Appendix E2

Paleontological Resource Assessment

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July 8, 2024 15953

Brian Mikail
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Subject: Paleontological Resources Inventory Letter Report for the Olive Park Apartments Project, City of Oceanside, San Diego County, California

Dear Mr. Mikail:

This letter report documents the results of the paleontological resources inventory conducted by Dudek in support of the proposed Olive Park Apartments Project (project) in the City of Oceanside, San Diego County, California (Figure 1 – Project Location). To determine the paleontological sensitivity of the project site and make adequate recommendations, Dudek performed a paleontological resources inventory for the project to comply with the California Environmental Quality Act (CEQA), Society of Vertebrate Paleontology (SVP 2010), and local County of San Diego (2009) guidelines for successful paleontological mitigation. The inventory consisted of a San Diego Natural History Museum (SDNHM) paleontological records search, pedestrian survey, and review of geological mapping, and geological and paleontological literature. This letter report was prepared by Sarah Siren, MSc and Michael Williams, PhD, who are qualified Principal Investigators for Paleontology in the County of San Diego, and in accordance with CEQA guidelines and SVP (2010) standards.

According to geological mapping by Kennedy et al. (2007) and the project-specific geotechnical report (Geocon 2024), the middle Eocene (approximately 47 mya to 41 mya; Cohen et al. 2003) Santiago Formation (map unit Tsa) underlies surficial soil in the majority of the exploratory excavations performed by the geotechnical consultant. Geotechnical borings and trenches made during geotechnical investigations revealed the presence of the Cretaceous age granitic rock (Kgr) known as the Green Valley Tonalite at depth within Boring B-1 and Trenches T-6, T-7, and T-11 through T-13 (Kennedy et al. 2007; Geocon 2024). Landslide material within the Santiago Formation was also noted by Geocon (2024). Undocumented fill was noted in the geotechnical report as underlying the northern and western portions of the project site with an estimated thickness of 10 feet (Geocon 2024). Previously placed fill is present on the south and northeast portions of the project site (Geocon 2024). The southern fill is estimated to have a maximum thickness of approximately 25 feet at the top of the slope (Geocon 2024). Topsoil across the project site is generally 1 to 4 feet thick, with the potential for localized areas of greater thickness (Geocon 2024).

1 Project Location and Description

The project includes a residential development and open space in the Mira Costa Neighborhood Area of the City of Oceanside, California. The project site is generally located south of Oceanside Boulevard and west of College Boulevard; more specifically, west of the terminus of Olive Drive and south of the North County Transit District (NCTD) rail line and College Boulevard Station. The project falls on Sections 21 and 22, Township 11 South, Range 4 West of the 7.5-minute San Luis Rey USGS Geological Survey Quadrangle map (Figure 1-Project Location). The project will involve development of the previously disturbed, approximately 10.87-acre portion (area of direct impact) of a vacant parcel (APN 162-111-04) that covers approximately 43.50 acres (Parcel Area), located east of Interstate-5, south of Oceanside Boulevard and the NCTD Sprinter rail line, west of College Boulevard, and north of the State Route 78 (SR-78) (Figure 2-Parcel Area).

2 Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in the Earth's crust, and per the SVP (2010) guidelines, are older than written history or older than approximately 5,000 years, which approximates the middle Holocene. They are limited, nonrenewable resources of scientific and educational value and are afforded protection under state laws and regulations. This study satisfies requirements in accordance with state guidelines (13 California Public Resources Code [PRC], 21000 et seq.) and PRC Section 5097.5 (Stats 1965, c 1136, p. 2792). This analysis also complies with guidelines and significance criteria specified by SVP (2010). Table 1 provides definitions for high, undetermined, low, and no paleontological resource potential, or sensitivity, as set forth in and by the SVP (2010) Guidelines for Determining Significance: Paleontological Resources.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
High	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.). 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.

Table 1. Paleontological Resource Sensitivity Criteria

Resource Sensitivity / Potential	Definition
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 (see "definitions" section in this document) 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.
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.
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.

Source: SVP (2010)

2 Regulatory Framework

2.1 California Environmental Quality Act

The CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to paleontological resources. Paleontological resources, which are limited, nonrenewable resources of scientific, cultural, and educational value, are recognized as part of the environment under these state guidelines. This study satisfies project requirements in accordance with CEQA (13 PRC [Public Resources Code], 21000 et seq.).

Paleontological resources are explicitly afforded protection by CEQA, specifically in Section VII(f) of CEQA Guidelines Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or … unique geological feature[s]." This provision covers fossils of signal importance – remains of species or genera new to science, for example, or fossils exhibiting features not previously recognized for a given animal group – as well as localities that yield fossils significant in their abundance, diversity, preservation, and so forth.

2.2 PRC Section 5097.5

The PRC Section 5097.5 (Stats 1965, c 1136, p. 2792) regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

3 Methods

3.1 Geological Map Review, Literature Review, Survey, and Paleontological Records Search

Published geological maps, published and unpublished reports were reviewed to identify geological units within the project site and determine their paleontological sensitivity.

Dudek conducted a pedestrian survey on February 23, 2024. The purpose of the survey was to ascertain if any fossils were present on the surface and confirm geological mapping. Field recording and photo documentation of exposed ground surface were completed as appropriate.

A paleontological records search request was sent to the SDNHM on April 1, 2024. The purpose of the records searches was to determine whether there are any known fossil localities in or near the project site to aide in determining whether a paleontological mitigation program is warranted to avoid or minimize potential adverse effects of construction on paleontological resources.

4 Results

4.1 Geological Map Review, Literature Review, Survey, and Paleontological Records Search

The project site is located within the northernmost Peninsular Ranges geomorphic province (Norris and Webb 1990; California Geological Survey [CGS] 2002). This geomorphic province is characterized by northwest trending mountain ranges and valleys that extend over 900 miles from the tip of the Baja Peninsula to the Transverse Ranges (i.e. the San Bernardino and San Gabriel Mountains in southern California). Regionally, the Peninsular Ranges are bounded to the east by the Colorado Desert and the west by the continental shelf and offshore islands (Santa Catalina, Santa Barbara, San Nicholas, and San Clemente) (Norris and Webb 1990; CGS 2002). Regional mountain ranges in the Peninsular Ranges geomorphic province include the Santa Ana, San Jacinto, and Santa Rosa Mountains. Geologically, these mountains are dominated by Mesozoic, plutonic igneous and metamorphic rocks that are part of the Peninsular Ranges batholith (Southern California batholith) (Jahns 1954).

The Santiago Formation has produced significant invertebrate and vertebrate fossils in northern San Diego County (Mihlbachler and Deméré 2009). Per the County of San Diego's (2009) guidelines for determining significance for paleontological resources and the Society of Vertebrate Paleontology (SVP 2010) paleontological mitigation guidelines, middle Cretaceous gabbro has no paleontological sensitivity, the middle Eocene Santiago Formation has high paleontological sensitivity, and artificial fill/residual soils have low paleontological sensitivity. Due to the

required grading and trenching for utilities of the project and the presence of the Santiago Formation on the surface and at depth within the project site, there is a potential for significant paleontological resources to be unearthed during project related ground disturbance. Therefore, MM-GEO-1 is provided to reduce impacts to paleontological resources to a less than significant level.

Based on the records search and survey results, map and literature review, review of the City of Oceanside guidelines for cultural and paleontological resources, and planned excavation depths and anticipated sediment removal amounts, the project site has low potential to produce paleontological resources on the surface that increases with depth. In the event that intact paleontological resources are discovered on the project site, ground-disturbing activities associated with construction of the project, such as grading and large diameter drilling (two feet or greater) during site preparation and trenching for utilities, have the potential to destroy a unique paleontological resource or site. Without mitigation, the potential damage to paleontological resources during construction would be a potentially significant impact. With implementation of the following recommended mitigation measure (MM), impacts would be reduced to below a level of significance. Impacts of the project are considered less than significant with mitigation incorporated during construction.

MM GEO-1 Paleontological Monitor. Prior to the issuance of grading permits, the Project Applicant shall submit to and receive approval from the City of a Paleontological Resources Mitigation and Monitoring Plan (PRMMP). The PRMMP shall include the provision of a trained paleontological monitor during onsite soil disturbance activities. The PRMMP shall include the provision of a trained paleontological monitor during onsite soil disturbance activities. The monitoring for paleontological resources shall be conducted on a full-time basis during the rough grading phases of the Project site within native soils that have the potential to harbor paleontological resources. The paleontological monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples of soil shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet screen washing and microscopic examination of the residual materials to identify small vertebrate remains. If paleontological resources are unearthed or discovered during grading activities, the following recovery processes shall apply:

- Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques.
- All fossils collected during the project shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the museum repository along with the specimens.
- A report documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared.
- All fossils collected during this work, along with the itemized inventory of these specimens, shall be deposited in a museum repository (such as the San Diego Natural History Museum, or the Natural History Museum of Los Angeles County) for permanent curation and storage.

Should you have any questions relating to this report and its findings please contact Michael Williams (mwilliams@Dudek.com) or Sarah Siren (ssiren@dudek.com).

Respectfully Submitted,

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Atts.: *Figures*
A, Confidential SDNHM Paleontological Records Search Results
B, Field Photographs
cc: *Alexandra Martini and Sarah Siren, Dudek*

5 References

California Geological Survey. 2002. California Geomorphic Provinces: Note 36. 4 pp.

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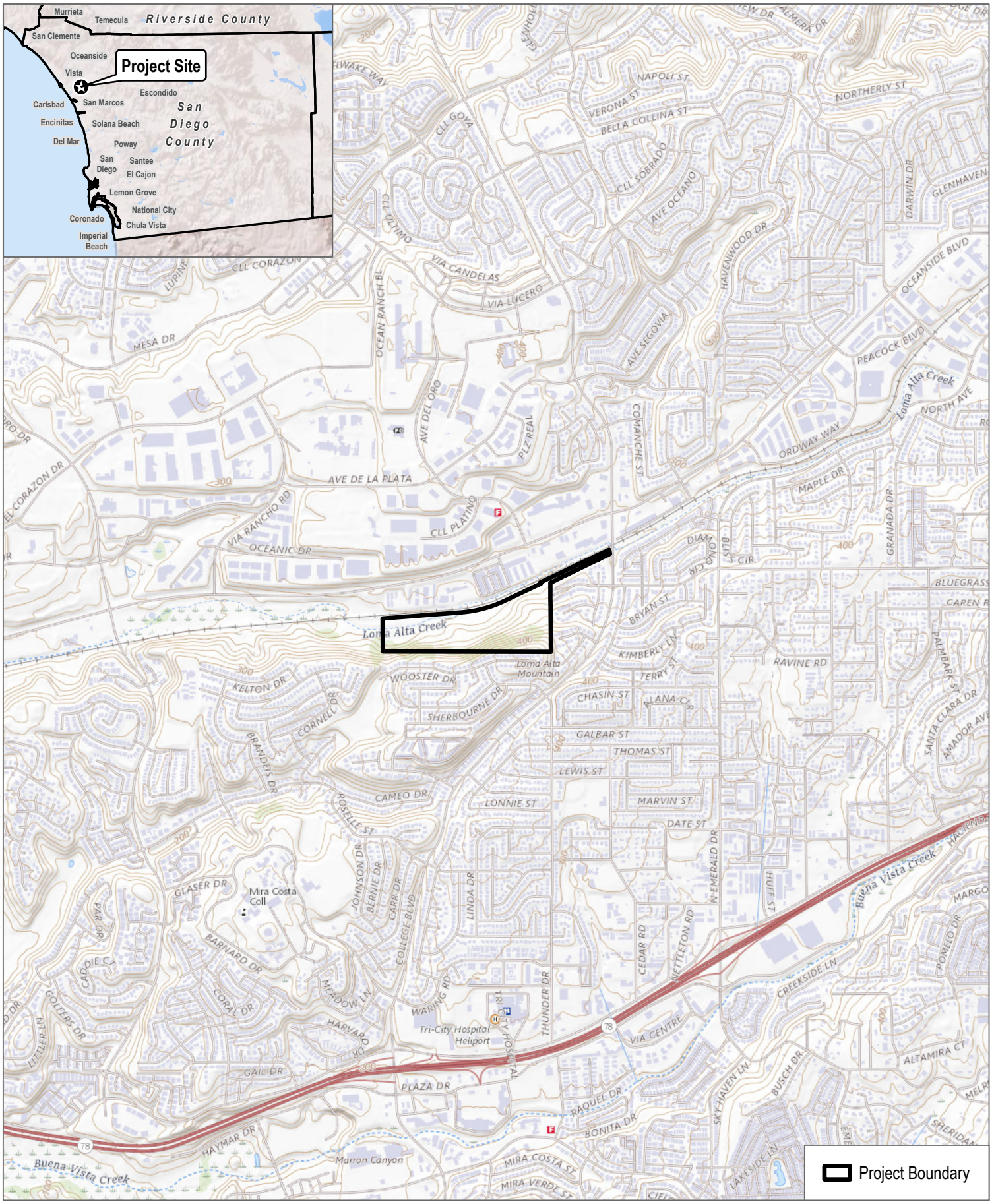
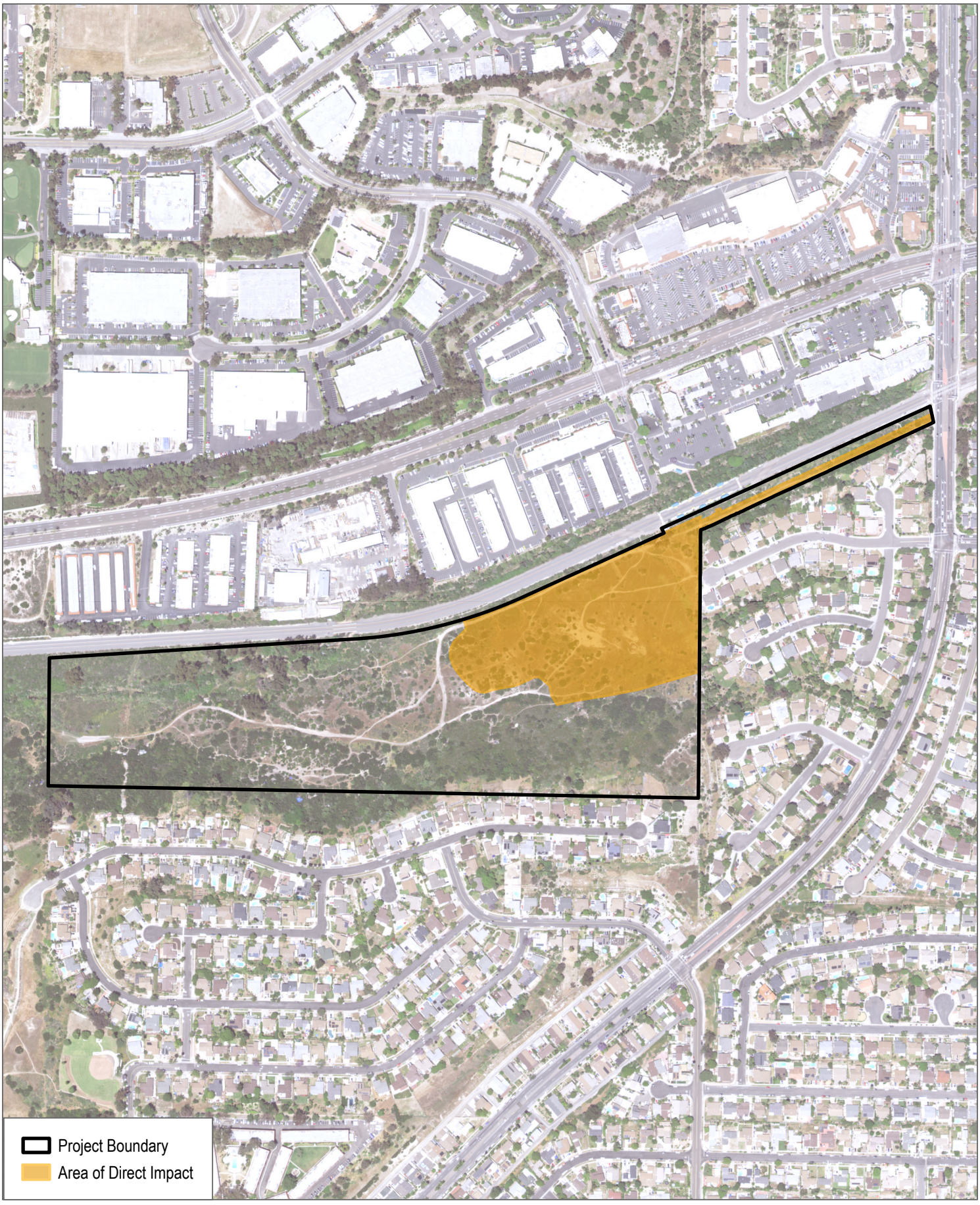


SOURCE: USGS National Map 2024
San Luis Rey Quadrangle - Township 11S Range 4W Section 21, 22

DUDEK

0 500 1,000 Feet

FIGURE 1
Project Location
Olive Park Apartments



SOURCE: NAIP 2020

DUDEK

0 255 510 Feet

FIGURE 2

Parcel Area

Olive Park Apartments

Attachment A

Confidential SDNHM Paleontological Records Search Results

Attachment B
Field Photographs

Photograph 1. View looking west toward the railroad tracks from the southern portion of the project site. In this area of the project site, surficial geology is obscured by vegetation. Photograph taken by M. Murillo. (Image 27)

Photograph 2. Overview of project site, looking west. Light colored, disturbed sedimentary deposits visible in central portion of the photograph. Mapped at the surface in this area is the Eocene age Santiago Formation (Kennedy et al., 2007). Photograph taken by M. Murillo from the northern portion of the project site. (Image 1)