

APPENDIX J

# **Santa Susana Field Laboratory–Paleontological Resources Assessment**

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## TECHNICAL MEMORANDUM



## APPENDIX J

## Santa Susana Field Laboratory—Paleontological Resources Assessment

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### Introduction

The purpose of this technical memorandum is to evaluate the potential for encountering paleontological resources (more commonly known as fossils) and to identify the potential impacts to paleontological resources that could result from the National Aeronautic and Space Administration's (NASA's) proposal to demolish structures and conduct soil and groundwater remediation on the NASA-administered property at the Santa Susana Field Laboratory (SSFL). For the purpose of this analysis, the NASA-administered property of SSFL is termed the "study area," as portrayed in Figure 1.

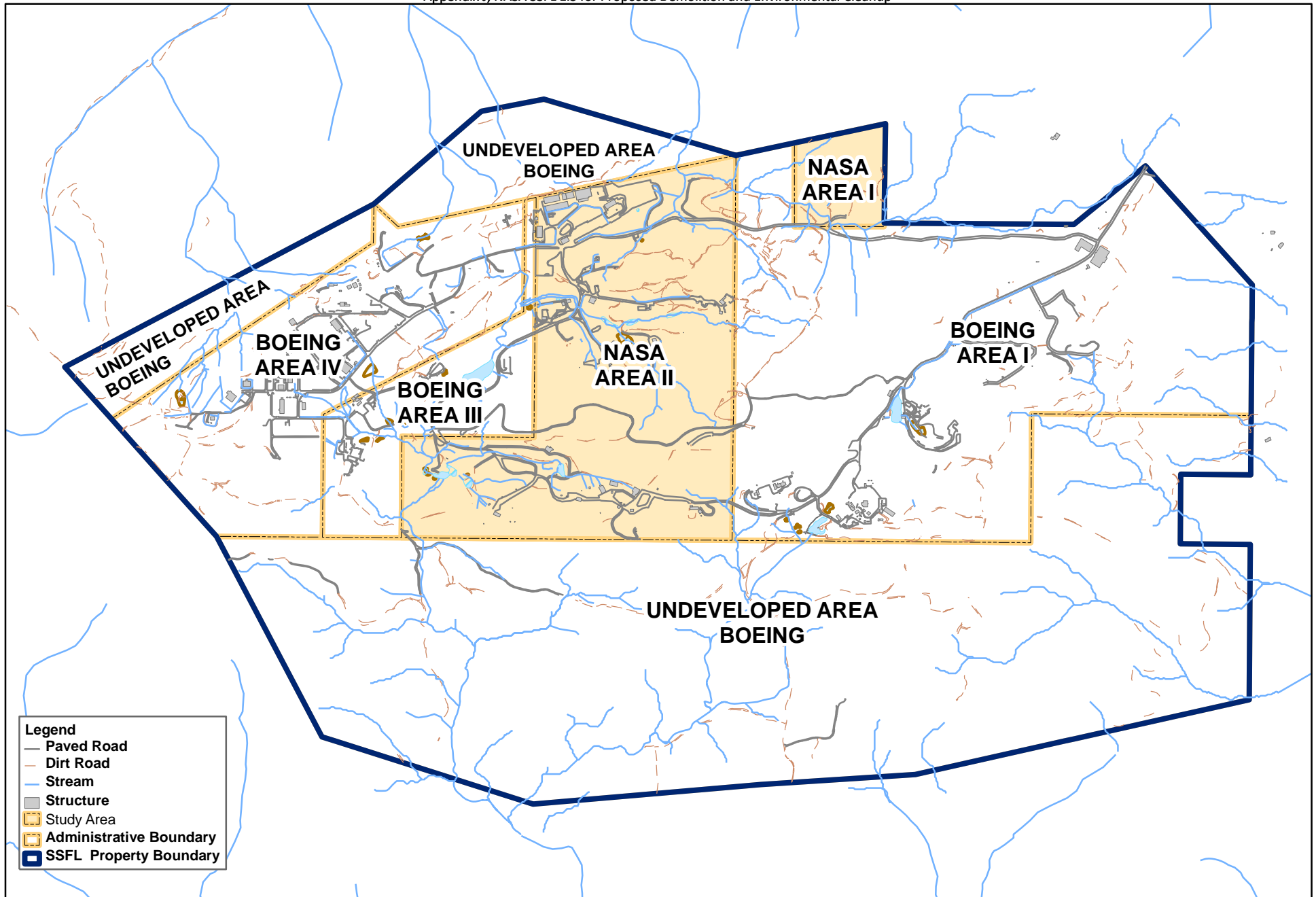
This study was prepared in conjunction with the federal Environmental Impact Statement (EIS). NASA is considering the following in its EIS:

- Up to 100-percent demolition of structures located on the NASA-administered portion of SSFL
- Soil remediation across the site by applying one or more remedial technologies including excavation, ex-situ treatments (which require excavation, treatment, and replacement of treated soils), soil vapor extraction, in-situ treatments (which include installing wells and injecting chemical, biological, or thermal treatments), phytoremediation, monitored natural attenuation, or institutional controls
- Groundwater treatment across the site by installing wells and applying one or more remedial technologies including pump and treat, vacuum extraction, iron-particle injection, thermal extraction, in-situ chemical or biological treatments, monitored natural attenuation, or institutional controls

Figures 2a and 2b identify the areas in which soil and groundwater remediation activities could take place. This assessment considers the potential to encounter paleontological resources as a result of the implementation of these proposed actions.

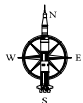
Although this assessment was conducted to support the EIS, other activities such as characterization of contamination and site operations also potentially could encounter or adversely affect paleontological resources. These activities are outside the scope of the EIS, but will be considered in the overall assessment.

This study included a literature search, which included reviewing available geologic maps, scientific publications, and technical reports for SSFL. A review of available museum and database records also was conducted. This study was conducted in compliance with professional guidelines and legislation relevant to paleontological resources management and mitigation, discussed in Section 3.

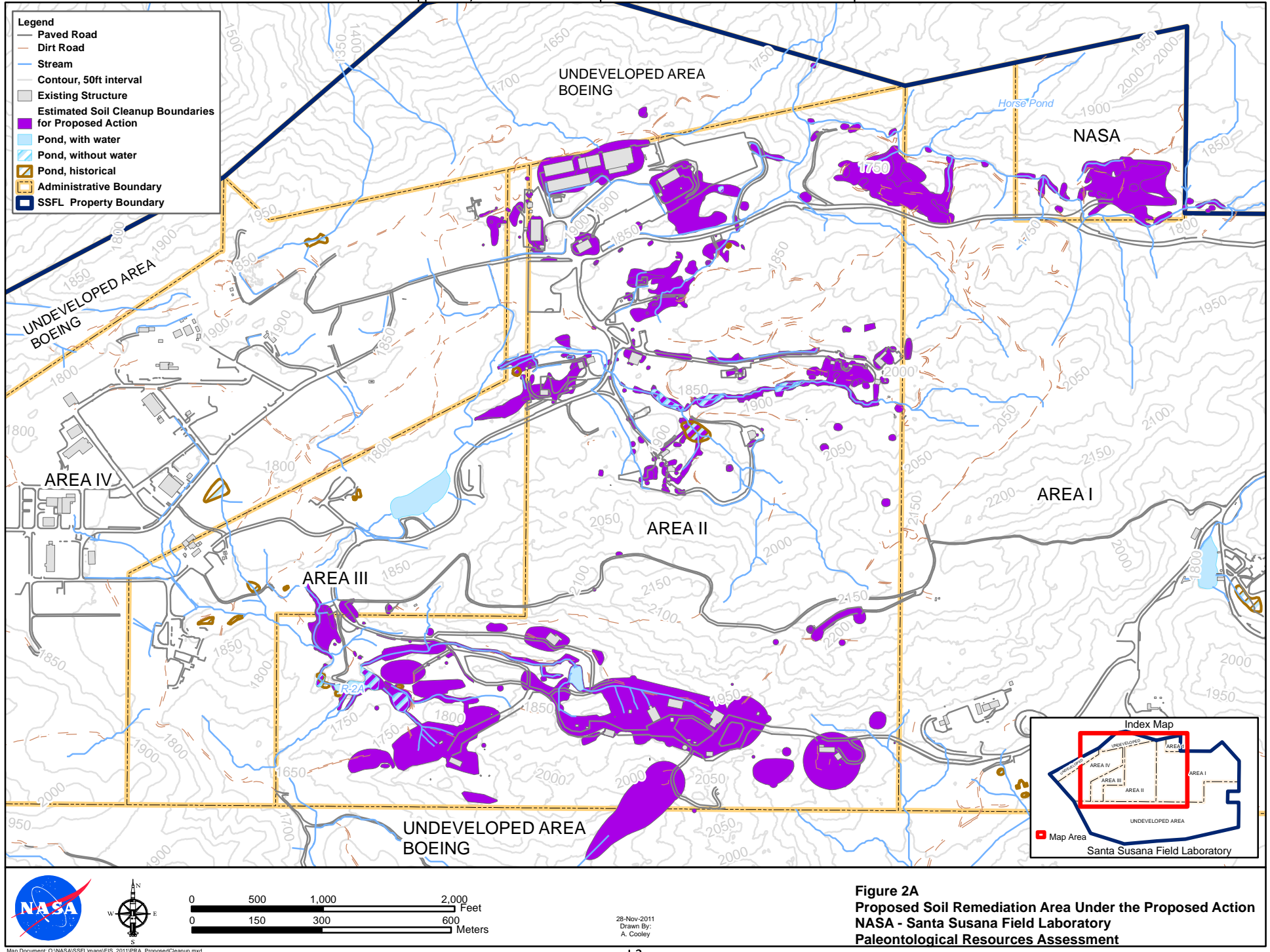


**Figure 1**  
**Regional Map**  
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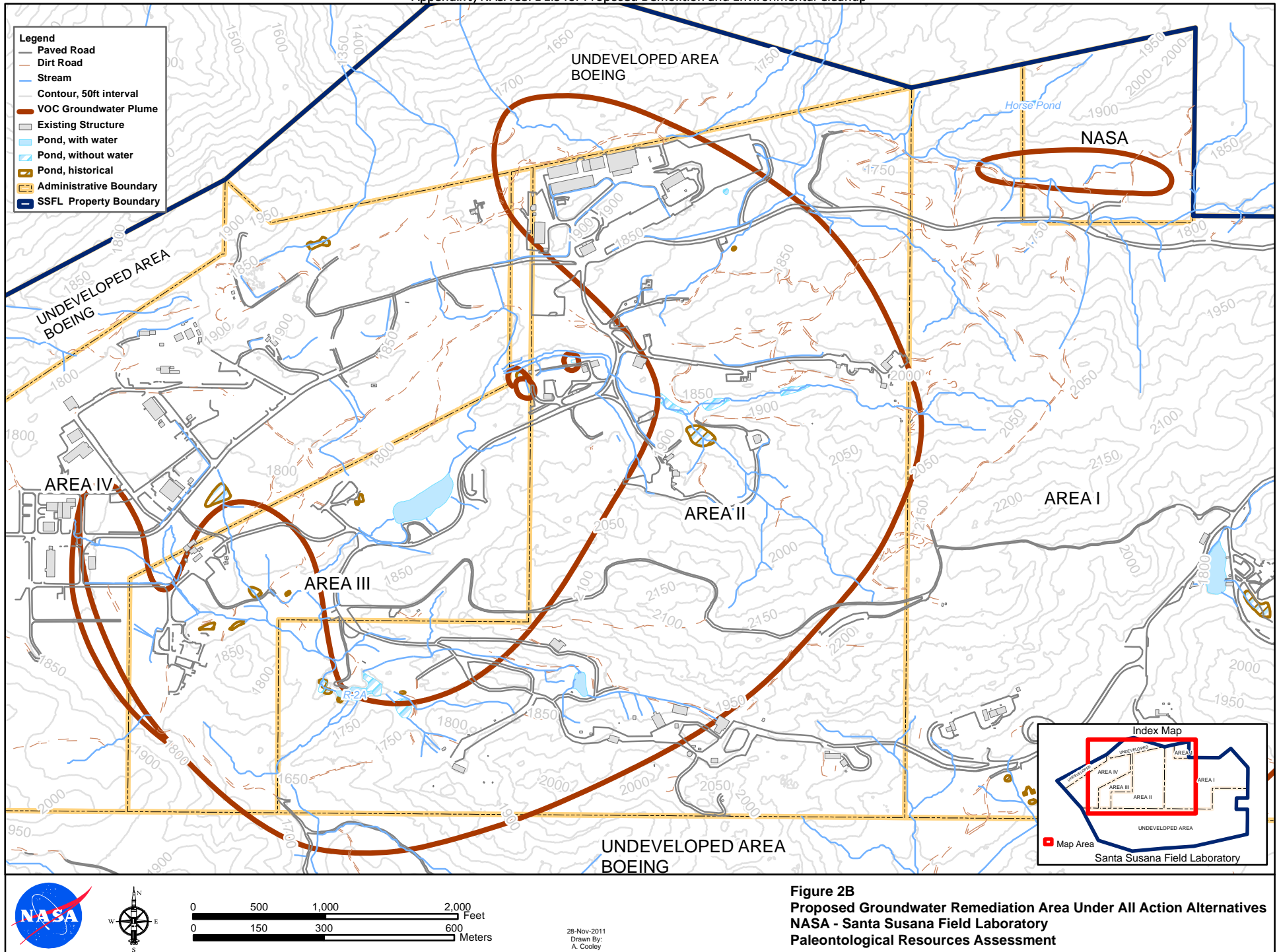
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 A. Cooley



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The environmental setting, including a discussion of the geologic setting, is presented in Section 2. A description of the laws, ordinances, regulations, and standards applicable to paleontological resources is presented in Section 3. Section 4 provides a discussion of the project impacts and associated mitigation measures. References are provided in Section 5.

## Environmental Setting

SSFL consists of approximately 2,850 acres of hilly terrain approximately 29 miles northwest of downtown Los Angeles, California, and immediately southeast of Simi Valley, on the southeastern corner of Ventura County, California. The site is at approximately 2,100 feet of elevation with more than 1,000 feet of topographic relief within the study area.

### Regional Geology

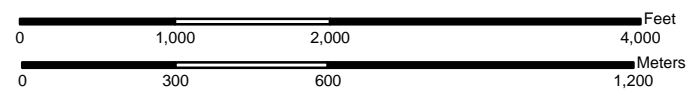
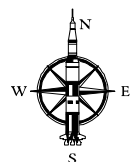
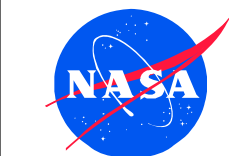
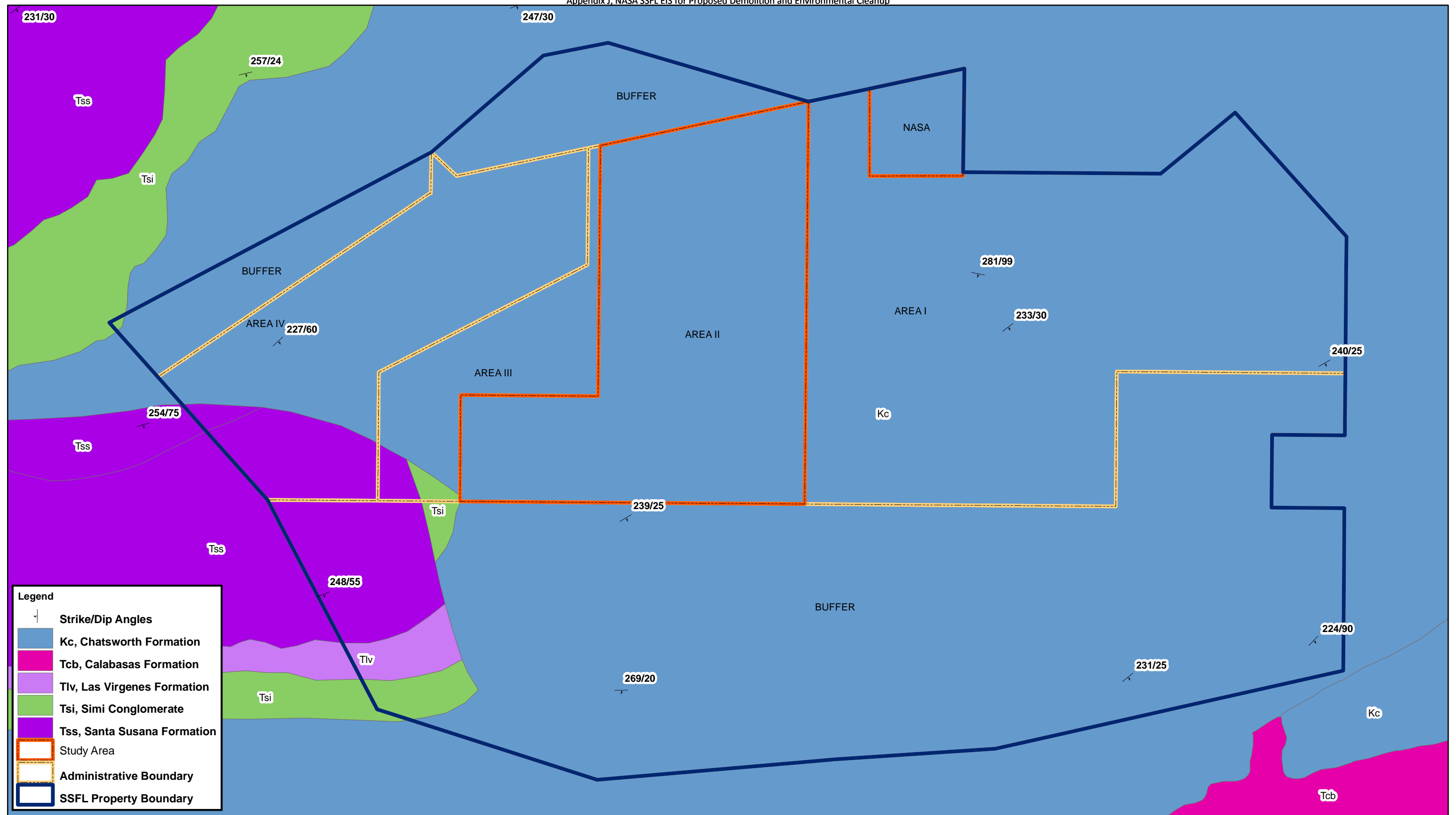
SSFL is situated in the Transverse Ranges, a geomorphic province dominated by rugged, mountainous terrain. The geologic structures of the Transverse Ranges, including the province itself, run predominantly east-west because of north-south compression from the numerous faults in the region, predominantly the San Andreas Fault Zone (MWH, 2007). The Transverse Ranges themselves are largely granitic, but sedimentary rocks also are preserved in certain areas, particularly on the flanks of the uplifts. As might be expected from its proximity to the Pacific Ocean, the sedimentary formations of the region preserve a predominantly marine history, with several non-marine episodes, and have produced a nearly continuous record from the Late Cretaceous to the Quaternary (MWH, 2009). Since the Early Miocene the region has undergone several episodes of intense deformation, including rotation of the entire region, which continues today (Nicholson et al., 1994), and later rifting (MWH, 2009). Together, these tectonic events create a complex regional geology that includes numerous large folds and faults as ever more Pacific Ocean sediment is accreted to the western edge of North America.

### Local Geology

Figure 3 shows the geological units within this rugged area. In general, the local geology of an area establishes the potential to encounter paleontological resources within that area. The geologic unit that underlies the entire study area is the Cretaceous Chatsworth Formation (Kew, 1924; MWH, 2007), which is now defined as encompassing the fine-grained marine sandstones of the Late Cretaceous in the Simi Hills that had previously been considered part of the Chico Formation (Colburn et al., 1981a; Kew, 1924). The Chatsworth Formation is bounded at the top by an angular unconformity, which forms the contact with the overlying Simi Conglomerate; the bottom contact of the unit is not exposed (Colburn et al., 1981a; MWH, 2007; MWH, 2009), but seismic data suggest that the formation unconformably overlies continental basement rock (Colburn, 1981b). In the study area, the formation generally dips to the northwest and is deformed by numerous faults and folds (Kew, 1924; Colburn et al., 1981a). The formation is interpreted to be a preserved submarine fan, composed primarily of turbidite sandstones and interbedded mudstone (Colburn et al., 1981a). For the purposes of this report, the Chatsworth Formation has been divided into a lower member, which is exposed at the southeastern corner of the site and generally dips northeast to underlie the site at unknown, but presumably great, depths; and an upper member, which dominates the surface geology of the site and forms the dramatic cliffs in the area. More recent work (MWH, 2007; MWH, 2009) has subdivided the upper portion of the Chatsworth Formation into numerous members, based generally on grain size and bed thickness, and provides detailed stratigraphic analysis of the upper member of the formation. The division between the upper and lower members of the Chatsworth Formation is based on the percentages of fine-grained to coarse-grained beds visible in outcrops, although the lithology of both members is similar and both include beds ranging from coarse sandstone to shale (MWH, 2007). In satellite imagery the upper member of the Chatsworth Formation is identifiable by the more rugged topography, which includes numerous cliffs and shear faces. In contrast, the lower member of the Chatsworth Formation, which is exposed in only a small portion of the southeastern corner of the study area, has produced a relatively less rugged topography with fewer outcrops and cliff faces.

The predominant sedimentary structures throughout the Chatsworth Formation, both upper and lower member, are turbidites (Colburn et al., 1981a). These, along with a sparse and re-worked local fauna (Colburn et al., 1981a) and numerous soft-sediment deformation structures (MWH, 2007), indicate that this formation was deposited in a





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**Figure 3**  
**Regional Geologic Units**  
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submarine fan environment. Submarine fans are broad, conical structures that form at the mouths of submarine canyons (canyons that form on the continental slopes), as shown in Link et al. (1981). This deposition has resulted in a geologic unit that generally is composed of laterally discontinuous beds. Turbidite deposits within these fans usually consist of sandstone and siltstone layers, decreasing in both grain size and bed thickness up-section, and typically are channelized and of limited geographic extent (Link, 1981). In places, part or all of the fine-grained portions of the turbidite sequence might have been stripped from the deposit by the processes that formed subsequent turbidite deposits, resulting in thick layers of sandstone with little to no shale between depositional beds (Link et al., 1981). Conglomerates and coquina-like shell deposits, such as those found in Dayton and Bell Canyons, are located in the lowest portions of the turbidite sequences (Link et al., 1981).

The only other units within the study area are quaternary alluvium, which consists of thin layers (typically 5 feet thick or less) of material eroded from the Chatsworth Formation scattered throughout the site (MWH, 2007); and disturbed fill from historic construction activities.

Younger sedimentary formations lie to the northwest and southeast of the study area. These include the Simi Conglomerate, the Las Virgenes Formation, the Santa Susana Formation, and the Calabazas Formation. In particular, the marine Santa Susana Formation lies immediately west of the southwestern study area boundary (Figure 3). This formation, however, is separated from the study area by a fault (MWH, 2007) and is not known to underlie any portion of the study area. These formations will not be affected adversely by the proposed demolition and remediation activities, and therefore, are not considered further.

### Paleontological Records Search Results

A part of the assessment includes the review of available geologic maps, scientific publications, technical reports, and other references to identify geologic formations that would likely contain paleontological resources and to identify paleontological resources that have been previously identified by others near the study area. The results of this review are discussed in this subsection.

Few references to fossils within the Chatsworth Formation are available. In large part, this might lack be due to the relative rarity of fossils within this unit. Megafossils (generally, fossils large enough to be seen in the field and without the aid of microscopes) are restricted to the lower member of the formation, and are rare within that member (Link et al., 1981). This lack of fossil records from the Chatsworth formation, in part, also could be because the formation name is relatively new (Link et al., 1981); therefore, fossils previously found in these beds would be attributed to other formations. The formation also was determined to have no potential to produce petroleum (Kew, 1924), which likely further reduced commercial interest in this formation.

To verify that the fossil record of the sediments underlying the study area was adequately addressed, the history of the sediments was reviewed, as were records of fossils found within the sediments before the adoption of the name “Chatsworth Formation.” Prior to 1981, the Cretaceous marine shales of the Simi Hills were described as being part of the Chico Formation (Link et al., 1981; Waring, 1917). No fossils were found in the overlying sandstone (what is now called the upper member of the Chatsworth Formation); however, invertebrate fossils, including gastropods, cephalopods, pelecypods (bivalves), echinoderms, and brittle stars were found in the shales now referred to as the lower member of the Chatsworth Formation (Waring, 1917). Later work (Kew, 1924) attributed both the shale-rich and overlying sandstone-rich units as part of the Chico Formation. The lithology of the fossil-bearing material also was defined more precisely—fossils were predominantly found in brown, calcite-rich, fine-grained sandstone at the base of the lower shale-rich unit (Kew, 1924). Kew (1924) confirms earlier reports that the upper sandstone units of Cretaceous age in this region are not fossiliferous.

More recently, field work in the Simi Hills area, and examination of museum records collected from beds now attributed to the Chatsworth Formation, have produced a sparse assemblage of invertebrate fossils including gastropods, cephalopods, and bivalves (Saul and Alderson, 1981), as well as trace fossils (Bottjer, 1981), from a small number of sites within the lower member of the formation. Although it has been estimated that more than 100 species of mollusks have been found, the majority have not yet been described (Saul and Alderson, 1981). The body fossils (fossils of the organism itself, as opposed to the trace fossils such as trackways and burrows) tend to be preserved in discrete packets of the rock (generally referred to as lenses due to their shape, which resembles a

convex lens) that represent the lowermost portions of channelized turbidite deposits within the lower member of the formation (Link, 1981). These fossil assemblages likely represent communities living at more shallow depths that were transported into the area by the turbidity currents that created this formation (Colburn et al., 1981a). Predominantly, these fossils have been found in the Dayton and Black Canyons (Saul and Alderson, 1981; Welton and Alderson, 1981; Waring, 1917), with the nearest lying 1.5 miles east of the study area (Link et al., 1981), within the lower member of the Chatsworth Formation.

The only vertebrate remains recorded from the Chatsworth Formation are shark teeth and fish bone found in two locations within the lower member of the formation, in association with large numbers of mollusk shells (Welton and Alderson, 1981). Few teeth are visible in hand-samples at either location; most of the fish remains were discovered by dissolution of rock from these locations in formic acid, which produced teeth, vertebrae, and placoid scales (Welton and Alderson, 1981).

Several microfossil sites (sites that have yielded fossils of microscopic organisms such as radiolaria, diatoms, and foraminifera) are located in the upper and lower members of the Chatsworth Formation. These include benthic foraminifera (Almgren, 1981) and calcareous nanofossils (Filewicz, 1981), which have contributed to identifying the age and depositional setting of the formation (Colburn et al., 1981a). Finally, plant fossils, including twigs and leaves, have been found in the fine-grained units within the Chatsworth Formation (Colburn et al., 1981a), although no details regarding the stratigraphic context of these fossils are available.

Along with the literature reviewed, two standard online databases (the PaleoBiology Database [not dated (n.d.)] and the University of California Museum of Paleontology [UCMP] database [n.d.]) were reviewed. The PaleoBiology Database (n.d.) records four gastropod species (*Perissitys colocara*, *P. pacifica*, *Murphitys Madonna*, and *M. corona*) from the formation. No information about the stratigraphy is provided (PaleoBiology Database, n.d.), and the study to which these records were attributed (Popenoe and Saul, 1987) does not provide a detailed stratigraphic analysis of these finds. The UCMP database (n.d.) does not include any records from the Chatsworth Formation. Several records attributed to the Chico Formation within Ventura County in the UCMP database (UCMP, n.d.) are almost certainly references to outcrops now classified as the Chatsworth Formation; however, these references do not include faunal lists (UCMP, n.d.).

No fossils were attributed to the Quaternary alluvium at the site.

Because disturbed sediments, including disturbed native sediment and any non-native fill, have no potential to produce scientifically significant paleontological resources, these sediments were not included in the literature or records review.

## Regulatory Setting

Potentially applicable federal, state, and local laws, ordinances, regulations, and standards governing the assessment and protection of paleontological resources are discussed in the following subsections.

### Federal Regulations

Paleontological resources are protected by federal regulations, most of which apply only to excavations and construction on federal land. Because the project is on land owned by the federal government and administered by NASA, these federal laws, ordinances, regulations, and standards are applicable to the study area.

Paleontological resources were first protected by the Federal Antiquities Act of 1906 (Public Law [P.L.] 59-209; 16 United States Code [U.S.C.] 431 et seq.; 34 Stat. 225), which calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands. Fossils, as prehistoric structures and objects of scientific interest, are therefore protected by this act.

Further federal protection of paleontological resources is provided by the Federal Land Management and Policy Act (43 U.S.C. 1712[c], 1732[b]); sec. 2, Federal Land Management and Policy Act of 1962 [30 U.S.C. 611]; Subpart 3631.0 et seq.), *Federal Register* Vol. 47, No. 159 (1982). This regulation charges federal agencies to manage public lands in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, archaeological, and water resources and, where appropriate, to preserve and protect certain

public lands in their natural conditions (Section 102[a][8][11]); to periodically inventory public lands so that the data can be used to make informed land-use decisions (Section 102[a][2]); and to regulate the use and development of public lands and resources through easements, licenses, and permits (Section 302[b]). Although paleontological resources are not mentioned specifically, scientifically significant fossils are understood to be scientific resources to be protected under this act.

The National Historic Preservation Act of 1966 includes more-specific regulations protecting paleontological resources. The statute provides for the survey, recovery, and preservation of significant paleontological data when such data could be destroyed or lost due to a federal, federally licensed, or federally funded project (P. L. 89 665; 80 Stat. 915, 16 U.S.C. 470 et seq.)

The *Code of Federal Regulations* Title 43, Section 8365.1-5 prohibits the collection of scientific resources, including vertebrate fossils, without a permit, as well as the use of fossils found on federal land for commercial purposes. However, the collection of reasonable amounts of common invertebrate fossils for non-commercial purposes is allowed.

### State of California

The state of California has several regulations that protect paleontological resources, the most important being the California Environmental Quality Act (CEQA). However, because the study area is under federal jurisdiction, these regulations are not applicable to activities within the study area.

### Ventura County

The Ventura County General Plan (County of Ventura, 2011) calls for an assessment of any potential impacts to paleontological resources for any discretionary project, and if impacts are expected either redesign of the project or mitigation of anticipated impacts. Because NASA is exempt from county regulations, the Ventura County General Plan is not applicable to activity within the study area.

### Professional Standards and Guidelines

The Society of Vertebrate Paleontology (SVP), an international scientific organization of professional paleontologists, has established guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data recovery, specimen preparation, analysis, and curation (SVP, 1995). Most practicing professional paleontologists follow the SVP guidelines, with appropriate accommodations for the last 16 years of advancement in paleontological resources management. More recently, paleontological resource management guidelines were promulgated by the U.S. Department of the Interior (USDI) Bureau of Land Management (BLM) *Instructional Memorandum 2008-009* (2008). These guidelines incorporate advancements that are being followed by many professional paleontologists conducting paleontological studies on federally managed land and elsewhere.

### Environmental Impacts and Recommendations

The potential effects on paleontological resources from the proposed demolition and remediation activities within the study area are assessed in Section 4. These potential impacts consist of damage or destruction of fossils, or improper removal of fossils from the sediments in which they are found as a result of earth-moving activities including demolition, excavation, or well installation activities associated with the proposed actions. Because paleontological resources are non-renewable resources (SVP, 1995), all impacts to paleontological resources should be considered long-term impacts.

### Sensitivity Criteria

In its guidelines for assessment and mitigation of adverse impacts to paleontological resources, the SVP (1995) established three categories of paleontological sensitivity for the geologic units—high, low, and undetermined. To these categories is added that of “moderate,” following current usage in federal guidelines (BLM, 2008). The paleontological importance or sensitivity of a geologic unit reflects its potential paleontological productivity as well as the scientific significance of the fossils it has produced. The potential paleontological productivity of a geologic unit exposed in the study area is inferred from the abundance of fossil specimens and/or previously recorded fossil

sites in exposures of the unit, or of similar units in similar geological settings. The underlying assumption of this assessment method is that a stratigraphic unit is most likely to yield fossil remains in a quantity and of a quality similar to those previously recorded from the unit elsewhere in the region.

An individual fossil specimen is considered scientifically important and therefore “significant” if it is identifiable; complete; well preserved; age diagnostic; useful in paleoenvironmental reconstruction; a member of a rare species; and/or a skeletal element different from, or a specimen more complete than, those now available for the species (SVP, 1995). For example, vertebrate remains are comparatively rare in the fossil record and most identifiable vertebrate remains, therefore, are scientifically significant. Invertebrate fossils, in contrast, are frequently part of a paleontologically significant fauna represented by many collections, but individually are of low scientific significance. That said, dense concentrations of invertebrate fossils can be considered scientifically significant due to the potential to catalog an entire, possibly diverse fauna, and the potential for finding rare taxa.

### Significance Criteria

Federal and state statutes, as well as professional standards, agree that the damage or destruction of a unique paleontological resource or site is a significant and adverse impact to paleontological resources (for example, CEQA Section 3.1.2) (SVP, 1995; BLM, 2008). This type of damage most typically is thought of as occurring from heavy-equipment damage to fossils, but also might occur when fossils are looted, improperly removed from the surrounding sediment, or otherwise lost to the scientific world. Because fossils are a non-renewable resource (SVP, 1995), all impacts to paleontological resources are considered adverse and potentially significant unless they result in recovery of the scientific and educational values of the resource.

Generally, the probability of adverse impacts during excavations within a geologic unit is proportionate to the paleontological sensitivity of the unit in question. Although it is theoretically possible to adversely affect paleontological resources in low-sensitivity geologic units, the possibility would be remote. The highest probability of significant adverse effects to paleontological resources results from disturbance of stratigraphic units with high paleontological sensitivity. These are geological units that have produced scientifically significant fossils, and in which recorded fossil localities are sufficiently frequent to anticipate encountering more (SVP, 1995). Significant impacts are possible from excavation in moderate sensitivity units; however, such impacts are less likely than in high sensitivity units, because fossil sites in these units tend to be widely scattered or of low scientific significance (BLM, 2008).

Paleontological resources that remain undisturbed in the sediment are considered to be unaffected by the proposed demolition and remediation activities within the study area and are considered adequately protected. Because fossils will only be exposed during the earth-moving phases of the project (including any demolition, excavation, and well installation activities), operation of treatment systems and monitoring activities that would not result in subsurface disturbances usually have no potential to affect paleontological resources.

### Sensitivity of Geologic Units

The lower member of the Chatsworth Formation has produced invertebrate fossils, typically deposited down slope from their location in life (Colburn et al., 1981a) and confined to geographically discontinuous beds that represent the bottommost portion of channelized turbidite sequences (Links, 1981). Where present, invertebrate fossils tend to be extremely numerous, in places forming coquina-like deposits (Welton and Alderson, 1981). The only vertebrate fossils—shark remains—are known from two locations, both south of the study area and in members older than those present in the study area (Welton and Alderson, 1981). Professional standards (BLM, 2008) state that formations which produce such invertebrate faunas, of sufficient numbers for hobby collecting, should be considered to be of moderate paleontological sensitivity; therefore, the lower member of the Chatsworth Formation is considered to possess moderate paleontological sensitivity.

The only fossils that have been attributed to the upper member of the Chatsworth Formation are microfossils. Because microfossils generally are not individually considered to be scientifically significant, the upper member of the Chatsworth Formation is considered to possess low paleontological sensitivity.

## Direct Impacts

The potential for the proposed demolition and remediation activities (along with site characterization sampling and site operation activities) to affect significant paleontological resources depends on the type of activity, as well as on the paleontological sensitivity of each geological unit affected. In general, paleontological resources are considered to be affected when they are damaged or removed from the surrounding sediment other than during a scientifically controlled excavation (SVP, 1995; BLM, 2008).

Proposed demolition activities would include removal of structural components up to 5 feet below grade and primarily would affect low-sensitivity disturbed sediment. Proposed excavation and ex-situ treatments would include removal of soils up to 20 feet below grade and primarily would affect low-sensitivity Quaternary alluvium and weathered material derived from the low-sensitivity upper member of the Chatsworth Formation. New well installations could reach depths of between 50 and 900 feet below grade and predominantly would encounter the low-sensitivity upper member of the Chatsworth formation; however, deep wells, particularly in the southern portion of the study area, might encounter the moderate-sensitivity lower member of the Chatsworth Formation. Soil borings (for site characterizations) could be advanced to the top of the weathered bedrock, and therefore would affect low-sensitivity alluvium and weathered material derived from the low-sensitivity upper member of the Chatsworth Formation. General site operation activities likely would be limited to activities such as infrastructure maintenance, plantings, pipe installation, and road or culvert maintenance, and would result only in surficial impacts to low-sensitivity alluvium.

The impacts of remediation disturbance on paleontological resources can be mitigated by scientifically recovering the fossil(s). Although well installation is the primary activity that might affect paleontological resources, reconsidering the locations where wells would be installed is not recommended because the exact locations of paleontological resources in the subsurface are not known.

Figure 3 shows the geology in the study area, which is underlain predominantly by the low-sensitivity upper member of the Chatsworth Formation; impacts to scientifically significant paleontological resources are not likely in this member. However, the moderate-sensitivity lower member of the Chatsworth Formation might be encountered during well installation activities, particularly in the southern portion of the study area. Also, a small part of the southeastern portion of the study area is underlain by the lower member of the Chatsworth Formation.

Activities that do not involve excavations or other subsurface disturbances will not affect fossils buried in the sediment, including activities such as in-situ treatment operations or monitoring activities that might affect the groundwater, but not the surrounding rock. The following mitigation recommendations are applicable only to the excavation phase of any site remediation activities, when adverse impacts are most possible.

## Conclusions and Recommendations

Implementation of the mitigation measures described in the following subsections would reduce the potential for adverse impacts to paleontological resources to a negligible level. In fact, any paleontological resources recovered during excavation activities could be considered a positive impact, because much of the paleontological record from California comes from monitoring excavation activities, and any fossils uncovered during excavations into this little-studied formation could contribute to this body of knowledge.

### Paleontological Field Survey.

Because the majority of the site is underlain by the low-sensitivity upper member of the Chatsworth Formation, and within the study area there are no substantial geological exposures of potentially fossiliferous sediment, no field survey is recommended. Furthermore, the moderate-sensitivity lower member of the Chatsworth Formation, which could be affected by well installation activities, could not be surveyed adequately in the study area without substantial and more invasive excavation.

### Monitoring and Mitigation Plan.

Once NASA selects an alternative (including which buildings would be demolished and what types of remedial technologies would be applied to clean up soil and groundwater contamination), a paleontological monitoring and mitigation plan (PRMMP) should be developed, in compliance with CEQA and other relevant legislation, to be



implemented for activities that would extend to the moderate-sensitivity lower member of the Chatsworth Formation. The PRMMP should outline a coordination strategy so that construction disturbances of the moderate-sensitivity lower member of the Chatsworth Formation would be monitored adequately. The PRMMP should stipulate the frequency of monitoring, methods of sampling and other appropriate procedures. It also should detail the significance criteria to be used for deciding which resources would be recovered for their data potential. The PRMMP should detail methods of recovery, post-excavation preparation and analysis of specimens, final curation of specimens at an accredited facility, data analyses, and reporting. The PRMMP should stipulate that paleontological work undertaken during this project will be conducted by qualified professionals.

### Construction Personnel Training.

For activities that extend to the moderate-sensitivity lower member of the Chatsworth Formation, construction personnel should be trained in recognizing possible buried paleontological resources and protecting paleontological resources during activities in the moderate-sensitivity lower member of the Chatsworth Formation in compliance with CEQA and other relevant legislation. This training should occur before activities that could affect the lower member of the Chatsworth Formation are initiated. Construction personnel should be trained on the procedures to be followed upon the discovery of paleontological materials. Personnel should be instructed that unauthorized collection or disturbance of fossils is unlawful.

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**End of Appendix J**