G-4 Paleontological Resources Assessment Report

HOLLYWOOD CENTER PROJECT CITY OF LOS ANGELES, CALIFORNIA

Paleontological Resources Assessment Report

January 2019

ESA

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Project Location:

Hollywood (CA) USGS 7.5-minute Topographic Quad Section 10, Township 1 South, Range 14 West, San Bernardino Base and Meridian

Acreage: Approx. 4.46 acres

Assessor Parcel Numbers: 5546-004-006; 5546-004-029; 5546-004-020; 5546-004-021; 5546-004-032; 5546-030-028; 5546-030-031; 5546-030-032; 5546-030-033; and 5546-030-034

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) has conducted a paleontological resources assessment for the Hollywood Center Project (Project) in support of an Environmental Impact Report (EIR). The Project proposes to construct a mixed-use project on approximately 4.46-acres (Project Site) in the Hollywood community of the City of Los Angeles (City), California. The City is the lead agency pursuant to the California Environmental Quality Act (CEQA).

The Project includes a "West Site" and "East Site." The West Site is located on Assessor Parcel Numbers (APNs) 5546-004-006 (1746-1764 N. Ivar Ave.); 5546-004-029 (6334 W. Yucca St.); 5546-004-020 (1745-1753 N. Vine St.); 5546-004-021; and 5546-004-032. The East Site is located on APNs 5546-030-028 (6236 W. Yucca St.; 1740-1768 N. Vine St.); 5546-030-031 (6270 W. Yucca St.); 5546-030-032 (1770 N. Vine St.); 5546-030-033 (1733-1741 N. Argyle Ave.); and 5546-030-034 (1720-1724 N. Vine St.).

The Project would develop the Project Site with 872 market-rate housing units; 133 senior affordable housing units; 30,176 square feet of commercial floor area; approximately 160,707 square feet of open space and amenities; 1,521 vehicle parking spaces; and 511 bicycle parking spaces. The West Site would include a 35-story mixed-use building "West Building"; and an 11-story "West Senior Building" with subterranean garage. The East Site would preserve the Capitol Records and Gogerty Buildings (Capitol Records Complex) and add a 46-story "East Building"; and also construct an 11-story "East Senior Building" with a five-story subterranean parking garage.

A Hotel Option associated with the East Site would replace 104 market-rate units within the East Building with a 220-room hotel. Under this Hotel option, there would be no change to building height and massing of the East Building, and the East Senior Building would be reduced from 11 stories to 9 stories with 48 affordable housing units.

The literature review and geological mapping indicates that the surficial geology of the Project Site consists of elevated older alluvium with outcrops of marine claystone and shale identified as the Monterey Formation are present to the north of the Project Site, and underlie the Project Site at an unknown depth. Ice Age animals such as mammoths, horse, camel, bison, sabertooth cat, wolf, and others, as well as abundant small animals such as rodents, birds, lizards, and snakes have been found from Pleistocene-aged alluvium throughout Los Angeles. Also, a wide variety of significant fossils, such as sharks, marine mammals, and land mammals are known from the Monterey and Topanga formations in the region.

A review of prior geotechnical investigations (Feffer, 2019) indicates that the Project Site is underlain by fill soil to a depth of 1 to 8 feet below ground surface (bgs), "young alluvium"

extending to 23.5 - 38 feet below grade, and "old alluvium" extending to the terminations of the borings, 65 to 135 feet below grade.

A database search for records of fossil localities within the Project Site was conducted by the Natural History Museum of Los Angeles County (LACM) on April 26, 2018. The database search results indicated that no known localities exist within the Project Site; however, a number of vertebrate fossils from Older Quaternary Alluvium are known from within one mile of the Project Site (LACM 6297-6300). These localities have yielded specimens of horse (*Equus*), bison (*Bison*), camel (*Camelops*), and mastodon (*Mammut americanum*) between 47 feet to 80 feet bgs.

The geologic units within the Project Site were assigned paleontological sensitivity rankings based on the Society for Vertebrate Paleontology guidelines. The fill present within the Project Site has no paleontological sensitivity. Due to the age of the alluvium present beneath the fill (early Holocene and older), all of the sediments present in the subsurface of the Project Site – alluvium and the Monterey Formation have high paleontological sensitivity.

No paleontological resources were identified within the Project Site as a result of this assessment. However, the findings of this assessment indicate that any Project-related excavation into previously undisturbed sediments would likely encounter geologic units with high paleontological sensitivity (early Holocene and older alluvium and Miocene-age Monterey formation). Recommended mitigation measures, including retention of a Qualified Paleontologist, paleontological resources monitoring, and procedures to be followed in the event of the discovery of paleontological resources, are provided in the *Conclusions and Recommendations* section of this assessment in order to reduce impacts to unique paleontological resources to a less than significant level under CEQA.

HOLLYWOOD CENTER PROJECT Paleontological Resources Assessment Report

Introduction

ESA has conducted a paleontological resources assessment for the Hollywood Center Project (Project) in support of an Environmental Impact Report (EIR). The Project proposes to construct a mixed-use project on an approximately 4.46-acre (194,495 square feet) site located at 1720-1770 North Vine Street; 1746-1760 North Ivar Avenue; 1733 and 1741 Argyle Avenue; and 6236, 6270, and 6334 West Yucca Street, Los Angeles, California 90028 (collectively, the "Property"), within the neighborhood of Hollywood, City of Los Angeles (City). The City is the lead agency pursuant to the California Environmental Quality Act (CEQA).

ESA personnel involved in the preparation of this assessment are as follows: Monica Strauss, M.A., RPA, program director; Sara Dietler, B.A., Project Manager; Alyssa Bell, Ph.D., Paleontological Principal Investigator and assessment author; and Jessie Lee, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location

The 4.46-acre Project Site is located on ten parcels generally bounded on the north by Yucca Street, on the west by Ivar Avenue, on the east by Argyle Avenue, and on the south by Hollywood Boulevard within the community of Hollywood (**Figure 1**). Vine Street bisects the Property, which creates two subareas referred to as the "West Site" and "East Site." The "West Site" area contains the following Assessor Parcel Numbers (APN) 5546-004-006 (1746-1764 N. Ivar Ave.); 5546-004-029 (6334 W. Yucca St.); 5546-004-020 (1745-1753 N. Vine St.); 5546-004-021; and 5546-004-032. The "East Site," contains APNs: 5546-030-028 (6236 W. Yucca St.; 1740-1768 N. Vine St.); 5546-030-031 (6270 W. Yucca St.); 5546-030-032 (1770 N. Vine St.); 5546-030-033 (1733-1741 N. Argyle Ave.); and 5546-030-034 (1720-1724 N. Vine St.).

The West Site is generally bound by Ivar Avenue on the west, Yucca Street and two commercial buildings to the north, Vine Street to the east, and two commercial buildings to the south. The East Site is generally bounded by Vine Street to the west, Yucca Street to the north, Argyle Avenue to the east, and two commercial buildings to the south. The Capitol Records building and the Gogerty building (Capitol Records Complex) are located on the East Site. To the north and east of the Project Site is the Hollywood Freeway (State Route 101); to the south is the Hollywood neighborhood and Central Los Angeles; to the west is the neighborhood of Hollywood Heights. Specifically, the Project is located in Section 10, Township 1 South, Range 14 West, San Bernardino Base and Meridian on the USGS Hollywood 7.5-minute topographic quadrangle (**Figure 2**).



SOURCE: ESRI

Hollywood Center Project

Figure 1 Regional Location





SOURCE: USGS Topographic Series (Hollywood, CA).

Hollywood Center Project

Figure 3 Project Location

Project Description

The Project would be comprised of a new mixed-use development on the approximately 4.46-acre site (Project Site). The existing Capitol Records Complex, composed of the Capitol Records Building and the Gogerty Building, would be preserved; although portions of its supporting parking area along with some existing parking not adjacent to the Capitol Records Complex, would be reconfigured and relocated to the new East Site five-floor subterranean and grade-level parking garage. The remaining surface parking uses on the Project Site would be removed in order to develop a mix of land uses, including residential uses (market-rate and senior affordable housing units), commercial uses, parking, and associated landscape and open space amenities. Four new buildings are proposed, including a 35-story "West Building," a 46-story "East Building," and two 11-story senior buildings set aside for extremely-low and very-low income households (one building on each site). The Project would develop approximately 1,287,150 square feet of developed floor area, including 1,005 residential dwelling units (872 market-rate units and 133 senior affordable housing units) totaling approximately 1,256,974 square feet of residential floor area, approximately 30.176 square feet of commercial floor area (retail and restaurant uses), approximately 160,707 square feet of open space and amenities, 1,521 vehicle parking spaces, and 551 bicycle parking spaces. The Project would have a floor-area ratio (FAR) of 6.975:1 (up to 7:1), which includes the existing 114,303 square foot Capitol Records Complex (consisting of the 92,664 square-foot Capitol Records Building and 21,639 square-foot Gogerty Building), for a buildable area of 1,401,453 square feet.

Under a proposed Hotel Option associated with the East Site, in lieu of the East Building Residential development described above, the Hotel Option would replace 104 of the market-rate units with a 220 room hotel such that the proposed Project would contain 220 hotel rooms and 319 market-rate residential housing units (there would be no change to the building height and massing for East Building). Under the Hotel Option, the senior housing building on the East Site would be reduced from 11 stories to 9 stories and would contain 48 affordable housing units. There would be no change to the West Site described above under the Hotel Option. Thus, under the Hotel Option, the Project would develop approximately 1,272,741 square feet of developed floor area, including 884 residential dwelling units (768 market-rate units and 116 senior affordable housing units) totaling approximately 1,112,287 square feet of residential floor area, a 220-room hotel totaling approximately 130,278 square feet of floor area, 30,176 square feet of other commercial floor area, 147,366 square feet of open space and amenities, 1,521 vehicle parking spaces, and 554 bicycle parking spaces. The Hotel Option would have a FAR of 6.903:1 (up to 7:1), which includes the existing Capitol Records Complex, for a total buildable area of 1,387,044 square feet.

Assuming the two sites are built one after another, construction of the Project would be completed over an approximately six-year period. Activities would be phased, beginning on the West Site as early as 2021 and on the East Site in approximately 2024. Construction timing could vary for both sites and could potentially overlap on the West and East Sites, and the EIR will analyze the most conservative construction schedule. Project construction would require grading and excavation activities down to a maximum depth of 76 feet below existing grade for building foundations and five levels of subterranean parking. The Project would export approximately 321,675 cubic yards of soil and generate approximately 1,616 cubic yards of demolition debris (asphalt, interior and exterior building demolition, and general demolition debris). No import of soil is proposed.

Regulatory Framework

State and Local Regulations

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable federal and state laws and regulations, as well as professional standards provided by the Society of Vertebrate Paleontology (SVP, 2010).

State Regulations

California Environmental Quality Act

The State CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 *et seq.*), are prescribed by the Secretary of Resources to be followed by state and local agencies in California in their implementation of the CEQA. Appendix G of the State CEQA Guidelines includes an Environmental Checklist Form with questions that may be used by public agencies in their assessment of impacts on the environment. The question within Appendix G that relates to paleontological resources states: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" The City of Los Angeles uses this question as its threshold of significance for determining whether impacts of paleontological resources are significant. CEQA protects paleontological resources by requiring an assessment of a project's potential paleontological impacts.

Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in PRC Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

Local Regulations

City of Los Angeles – General Plan

The Conservation Element of the City of Los Angeles General Plan recognizes paleontological resources in Section 3: "Archeological and Paleontological" (II-3), specifically the La Brea Tar Pits, and identifies protection of paleontological resources as an objective (II-5). The General Plan identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. If significant paleontological resources are uncovered during project execution, authorities are to be notified and the designated

paleontologist may order excavations stopped, within reasonable time limits, to enable assessment, removal or protection of the resources" (City of Los Angeles, 2001¹).

Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP, 1995, 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

As defined by the SVP (1995:26), significant nonrenewable paleontological resources are:

Fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP (1995:26), significant fossiliferous deposits are:

A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

Based on the significance definitions of the SVP (1995), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock

¹ For documents referenced in this Report, please see References for full citations.

unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case (SVP, 1995).

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. Therefore, without natural erosion or human-caused exposure, paleontologists cannot know either the quality or quantity of fossils. As a result, even in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside of the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if the fossils are significant, that successful mitigation and salvage efforts may be undertaken.

Paleontological Sensitivity

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources," the SVP (2010:1-2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

- **High Potential.** 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. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).
- Low Potential. 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 only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.
- Undetermined Potential. 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. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

• No Potential. Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

For geologic units with high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontologic potential of the rock units present within the study area.

Paleontological Resources Significance Criteria

Numerous paleontological studies have developed criteria for the assessment of significance for fossil discoveries (e.g. Eisentraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and Springer, 2003, etc.). In general, these studies assess fossils as significant if one or more of the following criteria apply:

- 1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
- 2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
- 3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
- 4. The fossils demonstrate unusual or spectacular circumstances in the history of life; or
- 5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

In summary, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important (Eisentraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and Springer, 2003). Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer, 2003; Scott et al., 2004).

Methods and Results

Archival Research

The Project Site was the subject of thorough background research and analysis. The research included a paleontological records search conducted by the Natural History Museum of Los Angeles County (LACM), as well as geologic map and literature reviews conducted by ESA paleontologist Alyssa Bell, Ph.D. The Project Site has also been the subject of a geotechnical study (Feffer, 2019). This study was used to further characterize the subsurface geological setting within the Project Site and supplement the archival research.

Geologic Setting

The Project Site is located in the Los Angeles Basin, a structural depression approximately 50 miles long and 20 miles wide in the northernmost Peninsular Ranges Geomorphic Province (Ingersoll and Rumelhart, 1999). The Los Angeles basin developed as a result of tectonic forces and the San Andreas fault zone, with subsidence occurring 18 – 3 million years ago (Ma) (Critelli et al., 1995). While sediments dating back to the Cretaceous (66 Ma) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 Ma) (Yerkes et al., 1965). Since that time, sediments have been eroded into the basin from the surrounding highlands, resulting in thousands of feet of accumulation (Yerkes et al., 1965). Most of these sediments are marine, as they eroded from surrounding marine formations, until sea level dropped in the Pleistocene Epoch and deposition of the alluvial sediments that compose the uppermost units in the Los Angeles Basin began.

The Los Angeles Basin is subdivided into four structural blocks, with the Project Site located in the Central Block, where sediments range from 32,000 to 35,000 feet thick (Yerkes et al., 1965). The Central Block is wedge-shaped, extending from the Santa Monica Mountains in the northwest, where it is about 10 miles wide, to the San Joaquin Hills to the southeast, where it widens to around 20 miles across (Yerkes et al., 1965).

Geologic Map & Literature Review

Geologic mapping by Dibblee and Ehrenspeck (1991) indicates that the surface of the Project Site is covered with early Holocene to late Pleistocene-aged elevated alluvium (mapped as Qae in **Figure 3**), likely overlying the Monterey formation. These geologic units are discussed below.



SOURCE: Dibblee Geological Foundation

Hollywood Center Project

Figure 3 Geology **Elevated Alluvium (Qae).** These alluvial sediments were deposited on the ancient floodplain of the Los Angeles River and consist of elevated and dissected well-sorted silts and sands, interbedded with stream channel deposits of sands and gravels (Dibblee and Ehrenspeck, 1991).

Geotechnical analyses conducted in 2018 (Feffer, 2019) and 2019 (Group Delta, 2019), disagree on the age of the alluvial sediments at the Project Site. Feffer identify these sediments as younger alluvium increasing to age older alluvium in the subsurface, indicating that the surficial layers of alluvium date to the Holocene (potentially younger than 5,000 years old) (Feffer, 2019). Group Delta identify these sediments as entirely older alluvium, dating from the mid-Holocene onwards (i.e., over 5,000 years old) (Group Delta, 2019). Given that the SVP identifies fossils as being 5,000 years in age or older, this discrepancy is significant in determining the paleontological potential of the upper layers of alluvium at the Project Site. As the LACM has records of fossil resources recovered from similar sediments as shallow as 5-6 feet below grade within a few miles of the Project Site, for the paleontological sensitivity assessment an age of mid-Holocene or older is accepted for these sediments, in line with that reported by Group Delta (2019) and mapping by Dibblee and Ehrenspeck (1991).

Pleistocene alluvium has a rich fossil history in Los Angeles (Brattstrom and Sturn, 1959; Steadman, 1980) and throughout southern California (Jefferson 1991a and b, Miller 1971, Scott and Cox 2008). The most common fossils include the bones of mammoth, bison, horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, as well as small animals such as rodents and lizards (Graham and Lundelius, 1994). In addition to illuminating the striking differences between Southern California in the Pleistocene and today, this abundant fossil record has been vital in studies of extinction (e.g. Sandom, et al., 2014; Scott, 2010), ecology (e.g. Connin et al., 1998), and climate change (e.g. Roy et al., 1996).

Monterey/Modelo Formation (Tm). Mapping by Dibblee and Ehrenspeck (1991) recognizes outcrops of bedrock north of the Project site as Monterey Formation, which is interchangeable with the Modelo Formation in this area. This formation consists of thinly-bedded, platy siliceous shale, with tentative outcrops identified north of the Project Site around the Franklin Avenue underpass of U.S. Highway 101 (Dibblee and Ehrenspeck, 1991). The Monterey/Modelo Formation was encountered in one of the four geotechnical borings at a depth of 85 feet below grade, but was not encountered in the other three borings, which extended to 80, 120, and 120 feet below grade (Feffer, 2019). As Project excavations are expected to extend a maximum of 76 feet below grade it appears to be unlikely the Monterey/Modelo Formation will be encountered. However, should excavations for the project extend past this depth, the Monterey may be impacted. The Monterey Formation records the filling of a deep basin formed by tectonism along the California margin (Pisciotto and Garrison, 1981) and constitutes one of the major elements of California geology and can range up to several thousands of feet thick (Bramlette, 1946). The Monterey ranges in age from 3 to 15 Million years old (Ma) (Obradovich and Naeser, 1981). The Monterey Shale has yielded a diverse fauna consisting of some mollusks (Bramlette, 1946) and common fish skeletons, particularly from laminated diatomaceous beds like those in the project area (Bramlette, 1946; Dibblee, 1973), and remains of larger marine macrofauna such as whales (Pyenson and Haasl, 2007) and the giant extinct Desmostylus (Hannibal, 1922), as well as birds

(Warheit, 1992), crocodiles (Barboza et al., 2017) and rare land organisms such as horse and land plants (Bramlette, 1946).

Topanga Formation (Ttusi). The upper claystone unit of the Topanga Formation is identified as occurring as extensive outcrops that make up the hills to the north of the Project Site (Dibblee and Ehrenspeck, 1991). This unit consists of micaceous clay shale or claystone with thin sandstone interbeds (Dibblee and Ehrenspeck, 1991). The Topanga was identified as occurring at 80 feet below grade in one of the borings conducted for the geotechnical study (Feffer, 2019). As Project excavations are expected to extend a maximum of 76 feet below grade it appears to be unlikely the Topanga Formation will be encountered. However, should excavations for the project extend past this depth, the Topanga may be impacted. The Topanga Formation is interpreted to represent wave-dominated coastal deposits grading into river-dominated deltaic deposits and fluvial deposits in the upper parts of the formation (Critelli and Ingersoll, 1995). The Topanga Formation dates to the middle Miocene, around 20 to 16 million years ago (Morton and Miller, 2006). Fossils from the Topanga Formation include numerous invertebrate and vertebrate remains from both marine and terrestrial settings, including sharks, bony fishes, birds, whales, dolphins, and land mammals (Boessenecker and Churchill, 2015; Campbell and Yerkes, 1980; Morton and Miller, 2006; Whistler and Lander, 2003).

LACM Records Search

On April 12, 2018, ESA requested a database search from the LACM for records of fossil localities in and around the Project Site. The purpose of the museum records search was to: (1) determine whether any previously recorded fossil localities occur in the Project Site, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity within the Project Site and vicinity. The records search returned no known localities within the Project Site, however a number of vertebrate fossils are known from similar sedimentary deposits in Los Angeles (McLeod, 2018). These are summarized here.

The closest locality known to the LACM is less than a mile from the Project Site, where four localities (LACM 6297-6300) were discovered at depths of 47 to 80 feet bgs during excavations for the Metrorail Red Line (McLeod, 2018). These localities preserved specimens of horse (*Equus*), bison (*Bison*), camel (*Camelops*), and mastodon (*Mammut americanum*) (McLeod, 2018). Other localities in Pleistocene-age alluvium are known from across Los Angeles, including LACM 5845, just over two miles from the Project Site, where a fossil mastodon (Mammutidae) was recovered from 5-6 feet bgs; LACM 3371, two miles from the Project Site, where specimens of fossil bison (*Bison antiquus*) were collected from 12 feet bgs; and LACM 3250, southeast of the Project Site, where a fossil specimen of mammoth (*Mammuthus*) was collected at a depth of about eight feet below street level (McLeod, 2018).

Given the discovery of significant fossil remains as shallow as 5-6 feet below grade near the Project Site, that depth should be used as a guideline for when the alluvium at the site increases in age to potentially preserve fossil resources (i.e., over 5,000 years old, as per the SVP [2010]).

The results of the database search are included as Appendix B to this assessment.

Paleontological Sensitivity Analysis

The review of the scientific literature and geologic mapping, as well as the records search from LACM, were used to assign paleontological sensitivities following the guidelines of the SVP (1995, 2010) to the geologic units present at the surface and subsurface of the Project Site that would be subject to ground-disturbing activities:

- Elevated Alluvium (Qae) Surficial sediments; high sensitivity. A wide variety of Ice Age fossils have been found in these sediments across the Los Angeles Basin, as reviewed above, including multiple specimens belonging to four taxa known from within one mile of the Project Site (McLeod, 2018).
- Monterey/Modelo Formation (Tm) Subsurface; high sensitivity. The Monterey/Modelo Formation is well-known in Southern California for preserving a wide array of marine fossils such as mollusks, fish, birds, and whales.
- **Topanga Formation (Ttusi)** Subsurface; **high sensitivity**. The Topanga Formation is well-known in Southern California for preserving a wide array of marine and terrestrial fossils such as sharks, bony fishes, birds, whales, dolphins, and land mammals.

Conclusions and Recommendations

As a result of this study, sediments present across the Project Site identified as elevated alluvium are assigned high paleontological sensitivity, as they are of an age to preserve fossils. The underlying Monterey/Modelo and Topanga formations also have a record of preserving significant fossils and have high paleontological sensitivity. Substantial excavation within the Project Site during construction for subterranean parking, deep excavation for excavation shoring, and ancillary uses or improvements is planned at depths up to 76 feet bgs, which would impact high sensitivity alluvial sediments, while the Monterey/Modelo and Topanga formations appear to be too deep to be impacted (Feffer, 2019). This classification indicates a high potential for fossils to be present in the subsurface. The following recommendations would serve to protect potentially unique paleontological resources or unique geological features, should they be encountered:

- A qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP, 2010) (Qualified Paleontologist) shall be retained prior to the approval of demolition or grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kickoff meeting and Project progress meetings on a regular basis, and shall report to the Project Site in the event potential paleontological resources are encountered.
- 2. The Qualified Paleontologist shall conduct construction worker paleontological resources sensitivity training at the Project kick-off meeting prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.). In the event construction crews are phased, additional training shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the Project Site and the procedures to be followed if they are

found. Documentation shall be retained by the Qualified Paleontologist demonstrating that the appropriate construction personnel attended the training.

- 3. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the standards of the SVP, 2010) under the direction of the Qualified Paleontologist. Paleontological resources monitoring shall be conducted for all ground disturbing activities in previously undisturbed sediments which have high sensitivity for encountering paleontological resources (elevated alluvium, as well as the underlying Monterey/Modelo and Topanga formations). However, depending on the conditions encountered, full-time monitoring within these sediments can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The Qualified Paleontologist shall spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should be revised based on his/her observations. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils. Monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries. Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries.
- 4. Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries. If there are significant discoveries, fossil locality information and final disposition will be included with the final report which will be submitted to the appropriate repository and the City.

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Appendix A Personnel





EDUCATION

M.A., Archaeology, California State University, Northridge

B.A., Anthropology, California State University, Northridge

AA, Humanities, Los Angeles Pierce College

20 YEARS EXPERIENCE

SPECIALIZED EXPERIENCE

Treatment of Historic and Prehistoric Human Remains

Archaeological Monitoring

Complex Shell Midden Sites

Groundstone Analysis

PROFESSIONAL AFFILIATIONS

Register of Professional Archaeologists (RPA), #12805

Society for California Archaeology (SCA)

Society for American Archaeology (SAA)

QUALIFICATIONS

Exceeds Secretary of Interior Standards

CA State BLM Permitted

Monica Strauss, RPA

Director, Southern California Cultural Resources Group

Monica has successfully completed dozens of cultural resources projects throughout California and the greater southwest, where she assists clients in navigating cultural resources compliance issues in the context of CEQA, NEPA, and Section 106. Monica has extensive experience with archaeological resources, historic buildings and infrastructure, landscapes, and Tribal resources, including Traditional Cultural Properties. Monica manages a staff of cultural resources specialists throughout the region who conduct Phase 1 archaeological/paleontological and historic architectural surveys, construction monitoring, Native American consultation, archaeological testing and treatment, historic resource significance evaluations, and large-scale data recovery programs. She maintains excellent relationships with agency staff and Tribal representatives. Additionally, Monica manages a general compliance monitoring team who support clients and agencies in ensuring the daily in-field compliance of overall project mitigation measures.

Relevant Experience

Orange County, Saddle Crest Homes Project EIR, Orange County, CA. Cultural Resources *Project Director.* The Saddle Crest project includes the development of 65 residential homes on an approximately 113.7-acre site. Monica managed the preparation of a Cultural Resources EIR section as well as a Phase 1 archaeological resources assessment. As part of the Phase 1 archaeological resources assessment, a literature review, a pedestrian survey, and Native American outreach were undertaken to meet CEQA compliance requirements.

Irvine Ranch Water District, Baker Treatment Plant, Orange County, CA.

Cultural Resources Principal Investigator. ESA was retained by the Irvine Ranch Water District to provide environmental compliance services. In support of an EIR for the upgrade of the IRWD's Baker Treatment Plant near Lake Forest, ESA cultural resources staff conducted a Phase I Cultural Resources Assessment. Monica directed the archival research, a series of pedestrian surveys, and oversaw the preparation of Phase I Cultural resources Technical reports and the cultural resources section of the EIR.

Topock Compressor Station Remediation CEQA Services. Mohave County, AZ and San Bernardino County, CA. *Cultural Resources Project Director.* Monica is overseeing the preparation of cultural resources EIR sections and is providing project support to the California Department of Toxic Substances Control (DTSC), including facilitating Native American involvement. DTSC provides oversight of the site investigation and cleanup activities for the Pacific Gas and Electric Company (PG&E) Topock Gas Compressor Station, located in San Bernardino County, 15 miles southeast of Needles, California. Groundwater samples taken under and near the Station were found to be contaminated with hexavalent chromium and other chemicals as result of past disposal activities. Soils contamination is also present at the site, requiring investigation and cleanup. These activities are highly scrutinized by the regional Native American Tribes because the area has important cultural and religious significance. ESA is currently preparing an EIR for soil investigations and will be conducting CEQA evaluations that tier off of the Program EIR for the Groundwater Remedy. Additional project-specific EIRs may be required for the final remedy, which is currently undergoing engineering design. ESA will provide these services as well as lead the Native American and public participation efforts.

Los Angeles Department of Water and Power, Path 46 Clearance Surveys, San Bernardino, CA. Project Director. ESA has been tasked by Los Angeles Department of Water and Power (LADWP) to conduct required surveys for the Path 46 Transmission Line Clearances Project. The project's objective is to restore required code clearances to the transmission conductors, which will be accomplished by grading the ground surface underneath the transmission lines to achieve required height consistency. The work is being conducted in compliance with BLM guidelines and federal laws and statutes. Biological, archaeological, and paleontological resource surveys are currently being conducted for the 77 proposed grading areas, staging areas, and roads. Reports will be written documenting the results of the surveys and providing recommendations on the areas for access, staging areas, and soil distribution that would have the least amount of impacts on natural resources. Monica is providing support to LADWP in their coordination with the BLM, including providing oversight of map preparation, field surveys, and preparation of pre-field research designs and postfield technical reports.

Ballona Wetlands Restoration EIR, Los Angeles County, CA. *Cultural Resources Project Director.* As part of the development of the restoration plan for the Ballona Wetlands, the ESA project team characterized existing conditions that included water and sediment sampling and analysis. The water and sediment quality sampling was performed to develop and evaluate potential restoration alternatives, and to develop a conceptual plan. The ESA project team compiled existing data on and conducted additional sampling for water and sediment to assess potential effects on the proposed wetland restoration habitat from the use of urban runoff and tidal in-flow from Ballona Creek. These data were used to complete a baseline report and restoration alternatives assessment. Monica is assisting the CSCC in fulfilling Army Corps of Engineers requirements under Section 106 of the National Historic Preservation Act. In addition, she is coordinating with Tribal members and is overseeing a team of resource specialists who are compiling cultural resources technical in preparation of the EIR's Cultural Resources section.

Los Angeles Department of Water and Power La Kretz Innovation Campus, Los Angeles County, CA. *Project Director.* The project involved the rehabilitation of the 61,000-square-foot building located at 518-524 Colyton Street, demolition of the building located at 537-551 Hewitt Street, and construction of an open space public plaza and surface parking lot, and involved compliance with Section 106 of the National Historic Preservation Act and consultation with the California State Historic Preservation Officer. ESA is providing archaeological monitoring and data recovery services and is assisting LADWP with meeting their requirements for Section 106 of the National Historic Preservation Act. Monica is providing oversight to archaeological monitors and crew conducting resource data recovery



and laboratory analysis, and is providing guidance to LADWP on meeting Section 106 requirements.

Los Angeles Department of Water and Power Lone Pine Landfill Paleontological Resources Recovery, Inyo County, CA. *Cultural Resources Project Director.* At the request of LADWP, ESA responded to a discovery of large mammal bone at the Lone Pine Landfill in an area where borrow materials were being excavated. ESA conducted geologic map research and recovered what was identified as a mammoth tusk. The tusk was stabilized, prepared for curation, and transported to a storage facility. Monica provided senior oversight of the paleontological resources recovery team and conducted paleontological resources sensitivity training and guidance to landfill staff in the event additional material are encountered.

City of Los Angeles Recreation and Parks, Hansen Dam Skate Park Project, Los Angeles County, CA. *Cultural Resources Principal Investigator.* ESA prepared a joint EA and IS/MND for the Los Angeles Department of Recreation and Parks in coordination with the U.S. Army Corps of Engineers (Corps) for a proposed skate park facility within the Hansen Dam Recreation Area. Monica managed a Phase I Cultural resources Study, coordinated with the Army Corps of Engineers and provided senior review for the EA/IS/MND cultural resources section.

Los Angeles Unified School District, Central Los Angeles High School #9. Los Angeles, CA. *Project Director.* ESA contributed to Data Recovery Report sections for Los Angeles Unified School District's Central High School #9, constructed in downtown Los Angeles. Between 2004 and 2009, Monica led a team of archaeological staff of ten who conducted archaeological monitoring and data recovery of archaeological materials in connection with the 19th century Los Angeles City Cemetery. She coordinated with the Los Angeles County Coroner and office of Vital Statistics to obtain disinterment permits and developed a mitigation plan incorporating components related to the future disposition of remains, artifact curation, and commemoration. She directed an extensive historical research effort to identify the human remains, and at the request of the client, participated in public outreach and coordination with media.

Bureau of Land Management, On-Call Cultural Resources Services, Riverside County, CA. *Project Manager.* ESA has been retained by the Bureau of Land Management under an on-call contract to provide cultural resource services including compliance monitoring for projects under Bureau of Land Management (BLM) jurisdiction. Monica managed a number of projects for the BLM (Palm Springs South Coast Field Office) providing a wide range of cultural resources services for solar projects and other projects taking place on BLM lands in compliance with Section 106 and specified BLM protocols. Services that she and her staff provide under this contract include compliance monitoring and peer review, Phase I archaeological resources surveys, resource evaluations, the preparation of reports, and Native American consultation. Projects completed under this contract include Dos Palmas Phase I Survey and Archaeological Monitoring, National Monument Phase I Survey, Windy Pointe Archaeological Monitoring, and Fast and the Furious Phase I Survey.





EDUCATION

B.A., Anthropology, San Diego State University

19 YEARS EXPERIENCE

CERTIFICATIONS/ REGISTRATION

California BLM Permit, Principal Investigator, Statewide

Nevada BLM Permit, Paleontology, Field Agent, Statewide

PROFESSIONAL AFFILIATIONS

Society for American Archaeology (SAA)

Society for California Archaeology (SCA)

Sara Dietler

Archaeologist

Sara is a senior archaeology and paleontology lead with 20 years of experience in cultural resources management in Southern California. As a senior project manager, she manages technical studies including archaeological and paleontological assessments and surveys, as well as monitoring and fossil salvage for many clients, including public agencies and private developers. She is a cross-trained paleontological monitor and supervisor, familiar with regulations and guidelines implementing the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology guidelines. She has extensive experience providing oversight for long-term monitoring projects throughout the Los Angeles Basin for archaeological, Native American, and paleontological monitoring compliance projects and provides streamlined management for these disciplines.

Relevant Experience

Los Angeles Unified School District (LAUSD) Central Los Angeles High School #9; Los Angeles, CA. Senior Project Archaeologist & Project Manager. Sara conducted on-site monitoring and investigation of archaeological sites exposed as a result of construction activities. During the data recovery phase in connection with a 19th century cemetery located on-site, she participated in locating of features, feature excavation, mapping, and client coordination. She organized background research on the cemetery, including genealogical, local libraries, city and county archives, other local cemetery records, internet, and local fraternal organizations. Sara advised on the lab methodology and setup and served as project manager. Sara was a contributing author and editor for the published monograph, which was published as part of a technical series, "Not Dead but Gone Before: The Archaeology of Los Angeles City Cemetery."

Downtown Cesar Chavez Median Project, City of Los Angeles, CA. *Project Manager.* Sara assisted the City of Los Angeles Department of Public Works Bureau of Engineering with a Local Assistance Project requiring consultations with Caltrans cultural resources. Responsible for Caltrans coordination, serving as contributing author and report manager for required ASR, HPSR, and HRER prepared for the project.

Elysian/USC Water Recycling Project Initial Study/Environmental

Assessment, Los Angeles, CA. *Project Manager.* Sara worked on the Initial Study/Mitigated Negative Declaration and an Environmental Assessment/Finding of No Significant Impact to construct recycled water pipelines for irrigation and other industrial uses serving Los Angeles Department of Water and Power customers in downtown Los Angeles, including Elysian Park. The U.S. Environmental Protection Agency is the federal lead agency.





EDUCATION

Ph.D., Vertebrate Paleontology; University of Southern California

M.S., Environmental Microbiology; University of Tennessee

B.A. with honors, Ecology and Systematics; William Jewell College & Homerton College, Cambridge University

10 YEARS EXPERIENCE

Alyssa Bell, PhD

Paleontologist

Dr. Alyssa Bell has supervised and peformed field work, authored project reports, and provided scientific and compliance direction and quality control for paleontological projects throughout Southern California. Dr. Bell has accumulated a wealth of field experience, working with crews from a variety of institutions on field sites in California, Arizona, New Mexico, South Dakota, and Utah, and has led her own expeditions in Montana. She has performed all manner of investigations from surveys and assessments to monitoring and fossil idenfitication over the last 15 years as a part of her academic pursuits and professional consultation, with the last three years being exclusively professional endeavors.

In addition to consulting, Dr. Bell serves as a postdoctoral fellow at the Dinosaur Institute of the Natural History Museum of Los Angeles County (LACM). There she is involved in pursuing her own research into fossil birds as well as working with the Institute's field projects and museum-wide education and outreach initiatives. She has also published peer-reviewed articles and book chapters and given numerous presentations at scientific conferences on both her paleontological and microbiological research.

Relevant Experience

ICHA Area 10 (PA 10-2 & 10-4) Archaeological and Paleontological Monitoring, Irvine, CA. *Principal Investigator & Project Paleontologist*. Dr. Bell managed the curatorial process for fossils collected during monitoring of pre-construction activities at the University of California, Irvine, and authored the final report.

Suncrest Reactive Power Support Project, San Diego County, CA. *Principal Investigator.* Dr. Bell authored the paleontological assessment for the Proponent's Environmental Assessment (PEA) in support for a dynamic reactive power support facility and associated 230-kilovolt (kV) transmission line near Alpine, California. The application for Certificate of Public Convenience and Necessary was filed in summer 2015 and the PEA was deemed complete in December 2015.

Washington National Archaeological and Paleontological Monitoring (Access Culver City), Culver City, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell managed the curatorial process for fossils collected during monitoring of preconstruction activities at the Washington national site in Culver City, CA and authored the final report.

OTO Hotels Santa Monica Archaeological and Paleontological Service, Santa Monica, CA. *Principal Investigator*. Dr. Bell supervised paleontological monitoring and mitigation services during construction excavations and grading. Services included implementation of a paleontological mitigation monitoring program and reporting.

Sacred Heart Specific Plan Environmental Impact Report (EIR), La Canada Flintridge, CA. Principal Investigator. Dr. Bell prepared paleontological studies and

developed monitoring & mitigation recommendations for the Sacred Heart development project.

Sixth & Bixel Paleontological Monitoring Services Project, Los Angeles, CA. *Principal Investigator & Project Paleontologist*. Dr. Bell supervised paleontological monitoring of preconstruction activities in support of a development project encompassing two parcels in downtown Los Angeles. During these activities, monitors identified and recovered numerous significant vertebrate fossils. Dr. Bell supervised the excavation of fossilized whale remains discovered on-site, and oversaw the collection and curation of all fossil specimens.

Natural and Cultural Support for the Gordon Mull Subdivision EIR, Glendora, CA. *Principal Investigator*. Dr. Bell collected the necessary data to prepare the technical sections and mitigation recommendations to support an EIR prepared by another firm to address the Gordon Mull Subdivision in the city of Glendora. The project is proposes to redevelop a 71-acre, 19-lot located in the San Gabriel Foothills.

Lake Elsinore Lakeshore Town Center Permitting, Riverside County, CA. *Principal Investigator*. Dr. Bell provided paleontological studies and developed monitoring and mitigation recommendations for the Lake Elsinore Town Center project in Riverside County.

San Pedro Plaza Park - Phase III Archaeological Monitor, Los Angeles, CA. *Principal Investigator.* Dr. Bell identified fossils during the mitigation measurementrequired archaeological monitoring of earthmoving activities in San Pedro Park Plaza. She is also responsible for curation of the fossil material and authorship of the paleontological section of the final report.

City of Hope Specific Plan and EIR, Duarte, CA. *Principal Investigator.* Dr. Bell provided paleontological resource studies for the City of Hope Specific Plan Project.

Blythe Solar Power Project, Units 1 & 2, Riverside County, CA. *Project Paleontologist.* Dr. Bell supervised paleontological monitoring of preconstruction activities for a solar photo-voltaic cell power-generating facility outside the city of Blythe. As a part of her role, she provided oversight and management of paleontological monitors and development of the final monitoring report.

Industrial Project Environmental Impact Report, Colton, CA. *Principal Investigator.* Dr. Bell provided a paleontological resources study for a six-acre industrial project site at the southwest corner of Agua Mansa Road and Rancho Avenue in the city of Colton.

Mojave Solar Project Paleontological Reporting, San Bernardino County, CA. *Principal Investigator.* Dr. Bell managed curation of fossil materials and authored the final report of paleontological monitoring services provided for construction activities in support of a solar field development project in San Bernardino County.

El Camino Real Bridge Replacement Environmental Services, Atascadero, CA. *Principal Investigator.* Dr. Bell provided environmental services, including preparation of all California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documentation, technical studies, and permitting, for the replacement of the El Camino Real Bridge over Santa Margarita Creek in Atascadero.