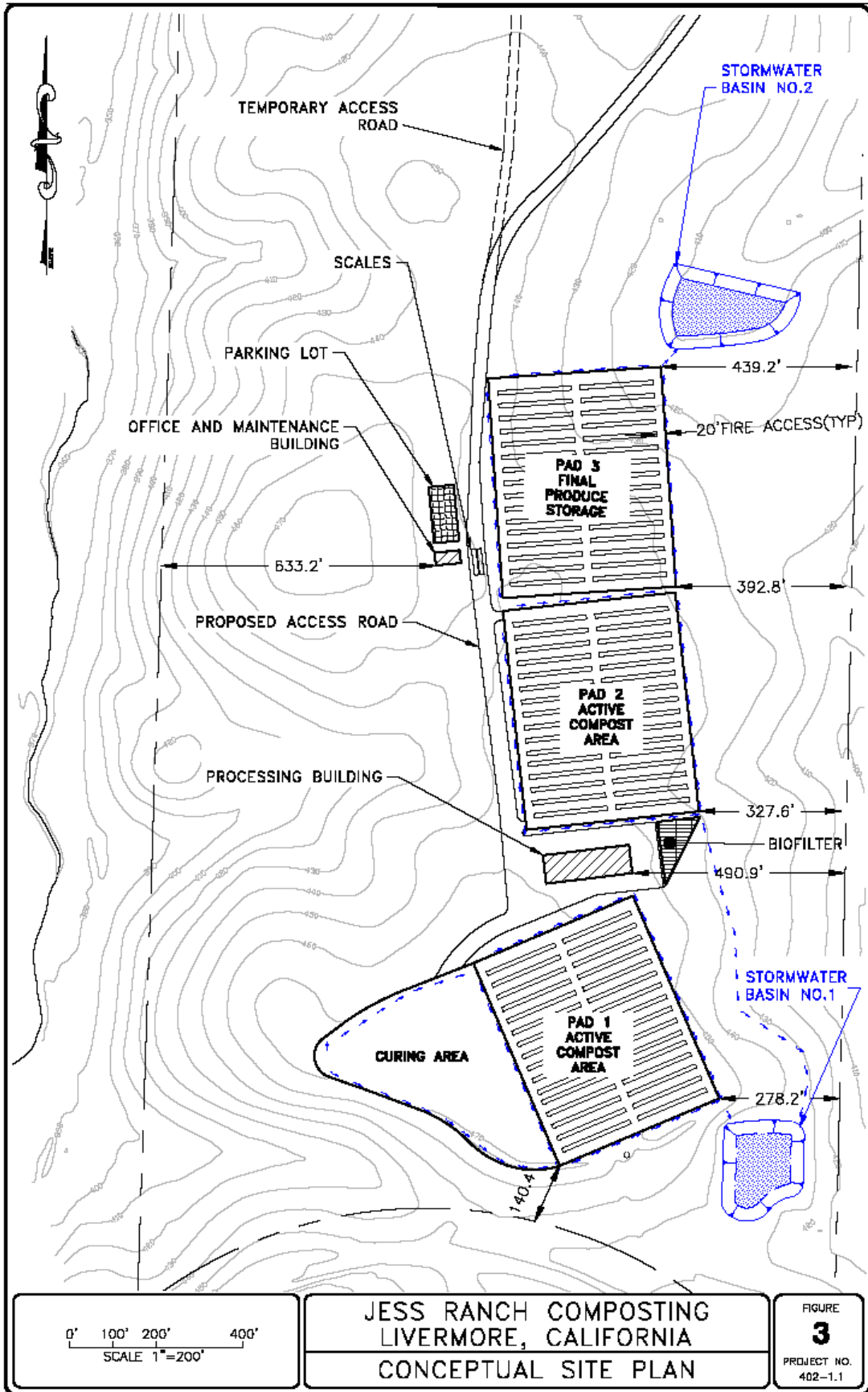


Figure 1





Jess Ranch Project Area of Potential Effects



Figure 4

Jess Ranch Project

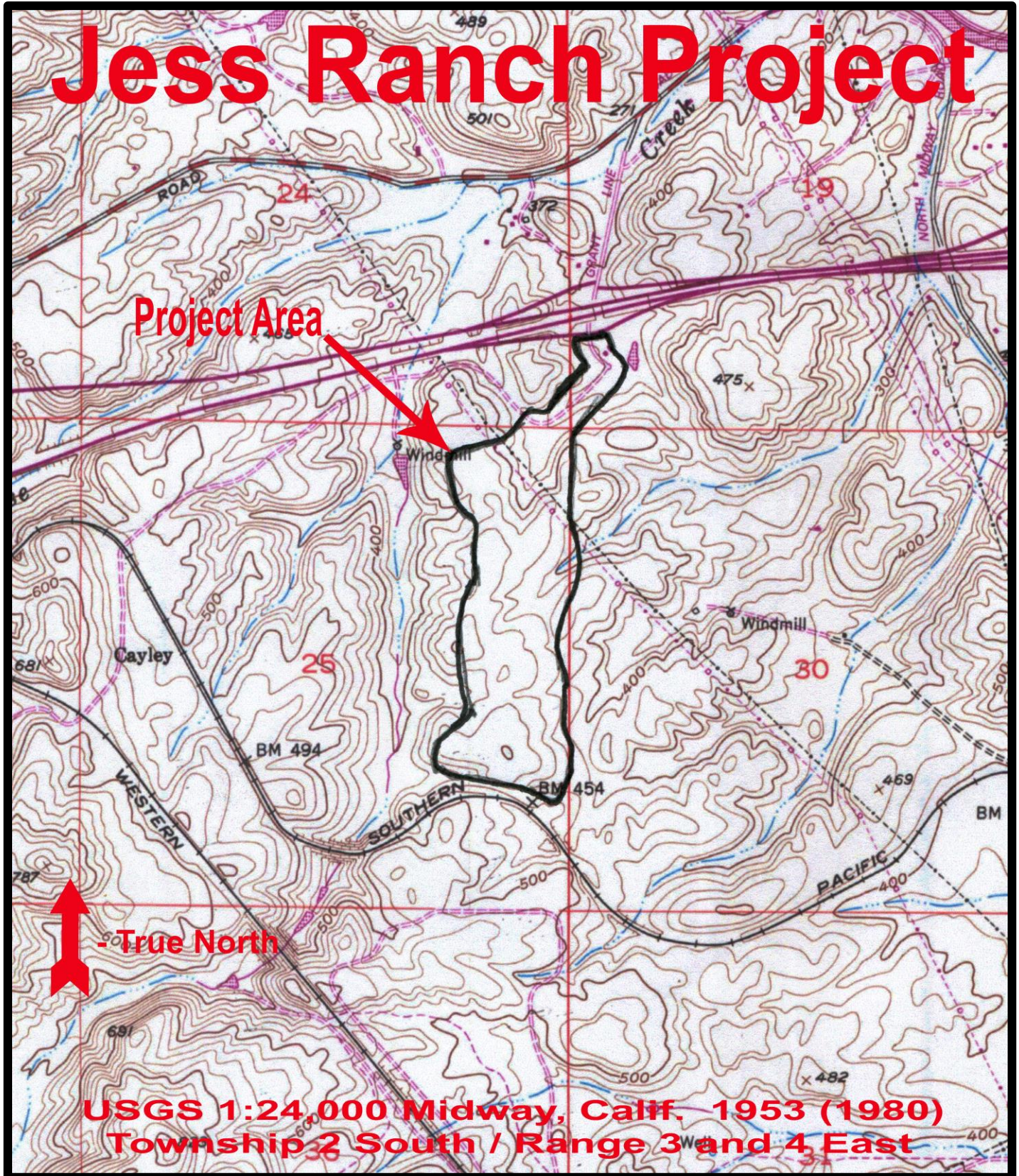


Figure 5

Jess Ranch Project Survey Coverage

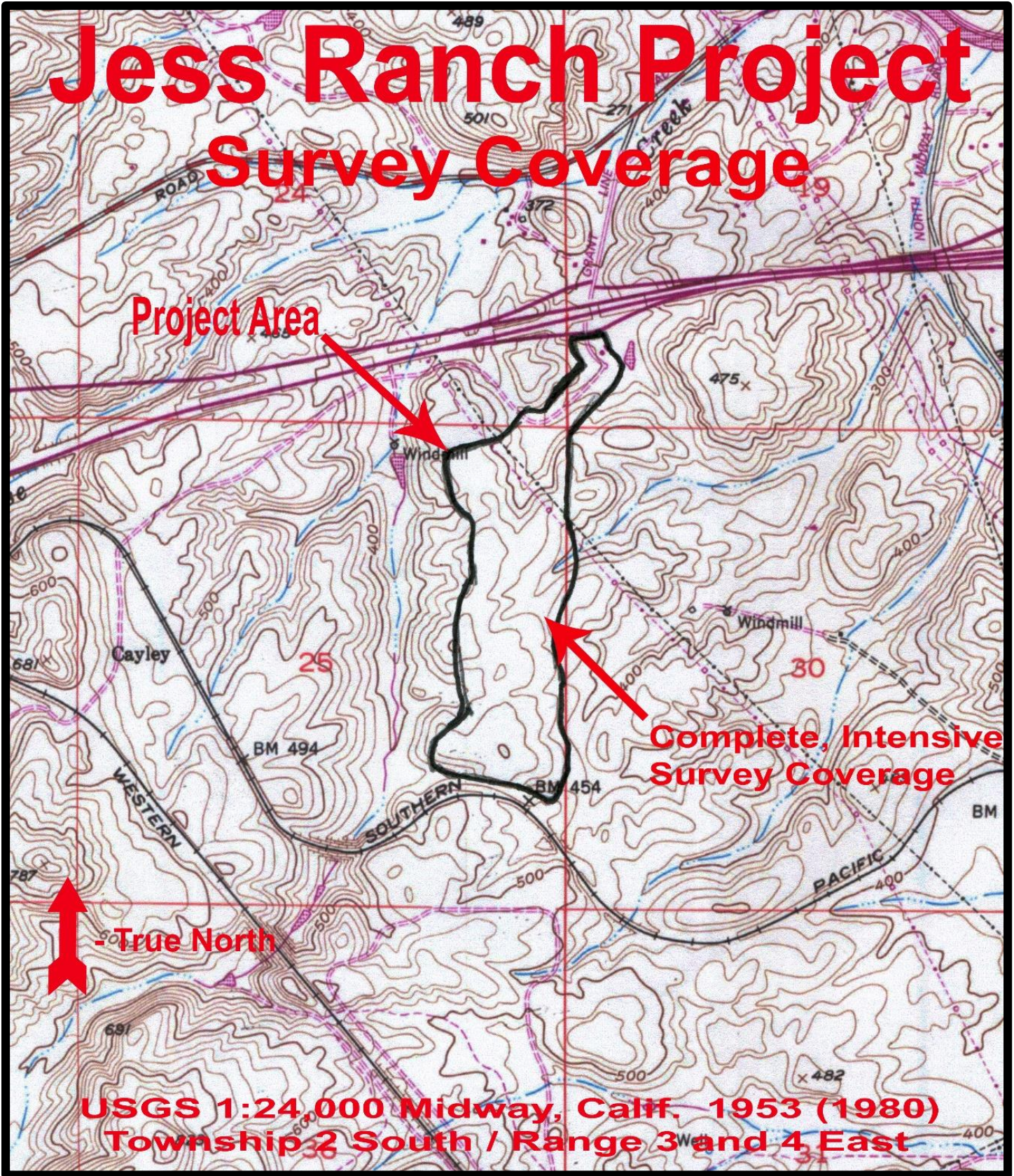


Figure 6

APPENDIX 2

NWIC Record Search

CALIFORNIA
HISTORICAL
RESOURCES
INFORMATION
SYSTEM



ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE

HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO

SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
<http://www.sonoma.edu/nwic>

2/1/2016

NWIC File No.: 15-0976

Neal Neuenschwander
Peak & Associates, Inc.
3161 Godman Avenue
Chico, CA 95973

Re: Jess Ranch Project

The Northwest Information Center received your record search request for the project area referenced above, located on the Midway USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a .25 mi. radius:

Resources within project area:	P-01-010947
Resources within .25 mi. radius:	P-01-001783 (Southern Pacific Railroad- +sent partial PDF [13pgs] including only Supplements within PA or buffer [total resource 185pgs])
Reports within project area:	S-2623, 5657, 7071, 11826, 43279
Reports within .25 mi. radius:	S-2865, 5862
Other Reports within records search radius:	Included is a list of the 11 "Other Reports" within or encompassing your project area. These reports are classified as Other Reports; reports with little or no field work or missing maps. The electronic maps do not depict study areas for these reports, however a list of these reports has been provided. In addition, you have not been charged any fees associated with these studies.

- Resource Database Printout (list):** enclosed not requested nothing listed
- Resource Database Printout (details):** enclosed not requested nothing listed
- Resource Digital Database Records:** enclosed not requested nothing listed
- Report Database Printout (list):** enclosed not requested nothing listed
- Report Database Printout (details):** enclosed not requested nothing listed
- Report Digital Database Records:** enclosed not requested nothing listed
- Resource Record Copies:** enclosed not requested nothing listed
- Report Copies:** enclosed not requested nothing listed
- OHP Historic Properties Directory:** enclosed not requested nothing listed

<u>Archaeological Determinations of Eligibility:</u>	<input checked="" type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>CA Inventory of Historic Resources (1976):</u>	<input type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input checked="" type="checkbox"/> nothing listed
<u>Caltrans Bridge Survey:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Ethnographic Information:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Historical Literature:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Historical Maps:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Local Inventories:</u>	<input type="checkbox"/> enclosed	<input type="checkbox"/> not requested	<input checked="" type="checkbox"/> nothing listed
<u>GLO and/or Rancho Plat Maps:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed
<u>Shipwreck Inventory:</u>	<input type="checkbox"/> enclosed	<input checked="" type="checkbox"/> not requested	<input type="checkbox"/> nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

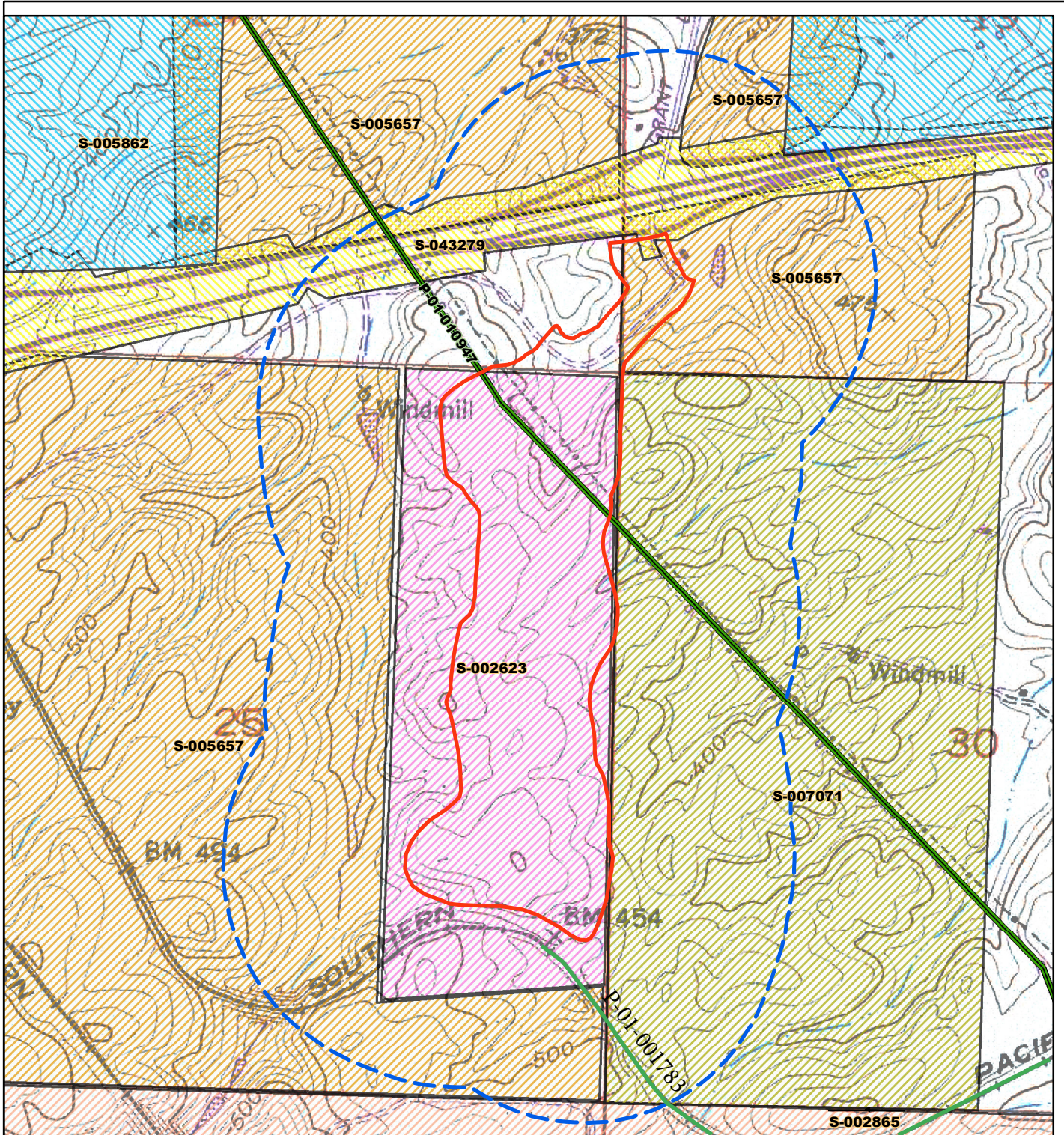
Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Annette Neal

Researcher

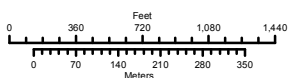
Jess Ranch Project Report and Resource Map



Northwest Information Center

File #15-0976 1 February 2016 A. Neal

May depict confidential cultural resource locations.
Do not distribute.



Jess Ranch Project Area	<all other values>	S-005657
Jess Ranch_Buffer	Label	S-005862
Resources (lines)	S-002623	S-007071
Reports (polygons)	S-002865	S-043279

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-001783	CA-ALA-000623H	Resource Name - Southern Pacific Railroad; OHP PRN - 4623-0436-9999; Other - Southern Pacific Mainline into Oakland; Other - Union Pacific Railroad (formerly Southern Pacific and Western Pacific railroads); Other - Drill Track; Other - Southern Pacific Railroad Yard and Tracks; Other - SPRR Spur1, SPRR Spur 2; Other - Southern Pacific Railroad Alignment, GD-5; Other - SPW-7, SPW-8, SPW-15, SPW-16, SPW-18; Other - Central Pacific Railroad; Other - Segment of Southern Pacific Railroad Grade (No. 1); Other - SPW-9; Other - Map Reference #01-08; Other - Southern Pacific Railroad - Segment of the Milpitas line; Other - SPW-6; Other - SPW-14; Caltrans - Bridge #33-0034, #33-0035,; Other - South Pacific Coast RR (SPCR); Other - Samtrans Newark Bridge; Other - Samtrans Dumbarton Cutoff; Other - Samtrans Dumbarton Bridge; OHP PRN - DOE 01-98-0056-0000; Other - GANDA-509-01H; Other - San Pablo-Tulare Railroad; Other - GANDA-509-16H; Other - TRWP-28; Other - Transcontinental Railroad, Niles-Sacramento Line	Structure	Historic	AH07 (Roads/trails/railroad grades); AH16 (Other) - power line; HP11 (Engineering structure); HP19 (Bridge) - railroad bridge; HP39 (Other)	1990 (G. Davis, Dames & Moore); 1994 (Brian Hathoff, Woodward-Clyde Consultants); 1994 (Woodward-Clyde Consultants); 1994 (Woodward-Clyde Consultants); 1995; 1995; 1996 (John W. Snyder, P.S. Preservation Services); 1996 (John W. Snyder, P.S. Preservation Services); 1996 (John W. Snyder, P.S. Preservation Services); 1998 (Elizabeth McKee, Caltrans District 4); 1999 (Elizabeth Kruse, Caltrans District 4); 1999 (William Kostura, Caltrans District 4); 1999 (William Kostura, Caltrans District 4); 2001 (Tracy Bakic, Cindy Baker, PAR Environmental, Inc.); 2001 (K. Van Citters, K. Bisson); 2002 (C. McMorris, A. Blosser, JRP); 2003 (M. Schmidt, J. Dougherty, PAR Environmental Services, Inc.); 2006 (Christopher Canzonieri, Basin Research Associates, Inc.); 2008 (David Buckley, William Self Associates, Inc.); 2008 (David Buckley, William Self Associates, Inc.); 2009 (J. Dougherty, J.P. Glover, PAR Environmental Services); 2009 (T. Martin, K. Frank, GANDA); 2009 (T. Martin, K. Frank, GANDA); 2010 (Lisa Holm, Lee Panich, Pacific Legacy, Inc.)	S-017993, S-021624, S-023385, S-025043, S-025885, S-026109, S-027016, S-031176, S-031374, S-032513, S-033642, S-035644, S-036217, S-037241, S-038242, S-038390, S-043313, S-043685, S-045417

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-010947		Resource Name - Pittsburg - Tesla Transmission Line	Structure	Historic	HP11 (Engineering structure)	2008 (Jennifer Lang, Garcia & Associates)	S-035796

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-002623		1981	Miley Paul Holman	Archaeological reconnaissance of the windpower generator farm to be located on the Jess Ranch East of Livermore, Alameda County (letter report).	Holman & Associates	
S-002865		1982	Miley Paul Holman	Archaeological field reconnaissance of the wind farm planned for the lands of Mulqueeny and Hera in Alameda County, California (letter report).	Holman & Associates	
S-005657		1982	Sarah E. Slater and Miley Paul Holman	An Archaeological Reconnaissance of Six Windfarm Parcels Near Altamont Pass, Alameda County, California	Holman & Associates	
S-005862		1982	Miley Paul Holman	An Archaeological Reconnaissance of the Proposed Fayette Manufacturing Company Wind Farm on the Morgan, Shuff, Haera and Costello Properties, Altamont Pass, Alameda County, California	Holman & Associates	
S-007071		1984	Miley Paul Holman	Helen Andrade Property Archaeological Reconnaissance (letter report)	Holman & Associates	
S-011826		1980	Dorothea J. Theodoratus, Mary Pyle Peters, Clinton M. Blount, Pamela J. McGuire, Richard D. Ambro, Michael Crist, Billy J. Peck, and Myrna Saxe	Montezuma I and II Cultural Resources	Theodoratus Cultural Research; Archaeological and Environmental Services	48-000041, 48-000042, 48-000123, 48-000124, 48-000125, 48-000126, 48-000127, 48-000128, 48-000129, 48-000130, 48-000131, 48-000132, 48-000133, 48-000134, 48-000135, 48-000136, 48-000137, 48-000138, 48-000139, 48-000140, 48-000141, 48-000142, 48-000199
S-043279		2013	Kristina Montgomery	Historic Property Survey Report, ALA-580 PM 0.0/8.1, 22.0/30.3; SJ-580 PM 13.5/15.4, EA 4G1900, EFIS 04-12000348; Archaeological Survey Report for the Freeway Performance Initiative	Caltrans	
S-043279a		2013	Kristina Montgomery	Archaeological Survey Report for the Freeway Performance Initiative Project in Alameda and San Joaquin County, California, ALA 580 PM 0.0/8.1, 22.0/30.3, SJ 580 PM 13.5/15.4, EA 4G1900/04-12000348	Caltrans	

APPENDIX 3

Native American Consultation

NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX



February 4, 2016

Neal Neuenschwander
Peak & Associates

Sent by Email: peakinc@yahoo.com
Number of Pages: 3

RE: Jess Ranch Project, Alameda County

Dear Mr. Neuenschwander:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
 - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
 - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
 - If the probability is low, moderate, or high that cultural resources are located in the APE.
 - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:
 - Any report that may contain site forms, site significance, and suggested mitigation measures.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 in accordance with Government Code Section 6254.10.
 3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. **A search of the SFL was completed for the USGS quadrangle information provided with negative results.**
 4. Any ethnographic studies conducted for any area including all or part of the potential APE; and
 5. Any geotechnical reports regarding all or part of the potential APE.

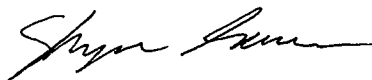
Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov

Sincerely,



Sharaya Souza
Staff Services Analyst

**Native American Heritage Commission
Tribal Consultation List
Alameda County
February 4, 2016**

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irenne Zwielerlein, Chairperson
789 Canada Road Ohlone/Costanoan
Woodside, CA 94062
amahmutsuntribal@gmail.com
(650) 400-4806 Cell

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
240 E. 1st Street Ohlone/Costanoan
Pomona, CA 91766
rumsen@aol.com
(909) 524-8041 Cell
(909) 629-6081

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

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791 Ohlone / Costanoan
Milpitas, CA 95036
muwekma@muwekma.org
(408) 314-1898
(510) 581-5194

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152 Ohlone/Costanoan
Fremont, CA 94539 Bay Miwok
chochenyo@AOL.com Plains Miwok
(510) 882-0527 Cell Patwin

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

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Jess Ranch Project, Alameda County.

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY



February 6, 2016

Honorable Irenne Zwierlein, Chairperson
***Amah Mutsun Tribal Band
of Mission San Juan Bautista***
789 Canada Road
Woodside, CA 94062

Subject: Jess Ranch Project, Alameda County, California.

Dear Honorable Chairperson Zwierlein,

The Jess Ranch Project is a proposed composting facility that will occupy approximately 30 acres of land in the Altamont Pass area south of Interstate 580 near the Grant Line Road exit (please see attached topographic map quadrangle). A record search has been completed for the project by the Northwest Information Center, CHRIS, who determined that the area had been inspected by archeologists during the 1980s who discovered no prehistoric period cultural resources within the project area. Peak & Associates, Inc. has just completed a second, more thorough inspection of the project area and also did not discover any evidence of prehistoric period cultural resources. The only historic period resource in the project area is an electric transmission line that was constructed in 1959.

If you have any information about, or would like to comment on, the proposed Jess Ranch Project, please don't hesitate to contact me, Neal Neuenschwander, Staff Archeologist, Peak & Associates, Inc., 3161 Godman Avenue, Chico, CA 95973, (530) 342-2800, peakinc@yahoo.com. Thank you for your time reviewing this letter and attached map.

Sincerely,

Neal Neuenschwander
Staff Archeologist

Enc. USGS topographic map

- 3941 Park Drive, Suite 20#329, El Dorado Hills, CA 95762/Phone: (916)939-2405/peakinc@sbcglobal.net
- 3161 Godman Avenue, Suite A, Chico, CA 95973/Phone: (530)342-2800/ peakinc@yahoo.com

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY



February 6, 2016

Tony Cerda, Chairperson
Coastanoan Rumsen Carmel Tribe
240 East 1st Street
Pomona, CA 91766

Subject: Jess Ranch Project, Alameda County, California.

Dear Honorable Chairperson Cerda,

The Jess Ranch Project is a proposed composting facility that will occupy approximately 30 acres of land in the Altamont Pass area south of Interstate 580 near the Grant Line Road exit (please see attached topographic map quadrangle). A record search has been completed for the project by the Northwest Information Center, CHRIS, who determined that the area had been inspected by archeologists during the 1980s who discovered no prehistoric period cultural resources within the project area. Peak & Associates, Inc. has just completed a second, more thorough inspection of the project area and also did not discover any evidence of prehistoric period cultural resources. The only historic period resource in the project area is an electric transmission line that was constructed in 1959.

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CONSULTING ARCHEOLOGY



February 6, 2016

Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Coastanoan
P.O. Box 28
Hollister, CA 95024

Subject: Jess Ranch Project, Alameda County, California.

Dear Honorable Chairperson Sayers,

The Jess Ranch Project is a proposed composting facility that will occupy approximately 30 acres of land in the Altamont Pass area south of Interstate 580 near the Grant Line Road exit (please see attached topographic map quadrangle). A record search has been completed for the project by the Northwest Information Center, CHRIS, who determined that the area had been inspected by archeologists during the 1980s who discovered no prehistoric period cultural resources within the project area. Peak & Associates, Inc. has just completed a second, more thorough inspection of the project area and also did not discover any evidence of prehistoric period cultural resources. The only historic period resource in the project area is an electric transmission line that was constructed in 1959.

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PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY



February 6, 2016

Andrew Galvan
Ohlone Indian Tribe
P.O. Box 3152
Fremont, CA 94539

Subject: Jess Ranch Project, Alameda County, California.

Dear Mr. Galvan,

The Jess Ranch Project is a proposed composting facility that will occupy approximately 30 acres of land in the Altamont Pass area south of Interstate 580 near the Grant Line Road exit (please see attached topographic map quadrangle). A record search has been completed for the project by the Northwest Information Center, CHRIS, who determined that the area had been inspected by archeologists during the 1980s who discovered no prehistoric period cultural resources within the project area. Peak & Associates, Inc. has just completed a second, more thorough inspection of the project area and also did not discover any evidence of prehistoric period cultural resources. The only historic period resource in the project area is an electric transmission line that was constructed in 1959.

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PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY



February 6, 2016

Honorable Rosemary Cambra, Chairperson
Muwekma Ohlone Indian Tribe of the SF Bay Area
P.O. Box 360791
Milpitas, CA 95036

Subject: Jess Ranch Project, Alameda County, California.

Dear Honorable Chairperson Cambra,

The Jess Ranch Project is a proposed composting facility that will occupy approximately 30 acres of land in the Altamont Pass area south of Interstate 580 near the Grant Line Road exit (please see attached topographic map quadrangle). A record search has been completed for the project by the Northwest Information Center, CHRIS, who determined that the area had been inspected by archeologists during the 1980s who discovered no prehistoric period cultural resources within the project area. Peak & Associates, Inc. has just completed a second, more thorough inspection of the project area and also did not discover any evidence of prehistoric period cultural resources. The only historic period resource in the project area is an electric transmission line that was constructed in 1959.

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APPENDIX 4

Paleontological Resource Assessment

Jess Ranch Composting Facility

Alameda County, California

Prepared by:

C. Bruce Hanson

March 5, 2016

Paleontological Resource Assessment, Jess Ranch Composting Facility, Alameda County, California

5 March, 2016

1 Introduction

1.1 Paleontological Resources

Paleontological resources comprise fossils -- the remains or traces of once-living organisms preserved in sedimentary deposits -- together with the geologic context in which they occur. Sedimentary deposits include unconsolidated or semi-consolidated “soils” as well as sedimentary rocks. Most fossils are the preserved hard parts of plants or animals, and include bones and/or teeth of once-living vertebrate animals, shells or body impressions of invertebrate animals, and impressions or carbonized or mineralized parts of plants (e.g. leaf impressions or “petrified wood”). *Trace fossils* include preserved footprints, trackways, and burrows of prehistoric animals and root marks created by plants. The geologic context in which fossils occur provides important information regarding the age of the fossils and the physical and biological features of the local ancient environment in which the represented organisms existed. Paleontological resources are non-renewable (Society of Vertebrate Paleontology, 2010).

Paleontological resources do not include man-made objects (artifacts) or human remains, though these may occur buried in younger sedimentary deposits. Such artifacts, remains, and their contexts are considered archeological resources, and are not considered in this report.

1.2 Project Location

The project location is provided in the main body of the Peak & Associates report, and shown on Figures 1-4.

1.3 Project Description

The project description is provided in the main body of the Peak & Associates report.

2 Data Sources

2.1 Prior Investigations

Geologic maps which include the Jess Ranch site have been published by Dibblee 1980, Graymer *et al.* 1994, and Wagner, *et al.* 1991.

SWCA Environmental Consultants (SWCA 2010) prepared a report on the cultural and paleontological resources of the Jess Ranch Project which, at that time, encompassed an area smaller than that presently under consideration but included within the areal extent of the current proposal. The information and conclusions in that report generally apply to the present proposal as well and are cited in this report.

Another project, the Sand Hill Wind Project was sited on several parcels to the north of Jess Ranch, across I-580. ICF International (ICFI 2013) prepared a draft environmental impact report for those sites. Much of the geologic information in that report is also applicable to the Jess Ranch Project.

2.2 Museum Records

SWCA 2010 cites a summary of results of a search of locality records held in the Vertebrate Paleontology Section at the University of California, Museum of Paleontology, Berkeley (UCMP). These data are supplemented here by an online search of plant and invertebrate localities relevant to assessment of the paleontological potential and sensitivity of the Jess Ranch site.

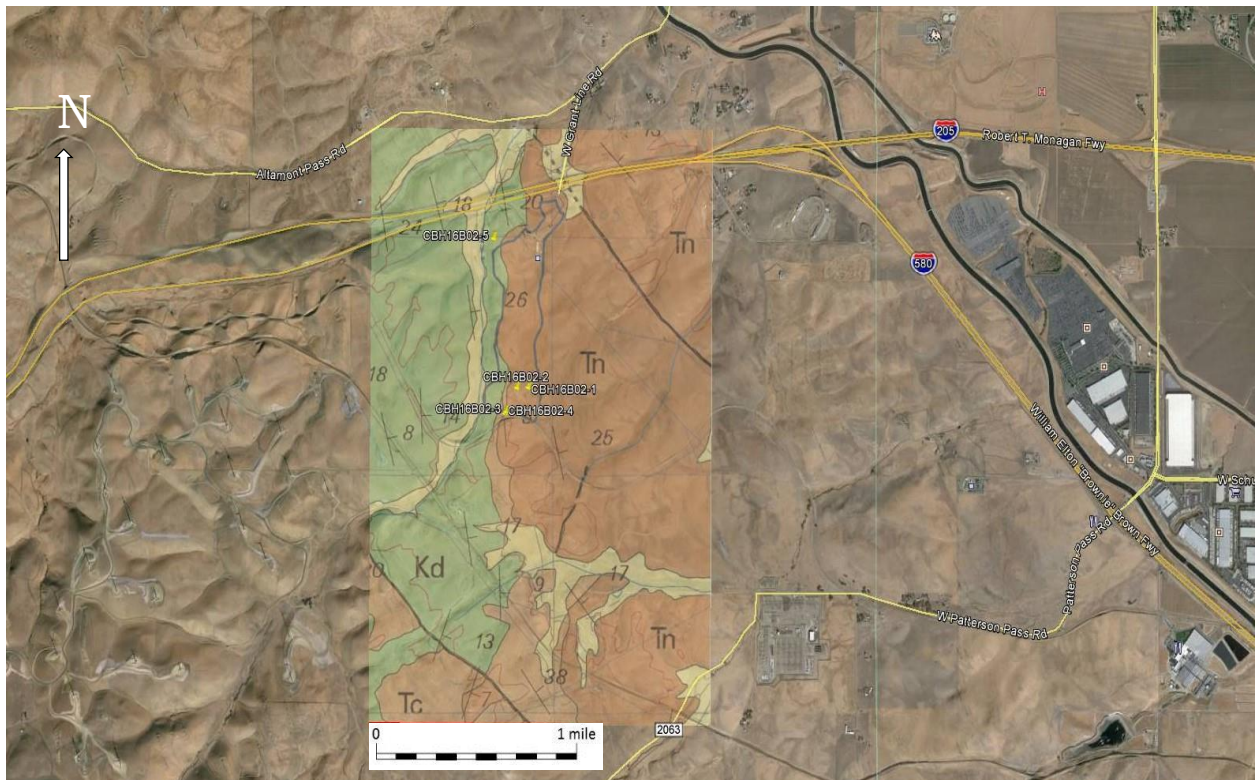


Figure 4-1. Geology and topography of the Jess Ranch area. Partial map of Brabb *et al.* 1996 superimposed on a Google Earth image. The Jess Ranch Project area is approximately outlined in blue. Kd – Panoche Formation; Tc – Cierbo Formation; Tn – Neroly Formation. Other geologic units recognized during the site survey are not shown. Locality numbers beginning “CBH” refer to sites visited during the field survey. See text.

2.3 Field Survey

A one-day survey of the project site and environs was conducted on February 2, 2016 to check the validity of existing geologic mapping and to collect data on the presence or absence of fossils.

3 Geology

3.1 Areal geologic setting

A report entitled “Sand Hill Wind Project Draft Environmental Impact Report” prepared by ICF International (ICFI 2013) describes conditions on several plots including some within one mile north of the proposed Jess Ranch Project site. Descriptions of the areal geology of that area apply equally to the Jess Ranch site which lies along the same major geologic trends.

3.1.1 Topography

ICFI 2013 states: “The project area parcel [is] located in the Altamont Pass, a mountain pass in the Diablo Range of the Coast Ranges. The pass is situated between the eastern edge of Livermore Valley and the western edge of the San Joaquin Valley.” The local terrain is characterized by rounded ridges separated by steep-sided valleys.

3.1.2 Regional and Local Geology

ICFI 2013 further indicates: The project area is located near the east flank of the Coast Ranges, in the east-central portion of California’s Coast Ranges geomorphic province (e.g., Norris and Webb 1990:359–363; California Geological Survey 2002:3).

“The Coast Ranges province is characterized by *en echelon* (i.e., parallel to subparallel) northwest-trending mountain ranges formed by active uplift related to complex tectonics of the San Andreas fault/plate boundary system (Norris and Webb 1990:359–380)”.

“The eastern Coast Ranges are broadly antiformal [(convexly folded)]. At the general latitude of the project area, they consist of a central core of Mesozoic units—primarily the Cretaceous Panoche Formation—flanked on the east by an upward younging sequence of marine and terrestrial sedimentary units that include the San Pablo Formation, a Miocene fanglomerate (an alluvial fan deposit that has become consolidated over time), and Quaternary alluvial deposits (Wagner et al. 1991).”

3.2 Site Geology

3.2.1 Published Geologic Maps

Three published geologic maps which cover the Project area present similar patterns of surface distribution of the geologic units at the site, but apply different names to the major units.

The map of Brabb *et al.* 1996 depicts the geology of the entire extent of Alameda County and includes the area in and around the Jess Ranch Project site (Figure 4-1). Geologic units mapped within the Project site are a subunit of the Great Valley Sequence (referred to as “Unit D”), the Late Miocene Cierbo Formation, and the late Miocene Neroly Formation. Portions of this map, including the area of the Project site, are apparently adapted and modified from the earlier map of Wagner *et al.* 1991 who map only two units on the site: the Panoche Formation (equivalent here to Unit D of Brabb *et al.* 1996) and the “San Pablo Formation”. In the usage of Brabb *et al.*, the San Pablo Formation, alternately termed the San Pablo Group, includes the Neroly Formation, the unit which occupies the majority of the area of the proposed Jess Ranch facility except for a portion of the western side. Time constraints prevented

access to a third geologic map covering the area, that of Dibblee 1980, although its major features are described in SWCA 2010.

3.2.2 Field Survey

A field survey of the Project site was conducted on February 2, 2016. Extensive vegetation cover (grasses and herbaceous plants) obscured the bedrock geology throughout a majority of the Project site, but available exposures permitted verification of the presence of the Panoche and Neroly Formations within or near the site boundaries. Although exposures of the Cierbo Formation were not directly observed, it most probably occurs within a small area in the southern portion of the Project site, as depicted in Brabb *et al.* 1996.

One relatively large area of bedrock exposure exists in the south-central part of the site, aligned with the broadly rounded ridge top which extends through the site (Localities CBH16B02-1, -2 in Figure 4-1). This area has clearly been machine-excavated to a depth of at least 12 feet and currently holds a small pond.

The northern and eastern sides of this excavation exhibit steep exposures of a light tan to medium gray, silty to fine sandy, very weakly consolidated vitric tuff (glassy volcanic ash - Figure 4-4) at least 10 feet thick. The gray color, where present, appears to be surficial, possibly caused by algal growth. Calcitic root casts are common, especially near the top of the unit indicating the presence of a paleosol (ancient soil). No geologic units mapped in the area match this lithology, and its age and identity remain unclear.

Much of the floor of this excavated area is occupied by a moderately hard, reddish-brown medium sandstone covered in most places by scattered, well-rounded pebbles of diverse lithology. This unit clearly underlies the tuff unit and its surface may mark a significant unconformity. The surface slopes gently southward. This unit may be assignable to the Oro Loma Formation, described in Brabb *et al.* 1996 as follows:

Oro Loma Formation of Briggs (1953) (Pliocene). Poorly consolidated reddish silt, sand, and gravel.

The Oro Loma Formation is mapped just over one mile east of the project site in Brabb *et al.* 1996.

The Neroly Formation, as mapped in Brabb *et al.* 1996, covers most of the surface of the Jess Ranch Project site. Due to the extensive vegetation cover during the field survey, rocks assignable to the Neroly Formation were not directly observed within the site boundaries. However, two large exposures just to the south of the Project site (Localities CBH16B02-3, -4 in Figure 4-1) exist on both sides of a railroad cut, now abandoned, exhibit the alternating sandstone and shale with abundant fossil leaves typical of the Neroly Formation.

Outcrops of the Panoche Formation appear just west of the north end of the project site (Figure 4-2, Localities CBH16B02-5 in Figure 4-1) and undoubtedly extend below the vegetation cover into the western portion of the project site.

4 Paleontology

Sedimentary geologic formations are generally widespread bodies of consolidated to unconsolidated sediments – clay, silt, sand, gravel, and/or cobbles – that have been deposited under comparable environmental conditions throughout (marine to terrestrial or lacustrine) and tend to exhibit a limited range of features and properties. As many of the environmental properties that prevailed during the deposition of the formation also influenced the presence or absence of organisms and the amenability to preservation of organic remains, the geographic distribution and kinds of fossils tend to follow the distribution of particular formations. Fossils are rarely distributed uniformly within a formation, though, and can vary in concentration at different levels within the formation and in different geographic areas. However, the history of fossil finds within a formation can provide clues as to the likelihood of fossil discoveries in the same formation in untried areas.

SWCA 2010 reports the results of a review of museum collections records at the University of California, Museum of Paleontology (UCMP) in Berkeley. This institution is the most likely one to hold records and collections from the region including the Jess Ranch site. This research revealed no recorded localities within the project site but documented “at least 20 previously recorded localities within 1.5 miles of the project boundaries (P. Holroyd, pers. comm.) ... 5 were determined to yield fossil specimens from the Neroly Formation.” It is not clear in this report whether the localities yielded plant, invertebrate, or vertebrate fossils.

A recent review of the UCMP online database (<http://ucmpdb.berkeley.edu/>) provided data on the number of known localities of each of the geologic units represented at the Jess Ranch site and their distribution by county. These data are summarized in Table 1.

Formation	# UCMP Locations	Invertebrate	Vertebrate	Plant
unnamed tuff	?	?	?	?
Oro Loma?	0/0	0/0	0/0	0/0
Neroly	16/118	6/93	0/3	10/22
Cierbo	22/95	22/93	0/2	0/0
Panoche	1/158	1/113	0/1	0/44

Table 1. Known localities documented in UCMP records for each of the recognized or possible (Oro Loma Formation) geologic units of Tertiary age or older within the Jess Ranch perimeter. Upper number indicates number of localities known in Alameda County – Lower number indicates total localities recorded in the given formation in the UCMP records.

5 Laws, Ordinances, Regulations, and Standards (LORS)

5.1 California LORS

5.1.1 CEQA – California Environmental Quality Act

The California Environmental Quality Act Checklist (Appendix G, section V. Cultural resources) asks “Would the project: ... c) Directly or indirectly destroy a unique **paleontological** resource or site or unique geological feature?”

5.1.2 California Public Resources Code

ICFI (2013) specifies: “Section 5097.5 prohibits knowing and willful excavation, removal, destruction, injury, and defacement of any paleontological 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.”

5.2 Local Policies

An online search of Alameda County ordinances and regulations revealed none relating to paleontological resource protection.

6 Sensitivity Analysis

6.1 Significance Criteria

6.1.1 CEQA Criteria

The state of California provides protection for paleontological resources under the California Environmental Quality Act (CEQA). Scott and Springer 2003 point out that “the stated intent of CEQA is to ‘develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state’ (PRC §21001a). The ‘environment’ in the sense of CEQA is defined as ‘the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, [and] objects of historic or aesthetic interest’ (PRC §21060.5)”.

The CEQA checklist (Appendix G, section V. Cultural resources) asks “Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?” CEQA does not provide further definitions or guidelines with respect to paleontological resources. At one extreme interpretation, virtually any fossil (except a trace fossil or a part shed during life) could be considered unique in that it represents the only available evidence of the former existence of an individual plant or animal at the place and time represented. At the other extreme, it might be inferred that only those fossil specimens unlike any that have been found anywhere else deserve protection. Neither extreme reflects the significance of fossils to the modern science of paleontology nor aligns with the stated intent of CEQA, as pointed out by Scott and Springer 2003.

Furthermore, determination of uniqueness or significance, by even the most liberal of definitions, is clearly not possible prior to the actual discovery, and is usually possible only after the specimen is collected, cleaned, and compared with others already existing in collections at research institutions. However, the probability that significant paleontological resources exist within a given body of rock or “soil” (unconsolidated sedimentary deposit) can be estimated given sufficient information (discussed below).

Although the scientific fields of paleontology and archeology differ in their subject matter, insight into the intent of CEQA with respect to paleontologically unique resources may be gained through consideration of parallel wording applied to archeological resources. PRC §21083.2(g) states:

“As used in this section, ‘unique archaeological resource’ means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.”

Application of comparable criteria to paleontological resources would dictate comparable protection for scientifically important paleontological resources, including both potentially significant fossils and their geologic settings. A potentially significant impact will occur if the project affects sensitive, previously undisturbed sediment or sedimentary rock unless mitigation measures reduce this impact to less-than-significant level.

6.1.2 Society of Vertebrate Paleontology (SVP) Guidelines

Recognizing the need for consistent, reasonable standards for the identification and management of paleontological resources which may be affected by construction activities, the leading organization of professional and non-professional vertebrate paleontologists, the Society of Vertebrate Paleontology, has published two sets of guidelines for measures relating to (1) assessment and mitigation (SVP 2010) and (2) curation (SVP 1996) of vertebrate, invertebrate, and plant fossils in construction sites. The criteria for assessment of the sensitivity (a term used here as equivalent to potential) of paleontological resources are stated in SVP 2010 and are presented here in Table 2.

Potential	Definition
High	Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources...Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.
Undetermined	Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources.
Low	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus, will only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule.
No	Some rock units, such as high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites), have no potential to contain significant paleontological resources. Rock units with no potential require neither protection nor impact mitigation measures relative to paleontological resources

Table 2. Paleontological Sensitivity Ratings. Source: Society of Vertebrate Paleontology 2010.

6.2 Site Sensitivity

6.2.1 Panoche Formation

The late Cretaceous marine Panoche Formation, part of the Great Valley Sequence, has yielded many invertebrate and plant specimens and a single reptile tooth. The discovery of new localities and specimens at the Jess Ranch site could contribute to a more complete understanding of the paleoecology and paleogeography of this part of California during a time nearing the Cretaceous/Tertiary extinction event.



Figure 4-2. Panoche Formation outcrops just northwest of the Jess Ranch Project site. Locality CBH16B02-5 in Figure 4-1.

Though presently at or near the surface only along the western edge of the Jess Ranch site, this unit underlies the entire site at depth, below the Tertiary and younger units at the site.

The paleontological sensitivity of this unit is estimated to be high.

6.2.2 Cierbo Formation

The Cierbo Formation (termed the Cierbo Sandstone in Brabb *et al.* 1996) of late Miocene age includes marine invertebrate fossils at numerous known localities. Additional discoveries in this unit could contribute to improved understanding of the paleoecology and geographic distribution of recovered species. There also remains the possibility of discovery of vertebrate fossils (whales, sharks) at the site.

A small area of Cierbo Formation exists near the southern end of the Jess Ranch Project site.

This unit is assessed to have high paleontological sensitivity.

6.2.3 Neroly Formation

Though situated above the Cierbo Formation in the local stratigraphic sequence, the Neroly Formation is also of late Miocene age. Sediments forming the Neroly Formation were deposited in brackish lagoons and freshwater deltas reflecting the gradual retreat of marine conditions from this region.

Characterized by alternating beds of bluish to gray sandstone and shale, the Neroly Formation is well known for its abundant fossil floral record. Outcrops in the abandoned railroad cut immediately south of the Jess Ranch site revealed well-preserved leaves in both shale and sandstone subunits (Figure 4-3 - Localities CBH16B02-3, -4 in Figure 4-1). Leaf assemblages such as that of the Neroly provide important

clues to the climatic conditions which prevailed during the time of deposition. Such historical records bear on interpretation of present-day climate changes, hence are of public interest.

The Neroly Formation is considered to be of high paleontological sensitivity.



Figure 4-3. Fossil leaves in Neroly Formation siltstone just south of the Jess Ranch Project site. Locality CBH16B02-3 in Figure 4-1.

6.2.4 Oro Loma Formation

The Oro Loma Formation has been identified and mapped as a fanglomerate by Wagner *et al.* 1991. Fanglomerate is a deposit of mixed, poorly sorted and often angular rock clasts, sand, silt, and clay deposited as alluvial fans – convex conical features below restricted hillslope drainages and developed above adjacent flood plains. Although such deposits may rarely include vertebrate fossils, none has been recorded in the Oro Loma Formation in the UCMP records despite extensive occurrence along the eastern flank of the California Coast Range.

The Oro Loma has been tentatively identified in the southern portion of the Jess Ranch facility during the recent field survey, but has not been mapped in the available published geologic maps covering the area.

The Oro Loma Formation is considered to have low paleontological sensitivity.

6.2.5 Tuff

The light-colored vitric tuff (Figure 4-4) which rests above the Neroly and Oro Loma (?) Formations cannot yet be linked to records of known localities in named formations. Assessment of paleontological sensitivity must therefore rely on the fossil potential in geologic units of similar composition.



Figure 4-4. Vitric tuff (volcanic ash) on east side of excavated area in southern part of the Jess Ranch Project site. Outcrop area is about five feet high. Locality CBH16B02-1 in Figure 4-1.

Pure tuffs such as that at the Jess Ranch site often include fossil leaves, but the present tuff is so weakly consolidated that it is doubtful that fossil leaf impressions or carbonized leaves could be recovered even partially intact.

Vertebrate fossils are less common in tuff deposits, but where they occur, they can be spectacular: Dozens of intact skeletons of rhinoceroses, horses and a variety of other mammals, birds, and reptiles are preserved in a volcanic ash deposit at Ashfall Fossil Beds State Historical Park in Nebraska: However, this locality originated under rare local circumstances: A pre-existing lake or pond attracted the animals during the eruption of a suffocating ash cloud, and the falling ash subsequently buried them where they died. (Ashfall Fossil Beds State Historical Park [online site])

In the absence of any evidence of special circumstances which could have led to concentrations of animals above the background distribution of the living animals, the paleontological sensitivity of this unit must presently remain undetermined.

6.2.6 Alluvium

SWCA 2010 reports Holocene age (10,000 years before present to present to today) deposits underlying “the far northern portions of the proposed road.” If these deposits are, in fact, Holocene in age, any included fossils may be of limited paleontological importance.

This alluvial deposit is deemed to be of low paleontological sensitivity.

Formation	Symbol (Brabb <i>et al.</i> 1996)	Age	Fossils	Sensitivity
Alluvium*	Qu	Pleistocene – Holoc.	Vertebrates	Low
Tuff	--	Pliocene?	?	Undetermined
Oro Loma Fm.	Tol	Pliocene	None known	Low
Neroly Fm. (San Pablo Group)	Tn	Late Miocene	Leaves, vertebrates, invertebrates	High
Cierbo Fm.	Tc	Late Miocene	Vertebrates, invertebrates	High
Panoche Fm. (Great Valley Group: Unit D)	Kd	Cretaceous	Marine shells, rare vertebrates	High

Table 3. Geologic units within the Jess Ranch Project site. Brabb *et al.* 1996 recognized Unit D, Cierbo, and Neroly Formations at the site. Oro Loma Fm. may be present on the site but not mapped. Tuff not recognized in any published maps. *Alluvium noted in SWCA 2010 as indicated in Dibblee, 1980 but not in Brabb *et al.* 1996 or Wagner *et al.* 1991.

7 Mitigation Recommendations

Expected impacts on paleontological resources may be reduced to insignificant levels through implementation of a mitigation plan which includes at least the following measures:

1. Designate a qualified paleontologist to plan and oversee mitigation efforts and prepare final report.
2. Monitoring - At least one qualified paleontologic monitor should be present at each site where geologic units of high sensitivity are undergoing active excavation.
 - a. Visual scanning - designated paleontologic monitor inspects spoils piles, trench walls, or other areas where sensitive sedimentary deposits are exposed by project-related excavation, during or immediately after excavation. If continuing excavation at the site of a new discovery threatens significant specimens, excavation equipment may be temporarily redirected, at the discretion of the monitor, to either avoid the site or to aid in recovery of the specimen(s).
 - b. Collect visible specimens - Small or isolated specimens should be appropriately wrapped and stored. Larger, unstable specimens should be excavated and stabilized for storage and transport. All specimens require explicit labelling and geographic and stratigraphic documentation.
3. Preparation, curation, and permanent storage/display - Pre-arranged agreements should assure that any significant fossils discovered during the project will be incorporated into established paleontological collections in a public research or educational institution supporting such collections. Institutional assessments to cover the costs of curation and permanent storage will be the responsibility of the project owner.
4. Final report - A final report will be prepared by the project paleontologist detailing the mitigation efforts, nature and significance of any salvaged specimens along with their geologic context, and ultimate disposition of any recovered specimens.

8 References

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