PROJECT DESCRIPTION AND CULTURAL RESOURCES ASSESSMENT
SANTA SUSANA FIELD LABORATORY
Northern Undeveloped Lands Radiological Study
Ventura County, California

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INTRODUCTION

JMA (John Minch and Associates, Inc.) has been retained to provide consulting services for cultural resources at the Santa Susana Field Laboratory (SSFL) in Simi Valley, CA. The purpose of this summary is to provide a description of the U.S. Environmental Protection Agency's (EPA) proposed Santa Susana Field Laboratory (SSFL) Northern Undeveloped Lands (NUL) Radiological Characterization Survey in sufficient detail to determine to what extent the proposed undertaking may affect any of the known, and potentially undiscovered cultural resources that exist within the Area of Potential Effect (APE). JMA's Cultural Resource Specialist (CRS) has reviewed the previous archaeological investigations conducted on the property, performed an independent records search at the South Central Coastal Information Center at California State University, Fullerton, and is reviewing all available previous correspondence between stakeholders, the Native American Heritage Commission, Native American Tribal Representatives, and the California State Historic Preservation Officer (SHPO). This summary is prepared in accordance with legal requirements set forth under regulations implementing Section 106 of the National Historic Preservation Act of 1966, (NHPA) 36 CFR Part 800.

DESCRIPTION OF THE PROPOSED UNDERTAKING

The Agency and Applicant proposing the undertaking are the same, namely, EPA. The Undertaking is to be administered by EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The EPA is undertaking the project in accordance with federal legislative mandate, HR 2764, the Consolidated Appropriations Act of 2008. Funding for the proposed Undertaking originates from the American Recovery and Reinvestment Act of 2009.

The proposed Undertaking is the radiological characterization of the northern portion of SSFL referred to as the Northern Undeveloped Lands, or NUL. The NUL is adjacent to Area IV of SSFL owned by The Boeing Company (Boeing), where upon the United States Department of Energy (DOE) and its contractors once operated several nuclear reactors and associated fuel facilities and laboratories. A similar Undertaking is currently ongoing in Area IV. The NUL consists of 182 acres, where industrial activities have never occurred, but a lawsuit settlement stipulated purchase of this area by Boeing from the adjoining American Jewish University's

Brandeis-Bardin Campus.

The purpose and need for the Undertaking is to determine the presence of potential radioactive contamination in surface soils, and subsurface soils, groundwater, surface water, and sediment within the NUL.

Environmental Setting

The NUL consists of naturally vegetated steep terrain, hills and rock outcrops. The project boundary is adjacent to the northern boundaries of Areas II, III and IV of SSFL. The SSFL property lies approximately 1.5 miles southeast of the City of Simi Valley. The NUL is undeveloped and distinguished by very steep north-facing slopes and numerous large sandstone rock outcrops.

PREVIOUSLY IDENTIFIED CULTURAL RESOURCES

A Class III Inventory/Phase I archaeological survey was conducted for the NUL by CRM TECH, Inc. in 2010. The results of the pedestrian survey included the identification and recordation of three prehistoric archaeological sites located in the project boundaries. Two of the sites identified by CRM TECH are characterized as lithic scatters, CA-VEN-1803 and CA-VEN-1804. The third, CA-VEN-1805 is described as a lithic scatter featuring a natural water cistern (Hogan and Tang, 2010). All three sites are noted to contain prehistoric artifacts, however, CA-VEN-1804 is also thought to possibly contain historic artifacts as well (Hogan and Tang, 2010).

At the time they issued their survey report, CRM TECH deemed the three sites they recorded as undeterminable for eligibility for inclusion to the National Register of Historic Places without further subsurface testing. However, since concurrence of ineligibility has not been sought from or granted by SHPO, all archaeological sites within NUL are considered eligible and treated accordingly for the purposes of this undertaking. In addition, the presence of the newly identified archaeological sites in NUL indicates the potential for elements of the project activities involving ground disturbance and clearing of vegetation to impact previously undiscovered cultural resources. Such activities were considered and addressed in the 2010 investigation conducted by CRM TECH, and the recommendations made in the survey report take into account the potential effects that the proposed Undertaking may have on any cultural resources that exist within the APE.

The Project Area

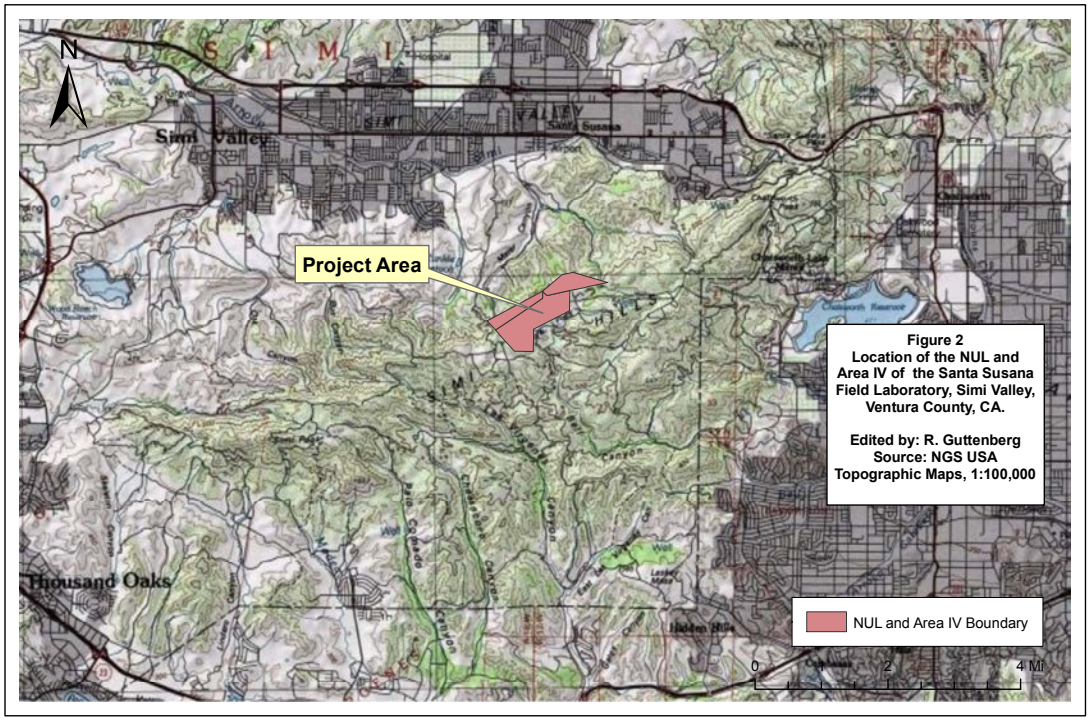
An area map, showing the location of the entire SSFL site, including the Area of Potential Effects (APE) in relation to the surrounding areas is provided on **Figure 1**. Also included on Figure 1 are the locations of the newly identified archaeological sites previously referenced. The vicinity map shown on the United States Geologic Survey Calabasas 7.5-minute topographic quadrangle map is shown on **Figure 2**. The latter map more clearly identifies the project area in relation to the entire SSFL.

Figure 1 Locations of the recorded archaeological sites in NUL.

(Restricted/Confidential Information Removed)

Figure 2 Vicinity Map of Santa Susana Field Laboratory

Location of NUL and Area IV, Santa Susana Field Laboratory



JMA

The Proposed Undertaking

General Description of Activities

The Undertaking involves several activities that are not anticipated to have any adverse affect on cultural resources in the project area, and is proposed to begin in November 2010 and is anticipated to be completed by December 2011. The separate components of the Undertaking include Vegetation Clearing, Gamma Scanning, Geophysical Survey, Surface and Subsurface Soil Sampling, Groundwater Monitoring Well Sampling, Surface Water and Sediment Sampling, and Support Activities. A discussion of each component of the Undertaking is provided below, as well as a description of general avoidance measures that will be implemented to avoid adverse impacts to cultural resources.

Vegetation Clearing

To provide access for project related vehicles/equipment and allow operation of gamma scanning equipment at optimum levels of sensitivity, vegetation within the APE will be cut or trimmed to a height of approximately six to 18 inches. Vegetation cutting in previously undisturbed areas will be conducted using a combination of hand held mechanical equipment and hand tools. In addition, heavy equipment such as tracked or wheel-driven mowers (i.e. a tractor with a mower attachment) can only be operated in previously disturbed areas in the NUL. As discussed in the Avoidance Measures below, known archaeological sites will be delineated with a 50 ft. buffer around site boundaries and flagged for avoidance by either JMA's CRS or the Cultural Resource Monitor.

Vegetation Clearing Avoidance Measures

The following measures have been identified to avoid the adverse effects associated with vegetation clearing activities:

VC-1 Before initiation of vegetation clearing activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and will be avoided from vegetation clearing and removal. In addition, all vegetation clearing activities in areas deemed sensitive by the CRS (e.g., previously undisturbed areas) will be

performed under the supervision of the Cultural Resources Monitor.

Gamma Scanning

EPA will characterize surface soil for gamma activity over 100 percent of the accessible areas of the NUL to identify and characterize elevated areas of gamma radiation. Scanning will be conducted at a rate of one to three feet per second and will normally require only one pass over each area being scanned. Gamma scanning will be completed using a combination of hand-held, stroller-mounted, mule-mounted, and off-road, forklift mounted systems. The stroller-mounted, mule-mounted and forklift mounted systems will be custom-built systems that are capable of detecting low levels of gamma radiation. The potential ground disturbance that may result from the use of each scanning system is provided below:

- Hand-held – foot traffic and vegetation alteration. No expected ground disturbance.
- Wheel mounted – foot traffic, light vehicle traffic and vegetation alteration. Minimal potential for ground disturbance.
- Mule mounted - foot traffic, mule traffic, and vegetation alteration. Minimal potential for ground disturbance.
- Forklift mounted - foot traffic, vehicle traffic and vegetation alteration. Heavy equipment operation has a potential for ground disturbance.

Gamma Scanning Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with gamma scanning activities:

GS-1 Before initiation of gamma scanning activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and scanning within the exclusion zone will be limited to hand-held equipment and performed under the supervision of the Cultural Resources Monitor. In addition, all gamma scanning in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

Geophysical Survey

EPA may conduct a geophysical survey to determine areas of potential subsurface disturbance that may be indicative of waste burial areas. The sub-surface geophysical survey will be conducted using ground-penetrating radar (GPR) (or other appropriate technology) and either electromagnetometer (EM) or magnetometer in locations suggested by the EPA's Historical Site Assessment (HSA) report. It is assumed that the EM and magnetometer survey will be completed at target locations in search of potential buried materials covering as much as approximately 80 acres within area IV and the NUL. The GPR survey will be conducted over approximately 15 acres, based on the results of the EM and magnetometer surveys. The impacts associated with each type of geophysical survey are foot traffic and light vehicle traffic. The presence of personnel and equipment during the geophysical surveys (regardless of the type of equipment used) may impact cultural resources.

Geophysical Survey Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with geophysical survey activities:

GP-1 Before initiation of the geophysical survey, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 foot. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and will be avoided from geophysical survey activities. , and in addition, all activities in areas deemed sensitive by the JMA archaeologist CRS will be performed under the supervision of the archaeological Cultural Resources Monitor.

Soil Sampling

EPA will collect surface and subsurface soil samples to characterize the representative concentration of each radionuclide of concern in surface and subsurface soil within the NUL Study Area. EPA is also collecting and containerizing soil samples which will be analyzed for potential chemical contamination by the Department of Energy. Biased and random sampling techniques will be used to identify surface and subsurface soil sampling locations. Should a sample location be identified within an area of known archaeological sensitivity then that location will be relocated nearby so impacts will be totally avoided. In the NUL, EPA anticipates that soil

samples will be initially collected from approximately 1,500 surface locations and 1,500 subsurface locations. As explained below, from two to four closely spaced boreholes up to approximately 10 feet below ground surface will be needed at each subsurface sample location to conduct the gamma logging, define the subsurface sample interval and collect the requisite soil volume for sample analysis.

Borehole gamma logging will be performed to identify depth intervals for subsurface soil samples. Boreholes will be made using a manually operated hand auger or mechanized direct push technology (DPT) rig with 3.25 inch tooling. Each borehole will be advanced to a depth of approximately 10 feet deep below ground surface or until refusal is reached if less than 10 feet. Continuous cores will be collected in each borehole, the lithology will be logged, and the soil classification will be documented for each sample.

Downhole gamma logging will be completed after the lithologic logging effort or concurrently with the lithologic logging effort. A 2-inch inner diameter polyvinyl chloride (PVC) pipe will be inserted into the open borehole. A probe attached to a Ludlum 2221 ratemeter will be lowered down the PVC piping at 6-inch intervals to document total gamma radiation counts. After the lithologic and gamma logging efforts have been completed at the borehole, the sample interval will be selected based on the previously described parameters.

Surface soil samples will be collected from 0 to 6 inches below the ground surface using stainless steel trowels, stainless steel shovels and/or spoons, and/or hand driven 3 inch sample tubes to collect enough soil to fill the appropriately sized sampling container. Subsurface soil sample intervals will be selected based on subsurface gamma scanning results and material noted during the lithologic logging effort. The DPT rig or hand auger will then be advanced to the desired depth to collect the subsurface soil sample. Additional off-set boreholes may be necessary to meet sample volume requirements. Additional off-set boreholes, if needed, will also be 6 to 12 inches from the previous borehole. EPA does not anticipate more than four boreholes per sample location: one borehole for lithologic and gamma logging and one to three boreholes for soil sample collection.

After the logging and sampling efforts are completed, each borehole will be backfilled with any unused soil volume from the same borehole and high solids bentonite. The impact of each activity is listed below:

- Surface soil sampling – foot traffic, light vehicle traffic and vegetation alteration, ground disturbance.
- Subsurface soil sampling – foot traffic, light vehicle traffic, heavy vehicle traffic, vegetation alteration, ground disturbance.
- Subsurface gamma scanning – foot traffic, light vehicle traffic, heavy vehicle traffic and vegetation alteration, ground disturbance.

Soil Sampling Avoidance Measures

The following measures have been identified to avoid the effects associated with soil sampling activities:

SS-1 Before initiation of soil sampling activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and avoided from all soil sampling activities. In addition, all soil sampling in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

Monitoring Well Sampling

EPA will evaluate existing radiological conditions in groundwater at on- and off-site locations. Groundwater sampling will be conducted at existing on-site and off-site wells. Approximately 10 existing monitoring wells in the NUL will be sampled during 2011. In addition, approximately 20 existing off-site wells will also be sampled in 2011. The impacts resulting from this sampling activity is expected to be foot traffic and light vehicle traffic.

Monitoring Well Sampling Avoidance Measures

JMA has determined that there is no potential for the Monitoring Well Sampling to have any adverse affects on known or unknown cultural resources.

Surface Water and Sediment Sampling

EPA will collect surface water samples to determine radionuclide concentrations in on-site and

off-site surface water and seeps. The surface water sampling will be conducted in two phases. Phase 1 will focus on identifying the general extent of contamination and identification of key radionuclides. Phase 2 will involve conducting a detailed evaluation of the radionuclides that were detected during Phase 1. Phase 2 may include a more extensive sediment sampling effort in areas of sediment contamination identified during Phase 1, and a targeted radionuclide suite. The collection of surface water samples will be focused on drainage pathways with specific sample locations being determined during the site reconnaissance. EPA will also collect sediment samples to determine radionuclide concentrations in major drainage areas. Sediment sampling will target the fine-grained sediment located within the stream and associated stream bank. EPA is also collecting and containerizing soil samples which will be analyzed for potential chemical contamination by the Department of Energy.

Approximately 60 surface water sample locations and 80 sediment sample locations are anticipated. Surface water and sediment sampling will target major drainage ways downstream of potential radiological source areas in Area IV and the NUL. Based on data obtained from the on-site sample locations in Area IV and the NUL, surface water and sediment sampling may extend further downstream at locations on-site (but outside Area IV and the NUL) and into adjacent off-site properties. Environmental impacts are expected to consist of foot traffic and light vehicle traffic.

Surface Water and Sediment Sampling Avoidance Measures

The following measures have been identified to avoid and minimize the effects associated with surface water and sediment sampling activities:

SWSS-1 In the event that surface water and sediment sampling activities are located within or adjacent to areas of known archaeological sensitivity the sampling crew shall coordinate with JMA's CRS to identify a means of access that avoids impacts to cultural resources. If surface water samples are to be collected from areas of known archaeological sensitivity, all sampling is to be conducted under the supervision of a JMA Cultural Resources Monitor.

Support Activities

The support activities may consist of a variety of actions including: use office and equipment storage space at the EPA field office area located at Building 204 in SSFL Area II, use of a animal (e.g.. mule) stable located within the EPA field office area, mobilization/staging, equipment/Investigation Derived Waste (IDW) stock piling, IDW management, access/on-site travel, access improvement, vegetation alteration and vegetation/soil removal.

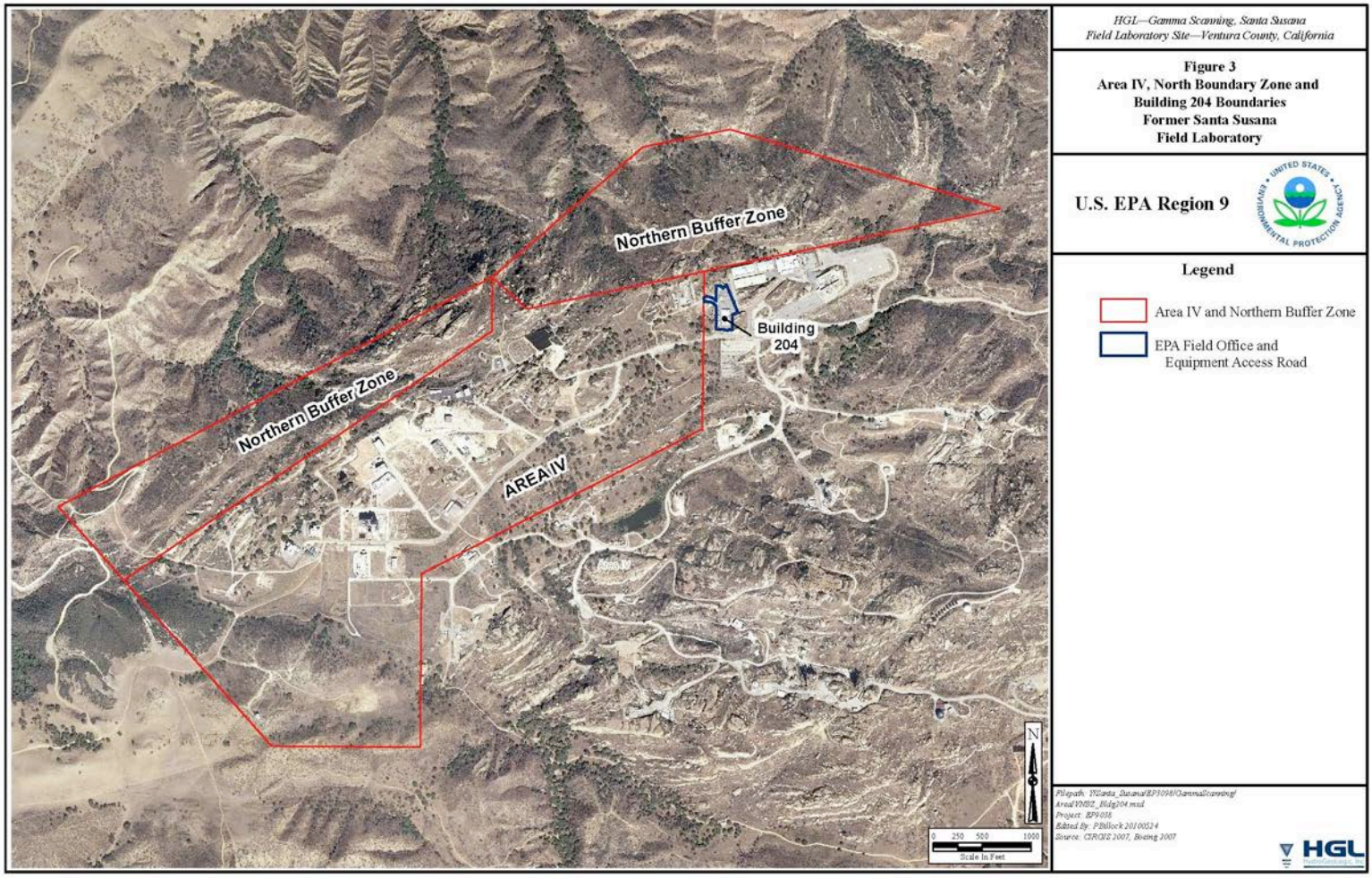
As indicated in **Figure 3**, EPA's field office area is located approximately 300 feet from Area IV and consists of Building 204, nearby outbuildings and adjacent paved areas. The animal (e.g. mule) stable is located within the EPA field office area and the entire field office area is fenced and locked outside normal working hours. Gamma scanning equipment and support vehicles will move to and from the field office and the NUL via existing paved and dirt/gravel roads located both onsite and offsite.

IDW associated with the site activities will consist of purge water, decontamination water and soil cuttings.

- Purge water will be generated during monitoring well sampling activities.
- Decontamination water will be associated with every sampling activity.
- Soil cuttings will be collected during soil logging activities.

The IDW generated during field activities will be placed in leak tight vessels (55 gallon drums or similar containers) and transported to a temporary staging at Buildings 4011 and 4015 for subsequent removal by a disposal contractor.

Figure 3 Location of SSFL Field Office, Area II



Support Activities Avoidance Measures

Avoidance, documentation and minimization measures for support activities are provided below:

SA-1 Before initiation of any support activities, JMA's CRS will identify the locations of previously recorded archaeological sites in the APE, and establish a 50 ft. exclusion zone around the site boundaries. The 50 ft. buffer will be delineated with colored flagging tape and the exclusion area will be avoided. In addition, all support activities in areas deemed sensitive by the CRS will be performed under the supervision of the Cultural Resources Monitor.

SA-2 Additionally, any previously undiscovered cultural resources that are encountered during any portion of the Undertaking shall be fully documented and recorded by JMA's CRS. Site Record forms for these sites will be submitted to the South Central Coastal Information Center at the California State University Fullerton and thus be recorded in the California Historical Resources Information System (CHRIS) inventory.

SA-3 In the event that temporally diagnostic artifacts or other isolated artifacts that are vulnerable to damage and/or unauthorized collection are encountered, the Cultural Resources Monitor shall obtain a GPS position of the artifact's exact location and then collect them. They will either be returned to their original locations after the project has concluded, or deposited in a public curation facility as appropriate.

References Cited

Hogan, Michael and Bai "Tom" Tang
2010 *Cultural Resources Identification Survey: Northern Undeveloped Land at the Santa Susana Field Laboratory Site, Simi Hills Area, Ventura County, California*. California archaeological survey. Submitted to United States Department of Energy.