Appendix G
Paleontological Resources Assessment Report

ESA

CROSSINGS CAMPUS, CITY OF CULVER CITY AND CITY OF LOS ANGELES, CALIFORNIA

Paleontological Resources Assessment Report

Prepared for
Culver Crossings Properties, LLC
2221 Rosecrans Avenue, Suite 200
El Segundo, CA 90245

July 2022

ESA

CROSSINGS CAMPUS, CITY OF CULVER CITY AND CITY OF LOS ANGELES, CALIFORNIA

Paleontological Resources Assessment Report

July 2022

Prepared for:
Culver Crossings Properties, LLC
2221 Rosecrans Avenue, Suite 200
El Segundo, CA 90245

Prepared by:
ESA
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Project Manager:
Kyle Garcia, M.A., RPA

Principal Investigator and Author:
J.D. Stewart, Ph.D.

Project Location:
Beverly Hills (CA) USGS 7.5-minute Topographic Quad
Township 2 South, Range 14 West, Unsectioned

Acreage: 4.46 acres

Assessor Parcel Numbers (APN): 4312-015-005 and 4312-015-006

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EXECUTIVE SUMMARY

Crossings Campus Paleontological Resources Assessment Report

Culver Crossings Properties, LLC, the Applicant, proposes to develop an office project (Project) on an approximately 4.46-acre site comprised of two properties: one 1.63-acre parcel is located in the City of Culver City, while the second 2.83-acre parcel is located in the City of Los Angeles. **Environmental Science Associates (ESA)** has prepared this paleontological resources assessment for the Project to identify potential impacts to paleontological resources in accordance with the California Environmental Quality Act (CEQA). The scope of work for this assessment included a geologic map and literature review, review of a site specific Preliminary Geotechnical Investigation report (Geotechnical Report) conducted for the Project, a paleontological resources records search through the Natural History Museum of Los Angeles County (NHMLAC), and the recommendation of mitigation measures to reduce impacts from the Project to paleontological resources to a less than significant level. The City of Culver City is the lead agency pursuant to CEQA.

Geologic mapping indicates that the surface of the Project Site is underlain by Holocene-age alluvium (Qa), which have a low sensitivity for paleontological resources due to the young age of the deposits and are unlikely to preserve fossil resources. However, these sediments increase in age with depth, such that the deeper layers of this unit have a higher potential to preserve paleontological resources. Moreover, numerous paleontological resources have been recovered from deeper deposits during construction of three development projects in the immediate vicinity of the Project Site in association with the Lakewood Formation--a geological unit which consists of a Pleistocene-age alluvium deposited in both marine and non-marine settings, which is considered to have high potential for encountering paleontological resources. In particular, these projects yielded the identification of more than 200 fossil specimens from these deposits that were encountered at depths between 15 feet below ground surface (bgs) to 41 feet bgs. In addition, the paleontological records search conducted through the NHMLAC also indicates that older (Pleistocene-age) geologic units in the vicinity of the Project Site have produced paleontological resources (including fossil specimens of horse, camel, mammoth, pond turtle, ground sloth, mastodon, mammoth, camel, turkey, saber-toothed cat, horse, deer, sharks, bony fish, and rays), including resources located within 0.6 and two miles from the Project Site at depths between 6 and 13 feet bgs and unknown depths.

Given the identification of numerous fossil specimens at depth during construction projects in the immediate vicinity, the positive results of NHMLAC records search, and since excavations for the Project would extend to a maximum depth of 50 feet bgs, the potential to encounter buried paleontological resources during construction of the Project is considered high. Therefore, as the Project could directly or indirectly destroy unique paleontological resources, impacts on buried paleontological resources are considered potentially significant. As such, recommended mitigation measures, including retention of a Qualified Paleontologist, paleontological resources monitoring, and procedures to be followed in the event of the discovery of paleontological resources, are provided in the *Summary of Findings and Recommended Mitigation Measures* section of this report in order to reduce impacts to paleontological resources to a less than significant level under CEQA.

CROSSINGS CAMPUS

Crossings Campus Paleontological Resources Assessment Report

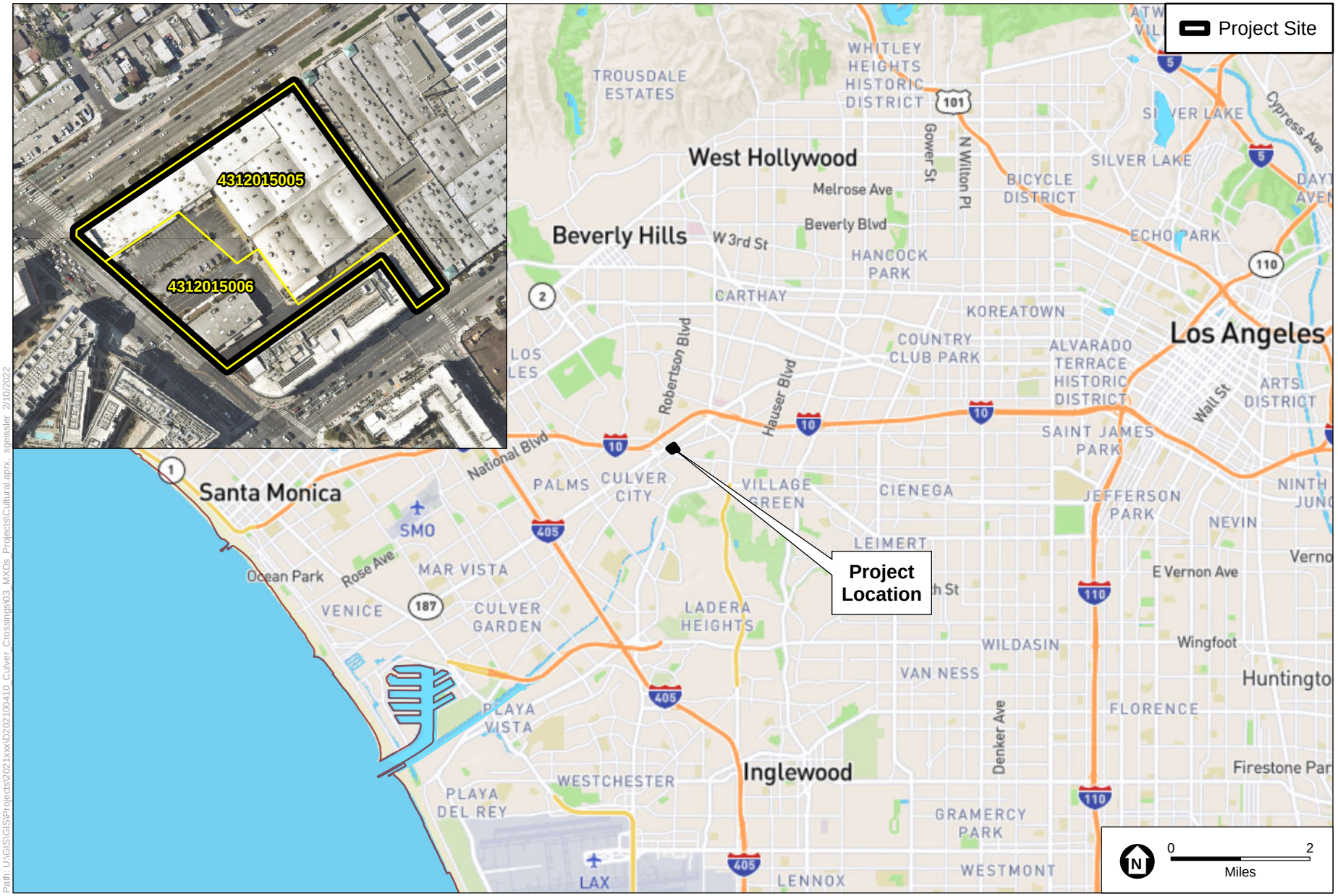
Introduction

Culver Crossings Properties, LLC, the Applicant, proposes to develop an office project (Project) on an approximately 4.46-acre-site comprised of two properties: one 1.63-acre parcel is located in the City of Culver City (Culver City Parcel), while the second 2.83-acre parcel is located in the City of Los Angeles (Los Angeles Parcel) (collectively referred to herein as the Project Site). **Environmental Science Associates (ESA)** has prepared this paleontological resources assessment for the Project to identify potential impacts to paleontological resources in accordance with the California Environmental Quality Act (CEQA). The scope of work for this assessment included a geologic map and literature review, review of a site-specific geotechnical report conducted for the Project, a paleontological resources records search through the NHMLAC, and the recommendation of mitigation measures to prevent potential impacts from the Project to significant paleontological resources, should they be encountered. The City of Culver City is the lead agency pursuant to CEQA.

ESA personnel involved in the preparation of this report are as follows: Kyle Garcia, M.A., RPA Project Manager; J.D. Stewart, Ph.D., Principal Investigator and report author; Fatima Clark, B.A., report contributor; and Stephan Geissler, GIS specialist. Resumes of key personnel are included in **Appendix A** of this report.

Project Location

The Project Site is located at 8825 National Boulevard and 8871 Washington in Culver City, California (Culver City Parcel); and 8876, 8884, 8886 and 8888 Venice Boulevard and 8827 and 8829 National Boulevard in Los Angeles, California (Los Angeles Parcel) (**Figure 1**). The Project Site is bounded by Venice Boulevard to the north, Washington Boulevard to the south, National Boulevard to the west, and existing commercial uses to the east (**Figure 2**). It is also situated within an unsectioned area of Township 2 South, Range 14 West on the Beverly Hills, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (**Figure 3**).



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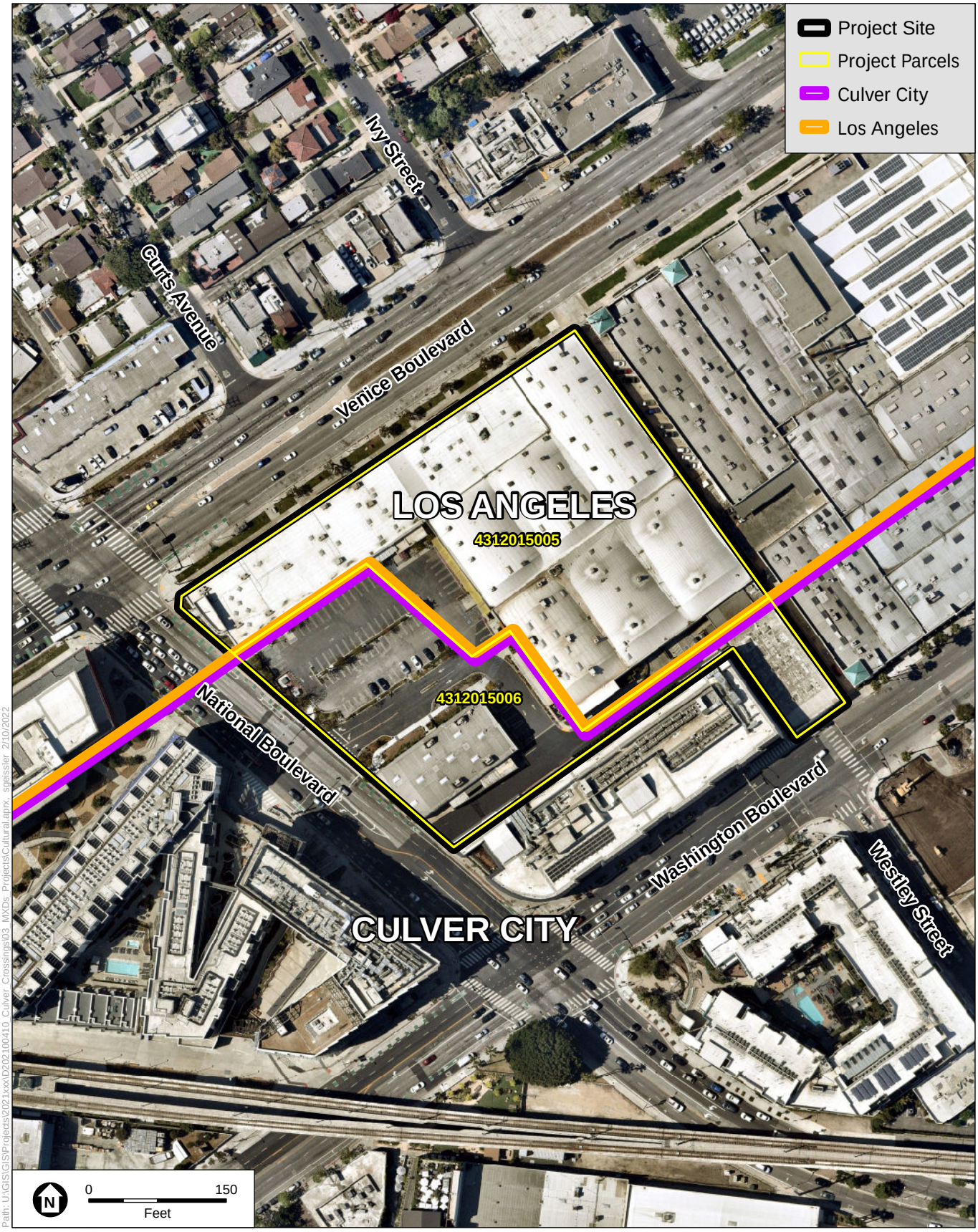
SOURCE: Mapbox, 2021; ESA, 2022

Crossings Campus

Figure 1
Project Location and Regional Vicinity



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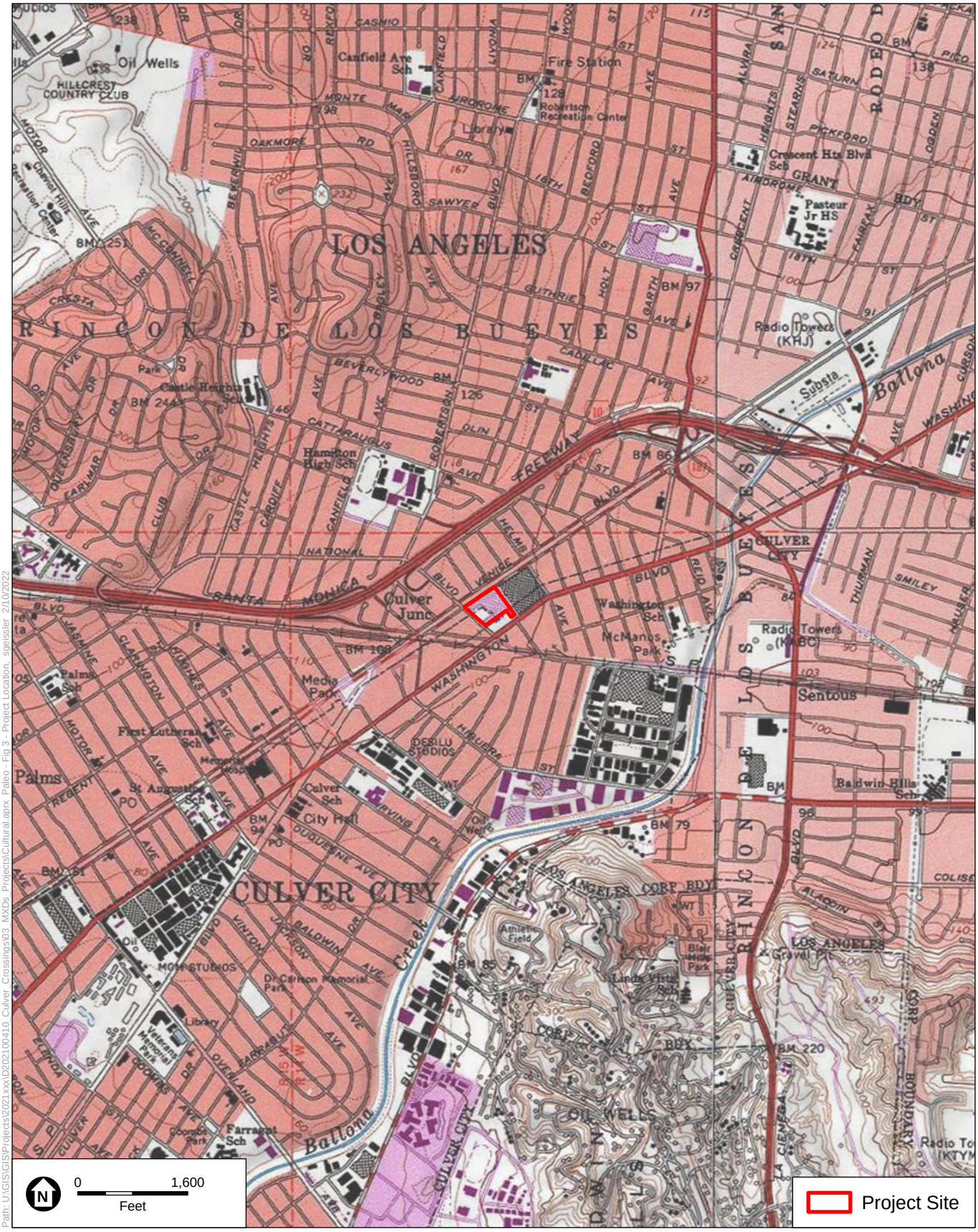
SOURCE: Nearmap, 2021

Crossings Campus

Figure 2
Culver City and Los Angeles City Boundaries

ESA



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SOURCE: Beverly Hills Quad, 2013; ESA, 2022

Crossings Campus

Figure 3
Project Location

ESA

Project Description

The Project Site is currently improved with low-rise warehouses that have been converted into retail, office, and surface and enclosed parking lots serving the existing uses on the Project Site. The Project Site is mostly flat with gradual sloping from north to south. Landscaping on the Project Site is limited to parking medians, street edge, and building perimeter planting.

The Culver City Parcel is currently developed with two warehouse buildings, surface parking and vehicular access that supports the existing uses on the Project Site. The one warehouse building is vacant while the other is used for storage. Vehicular access to the Culver City Parcel is provided along National Boulevard. Pedestrian access to the Culver City Parcel is provided along National Boulevard and on Washington Boulevard at the southern edge of the Project Site. The Los Angeles Parcel is currently improved with a single warehouse building that has been partitioned into six separate spaces consisting of a combination of office and retail uses, and 70 spaces of enclosed vehicular parking. Vehicular access to the Los Angeles Parcel is provided via the Culver City Parcel from National Boulevard. Pedestrian access is provided along the western edge on National Boulevard and via the northern edge of the site along Venice Boulevard.

The Project would involve demolition of the three existing buildings on the Project Site, totaling 105,047 square feet (sf), to support the proposed integrated office complex. The Project would construct two buildings, one on each of the two parcels that comprise the Project Site. The building to be constructed on the Culver City Parcel is identified as Building 1 consisting of a 167,000 sf office building. Building 1 would be four stories, measuring up to 56 feet in height to the top of the roof, with a three-level subterranean garage containing 478 vehicular parking spaces and 51 bicycle parking spaces. The maximum depth of ground disturbance for Building 1 is expected to reach depths of up to 50 feet below ground surface (bgs). The building to be constructed on the Los Angeles Parcel is identified as Building 2 consisting of a 369,000 sf office building. Building 2 would be four to five stories, measuring 56 feet to 71 feet in height to the top of the roof, with a three-level subterranean garage containing 738 vehicular parking spaces and 124 bicycle parking spaces. The maximum depth of ground disturbance for Building 2 is expected to reach a maximum depth of up to 50 feet bgs.

Regulatory Framework

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable state laws and regulations, as well as professional standards.

State

California Environmental Quality Act

The CEQA Guidelines (California Code of Regulations Title 14, Chapter 3, Section 15000 et seq.), define the procedures, types of activities, individuals, and public agencies required to comply with CEQA. As part of CEQA's Initial Study process, one of the questions that must be answered by the lead agency relates to paleontological resources: "Will the proposed project

directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (CEQA Guidelines Appendix G, Section VII, Part f).

The loss of a significant paleontological resource, which includes any identifiable fossil that is unique, unusual, rare, uncommon, diagnostically, or stratigraphically important, and/or those that add to an existing body of knowledge in specific areas—stratigraphically, taxonomically, and/or regionally—would be a significant environmental impact. Direct impacts to 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.

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" (CEQA Guidelines Appendix G, Section VII, Part f). In general, for project sites that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources.

California Penal Code Section 622.5

California Penal Code Section 622.5 provides the following: "Every person, not the owner thereof, who willfully injures, disfigures, defaces, or destroys any object or thing of archeological or historical interest or value, whether situated on private lands or within any public park or place, is guilty of a misdemeanor."

California PRC Section 5097.5

California Public Resources Code (PRC) Section 5097.5 provides protection for paleontological resources on public lands, where Section 5097.5(a) states, in part, that:

> *No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, paleontological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other paleontological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.*

Local

City of Los Angeles General Plan

Conservation Element

The City of Los Angeles' General Plan Conservation Element (Conservation Element) recognizes the presence of paleontological resources within the city in Section 3: "Archeological and Paleontological" (II-3), specifically the La Brea Tar Pits (considered to be the best known and most abundant fossil locality in the general vicinity of the Project), 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." Section 3 of the Conservation Element, adopted in September 2001, includes policies for the protection of paleontological resources. As stated therein, it is the City's policy that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as an objective the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities." Section 5 of the Conservation Element recognizes the City's responsibility for identifying and protecting its cultural and historical heritage. The Conservation Element establishes the policy to continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities, with the related objective to protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes.[1]

City of Culver City General Plan

The City's General Plan does not include policies, goals, and objectives for paleontological resources; however, the City is currently preparing a General Plan update that will consider paleontological resources.

Society for Vertebrate Paleontology Standard Guidelines

The Society of Vertebrate Paleontology (SVP) Guidelines (SVP, 2010) outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state and local regulatory agencies accept and use the professional standards set forth by the SVP.

Paleontological Resources Significance Criteria

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

> *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).*

[1] City of Los Angeles General Plan, Conservation Element, pages II-6 to II-9.

Multiple paleontological studies have additional criteria for the assessment of significance for fossil discoveries (e.g., Murphey et al., 2019; 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.
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

In summary, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important (Murphey et al., 2019; Murphey and Daitch, 2007; Scott and Springer, 2003). Any identifiable vertebrate fossil is significant (SVP, 2010). Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer, 2003; Scott et al., 2004).

Paleontological Potential

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

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).

- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
- **No Potential.** Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

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

Methods

The Project Site was the subject of thorough background research and analysis to assess its paleontological sensitivity. The research included geologic map and literature review, review of the Geotechnical Report prepared for the Project, and a paleontological records search conducted by the NHMLAC.

Results

Geologic Setting

The Project Site is situated in the northern portion of the Los Angeles Basin (Basin), a structural depression approximately 50 miles long and 20 miles wide (Yerkes et al., 1965; Ingersoll and Rumelhart, 1999). The Basin is within the Transverse Ranges physiographic-structural province, a series of east-west trending mountains and valleys that interrupt the northwest-southeast orientation of other major California ranges, including the Peninsular Ranges, Coast Ranges, and the Sierra Nevada. The Basin is bounded on the north by the Santa Monica Mountains, the Elysian, Repetto, and Puente Hills and on the east, and by the Santa Ana Mountains and San Joaquin Hills to the southeast. The Basin formed between 18 and 3 million years ago as a result of tectonic subsidence (Critelli et al., 1995). Continuous sedimentation into the Basin began

during the middle Miocene around 13 million years ago, as thousands of feet of sediments were deposited in a marine environment (Yerkes et al., 1965). Deposition of terrestrial alluvial sediments commenced during the Pleistocene.

Geologic Map and Literature Review

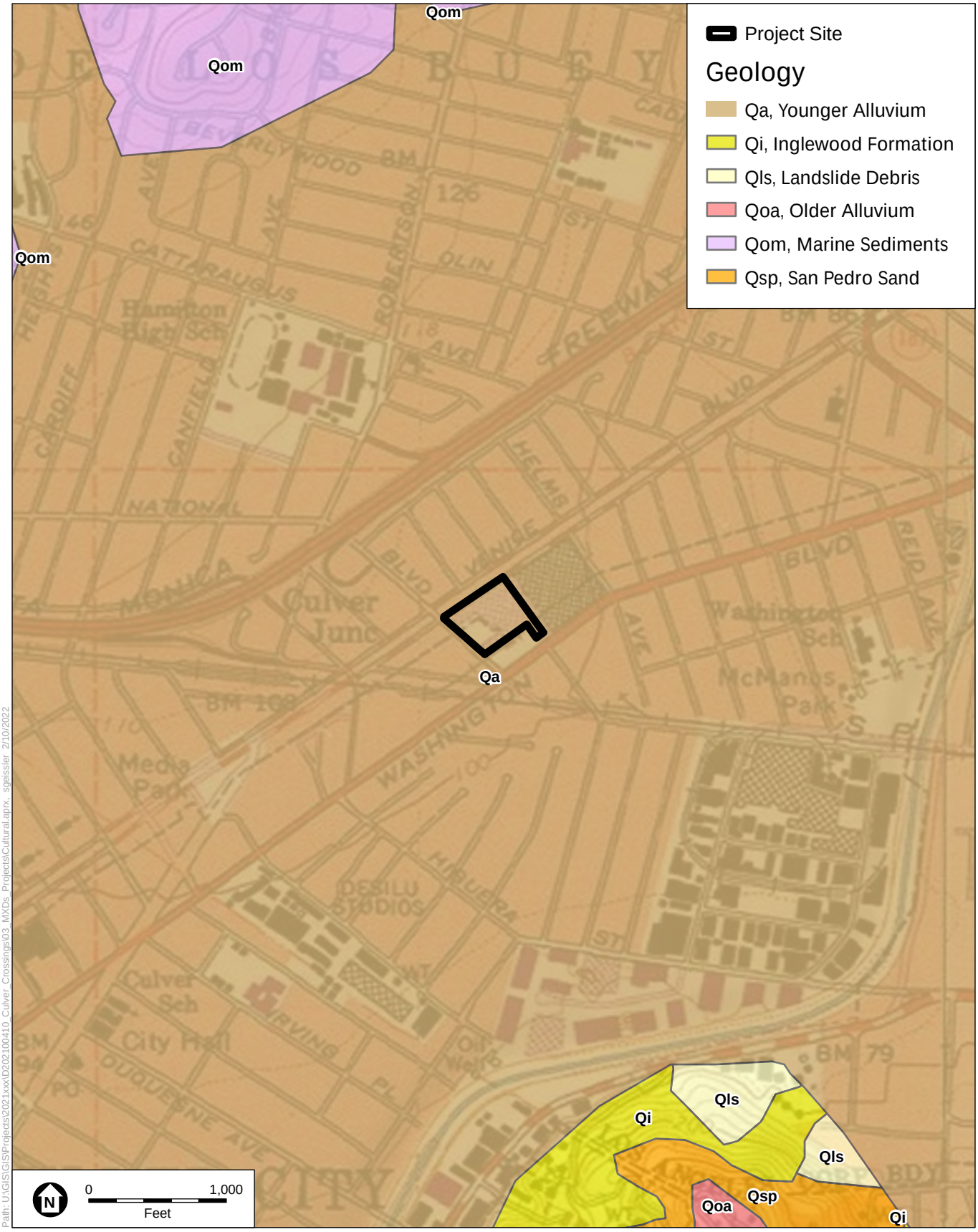
Geologic mapping indicates that the surface of the Project Site is underlain by Holocene-aged younger Quaternary alluvium (mapped as Qa) (**Figure 4**). The alluvial sediments were deposited on the ancient floodplain of the Los Angeles River and consist of well-sorted silts and sands, interbedded with stream channel deposits of sands and gravels (Dibblee and Ehrenspeck, 1991). At the surface, these sediments have low sensitivity due to the young age of the deposits and are unlikely to preserve fossil resources. However, these sediments increase in age with depth, such that the deeper layers of this unit are of an age and have the potential to preserve fossil resources (i.e., over 5,000 years old, as per the SVP [2010]).

Alluvial sediments that date to the middle Holocene or older have a rich fossil history in southern California and particularly the Los Angeles Basin. The most common fossils include the bones of mammoth, bison, horse, wolf, camel, antelope, and giant ground sloth, as well as small animals such as rodents, birds, and lizards (Graham and Lundelius, 1994; Jefferson, 1991a and b; Miller, 1971). In addition to illuminating the striking differences between Southern California in the Pleistocene and today, this abundant fossil record has been vital in studies of extinction (e.g., Sandom, et al., 2014; Barnosky et al., 2004), ecology (e.g., Connin et al., 1998), and climate change (e.g., Roy et al., 1996).

In 2016, paleontological resources monitoring was conducted for a construction project located in the immediate vicinity of the Project Site. In total, 78 fossil specimens were collected at this project from sediments at 28 to 29 feet below street level, both *in situ* and from spoil piles excavated at that level (SWCA, 2016). The taxa represented by the collected fossils range from mammal (*Camelops hesternus*) and plant (*Pinus* sp.) remains, to a large number of mollusks (Bivalvia and Gastropoda).

From 2017 to 2018, paleontological resources monitoring was conducted for a project located in the immediate vicinity of the Project Site. The monitoring yielded several paleontological specimens (gastropod and clam shells) at depths of 25 to 41 feet bgs that extended past the artificial fill, throughout the entire property (ESA, 2018).

In 2018, paleontological resources monitoring was conducted for another development project (located adjacent to the Project Site). Approximately 100 specimens consisting of marine mammal (otariid, and cetacean), terrestrial mammals (*Bison* sp.), invertebrate, and plant fossils, were encountered beginning at approximately 15 feet to 32 feet bgs, exclusively within bluish gray silty sand and clay layers (ESA, 2021). Thus, they all come from marine facies of the Lakewood Formation. These fossiliferous sediments continue beyond the maximum depth of excavations at 35 feet bgs. The specimens were found in 13 separate locations across the property. Microvertebrate fossils were also identified through screening of sediments during construction, and included amphibians, snakes, gophers, kangaroo rats, harvest mice, wood rats, voles, and rabbits (Stewart, personal communication, 2022).



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SOURCE: USGS Topographic Series (Beverly Hills, CA); Dibblee & Ehrenspeck (1991); ESA, 2022

Crossings Campus

Figure 4
Geologic Map

ESA

Natural History Museum of Los Angeles County Records Search

In addition to the literature search (which yielded a large array of fossil specimens in close proximity to the Project Site), ESA requested a database search on October 18, 2021, from the Natural History Museum of Los Angeles County (NHMLAC) for records of fossil localities in and around the Project Site. The purpose of the museum records search was to: (1) determine whether any previously recorded fossil localities occur in the Project Site, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity within the Project Site and vicinity. The results from the NHMLAC were received on October 27, 2021. The results indicate that no fossil localities fall within the Project Site, but that fossil localities do exist nearby from the same sedimentary deposits that occur in the Project Site, either at surface or at depth (**Table 1**). Fossil localities (including horse, camel, mammoth, and man, pond turtle, ground sloth, mastodon, mammoth, camel, turkey, saber-toothed cat, horse, deer, sharks, bony fish, and rays) are situated within approximately 0.6 and two miles from the Project Site. These localities were found at unknown depths and depths between 6 and 13 feet bgs.

TABLE 1
SUMMARY OF NHMLAC FOSSIL LOCALITIES

Locality Number	Distance from Project Site	Formation	Taxa	Depth
LACM VP 4250	0.75 miles	Undetermined (Pleistocene)	Elephant (*Elephas*)	Unknown
LACM VP 3368	0.55 miles	Undetermined (Pleistocene)	Horse (*Equus*)	Unknown
LACM IP 198	0.60 miles	Unknown formation (Pliocene)	Invertebrates (unspecified)	Unknown
LACM VP 4232, LACM IP 23223	0.90 miles	Undetermined (Pleistocene, interbedded sands & clayey silts)	Human (*Homo*), mammoth (*Mammuthus*); moon snails (*Cryptonatica*), turrid snails (*Propebela, Antiplanes*), scaphopod (*Dentalium*), murex snails (*Boreotrophon*), nut clam (*Acila*), dove snail (*Mitrella*)	12–13 feet bgs
LACM VP 3366	1.65 miles	Unknown formation (Pleistocene)	Camel (Camelops)	Unknown (collected during the Limpo Outfall)
LACM VP 3369	1.70 miles	Unknown formation (Pleistocene, greenish clay-silt)	Horse family (Equidae)	6 feet bgs

SOURCE: Bell, 2021.

Paleontological Sensitivity Analysis

The literature and geologic mapping review and the records search results presented above were used to assign paleontological sensitivity to the geologic units at surface and underlying the Project Site, following the guidelines of the SVP (2010):

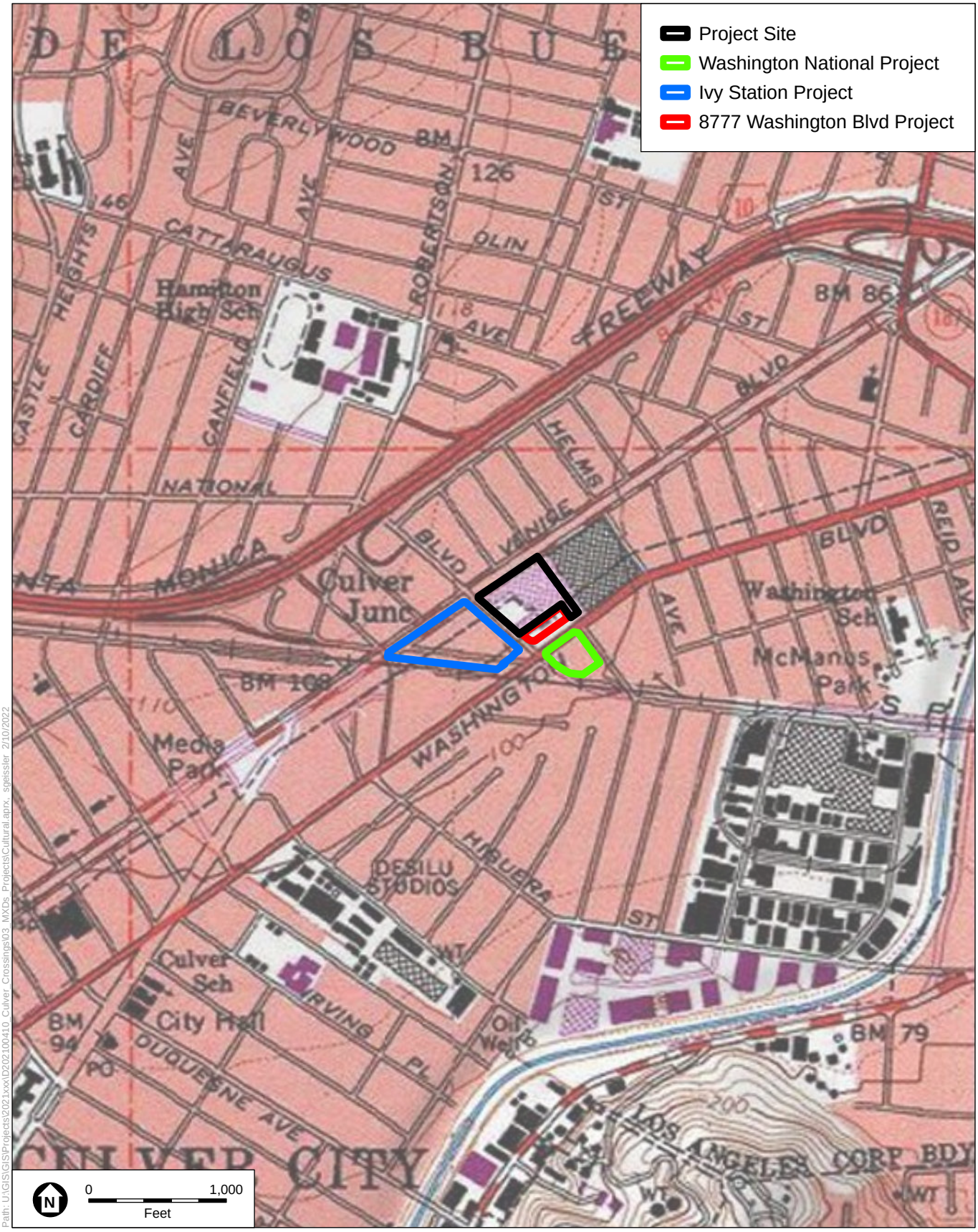
- **Fill Material:** As indicated by geotechnical testing (Geotechnologies, Inc., 2021), fill material is present at the surface of the Project Site and extends to depths between 3 and 11.5 feet. It is unclear as to where the fill material came from and so assigning an age is not possible. Given that the fill is described as artificial and is likely the result of past grading or construction activities at the Project Site, it is unlikely to contain intact fossiliferous deposits. Therefore, this unit is assigned **No Potential** to contain significant paleontological resources.
- **Qa:** Holocene alluvial gravel, sand and silt-clay, derived from Santa Monica Mountains; includes gravel and sand of stream channels. This geologic unit is mapped as covering the Project vicinity for several blocks in all directions (Dibblee and Ehrenspeck, 1991). Those authors imply that it is of Holocene age. The geotechnical report for this Project (Geotechnologies, Inc., 2021) identified the sediments below the artificial fill only as "native soils." The upper layers of this unit are assigned **Low Potential** to contain paleontological resources given their young age. However, these sediments increase in age with depth, such that the deeper layers of this unit have a **higher potential** to preserve paleontological resources. Therefore, this unit is assigned a **Low to High Potential** for significant paleontological resources such that the potential increases with depth.
- **Lakewood Formation:** This formation consists of Pleistocene alluvium deposited in both marine and non-marine settings and is only found subsurface in the Project vicinity. When uncovered through excavation in this area, this unit ranges from gray to bluish gray to greenish gray. Within the Project vicinity, only marine facies of the Lakewood Formation have been identified. Given the fairly extensive vertebrate and invertebrate paleontological collections that resulted from nearby projects, the Lakewood Formation is assigned **High Potential** for significant paleontological resources.

Summary of Findings and Recommendations

Geologic mapping indicates that the surface of the Project Site is underlain by Holocene-age alluvium (Qa), which have a low sensitivity for paleontological resources due to the young age of the deposits and are unlikely to preserve fossil resources. However, these sediments increase in age with depth, such that the deeper layers of this unit have a higher potential to preserve paleontological resources. Moreover, numerous paleontological resources have been recovered from deeper deposits during construction of three development projects in the immediate vicinity of the Project Site (**Figure 5**) in association with the Lakewood Formation—a geological unit which consists of a Pleistocene-age alluvium deposited in both marine and non-marine settings, which is considered to have high potential for encountering paleontological resources. In particular, these projects yielded the identification of more than 200 fossil specimens from these deposits that were encountered at depths between 15 feet bgs to 41 feet bgs. In addition, the paleontological records search conducted through the NHMLAC also indicates that older (Pleistocene-age) geologic units in the vicinity of the Project Site have produced paleontological resources (including fossil specimens of horse, camel, mammoth, pond turtle, ground sloth, mastodon, mammoth, camel, turkey, saber-toothed cat, horse, deer, sharks, bony fish, and rays),

including resources located within 0.6 and two miles from the Project Site at depths between 6 and 13 feet bgs and unknown depths. Given the identification of numerous fossil specimens at depth during construction projects in the immediate vicinity, the positive results of NHMLAC records search, and since excavations for the Project would extend to a maximum depth of 50 feet bgs, the potential to encounter buried paleontological resources during construction of the Project is considered high. Therefore, as the Project could directly or indirectly destroy unique paleontological resources, impacts on buried paleontological resources are considered potentially significant. As such, the following recommendations are provided below in order to reduce impacts to paleontological resources to a less than significant level under CEQA.

1. Prior to the issuance of grading permits, the Applicant shall retain a Qualified Paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kick-off meeting, and Project progress meetings, and shall be responsible for monitoring and overseeing paleontological monitors (meeting SVP standards) that will observe grading and excavation activities.
2. Paleontological monitoring shall be conducted during construction excavations into undisturbed older alluvial sediments that exceed 10 feet in depth. Monitoring shall consist of visually inspecting fresh exposures of rock for larger fossil remains and, where appropriate, collecting and wet screening sediment samples of promising horizons for smaller fossil remains. If significant vertebrate fossils are found by screening, it will be necessary to collect a 6,000-pound sample for screening, per SVP Guidelines (2010). The sample can be collected by construction machinery and stockpiled and processed in a safe location on site, or transported to another site for processing. The frequency of monitoring inspections shall be determined by the Qualified Paleontologist and shall be based on the rate of excavation and grading activities, the materials being excavated, and the depth of excavation, and if found, the abundance and type of fossils encountered. Full-time monitoring can be reduced to part-time inspections, or ceased entirely, if determined adequate by the Qualified Paleontologist. If a potential fossil is found, the Qualified Paleontologist shall have authority to temporarily stop excavation activity or to temporarily divert or redirect grading and excavation activities in the area of the exposed fossil to facilitate evaluation of the discovery. An appropriate buffer area shall be established by the Qualified Paleontologist around the find where construction activities shall not be allowed to continue. Work shall be allowed to continue outside of the buffer area. At the Qualified Paleontologist's discretion, and to reduce any construction delay, the grading and excavation contractor shall assist in removing rock/sediment samples for initial processing and evaluation. If preservation in place is not feasible, the Qualified Paleontologist shall implement a paleontological salvage program to remove the resources from their location.
3. Any significant fossils recovered during Project-related excavations shall be prepared to the point of identification. The residue form sediment samples shall be dried and sorted with a binocular dissecting microscope. Both macrofossils and vertebrate microfossils shall be prepared to the point of identification, identified, and curated into an accredited repository. The Qualified Paleontologist shall prepare a final report summarizing the results of the monitoring and salvaging efforts, the methodology used in these efforts, as well as a description of the fossils collected and their significance. The report shall accompany the specimens to the accredited repository. The report shall also be submitted by the Applicant to the City of Culver City to signify the satisfactory completion of the Project and required mitigation measures.



SOURCE: USGS Topographic Series (Beverly Hills, CA)

Crossings Campus

Figure 5
Projects in Vicinity

ESA

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Appendix A
Personnel Qualifications

Kyle Garcia, M.A., RPA

Principal Archaeologist

EDUCATION

M.A., Anthropology (Archaeology Option), California State University Los Angeles,

B.A., Anthropology, (Physical/ Biological Emphasis), University of California, Santa Barbara

18 YEARS EXPERIENCE

CERTIFICATIONS/ REGISTRATION

Register of Professional Archaeologists

Riverside County Registered Archaeologist and Paleontologist

Orange County-Certified Archaeologist and Paleontologist

40-Hour HAZWOPER Training – Update, 2019

PROFESSIONAL AFFILIATIONS

Society for American Archaeology

Society for California Archaeology

Pacific Coast Archaeological Society

Kyle Garcia has 18 years of experience in the archaeology and prehistory of southern California, with a specialization in faunal analysis. During his career, he has authored or contributed to more than 800 projects subject to the requirements of the California Environmental Quality Act, the National Environmental Policy Act (NEPA), and regulations implementing Section 106 of the National Historic Preservation Act (Section 106 of the NHPA). He is well-versed in the archaeological resources of California's coastal, interior, and island settings. He is skilled in evaluation historic and prehistoric archaeological resources; agency and Native American consultation; pedestrian surveys, testing and evaluation excavations as well as archaeological and paleontological construction monitoring, and laboratory processing. During his tenure, he has authored or contributed to more than 500 technical reports and sections to support all levels of CEQA and NEPA documents. Kyle's portfolio of projects includes energy, water, and transportation infrastructure as well as residential, commercial, mixed-use, institutional, and urban redevelopment serving public and private sector clients. Kyle has conducted archaeological work throughout California and is a certified archaeologist and paleontologist in Riverside and Orange counties.

Representative Experience

Archaeological/Paleontological Monitoring. Kyle has managed more than 120 archaeological and/or paleontological construction monitoring projects in Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. His recent monitoring experience in Culver City for mixed-use development projects include Ivy Station, Culver Studios (9336 Washington Blvd), 8888 Washington Blvd, and 8777 Washington Bvld projects. His recent monitoring experience in the City of Los Angeles for mixed-use development projects include the Park Fifth Apartments (437 Hill St), Essex Hollywood (6250 Sunset Blvd), 6th and Virgil Project, 1500 Figueroa, 1340 Figueroa, and 10000 Santa Monica Blvd.

Paleontology. In addition to his archaeological work, Kyle has been cross-trained in paleontological mitigation monitoring and assisted in the excavations of a Miocene whale fossil near Irvine and a new species of extinct tuna in Laguna Niguel, California. Kyle has also managed or conducted more than 200 paleontological assessments and 40 paleontological monitoring projects throughout southern California. He has assisted ESA's paleontologists with the preparation of paleontological reports in compliance with CEQA and local paleontological guidelines, including guidelines for the Society for Vertebrate Paleontology.

Large-Scale Development Projects. Kyle directed the 1,400-acre field survey and the successful site recordation of over 150 prehistoric and historic archaeological resources per the Section 106 Process for a confidential project in

Riverside County; served as the Deputy Project Manager for the 240-acre Archaeological Treatment & Restoration Plan for The Cove project that was subject to Section 106, responsible for the field survey, Native American consultation, final report, and supervised the thorough recordation and documentation of over 350 significant artifacts. In Arizona, he led crews on a pedestrian survey and site recordation of more than 200 historic and prehistoric archaeological resources during a Class III Inventory on an 11,000-acre portion of the La Osa Ranch Project site in Pinal County.

Water Infrastructure. Kyle has performed the archaeological and paleontological resources surveys and assessments for a number of regional water infrastructure projects including the Reservoir No. 1 Reconstruction Project MND for Burbank; the Pasadena Groundwater Storage Program; and recycled water facilities projects for San Clemente, Pasadena, the Town of Rosamond, and Palmdale.

Transportation Infrastructure. Kyle is often sought after to conduct Peer Review services of controversial projects across southern California including the Needles Highway Safety Realignment Project for the County of San Bernardino, various infrastructure projects for Caltrans/San Bernardino Associated Governments, and the I-710 Corridor Project Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the City of Commerce.

In addition to road projects, Kyle has provided archaeological and paleontological services—cultural resources assessments and monitoring—on and around the Los Angeles International Airport (LAX). Among these include the cultural resources assessment of the proposed concrete pad/apron area and staging area within the southwest portion of LAX, known as the Southwest Remain Overnight Apron Project/West Aircraft Maintenance Area Project. He was also the ESA PCR cultural resources task manager for the EIR and Archaeological/Paleontological Monitoring for the LAX Central Utility Plant Replacement Project. Finally, Kyle was the PCR project manager for the archaeological and paleontological monitoring services during earthmoving operations associated with the development of the Crossfield Taxiway project. Monitoring was in compliance with the mitigation measures outlined in the Master Plan EIS/EIR pursuant to CEQA, NEPA, and Section 106.

Energy Projects. Kyle is well-versed in the potential effects of energy production projects on Southern California Archaeology through his service as an on-call consultant to Southern California Edison (SCE), where he has served as the Project Director and Manager for over 100 SCE projects and managed SCE purchase order contracts in excess of $1.5 million. These projects were subject to requirements of CEQA, Section 106 of the NHPA, and other local ordinances. These projects included deteriorated pole replacements, conduit and vault installations, and distribution circuit installations (aboveground and underground) located throughout SCE's service area in Central and Southern California. Kyle not only managed the budgets and supervised the work for these projects but also conducted most of the record searches, surveys, report writing, site recordation, and client/agency coordination for these projects. In addition to his SCE work, Kyle was the project manager for a 150-acre ground-mounted solar

power project in San Bernardino County and assisted with a 245-acre confidential petroleum exploration project on California's Central Coast.

Education Facilities. Kyle's academic experience includes conducting cultural and paleontological records searches in support of an Initial Study/MND for the proposed John Thomas Dye School Improvement project in the Bel Air Community of the city of Los Angeles; the Long Beach Unified School District's District-Wide Cultural Resources Assessment; and the University High School Beautification project. In addition, Kyle has supervised ESA PCR staff paleontologists during paleontological monitoring services for the Stephen S. Wise Middle School Relocation project in the city of Los Angeles; he also supervised the subsequent fossil identification/analysis and final report preparation services for this project. These services have been conducted pursuant to a Mitigation Monitoring and Reporting Program that was established to implement the mitigation measures identified in the EIR for the project.

Cultural Resources Sensitivity Training. He is well-versed in conducting Cultural Resources Sensitivity Training Sessions to government staff, applicants, contractors, engineers, and construction personnel with regard to the procedures to implement in the event that archaeological or paleontological resources are encountered during construction.

Geographic Information Systems. Kyle has also gained valuable experience with recording historic and prehistoric archaeological sites with Garmin, Magellan, and sub-meter Trimble GeoXT Global Positioning System (GPS) units. He has worked with GIS software such as ArcPad, ArcGIS, and ArcView and developed methods for using these products to accurately and efficiently record archaeological sites.

Presentations. Kyle presented a paper at the 72nd Annual Meeting for the Society of American Archaeology Conference in Austin, Texas in 2007. The paper focused on prehistoric 'yoni' features encountered on a project site proposed to be developed in western Riverside County, California. The project was subject to requirements of CEQA and Section 106 of the NHPA. Kyle has also presented a poster at the Society of California Archaeology Conference in Fish Camp, California in 2016 titled *Urban Archaeology Strikes Again! - 250 Years of Los Angeles History and Archaeology Uncovered in One Downtown City Block*. Kyle also presented a paper on historic archaeology and CEQA at a 2015 workshop for the California Preservation Foundation in Los Angeles.

Joseph D. Stewart, PhD

Qualified Paleontologist

EDUCATION

Ph.D., Systematics & Ecology, University of Kansas

M.A., Systematics and Ecology, University of Kansas

B.A. Degree, Biology, University of Kansas

40 YEARS EXPERIENCE

QUALIFICATIONS

Meets Society of Vertebrate Paleontology definition of qualified professional paleontologist

Orange County Certified Paleontologist

SPECIALIZED SKILLS

Identification of fossil fish and Pleistocene microvertebrate fauna

PROFESSIONAL AFFILIATIONS

Society of Vertebrate Paleontology

Research Associate, Natural History Museum of Los Angeles County

Joseph D. Stewart has more than 40 years of experience in the field of paleontology, with 30 years of experience in California. He has authored or co-authored 40 peer-reviewed articles for scientific journals and books. Within these, he has authored or co-authored descriptions of three new genera and three new species. He is a recognized authority on fossil fishes of Cretaceous rocks of North America and Cenozoic rocks of the western coast of North America. As a result, Dr. Stewart is often called upon to identify paleontological and archaeological specimens. He has served as expert witness for the U.S. Department of Justice.

Dr. Stewart has extensive experience finding and excavating fossils for county, state, and provincial institutions. His field work includes projects in cooperation with the U.S. Bureau of Land Management, National Parks Service, U.S. Army Corps of Engineers, U.S. Navy, U. S. Department of Energy, Federal Aviation Administration, California Energy Commission, Caltrans, and California State Parks. The Bureau of Land Management's national website features one of his excavations from 2004. He has supervised monitoring of construction activity in numerous California counties and municipalities. In addition to fieldwork, he has experience in the supervision of preparators, surveyors, curatorial assistants, and excavators. He also has extensive experience preparing fossils, and has processed, recovered, and identified thousands of microvertebrate fossils.

Relevant Experience

Crestavilla Retirement and Assisted Living Community Project, Laguna Niguel, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during the construction of a new 224-unit retirement and assisted living facility and an approximately 1,870 square-foot Spiritual Resource Center (Shepherd of the Hills Church) within a four-story structure located over a one-level subterranean parking structure. The monitoring led to the identification of a remarkable collection of vertebrate fossils, including the first record of a gulper shark (*Centrophorus*) from any Neogene sediments of coastal California and the first reported specimens of the cookie-cutter shark (*Isistius*) from the Capistrano Formation. Additionally, the project yielded the most complete fossil tuna ever found in California and it probably represents a species new to science.

Palos Verdes Peninsula Water Reliability Project, Palos Verdes Peninsula, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during construction of new potable water pipelines and a new booster pump station to replace the current water distribution system serving the Palos Verdes Peninsula. The monitoring led to the identification and salvage of numerous fossils from Altamira Shale deposits of the Monterey Formation, including fossils of leaf imprints, sardine scales, fish parts (vertebrae, dentary, mandible) and the fossil appendage (dactyl) of a type of Mantis shrimp (Stomatopod). The Mantis

shrimp specimen is believed to be the only second known occurrence in southern California of *Angelosquilla altamierensis*, and the only one with a known precise locality and provenience.

Syphon Reservoir Improvement Project, Orange County, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during geotechnical explorations (including borings, exploratory test pits, and abutment/seismic trenches) at the Syphon Reservoir, as the project is located within geologic formations (Silverado and Sespe/Vaqueros) that have a high paleontological potential for yielding paleontological resources. Sediment sampling was conducted to identify the presence/absence of microvertebrate fossils.

Oaks at Monte Nido, Santa Monica Mountains, Unincorporated Los Angeles County, CA. *Principal Paleontologist.* Dr. Stewart was in charge of the preparation of the Paleontological Resources Assessment Report, which included a pedestrian survey. The pedestrian survey yielded the identification of a sandstone boulder that contains a fossil impression of the skull of a small-toothed cetacean "dolphin" and the identification of fossilized shells of pelecypods (e.g., bivalves such as clams, mussels, oysters, and cockles) and gastropods (e.g., snails and slugs). The project proposes the development of 15 single-family residences on separate individual recorded parcels within the Monte Nido Community, along the scenic route of Piuma Road.

Path 15 500 kV Power Transmission Line Between Los Banos and Gates substations, Merced and Fresno Counties, CA. *Principal Paleontologist.* Dr. Stewart supervised paleontological monitoring during construction of an 80-mile, high-voltage transmission line in the San Joaquin Valley. Dr. Stewart's team located an extensive bonebed in Middle Miocene sediments, dating back approximately 15 million years. Dr. Stewart and his team excavated and prepared over 1,200 vertebrate fossils, deposited them at the University of California Museum of Paleontology, and preserved the site for future research. They also discovered a smaller bonebed of late Miocene age (ca. 7 million years). As a result of his diligent analysis, the project schedule was maintained and there were no delays in construction.

Heritage Fields/Great Park Paleontological Review, Orange County, CA. *Principal Paleontologist.* Dr. Stewart conducted Phase I and II paleontological assessments at the Heritage Fields / Great Park in Orange County, California where he and his team discovered significant portions of a Miocene-aged (15 million years ago) whale fossil, and a Pleistocene microvertebrate fauna dating to before 28,000 years ago.

Calnev Pipeline Project, San Bernardino County, CA, and Clark County, NV. *Principal Paleontologist.* Dr. Stewart directed paleontological survey of a 234-mile-long project area in San Bernardino County, California and Clark County, Nevada and wrote the paleontological assessment.