Appendix 9.6
Paleontological Resources Data

Paleontological Resources Assessment for the 12850 and 12900 Crenshaw Boulevard Project, Gardena, California

JUNE 2020

PREPARED FOR

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PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE 12850 AND 12900 CRENSHAW BOULEVARD PROJECT, GARDENA, CALIFORNIA

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SWCA Project No. 60168

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EXECUTIVE SUMMARY

Purpose and Scope: Din/Cal 4, Inc. (client) retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources study in support of the proposed 12850 and 12900 Crenshaw Boulevard Project (project) located in the city of Gardena, California. The proposed project will demolish existing structures at the project site and construct a new building with up to 265 residential units on the site.

The following study was conducted to analyze potential impacts to paleontological resources that may result from ground-disturbing activities proposed by the project in compliance with the California Environmental Quality Act (CEQA), including relevant portions of Public Resources Code (PRC) Section 5097.5. As part of the study, SWCA requested a confidential records search from the Natural History Museum of Los Angeles County (LACM) and conducted a review of geologic mapping, geotechnical study of the project site, and the scientific literature in order to assess the potential for paleontological resources to occur within the project site and inform the analysis of potential impacts in accordance with Appendix G of the CEQA Guidelines.

Dates of Investigation: A records search was requested from the LACM on February 24, 2020. This report was authored in March 2020.

Summary of Findings: The surface of the project area consists of elevated alluvial sediments dating from the early Holocene to the late Pleistocene, which are of an age to preserve fossil resources and have high paleontological potential. Other geologic formations that crop out near the project area and are likely present in the subsurface at an undetermined depth include older alluvial deposits from the late Pleistocene, which also has high paleontological potential. No previously recorded fossil localities were identified within the project area from the LACM records search. However, the LACM has records of numerous fossil localities from the same geologic units in the vicinity of the project area.

Recommendations and Conclusions: The geologic units present at the surface and in the subsurface of the project area are determined to have high paleontological potential. Elsewhere in the Los Angeles Basin, including within 2 km (1.24 miles) of the project area, Pleistocene-aged alluvial sediments have a proven record of preserving significant fossil resources. If present, fossil resources are subject to proper treatment in accordance with CEQA. Measures GEO-1 through GEO-3 are recommended to mitigate against directly or indirectly destroying unique paleontological resources or sites or unique geologic features. With implementation of these measures SWCA finds that potential adverse impacts to paleontological resources will be reduced to a less-than-significant level.

Disposition of Data: The final report and any subsequent related reports will be submitted to Din/Cal 4, Inc. Research materials and the report are also on file at the SWCA Pasadena Office.

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INTRODUCTION

Din/Cal 4, Inc. (project applicant) retained SWCA Environmental Consultants (SWCA) to conduct a paleontological resources assessment for the proposed 12850 and 12900 Crenshaw Boulevard Project (project), located in the city of Gardena, California (Figure 1). The proposed project will demolish existing structures at the project site and construct a new building with up to 265 residential units on the site.

The following study was conducted to analyze potential impacts to paleontological resources that may result from ground-disturbing activities proposed by the project in compliance with the California Environmental Quality Act (CEQA), including relevant portions of Public Resources Code (PRC) Section 5097.5. As part of the study, SWCA requested a confidential records search from the Natural History Museum of Los Angeles County (LACM) and conducted a review of geologic mapping and the scientific literature in order to assess the potential for paleontological resources to occur in the project site and inform the analysis of potential impacts in accordance with Appendix G of the CEQA Guidelines. SWCA also reviewed the report from the geotechnical engineering investigation conducted for the project site (Geotechnologies, Inc. 2020).

SWCA Paleontological Principal Investigator Alyssa Bell, Ph.D., conducted the paleontological analysis and authored this report. Chris Millington, M.A., R.P.A., served as Project Manager and provided quality control. Copies of the report are on file with SWCA's Pasadena Office.

PROJECT DESCRIPTION

The project is located at 12850 and 12900 Crenshaw Boulevard and is bounded by Crenshaw Boulevard to the west, a gasoline station to the north, the Dominguez Flood Control Channel to the east, and light industrial uses to the south. The project site consists of an approximately 1.3-acre parcel listed by the Los Angeles County Assessor's Office as parcel number (APN) 4060-004-039. The parcel is currently developed with an approximately 24,000-square-foot warehouse building and paved surfaces used for parking and storage. The project proposes to demolish the building and pavement and construct a new building with up to 265 residential units. The project will require ground disturbance beneath the developed portions of the project site (Figure 2). The construction of a parking ramp is expected to require excavation to a depth of approximately 2.4 m (8 ft.) below the current grade in an area that measures 34 × 12.8 m (112 × 42 ft.); the three elevator shafts are anticipated to require excavation to approximately 1.5 m (5 ft.) below grade, each within a 1.8 × 1.8 m (6 × 6 ft.) area. Removal and recompaction of the existing artificial fill is also anticipated with the entire project area, which is estimated as 0.9 m (3 ft.) below grade.

REGULATORY SETTING

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under federal and state laws and regulations. This study satisfies project requirements in accordance with state and local regulations, and was conducted as a means of characterizing the existing conditions consistent with the application of the screening criteria defined in Appendix G of the CEQA Guidelines (as amended December 28, 2018). This analysis also complies with guidelines and criteria specified by the Society of Vertebrate Paleontology (1995, 2010).

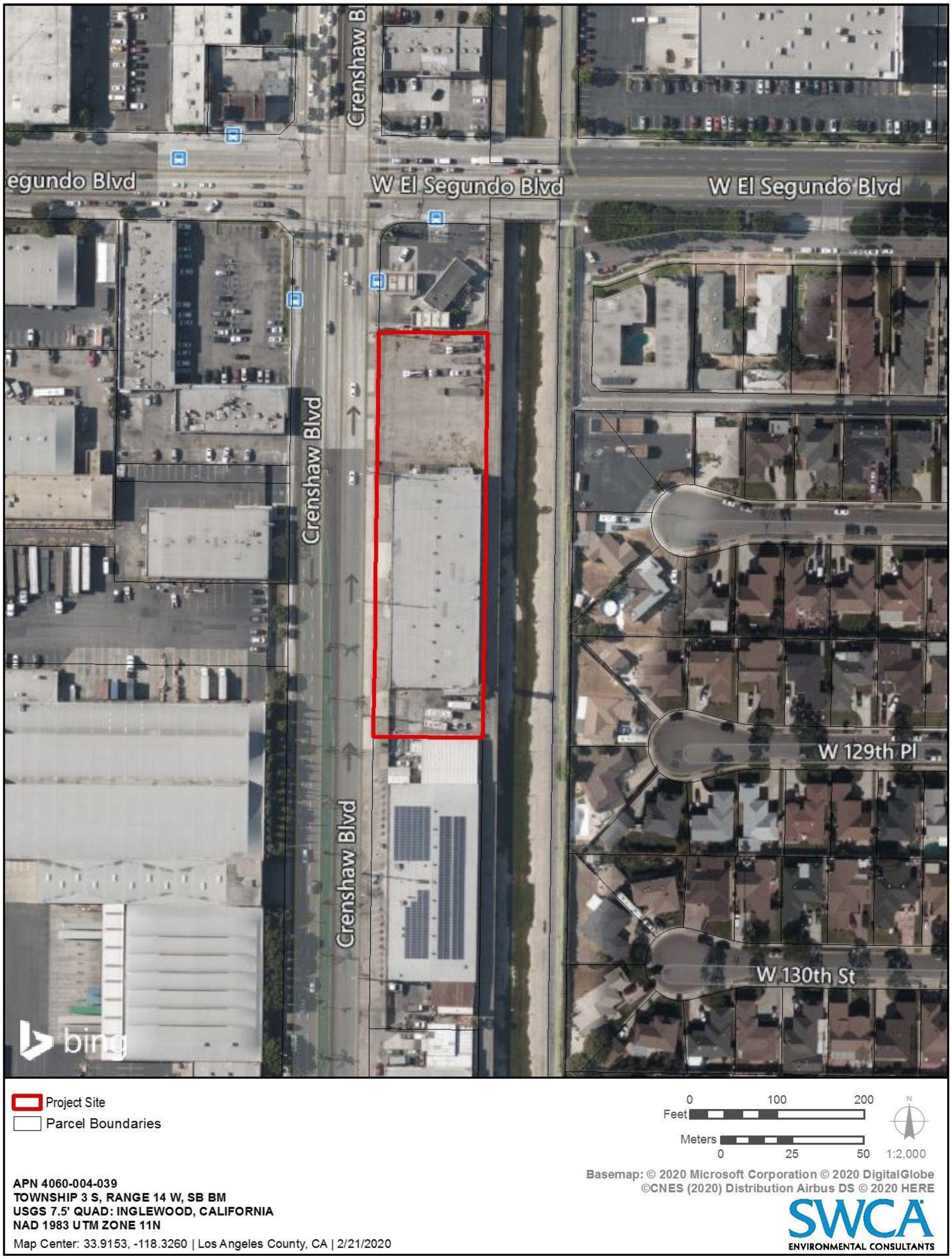

Figure 1. Project area.

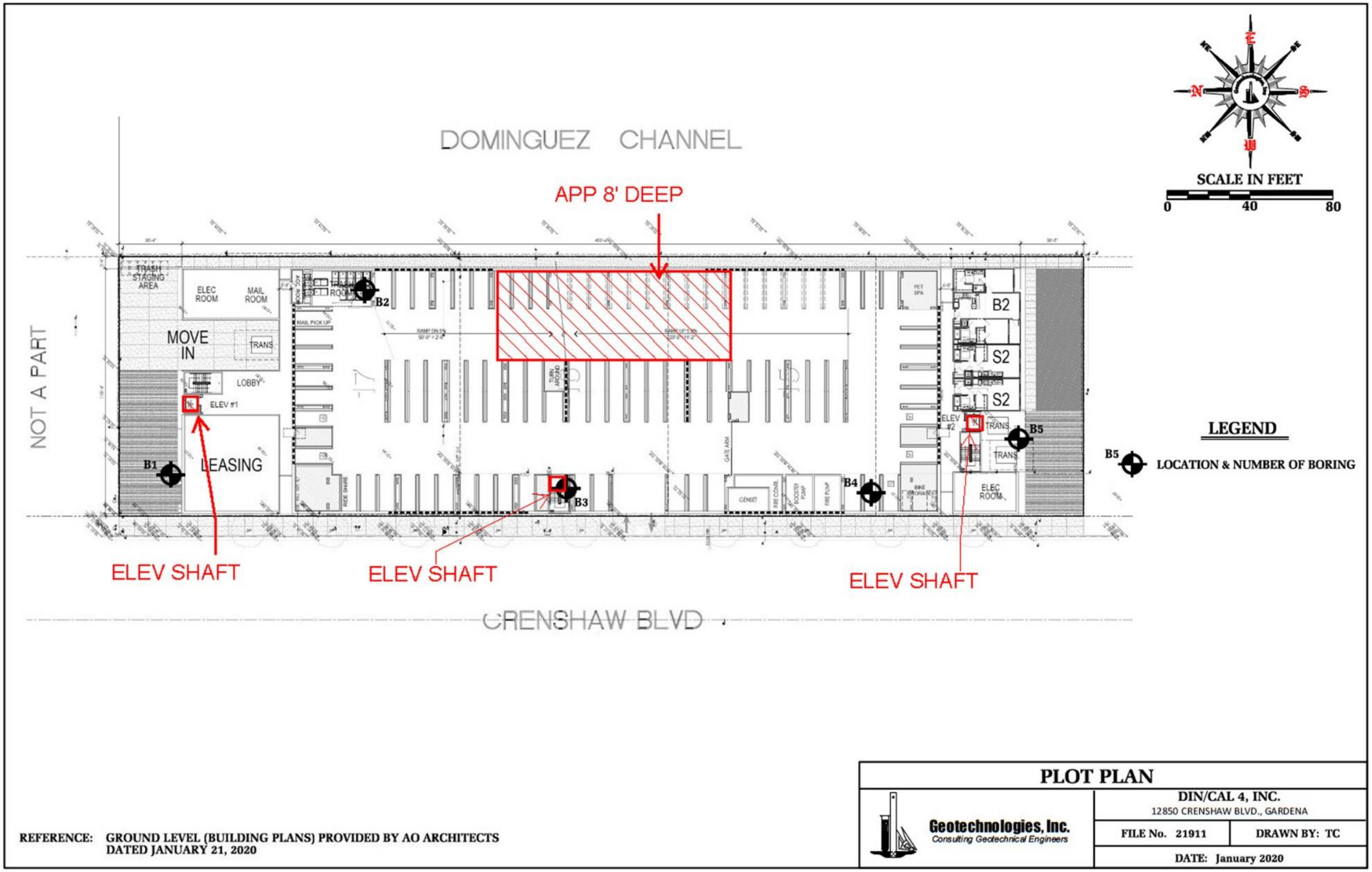

Figure 2. Project design showing the ground floor appended with areas requiring excavation more than 3 feet below current grade (red cross-hatching) for the elevator shafts and parking ramp.

State Regulations

California Environmental Quality Act (CEQA)

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified at PRC Section 21000 et seq. CEQA requires lead agencies to determine if 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. Section VII(f) of the Environmental Checklist asks whether a project would directly or indirectly destroy a unique paleontological resource and result in impacts to the environment.

Public Resources Code (PRC) Section 5097.5

Requirements for paleontological resource management are included in the PRC Division 5, Chapter 1.7, Section 5097.5, and Division 20, Chapter 3, Section 30244, 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.

METHODS

The following section presents an overview of the methodology used to identify the potential for paleontological resources within the project site. This report is based on a desktop review of available scientific literature, geologic maps, and a records search from the LACM. This report 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 potential (sensitivity) of the project site.

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 et al. 2019, 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.

Paleontological Potential

Paleontological potential 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:

> **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)

RESULTS

Geological Setting

The project area 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 to 3 million years ago (Mya) (Critelli et al. 1995). While sediments dating back to the Cretaceous (66 Mya) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 Mya) (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 at the westernmost edge of 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 geology in the project area has been mapped by Dibblee and Minch (2007) as composed of elevated and dissected alluvial sediments that date from the early Holocene to late Pleistocene (Qae) at the surface, which transitions to older alluvium (Qoa) that dates to the late Pleistocene approximately 0.5 km (0.31 miles) to the east of the project site, near the intersection of West El Segundo Boulevard and Purche Avenue, as shown in Figure 3 (Dibblee and Minch 2007). These units are very similar in their lithology, with both consisting of gravel, sand, and clay derived from the nearby uplands of the Rosecrans Hills east of the project site. While the elevated alluvial sediments (Qae) at the surface of the project site are slightly

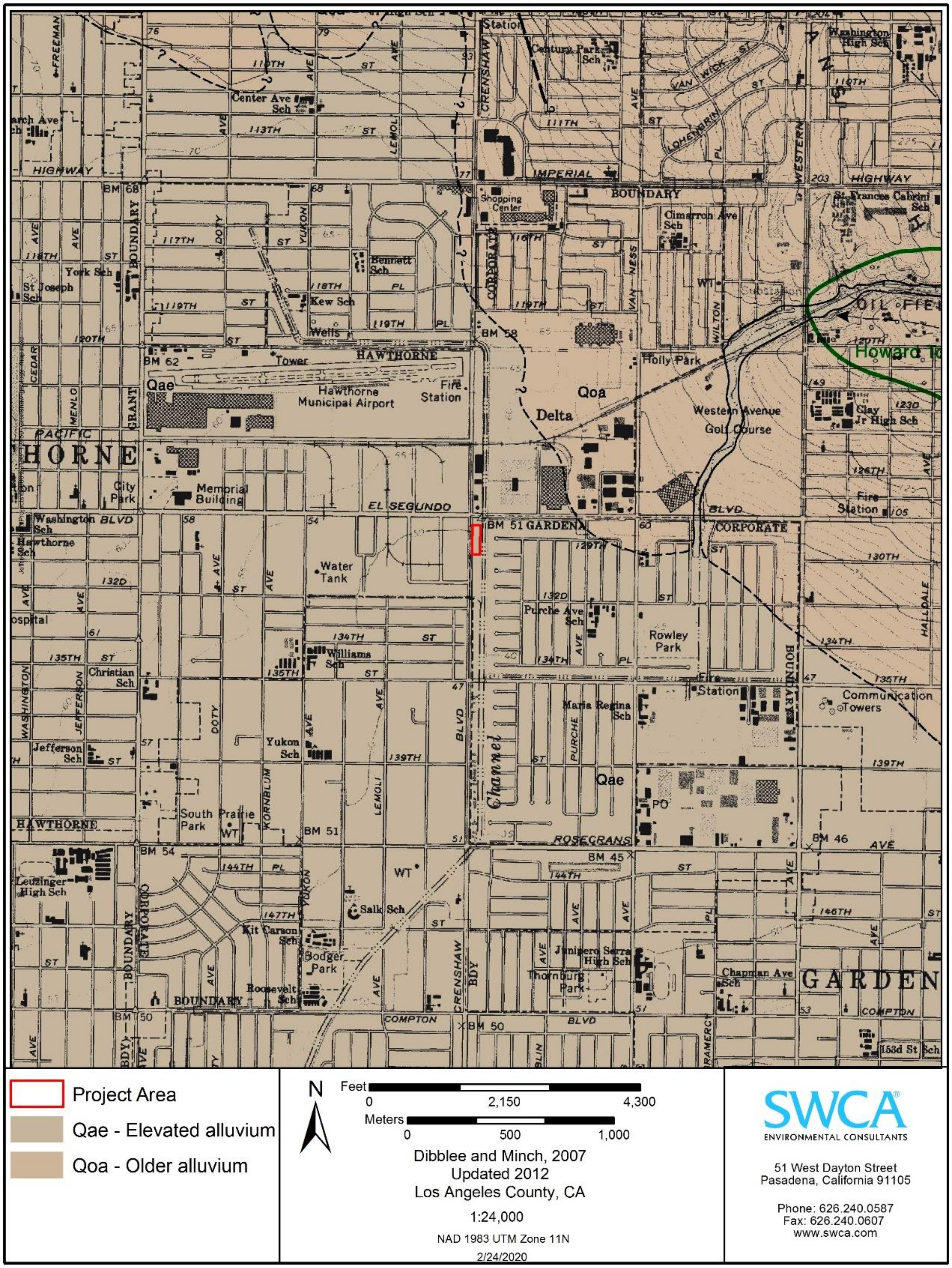

Figure 3. Geologic map of the project area, adapted from Dibblee and Minch (2007).

younger than the subsurficial older alluvium (Qoa), both are of an age to preserve fossil resources, which the SVP defines as being over 5,000 years in age, or middle Holocene (SVP 2010). The geotechnical study of the site confirmed the presence of alluvial sediments underlying artificial fill at a maximum depth of 3 feet (0.91 meters) (Geotechnologies, Inc. 2020).

Ice Age sediments such as these have a rich fossil history in southern California, including the Los Angeles Basin (Jefferson 1991a and b, McDonald and Jefferson 2008, Miller 1971, Reynolds and Reynolds 1991, Springer et al. 2009). 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). 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, Scott 2010), ecology (e.g., Connin et al. 1998), and climate change (e.g., Roy et al. 1996).

This rich fossil history is reflected in the collections of the LACM, which has numerous fossil localities in Pleistocene-aged alluvium throughout the Los Angeles Basin, the closest of which is 1.97 km (1.22 miles) southwest of the project area (McLeod 2020), as detailed in Table 1 below. Therefore, these sediments are assigned high paleontological potential.

Table 1. LACM Fossil Localities in the Vicinity of the Project Area

LACM Locality Number	Approximate Distance to Project Area	Geologic Unit	Depth	Fossil Taxa Collected
LACM 2035	1.97 km (1.22 miles)	Pleistocene alluvium	Unrecorded	Mammoth (*Mammuthus*)
LACM 3266	3.36 km (2.09 miles)	Pleistocene alluvium	15 – 18 ft below ground surface	Unidentified vertebrates
LACM 1344 & 3365	4.25 km (2.64 miles)	Pleistocene alluvium	15 – 20 ft below ground surface	Mammoth (*Mammuthus*), squirrel (Sciuridae), horse (*Equus*), and pronghorn antelope (*Breameryx*)
LACM 1295 & 4206	5.22 km (3.24 miles)	Pleistocene alluvium	Described as "relatively shallow," exact depths unknown	Pond turtle (*Clemmys*), puffin (*Mancalla*), turkey (*Parapavo*), ground sloth (*Paramylodon*), mammoth (*Mammuthus*), squirrel (Sciuridae), horse (*Equus*), pronghorn antelope (*Capromeryx*), and bison (*Bison*)

Source: LACM records search (McLeod 2020); Appendix A

SENSITIVITY ASSESSMENT

The review of geologic mapping, scientific literature, and records search from the LACM indicate that the alluvium present at the surface and in the subsurface of the project area has high paleontological potential. Should fossil resources be present in the subsurface of the project area, ground-disturbing activities associated with excavations would risk damaging or disturbing those resources. Therefore, recommendations are provided to avoid impacts to paleontological resources.

RECOMMENDATIONS AND CONCLUSION

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?" With the implementation of the following recommendations, construction associated with the project will be mitigated against directly or indirectly destroying unique paleontological resources or sites or unique geologic features. The intent of these recommendations is to ensure that potential adverse impacts to paleontological resources as a result of project implementation are reduced to a less-than-significant level.

The following mitigation measures have been developed in accordance with the SVP's *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources* and meet the paleontological requirements of CEQA. Similar mitigation measures have been used throughout California and have been successful in protecting paleontological resources while allowing timely completion of construction.

GEO-1. Retain a Project Paleontologist and prepare a monitoring plan: A Project Paleontologist will prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). A Project Paleontologist is defined as one who meets the Society of Vertebrate Paleontology (SVP) standards for a Qualified Professional Paleontologist. The PRMMP will conform to SVP standards and address the specifics of monitoring and procedures to follow in the event of a fossil discovery. The PRMMP will include a repository agreement with an accredited paleontological repository, such as the Natural History Museum of Los Angeles County. The PRRMP will also include a Worker's Environmental Awareness Program that will describe the legal requirements for preserving fossil resources, procedures to follow in the event of a fossil discovery, and other relevant sections of the PRMMP. This training program will be given to the crew before ground-disturbing work commences and will include handouts to be given to new workers.

GEO-2. Monitor for paleontological resources: Monitoring will be conducted by a Paleontological Monitor, defined as one who meets the SVP standards for a Paleontological Resource Monitor. The Paleontological Monitor shall be under the supervision of the Project Paleontologist. As defined in the PRMMP, Paleontological monitoring will include inspection of exposed sedimentary units during active excavations within sensitive geologic sediments that occur in previously undisturbed sediment, which has been estimated as any portion of the project site where excavation exceeds 0.9 m (3 ft.) in depth. The frequency of monitoring shall be based on consultation with or periodic inspection by the Project Paleontologist, and shall depend on the rate of excavation and grading activities and the materials being excavated.

GEO-3. Evaluate and treat fossil discoveries: In the event of a fossil discovery work will cease in a 15-m (50-foot) radius of the find while the Project Paleontologist assesses the significance of the fossil and documents its discovery. Work outside this radius may continue. Should the fossil be determined significant, it will be salvaged following the procedures and guidelines of the SVP and recommendations of the Project Paleontologist. Recovered fossils will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and reposited with the paleontological curation facility identified in the PRMMP. The Project Paleontologist will prepare a report of the monitoring work and any findings after construction is completed.

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APPENDIX A

Paleontological Records Search Results

Natural History Museum of Los Angeles County

CONFIDENTIAL – NOT FOR PUBLIC RELEASE

Kimley»Horn

TECHNICAL MEMORANDUM

To: Ray Barragan and Lisa Kranitz, City of Gardena

From: David Brunzell, BCR Consulting LLC, and Rita Garcia

Date: January 14, 2021

Subject: **Gardena Transit Oriented Development Specific Plan, 12850 and 12900 Crenshaw Boulevard, Paleontological Resources Assessment Peer Review**

BCR Consulting LLC, on behalf of Kimley-Horn, conducted a third-party peer review of the Project's Paleontological Resources Assessment (SWCA Environmental Consultants, June 2020) on behalf of the City of Gardena. No specific comments were embedded in the *Paleontological Resource Assessment* document. The analysis meets the applicable provisions of CEQA and the State CEQA Guidelines and is adequate for inclusion in the Project EIR.

Please do not hesitate to contact David Brunzell at 909-525-7078 or david.brunzell@yahoo.com with any questions.