Paleontological Resources Technical Report for the 5407 Wilshire Project, Los Angeles

AUGUST 2023

PREPARED FOR

Walter N. Marks, Inc.

PREPARED BY

SWCA Environmental Consultants

PALEONTOLOGICAL RESOURCES TECHNICAL REPORT FOR THE 5407 WILSHIRE PROJECT, LOS ANGELES, CALIFORNIA

Prepared for

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Paleontological resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. This document contains sensitive information regarding the nature and location of paleontological sites that should not be disclosed to the general public or unauthorized persons.

EXECUTIVE SUMMARY

Purpose and Scope: Walter N. Marks Incorporated (the Project applicant) retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources study in support of the proposed 5407 Wilshire Project (Project), located in the city of Los Angeles, California. This study is intended to characterize and describe paleontological resources identified within the Project site that could be affected by ground-disturbing activities associated with the Project. The Project applicant proposes to construct one high-rise, residential building on a 1.3-acre property at 5401–5407 Wilshire Boulevard (Project site).

This report includes a review of laws, ordinances, and regulations relevant to this Project, as well as a records search from the Natural History Museum of Los Angeles County (LACM) and a review of geologic mapping, the scientific literature, and previous geotechnical investigations at the Project site. This study was completed in compliance with California state statutes (the California Environmental Quality Act and the California Public Resources Code), local regulations, and professional standards of the Society of Vertebrate Paleontology.

Dates of Investigation: A records search was requested from the Natural History Museum of Los Angeles County on January 16, 2019. This report was completed in April 2020 and revised in February 2023.

Findings of the Investigation: The surface of the Project site consists of older alluvium, which dates from the Pleistocene and has high paleontological sensitivity. No previously recorded fossil localities were identified within the Project site from the records search. However, the LACM has records of numerous fossil localities from the same geologic unit in the vicinity of the Project site. In particular, asphaltic sediments associated with the world-famous La Brea Tar Pits are known to occur in the subsurface surrounding Hancock Park (to the west of the Project site), including the closest known fossil localities to the Project site.

Impact Analysis and Conclusion: The geologic unit present in the Project site has a record of preserving significant paleontological resources, particularly as incredibly abundant fossils within asphaltic sediments (like the La Brea Tar Pits). Specifically, paleontologically sensitive sediments include the stratum designated as older alluvium, which is also referred to as the Lakewood Formation, and more deeply buried sediments known as San Pedro Formation. These paleontologically sensitive sediments have been observed below depths of 5 feet—the estimated depth of fill—and down to at least 90 feet. Ground-disturbing activities proposed for the Project would include excavation to a maximum estimated depth of approximately 63 feet. Therefore, the Project could result in a potentially significant impact resulting from excavation within sediments that have high paleontological sensitivity.

Recommendations to avoid significant impacts to fossil resources include the implementation of specific mitigation measures in order to ensure any impacts to paleontological resources remain less than significant. SWCA recommends mitigation measure (MM) PAL-1 be implemented to avoid or reduce any potentially significant impacts to less than significant levels. MM PAL-1 has been developed in accordance with and incorporate the performance standards of the SVP, state and local regulations, and industry best practices for mitigation paleontology. The implementation of MM PAL-1 will ensure that fossils, if encountered, are assessed for significance, and if deemed significant, they will be salvaged and curated with an accredited repository. Based on the evidence and analysis provided herein and with implementation of MM PAL-1, SWCA recommends the potential for impacts under CEQA will be less than significant with mitigation.

Disposition of Data: This report will be on file with the following entities: City of Los Angeles, the project applicant, and SWCA's Pasadena, California, office.

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FIGURES

1 INTRODUCTION

Walter N. Marks Incorporated (the Project applicant) retained SWCA Environmental Consultants (SWCA) to provide paleontological resources services in support of the 5407 Wilshire Project (Project) in the city of Los Angeles, California (Figures 1 and 2). SWCA performed a desktop analysis to assess paleontological conditions throughout the Project site and reviewed relevant technical documents and museum databases on paleontological resources. The desktop research is summarized in this paleontological resources technical report (PRTR), which documents the existing paleontological conditions within the Project site.

1.1 Paleontological Resources Study Personnel

SWCA Lead Paleontologist Alyssa Bell, Ph.D., conducted the paleontological analysis and authored this report. SWCA Paleontological Resources Principal Investigator Russell Shapiro, Ph.D., reviewed this report. SWCA Senior Archaeologist Chris Millington acted as project manager and provided additional oversight and quality assurance/quality control on the report.

2 PROJECT DESCRIPTION

2.1 Proposed Project Work

The Project site is located at 5401 and 5425 Wilshire Boulevard, 664-670 Cochran Avenue, and 665-671 Cloverdale Avenue in the city of Los Angeles, California. The Project site is in the La Brea neighborhood of Los Angeles on a 1.3-acre parcel associated with the following Assessor's Parcel Numbers (APNs): 5508-009-030 and 5508-009-024. The site is currently occupied by two 1-story commercial structures and an associated asphalt-paved parking lot. The site is bounded by residential housing to the north, Cochran Avenue to the west, Coverdale Avenue to the east, and Wilshire Boulevard to the south. This location is plotted in an unsectioned portion of Township 1 South, Range 14 West, as depicted on the U.S. Geological Survey (USGS) Hollywood, California, 7.5- minute quadrangle. See Figure 1 through Figure 3 for depictions of the Project site and location.

The Project applicant proposes to redevelop the existing properties at 5401 to 5425 Wilshire Avenue. The northwestern portion of the property currently occupied by Staples at 5407 Wilshire Boulevard will be demolished. The east and south facades of the property located at 5401 Wilshire Boulevard which currently occupied by Wilshire Beauty, Blank Spaces, and Des Kohan will be retained while the remainder of the building is demolished in order to construct the Project's three levels of subterranean parking. Once the subterranean parking has been constructed, the east and south façades of the building at 5401 Wilshire Boulevard would be rehabilitated and incorporated into a new one-story building at 5401 Wilshire Boulevard. The remainder of the Project Site would be developed with a new 42-story mixed-use tower (39 stories over a three-level podium). The existing surface asphalt parking lot associated with the extant properties will also be removed during construction. Ground-disturbing construction activities would involve grading, excavation, shoring tiebacks, and drilling of soldier piles and would be performed using loaders, excavators, compactors, hauling trucks, and a drill. Excavation is expected to reach up to 63 feet below the existing grade.

Figure 1. Project vicinity.

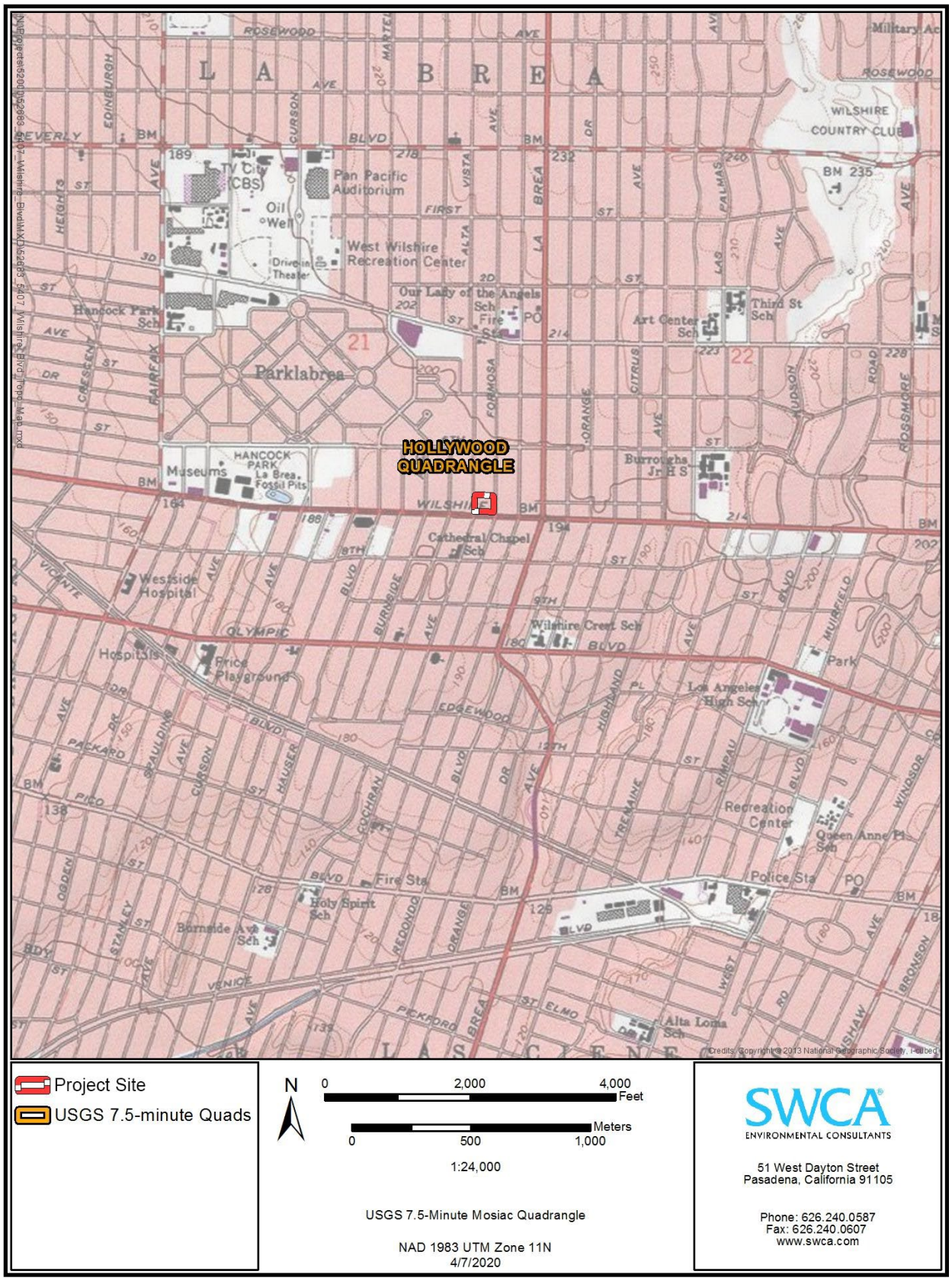

Figure 2. Project site on USGS Hollywood, California, 7.5-minute quadrangle.

Figure 3. Project site and parcel boundaries.

3 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments (Murphey and Daitch 2007). Therefore, a wide range of material is represented in the fossil record, including bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains, which may vary in their degree of mineralization.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered nonrenewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced (Murphey and Daitch 2007). Fossils are important scientific and educational resources and can be used to do the following:

- study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- reconstruct ancient environments, climate change, and paleoecological relationships;
- provide a measure of relative geologic dating, which forms the basis for biochronology and biostratigraphy, and is an independent and corroborating line of evidence for isotopic dating;
- study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- study patterns and processes of evolution, extinction, and speciation; and
- identify past and potential future human-caused effects on global environments and climates (Murphey and Daitch 2007).

4 REGULATORY SETTING

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state and local laws and regulations. This study satisfies project requirements in accordance with both state and local regulations. This analysis also complies with guidelines and significance criteria specified by the Society of Vertebrate Paleontology (SVP) (1995, 2010).

4.1 State Regulations

4.1.1 *California Environmental Quality Act*

The California Environmental Quality Act (CEQA) is the principal statute governing environmental review of projects occurring in the state and is codified at Public Resources Code (PRC) Section 21000 *et seq*. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on the environment, including significant effects on paleontological resources. Guidelines for the

Implementation of CEQA, as amended December 28, 2018 (Title 14, Chapter 3, California Code of Regulations 15000 *et seq*.), define procedures, types of activities, persons, and public agencies required to comply with CEQA and include as one of the questions to be answered in the Environmental Checklist (Appendix G, Section VII, Part f) the following: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

4.1.2 *Public Resources Code Section 5097.5*

Requirements for paleontological resource management are included in the PRC Division 5, Chapter 1.7, Section 5097.5, which 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.

These statutes prohibit the removal, without permission, of any paleontological site or feature from lands under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, local agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, and district) lands.

4.2 Local Regulations

4.2.1 *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 2001).

The City of Los Angeles CEQA Thresholds of Significance Guide (City of Los Angeles 2006) Section D:1 specifies that the determination of significance for paleontological resources shall be made on a case-by-case basis, taking into consideration the following factors:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance. (City of Los Angeles 2006)

5 RESOURCE ASSESSMENT GUIDELINES

The loss of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region, would be a significant environmental impact. Direct impacts on paleontological resources primarily concern the potential destruction of nonrenewable paleontological resources and the loss of information associated with these resources. This includes the unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments are disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of information (a significant impact). At a project-specific level, direct impacts can be mitigated to a less-than-significant level through the implementation of paleontological mitigation.

The CEQA threshold of significance for a significant impact to paleontological resources is reached when a project is determined to "directly or indirectly destroy a significant paleontological resource or unique geologic feature" (Appendix G, State CEQA Guidelines). In general, for a given project site that is underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources. For a project site that is directly underlain by geologic units with no paleontological sensitivity, there is no potential for impacts on paleontological resources unless sensitive geologic units that underlie the non-sensitive unit are also affected.

5.1 Professional Standards

The SVP has established standard guidelines 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 (1995, 2010). 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 laws, ordinances, regulations, and standards accept and use the professional standards set forth by the SVP.

As defined by the SVP (2010:11), significant paleontological resources are defined as:

> fossils and fossiliferous deposits, here defined as 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).

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). 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.

A geologic unit known to contain significant fossils is considered sensitive to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either disturb or destroy fossil remains directly or indirectly. This definition of sensitivity differs fundamentally from the definition for archaeological resources as follows:

> It is extremely important to distinguish between archaeological and paleontological (fossil) resource sites when defining the sensitivity of rock units. The boundaries of archaeological sites define the areal extent of the resource. Paleontological sites, however, 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).

Many archaeological sites contain features visually detectable on the surface. In contrast, fossils are often contained within surficial sediments or bedrock and are therefore not observable or detectable unless exposed by erosion or human activity.

In summary, paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. As a result, even in the absence of fossils on the surface, 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 the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment 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 these remains are significant, successful mitigation and salvage efforts may be undertaken to prevent adverse impacts to these resources.

5.2 Paleontological Sensitivity

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, 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 Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources," the SVP (2010:1–2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential, described below.

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., ash or tephra), 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 sandstone, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstone, fine-grained marine sandstone, etc.). Paleontological potential consists of both a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Rock units which contain potentially datable organic remains older than late Holocene, including deposits associated

with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential."

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 or impact mitigation measures relative to paleontological resources" (SVP 2010:1–2).

6 METHODS

This PRTR is based on a desktop review of available scientific literature, geologic maps, and a records search from the Natural History Museum of Los Angeles County (LACM). This PRTR conforms to industry standards as developed by the SVP (1995, 2010). The purpose of this analysis is 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 of the Project site.

7 RESULTS

7.1 Literature Search Results

7.1.1 *Geologic Setting*

The Project site is located in the Los Angeles Basin, a structural depression approximately 50 miles long by 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 (Mya) (Critelli et al. 1995). While sediments dating back to the Cretaceous (66 million years ago) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 million years ago) (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, until sea level dropped in the Pleistocene 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 occurring 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).

The rapid sedimentation into the Los Angeles Basin resulted in the preservation of the organic content of much of the marine sediments, forming the most productive oil-producing district in California (Yerkes et al. 1965). The Project site is to the immediate southeast of the Salt Lake Oil Field which is roughly centered along Beverly Boulevard (Dibblee and Ehrenspeck 1991). These oil-producing sediments are relevant to the paleontology of the area, as they are the cause of the world-famous La Brea Tar Pits, located at Hancock Park about 1 mile west of the Project site. The asphaltic sands of the La Brea Tar Pits form when petroleum seeps upward into the overlying alluvial sediments (Spencer et al. 2003). In places where the petroleum reached the surface, sticky pools of asphalt were left behind as the lighter petroleum products evaporated (Akersten et al. 1983). These pools would then trap most organisms that came into contact with it, everything from pollen and plant seeds to mammoths, analogous to how fly-paper or quicksand works (Harris 2015). This mechanism is reflected in the composition of macrofauna discovered at the Tar Pits, which are 90% carnivores (Friscia et al. 2008). Bones could also be transported and entrapped in the asphaltic sediments through normal fluvial processes (Spencer et al. 2003). Once entrapped, the asphalt impregnates the bones of animals, contributing to their excellent preservation.

The Tar Pits have a long record of human use, dating back to Native Americans who collected the asphalt for use in roofing (Seaman 1914). Records of bones being discovered in the La Brea Tar Pits go back to the 1800s; however, these bones were widely regarded as modern domesticated and wild animals that had fallen into the traps (Seaman 1914), and it was not until 1877 that the first extinct organism, a *Smilodon* (saber-toothed cat), was reported (Denton 1877). The first scientific excavations at the Tar Pits began in 1907 (Seaman 1914) and continue today under the direction of the Page Museum. The specimens in the Tar Pits are up to 40,000 years old (late Pleistocene), with over 500 species described thus far (Harris 2007). Taxa preserved in the asphaltic deposits range from typical Ice Age fauna such as saber-toothed cat, mammoth, sloth, bison, and dire wolf to a diverse array of microfossils such as rodents, small reptiles and amphibians, insects, pollen and plant remains, and also include some of the oldest human remains in California (Harris 2007; Pham 2015). At this time, over 3 million specimens have been collected from the deposits in and around Hancock Park (Pham 2015), with excavations continuing today.

The most recent excavations in and around Hancock Park are at Pit 91, which is an ongoing excavation begun in 1913 and continuing today, and Project 23, to the west of Hancock Park at the Los Angeles County Museum of Art (LACMA). Pit 91 was initially excavated from 1913–1915, with excavations resuming in 1969 and continuing to the present (Friscia et al. 2008). Since the reopening of the pit, 320 species have been recovered from the site (Harris 2007). Today, the site is actively excavated during the summer months. During the 2017 field season, 3,300 specimens were recovered, including the skulls of saber-toothed cats and dire wolves, ground sloth bones, and the first confirmed juvenile mammoth from Pit 91 (La Brea Tar Pits and Museum 2017). Pit 91 has currently been excavated to a depth of 15 feet, with an estimated 3 to 8 feet of asphaltic deposits remaining further below ground (La Brea Tar Pits and Museum 2017). Another recent excavation of note is Project 23, which resulted from paleontological mitigation work for the LACMA Transformation Project. During construction activities for that project from 2006–2008, fossiliferous asphaltic deposits as well as a non-asphaltic nearly complete mammoth specimen were discovered (Rice et al. 2015). In all, 16 fossiliferous asphaltic deposits were crated into 23 wooden boxes, with a total of 383 cubic meters of material collected (ArchaeoPaleo Resource Management, Inc. 2014). The crated deposits are still being processed, with estimates of the number of fossils contained within ranging from 1 to 3 million (ArchaeoPaleo Resource Management, Inc. 2014).

7.1.2 *Project Geology and Paleontology*

Dibblee and Minch (1991) mapped the geology in the vicinity of the Project site at a scale of 1:24,000 (see Figure 3). The surficial geology of the Project site consists of older alluvium, as described below.

Older Alluvium (Qae). Older alluvium is present at the surface across the Project site. Sediments mapped as older alluvium consist of slightly indurated and elevated gravel and sand that dates to the Pleistocene (11,700–2.58 million years ago) (Dibblee and Minch 1991). Pleistocene alluvial sediments have a rich fossil history in the Los Angeles Basin (Hudson and Brattstrom 1977; Jefferson 1991a, 1991b; McDonald and Jefferson 2008; Miller 1941, 1971; Roth 1984; Scott 2010; Scott and Cox 2008). The most common Pleistocene terrestrial mammal fossils include the bones of mammoth, bison, deer, and small mammals, but other taxa, including horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, have been reported (Graham and Lundelius 1994), as well as reptiles such as frogs, salamanders, and snakes (Hudson and Brattstrom 1977). As discussed above, in the vicinity of the Project site these sediments may be impregnated with asphalt, as at the nearby La Brea Tar Pits, in which case they have the potential to preserve unusually dense concentrations of fossil resources. 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., Barnosky et al. 2004; Sandom et al. 2014), ecology (e.g., Connin et al. 1998), and climate change (e.g., Roy et al. 1996).

7.1.3 *Records Search Results*

A museum records search was requested from the LACM and received on January 30, 2019. The results of this search indicate numerous fossil localities are known from older alluvium in the vicinity of the Project site. The closest known locality to the Project site, LACM 1724, is located 0.3 mile west of the Project site, at the intersection of Wilshire Boulevard and Hauser Boulevard (McLeod 2019). At this locality fossils of pond turtle (*Clemmys marmorata*), bird (Aves), raccoon (Procyonidae), sabretooth cat (*Smilodon fatalis*), dire wolf (*Canis dirus*), coyote (*Canis latrans*), pronghorn antelope (*Capromeryx minor*), and bison (*Bison*) were collected from an asphaltic layer at a depth of 8 feet below the surface (McLeod 2019). Slightly eastward of the Project site, between La Brea Avenue and Tremain Avenue, from south of Wilshire Boulevard to south of Olympic Boulevard, the LACM has three fossil localities (LACM 1198, LACM 1814, and LACM 5599) that produced mastodon (*Mammut*), bovid (*Preptoceras sinclairi*), and camel (*Camelops*) in asphaltic sediments at depths from 2 to 17 feet below the surface (McLeod 2019). Additionally, the La Brea Tar Pits are located 0.7 mile to the west of the Project site. In addition to the millions of fossils found in the active Tar Pits at Hancock Park, the LACM has records of seven fossil localities within one block of Hancock Park where asphaltic sediments produced significant fossils from the subsurface.

7.2 Paleontological Sensitivity

The review of the literature and the records of the LACM presented above were used to assign the SVP's paleontological potential rankings to the geologic units present in the Project site (Figure 4). Due to the abundant fossil resources recorded by the LACM in older alluvial sediments, particularly asphaltic sediments, older alluvium is assigned high paleontological sensitivity. Figure 5 shows a paleontological sensitivity map of the Project site.

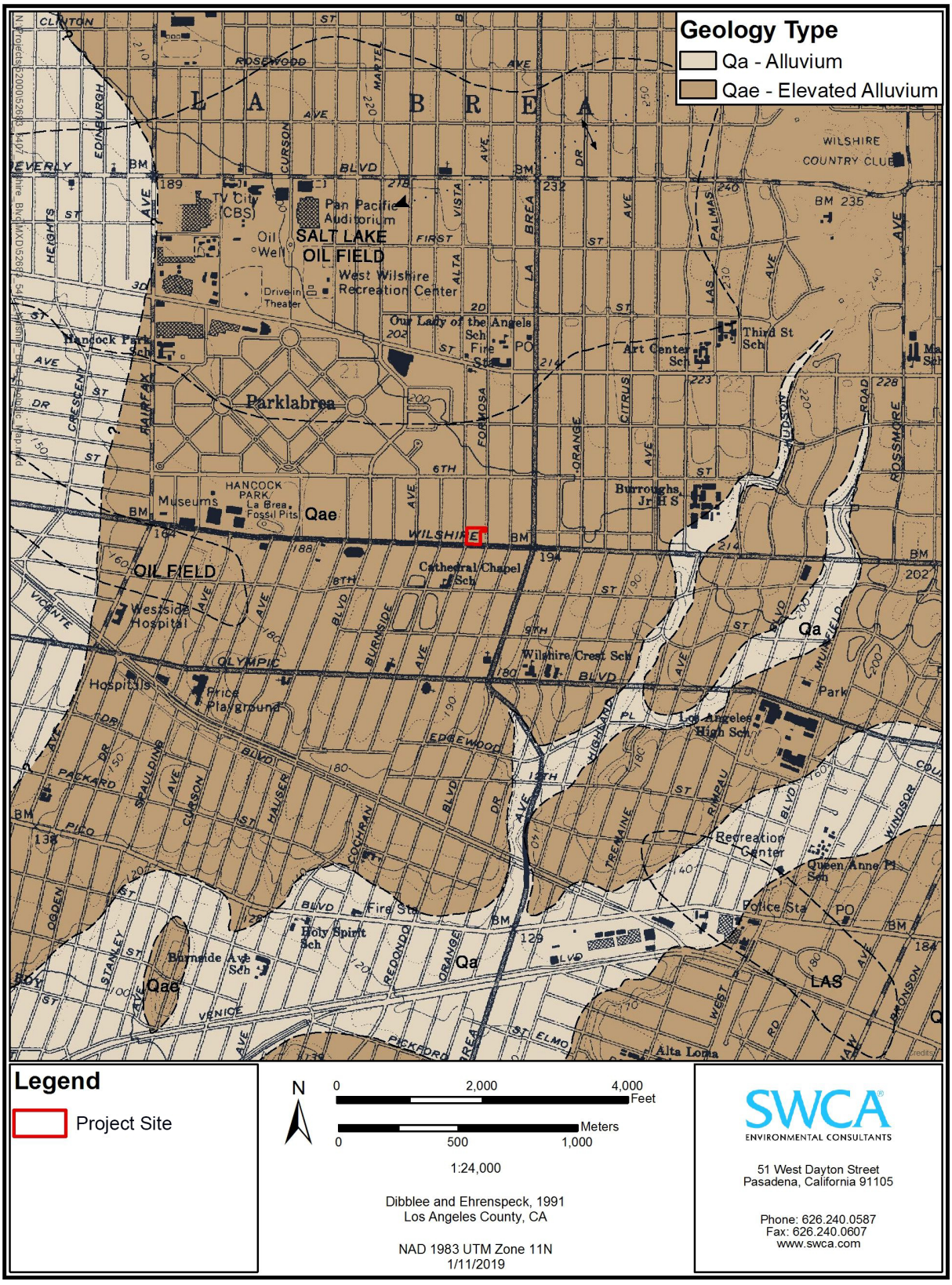

Figure 4. Geology of the Project site and vicinity.

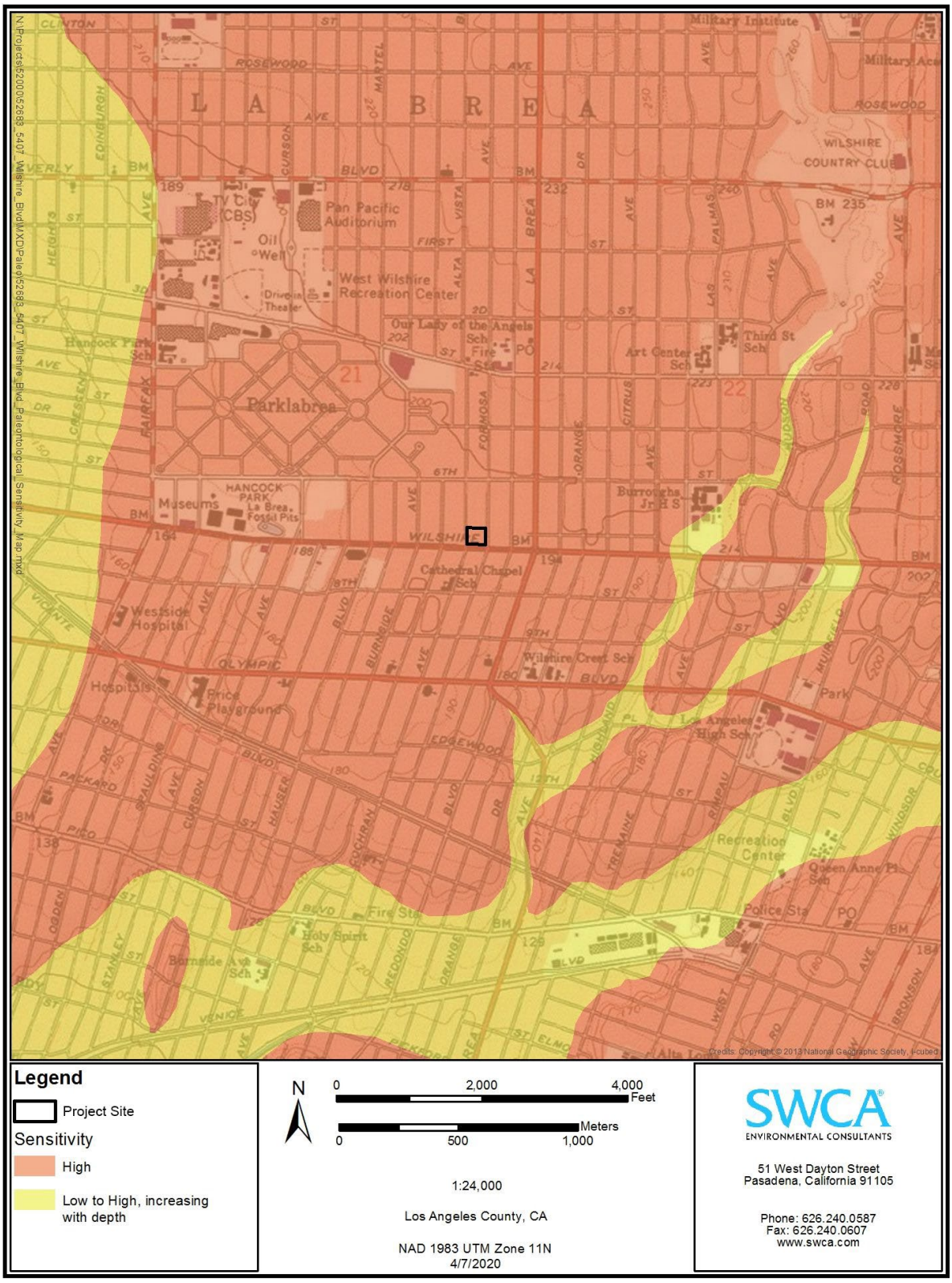

Figure 5. Paleontological sensitivity of the Project site and vicinity.

8 IMPACT ANALYSIS AND RECOMMENDED MEASURES

To demonstrate CEQA compliance, a response is required to the following question in the Environmental Checklist, based on the results of the paleontological analysis: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

The paleontological sensitivity analysis indicates that there are sedimentary formations that have been observed within the Project site that have a high likelihood of containing paleontological resources, specifically within the stratum designated as older alluvium, which is also referred to as the Lakewood Formation, and more deeply buried sediments known as San Pedro Formation. The paleontologically sensitive sediments have been observed below depths of 5 feet—the estimated depth of fill—and down to at least 90 feet below grade. Ground-disturbing activities proposed for the Project would include excavation to a maximum estimated depth of approximately 63 feet. Therefore, the Project could result in a potentially significant impact resulting from excavation within sediments that have high paleontological sensitivity.

SWCA recommends mitigation measure (MM) PAL-1 be implemented to avoid or reduce any potentially significant impacts resulting from ground-disturbing activities within the paleontologically sensitive sediments. MM PAL-1 has been developed in accordance with and incorporate the performance standards of the SVP (1995, 2010), state and local regulations, and best practices in mitigation paleontology (Murphey et al. 2019). The implementation of MM PAL-1 will ensure that fossils, if encountered, are assessed for significance, and if deemed significant, they will be salvaged and curated with an accredited repository. The recommended measure is defined as follows:

> **MM PAL-1.** The Project applicant shall retain a Qualified Paleontologist, who meets or exceeds the Society of Vertebrate Paleontology (SVP) qualification standards to carry out all regulatory compliance measures and protocols related to paleontological resources. The Qualified Paleontologist shall obtain a curatorial arrangement with an accredited repository such as the Los Angeles County Natural History Museum (NHMLA) before construction in the event of significant paleontological resource discoveries during construction.
>
> The Qualified Paleontologist shall develop worker environmental awareness program (WEAP) training to educate the construction crew on the legal requirements for preserving fossil resources, as well as the procedures to follow in the event of an unanticipated fossil discovery. This training program shall be given to the crew before ground-disturbing work commences and shall include handouts to be given to new workers as needed.
>
> Full-time monitoring shall occur during ground-disturbing activities at depths greater than 5 feet that have the potential to impact previously undisturbed sediments of high paleontological sensitivity, including deposits designated as older alluvium, Lakewood Formation, or San Pedro Formation. Monitoring shall not be required when ground-disturbing activities are less than or equal to 5 feet deep, or when impacting only previously disturbed sediments and/or recent fill, regardless of depth. Monitoring shall be conducted by a qualified Paleontological Monitor, defined as one who meets the SVP standards and who shall be supervised by the Qualified Paleontologist. The Qualified Paleontologist may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. Monitoring efforts can be increased, reduced, or ceased entirely if determined adequate by the Qualified Paleontologist. Paleontological monitoring shall include inspection of exposed sedimentary units during active excavations below 5 feet deep and outside of fill. The Paleontological Monitor shall have authority to temporarily divert activity away from exposed fossils to evaluate the significance of the find and, shall the fossils be determined significant, then the fossil specimens and associated data shall be collected based on professional standards. The Paleontological Monitor shall record pertinent geologic data and collect appropriate sediment samples from any fossil localities.

Recovered fossils shall be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a designated paleontological repository (e.g., NHMLA).

Upon the conclusion of ground-disturbing activities, the Qualified Paleontologist shall prepare a final monitoring report that documents the paleontological monitoring efforts for the Project and describes any resources discoveries observed and/or recorded. If paleontological resources require curation, the final monitoring report and any associated data pertinent to the curated specimen(s) shall be submitted to the designated repository. A copy of the final monitoring report shall be filed with City Planning.

9 CONCLUSION

Based on the evidence and analysis provided herein and with implementation of MM PAL-1, SWCA recommends the potential for impacts under CEQA will be less than significant with mitigation.

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