



APPENDIX E

Paleontological Resource Technical Memorandum



January 5, 2024

Tony Locacciato, AICP
Partner
Meridian Consultants, LLC
Transmitted via email to tlocacciato@meridianconsultantsllc.com

RE: Paleontological Resource Technical Memorandum for Hollywood Central Project, City of Los Angeles, Los Angeles County, California

Dear Tony Locaccito,

At the request of Meridian Consultants, PaleoWest, LLC, dba Chronicle Heritage (Chronicle Heritage) prepared this paleontological resource technical memorandum for the Hollywood Central Project (Project), City of Los Angeles, Los Angeles County, California. The goal of the assessment is to detail the results of the literature review and museum records search and summarize the paleontological sensitivity of the geologic units in and within the vicinity of the Project area.

This paleontological resource assessment included a fossil locality records search conducted by the Natural History Museum of Los Angeles County (NHMLAC). The records search was supplemented by a review of existing geologic maps and primary literature regarding fossiliferous geologic units that are pertinent to the analysis of existing data for the Project. This technical memorandum, written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010), has been prepared to support environmental review under the California Environmental Quality Act (CEQA).

Project Location and Description

The proposed Project would develop a mixed-use commercial and residential project on two sites. The Project area is located on either side of Cherokee Avenue between Hollywood Boulevard and Selma Avenue in Hollywood (Exhibit A, Figure 1). Specifically, the Project area Site is depicted located within Township 1 South, Range 14 West of an unsectioned area of the La Brea Land Grant on the Hollywood, California U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Exhibit A, Figure 2). The Project is a mixed-use commercial and residential project proposed within four existing buildings that would remain and four new buildings. The Project would include 42,404 square feet of new retail or restaurant uses, 30,488 square feet of new office uses, 24,924 square feet of existing building space would be reused or remain as retail or restaurant uses, 14,290 square feet of existing building space would be reused or remain as office uses, and 633 multi-family residential units. As proposed, the Project includes the demolition of three existing buildings, the retention of four existing buildings, two of which will be partially demolished and altered, and the construction of four new buildings. The two buildings to be partially demolished will be altered at the rear of the buildings only..



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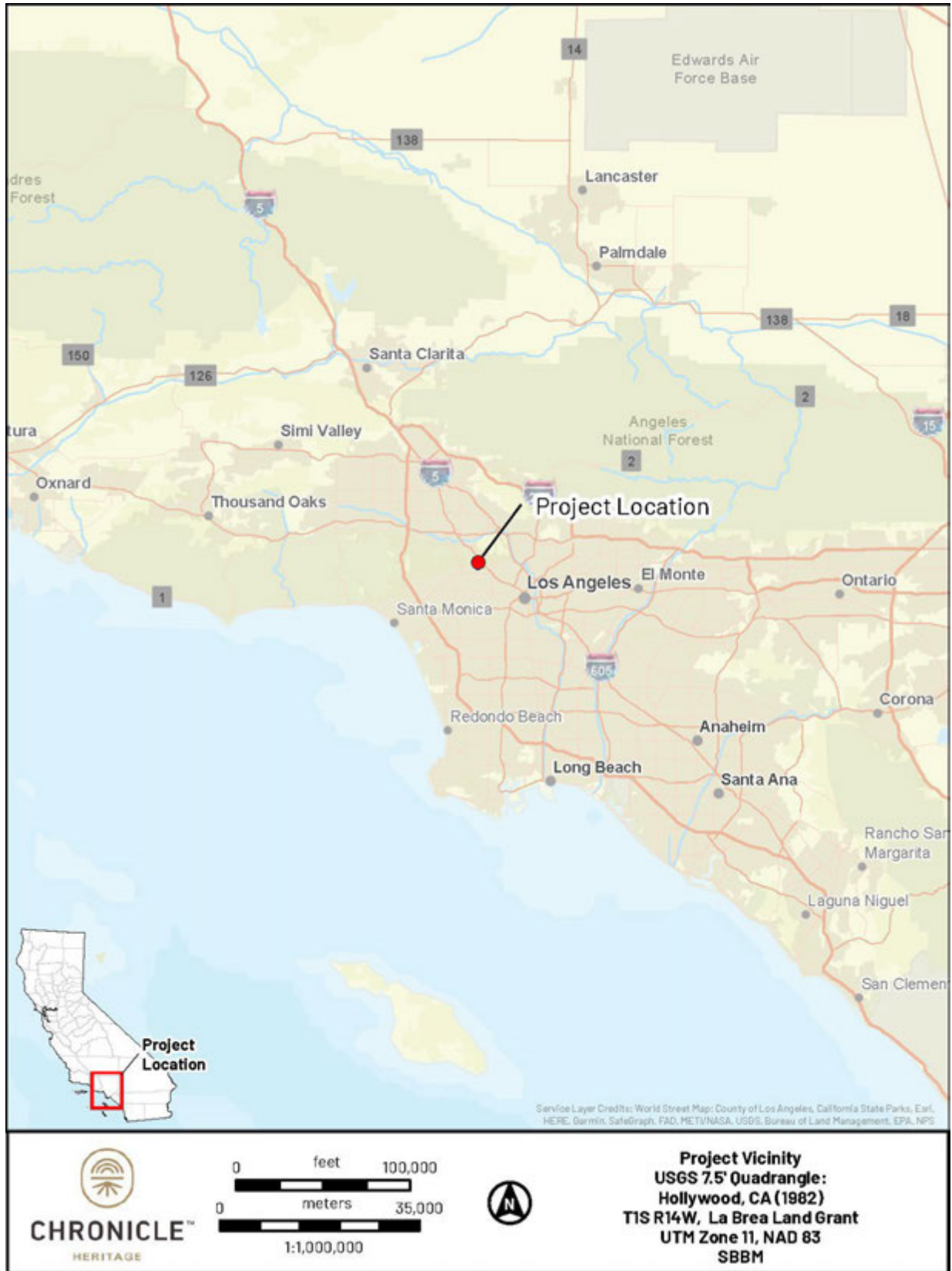


Figure 1. Project vicinity map.

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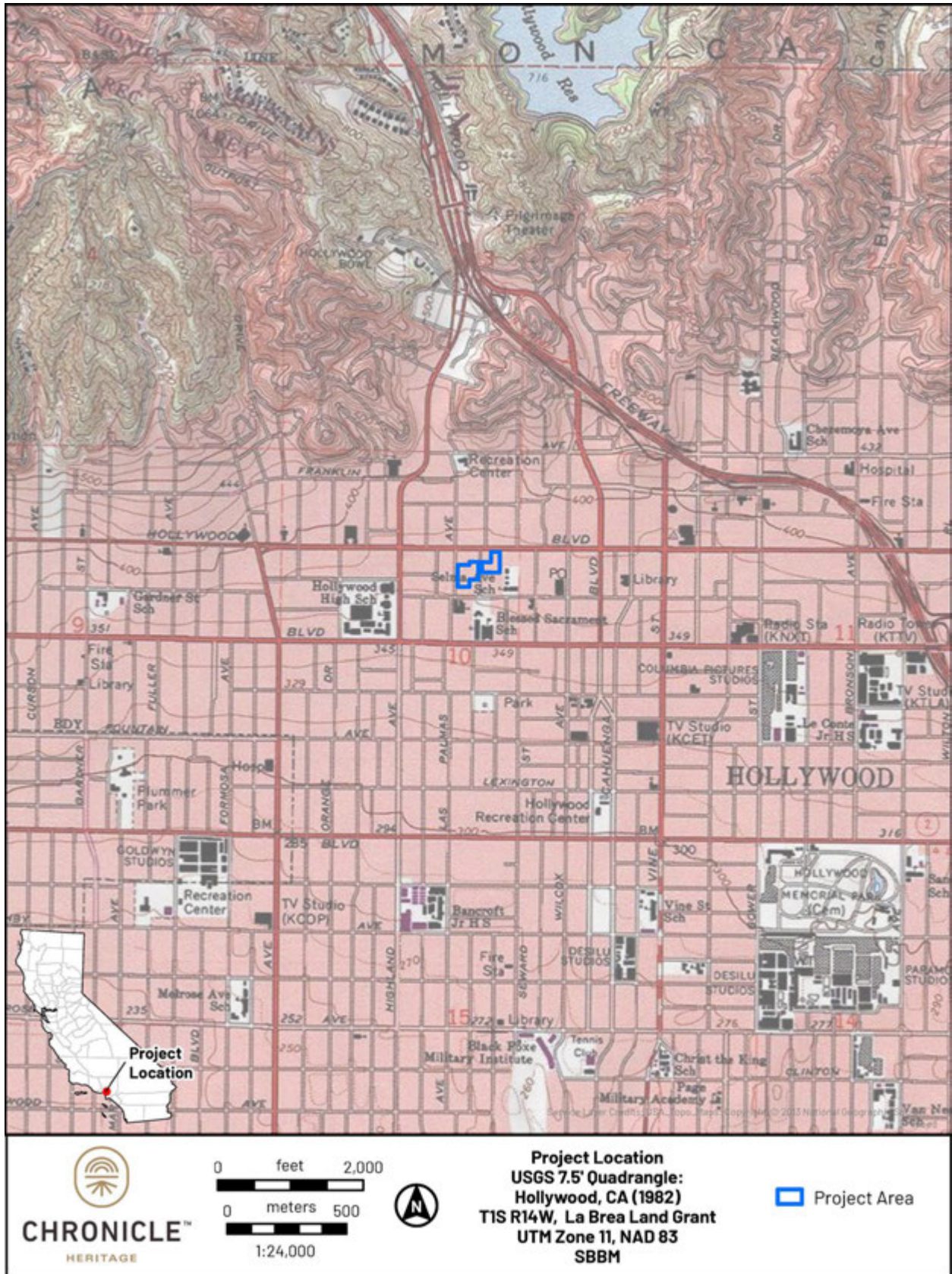


Figure 2. Project location map.

Regulatory Context

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because, once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws and regulations. Laws pertinent to this Project are discussed below.

State Laws and Regulations

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [j]). Appendix G in California Code of Regulations (CCR) Section 15023 provides an Environmental Checklist of questions (Section 15023, Appendix G, Section XIV, Part A) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?"

California Public Resources Code

Section 5097.5 of the PRC states:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this PRC section, 'public lands' means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof.

Consequently, public agencies are required to comply with PRC Section 5097.5 for their activities including construction and maintenance as well as for permit actions (e.g., encroachment permits) undertaken by others.

Local

The Los Angeles County General Plan (2015), Chapter 9: Conservation and Natural Resources Element, VIII. Historic, Cultural, and Paleontological Resources, specifies eleven "significant general fossil localities in Los Angeles County. In addition, the general plan (Los Angeles County, 2015) also establishes the following goals and policies are for paleontological resources:

Goal C/NR 14: Protected historic, cultural, and paleontological resources.

Policy C/NR 14.1: Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible.

Policy C/NR 14.2: Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural, and paleontological resources.

Policy C/NR 14.6: Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.

The City of Los Angeles Conservation Element (2001), Section 3, states that Los Angeles is rich in paleontological resources and mandates protection of paleontological sites. The Conservation Element states the following:

- 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. For Los Angeles city and county, the Los Angeles County Museum of Natural History, including the George C. Page Museum, provides advice concerning paleontological resources.
- The city has a primary responsibility in protecting significant archaeological and paleontological resources.
- Loss of or damage to archaeological and paleontological sites due to development, unauthorized removal and vandalism is a continuing issue.
- The city has an objective to protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes.
- The city has a policy of identifying and protecting significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities.

Paleontological Resources

Paleontological Resource Definition

The SVP has provided guidance designed to support state and federal environmental review. The SVP broadly defines significant paleontological resources as follows:

Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). (SVP, 2010)

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or that could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well-represented lineages can be equally important for studying evolutionary patterns and processes, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic

units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important and therefore considered significant.

This definition is used for all projects that are subject CEQA since CEQA does not define "a unique paleontological resource or site."

Paleontological Resource Potential

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by SVP (2010) to determine the course of paleontological mitigation for a given project. These guidelines establish protocols for the assessment of the paleontological resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of geologic units (or members thereof) underlying a project area can be assigned to one of four categories defined by SVP (2010). Although these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted the following guidelines.

High Potential (Sensitivity)

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

Low Potential (Sensitivity)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and widespread invertebrate fossils of well-documented and understood taphonomic, phylogenetic species, and habitat ecology are considered to have a low potential for containing significant nonrenewable fossiliferous resources. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow a determination that some areas or units have a low potential for yielding significant fossils before the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction is underway, it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from low to high potential and thus require monitoring and mitigation if the resources are found to be significant.

Undetermined Potential (Sensitivity)

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

No Potential

Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Methods

To assess whether a particular area has the potential to contain significant fossil resources in the subsurface, it is necessary to review published geologic mapping to determine the geology and stratigraphy of the Project area and vicinity. Geologic units are considered sensitive for paleontological resources if they are known to contain significant fossils anywhere in their extent. Therefore, a search of pertinent local and regional museum repositories for paleontological localities in and within 3 miles (mi) of the Project area is necessary to determine whether fossil localities have been previously discovered within a particular rock unit. For this Project, a records search was requested of the NHMLAC collections for localities within 1 mi of the Project. Records searches were also conducted of the online University of California Museum of Paleontology (UCMP) Collections, Paleobiology Database, FAUNMAP, iDigBio, and other published and unpublished geological and paleontological literature of the area.

Resource Context

Geologic Setting

The Project Site is located along the border of the northwestern edge of the Peninsular Ranges geomorphic province and the southeastern edge of the Transverse Ranges geomorphic province. The Peninsular Ranges province is a region of northwest-trending mountain ranges and valleys roughly parallel to the San Andreas Fault Zone and North American plate boundary. The Peninsular Ranges are bound to the east by the Colorado Desert, to the north by the Transverse Ranges near the San Bernardino–Riverside County line, to the west by the Pacific continental shelf, and south into Baja California (Norris and Webb, 1976). The Transverse Ranges province is distinguished by east–west trending mountain ranges and valleys, in contrast to the respective northwest–southeast trend in the provinces to the north and south. The Transverse Ranges extend west to include the San Miguel, Santa Rosa, and Santa Cruz Islands; extend north to include the San Gabriel and San Bernardino Mountains and the San Andreas Fault; and locally extend south to a series of faults along the southern base of the Santa Monica Mountains (Yerkes and Campbell, 2005; Hillhouse, 2010).

Locally, the Project is in the Los Angeles Basin, a northwest-trending lowland plain at the northern end of the Peninsular Ranges geomorphic province of California (Yerkes and Campbell, 2005). The Los Angeles Basin is underlain by a structural depression that was the site of extensive accumulation of interstratified fluvial, alluvial, floodplain, shallow marine, and deep shelf deposits on underlying Mesozoic metamorphic and granitic plutonic basement rocks. Sediment

accumulation and subsidence occurred there since the Cretaceous Period (145 million years ago [Ma] to 66 Ma) and has reached a maximum thickness of more than 20,000 ft (Yerkes et al., 1965; Norris and Webb, 1976; McCulloh and Beyer, 2004). During that time, fluctuations (transgressions/regressions) in relative sea level related to tectonic uplift, subsidence, and Pleistocene (2.58 Ma to 11,700 years ago) glaciation resulted in both marine and terrestrial sedimentary deposits throughout the Los Angeles Basin. By the Miocene Epoch (25 Ma to 5.3 Ma), the large depositional basin extended north to the Santa Monica Mountains and San Fernando Valley, east to the southern foothills of the San Gabriel Mountains and the Santa Ana Mountains, and south to the San Joaquin and Palos Verdes hills. Structurally, the basin can be divided into four primary structural blocks: the northwestern, southwestern, central, and northeastern blocks. Locally, the Project is in the northwestern block, which is dominated by the west-plunging anticline that forms the eastern portion of the Santa Monica Mountains, and a northeast-trending branch of the Santa Monica Fault Zone (Yerkes et al., 1965). The Santa Monica Mountains in this area are composed of marine clastic sedimentary rocks ranging in age from the Cretaceous Period to the Pleistocene Epoch with volcanic rocks from the Miocene Epoch (Yerkes et al., 1965).

Site Specific Geology and Paleontology

The geology of the area the Project Site is located in is mapped by Campbell et al. (2016) at a scale of 1:100,000 (Figure 3). The Project area is underlain by old alluvial fan deposits (Qof) composed of slightly to moderately consolidated silt, sand and gravel deposited by alluvial fans during the Pleistocene Epoch (Figure 3). Elsewhere in Los Angeles County, Pleistocene deposits have produced remains of a diverse terrestrial fauna, including fossil specimens of mammoth, mastodon, horse, bison, camel, tortoise, rodent, and bird have been reported (Miller, 1971; Jefferson, 1989, 1991a, 1991b; Stock and Harris, 2001; Agenbroad, 2003; Bell et al., 2004; Maguire and Holroyd, 2016).

Records Search Results

The NHMLAC records search did not produce any Pleistocene fossil localities from within the Project Site or within a 1-mile radius of the Project Site (Bell, 2023) (Attachment A). However, the results do include five localities nearby from within the same sedimentary deposits that occur in the Project area (Bell, 2023).

Searches of online databases and other literature produced nine additional fossil localities within 3 mi of the Project (Miller, 1971; Jefferson, 1991a, 1991b; Graham and Lundelius, 2010; iDigBio, 2023; Paleobiology Database [PBDB], 2023; UCMP, 2023) (Table 1).

Table 1. Vertebrate Localities Documented in Vicinity of Project

Locality No.	Age	Taxa	Depth*	Distance
2443 N. Gower Street (LACM IP 3280) ¹	Eocene	Gastropod (<i>Amaurellina clarki</i>)	Not specified	1.1 mi northeast
West side of Western Avenue just north of Council Street (LACM VP 5845) ¹	Rancholabrean NALMA (Rancholabrean) (240,000–11,000 years ago) (Pleistocene)	Mastodon (Mammutidae)	5-6 ft bgs	2.3 mi southeast
Intersection of Sierra Bonita & Oakwood Avenue (LACM VP 3371) ¹	Rancholabrean (Pleistocene)	Bison (<i>Bison</i>)	12 ft bgs	1.9 mi southwest

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Locality No.	Age	Taxa	Depth*	Distance
Intersection of Rosewood Avenue & Westbourne Drive (LACM VP 7673)	Rancholabrean (Pleistocene)	Horse (<i>Equus</i>)	Not specified	3 mi west-southwest
Metro Rail Red Line Hollywood Blvd. subway tunnel, Hollywood Blvd from St. Andrews Place to Western Avenue (LACM VP 6297-6300) ¹	Rancholabrean (Pleistocene)	Horse, American mastodon (<i>Mammut americanum</i>), bison, camel (<i>Camelops</i>)	47-80 ft bgs	Not specified
Hwy 101 Roadcut ²	Irvingtonian North American Land Mammal Age (NALMA) (1.9 Ma to 250,000 years ago) (Pleistocene)	Great white shark (<i>Carcharodon carcharias</i>), purple dwarf olive (<i>Olivella biplicate</i>)	Not specified	3 mi north
Beverly Boulevard and Kilkea Drive, Los Angeles (LACM 2034, 2361) ³	Rancholabrean (Pleistocene)	American mastodon, Columbian mammoth	Not specified	2 mi southwest
Edinburgh and 3rd Streets, Los Angeles (LACM 1268) ³	Rancholabrean (Pleistocene)	Elephantid (Proboscidean)	Not specified	2.5 mi south-southwest
Hollywood (LACM 2030) ³	Rancholabrean (Pleistocene)	Long-horned bison (<i>Bison latifrons</i>)	Not specified	Within 3 mi
La Cienega Boulevard, 455 near Colgate Avenue, Los Angeles ³	Rancholabrean (Pleistocene)	American mastodon, long-horned bison	Not specified	3 mi southwest
Madison and Middlebury, Los Angeles (LACM 3250) ³	Rancholabrean (Pleistocene)	Mammoth (<i>Mammuthus</i> sp.)	Not specified	2.75 mi southeast
Melrose Avenue and La Cienga Boulevard, Los Angeles (LACM 2033) ³	Rancholabrean (Pleistocene)	Camelid (<i>Camelops</i> sp.), Columbian mammoth (<i>Mammuthus</i> cf. <i>columbi</i>), bison, horse, tortoise (cf. <i>Geochelone</i> sp.)	Not specified	2.5 mi west-southwest
Tremaine and 8th Streets, Los Angeles (LACM 1198) ³	Rancholabrean (Pleistocene)	Mastodon (<i>Mammut</i> sp.)	Not specified	2.5 mi south
Wilshire Boulevard and Orange Grove Drive, Los Angeles (LACM 1604) ³	Rancholabrean (Pleistocene)	Ancient bison (<i>Bison</i> cf. <i>antiquus</i>)	Not specified	3 mi southwest

¹ Bell (2023).

² UCMP (2023).

³ Jefferson (1991a; 1991b).

⁴ Stock and Harris (2001)

*ft bgs = feet below ground surface

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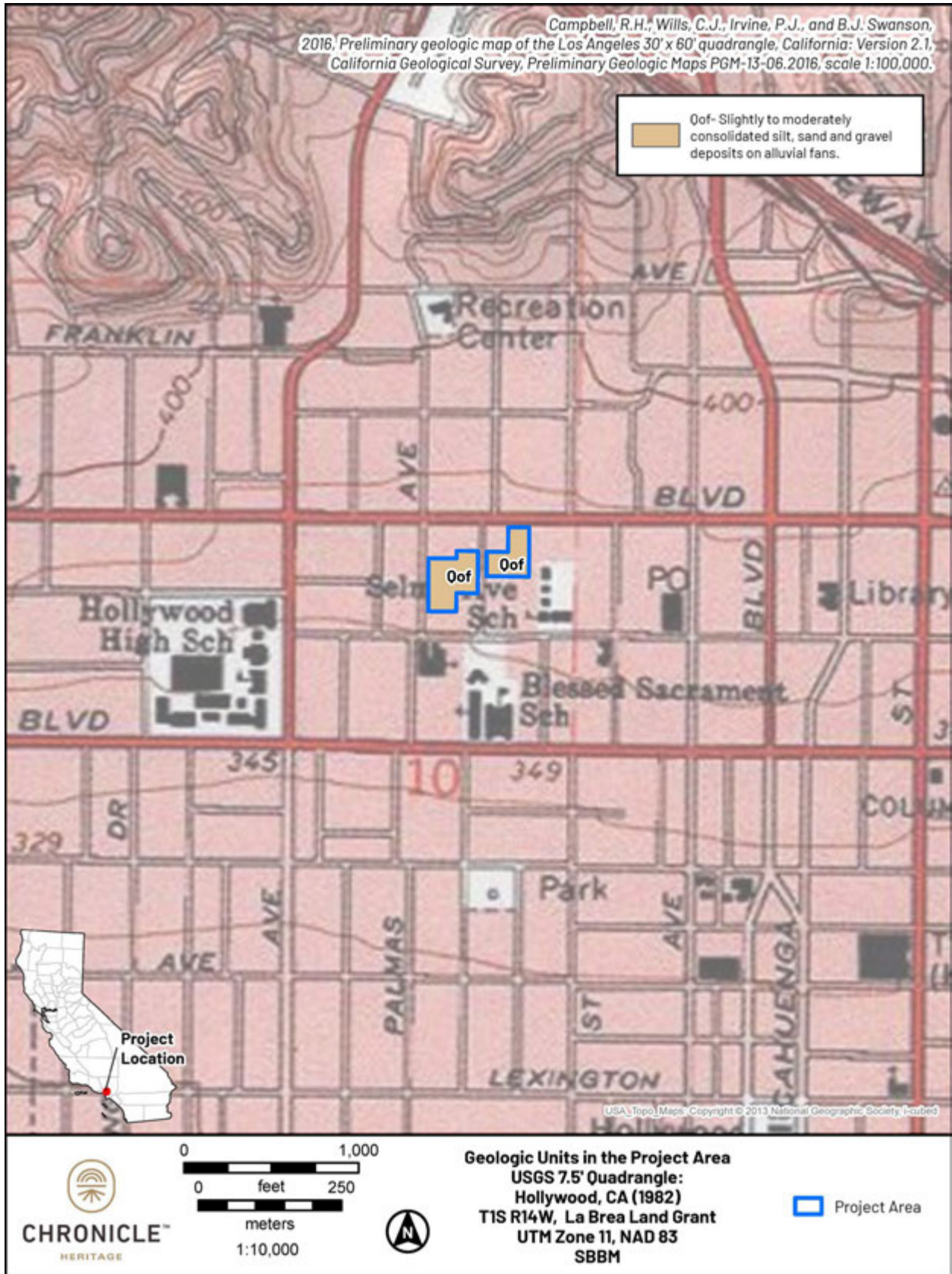


Figure 3. Project geology map.

Findings and Recommendations

This memorandum uses the SVP (2010) system to assess paleontological sensitivity and the level of effort required to manage potential impacts to significant fossil resources. Using this system, the sensitivity of geologic units was determined by the relative abundance and risk of adverse impacts to vertebrate fossils and significant invertebrates and plants.

Based on the literature review and museum records search results, and in accordance with the SVP (2010) sensitivity scale, the old alluvial fan deposits (Qof) have high paleontological sensitivity because similar deposits have yielded significant fossils in the vicinity of the Project (Table 2). Because of the presence of fossil localities in the vicinity, Project-related ground disturbance has the potential to impact paleontological resources throughout the Project area. As such, further mitigation such as construction monitoring is recommended to reduce potential impacted to paleontological resources as the result of the Project.

Table 2. Geologic Units in the Project Area and their Paleontological Sensitivity

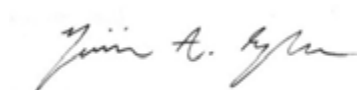
Geologic Unit	Map Abbreviation¹	Age	Typical Fossils²	Paleo Sensitivity
Old alluvial fan deposits	Qof	Late Pleistocene	Mammoth, mastodon, camelid, horse, bison, elephantid, shark, other terrestrial vertebrates and invertebrates	High

¹ Kennedy and Tan (2007).

² Bell (2023); UCMP (2023); PBDB (2023); Jefferson (1991a; 1991b); Stock and Harris (2001)

Thank you for contacting Chronicle Heritage for this Project. If you have any questions, please do not hesitate to contact us.

Sincerely,
Chronicle Heritage



Benjamin Scherzer, M.S.
Senior Paleontologist

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Attachment A.
NHMLAC Record Search Results

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org



Research & Collections

e-mail: paleorecords@nhm.org

December 24, 2023

Chronicle Heritage
Attn: Benjamin Scherzer

re: Paleontological resources for the Hollywood Central Desktop Review, #23-PC-01335

Dear Benjamin:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Hollywood Central Desktop Review project area as outlined on the portion of the Hollywood USGS topographic quadrangle map that you sent to me via e-mail on December 7, 2023. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM IP 3280	2443 N. Gower St	unknown (Eocene)	<i>Amaurellina clarki</i> Stewart	Unknown
LACM VP 6297-6300	Metro Rail Red Line Hollywood Blvd. subway tunnel, Hollywood Blvd from St. Andrews Place to Western Ave	Older alluvium (pebble-gravel; sand; sand & clay)	Horse (<i>Equus</i>), mastodon (<i>Mammot americanum</i>), bison (<i>Bison</i>), camel (<i>Camelops</i>)	47-80 feet bgs
LACM VP 5845	West side of Western Ave. just north of Council St	Unknown formation (Pleistocene, unconsolidated yellow sediments)	Mastodon (<i>Mammutidae</i>)	5-6 feet bgs
LACM VP 3371	Intersection of Sierra Bonita & Oakwood Ave	Unknown formation (Pleistocene; green clay)	Bison (<i>Bison</i>)	12 ft bgs (sewer replacement project)
LACM VP 7673	Intersection of Rosewood Ave. & Westbourne Dr	Undetermined (claystone; Pleistocene)	Horse (<i>Equus</i>)	Unrecorded (collected during Hollyhills Drain project)

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

A handwritten signature in black ink that reads "Alyssa Bell". The signature is written in a cursive, flowing style.

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice