

June 11, 2024

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**JPI Real Estate Acquisition, LLC**Sunti Kumjim  
12250 El Camino Real, Suite 380  
San Diego, CA 92130**Subject: Paleontological Resources Inventory Report for the Collection at Cactus Apartments Project, City of San Diego, California****Dear Sunti Kumjim:**

This letter documents the results of the paleontological resources inventory conducted by Dudek for the proposed Collection at Cactus Apartments project (Project). The approximately 39.62-acre Project site is located south of State Route (SR) 905 (Otay Mesa Freeway), the east of Cactus Road, and north of Airway Road, in the northwest section of the Otay Mesa area of the City of San Diego, California. The Project site is located 1 mile north of the U.S./Mexico border (Figure 1 – Project Location Map).

The Project proposes the construction of 962 multifamily residential units on approximately 29.37 acres of the approximately 39.62-acre Project site. The Project would allow for the future development of a 3.5-acre park, 17,452 square feet in leasing/amenity space, five detention basins, and associated utilities and improvements.

To determine the paleontological sensitivity of the Project site, Dudek performed a paleontological resources inventory and preconstruction survey for the Project to comply with the California Environmental Quality Act (CEQA) and the County of San Diego's Guidelines. The inventory consisted of a field survey, a San Diego Natural History Museum (SDNHM) paleontological records search, and a review of geological mapping and geological and paleontological literature. The results of the paleontological records search and field survey were negative for paleontological resources within the Project site; however, the SDNHM reported two fossil localities near the Project site from geological units that are not mapped at the surface of the Project site but may underlie it at depth.

## 1 Paleontological Resources

Paleontological resources are the remains or traces of plants and animals that are preserved in Earth's crust, and per the Society of Vertebrate Paleontology ([SVP] 2010) guidelines, are older than written history or older than approximately 5,000 years. 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 PRC, 21000 et seq.) and Public Resources Code 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, moderate, low, and zero paleontological resource potential, or sensitivity, as set forth in and by the City of San Diego's (2022) Significance Determination Thresholds.

**Table 1. Paleontological Resources Sensitivity Thresholds**

Resource Sensitivity/Potential	Definition
High	These formations are known to consist of geological deposits, formations, and rock units such as Delmar Formation (Td), Friars Formation (Tf), Lindavista Formation (QIn, QLB) occurring in Mira Mesa/Tierrasanta, Lusardi Formation (KI) occurring within Black Mountain Ranch/Lusardi Canyon Poway/Rancho Santa Fe, Mission Valley Formation (TMV), Mt. Soledad Formation (Tm, Tmss, Tmsc) occurring in Rose Canyon, Otay Formation (To), Point Loma Formation (Kp), Pomerado Conglomerate (Tp) within Scripps Ranch/Tierrasanta, San Diego Formation (Qsd), Scripps Formation (Tsd), Stadium Conglomerate (Tst), Sweetwater Formation, and Torrey Sandstone (Tf) located within Black Mountain Ranch/Carmel Valley. Monitoring is required for grading that is greater than 1,000 cubic yards and depths that are 10 feet or greater.
Moderate	Moderate sensitivity is assigned to geological deposits, formations, and rock units consisting of Cabrillo Formation (KCS), Lindavista Formation (QIn, QLB), Lusardi Formation (KI), Mt. Soledad Formation (Tm, Tmss, Tmsc), Pomerado Conglomerate (Tp), River/Stream Terrace Deposits (Qt) occurring in South Eastern/Chollas Valley/Fairbanks Ranch/Skyline/Paradise Hills/Otay Mesa, Nestor/San Ysidro, and Santiago Peak Volcanics (Jsp) occurring in Black Mountain Ranch/La Jolla Valley, Fairbanks Ranch/Mira Mesa/Peñasquitos. Monitoring is required for grading that is over 2,000 cubic yards and depths that are 10 feet or greater.
Low	Low sensitivity is assigned to geologic or surficial formation/materials that consist of Alluvium (Qsw, Qal, or Qls), River/Stream Terrace Deposits (Qt), and Torrey Sandstone (Tf). No monitoring is required in areas with low sensitivity.
Zero Sensitivity	These formations consist of volcanic or plutonic igneous rocks with a molten origin (such as Granite/Plutonic [Kg] and Santiago Peak Volcanics [Jsp]). No monitoring is required in areas with zero sensitivity.

Source: City of San Diego 2022.

## 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.

## 2.3 City of San Diego Municipal Code – Paleontological Resources Requirements for Grading Activities

Chapter 14, Article 2, Division 1 of the City of San (City) Diego Municipal Code was updated in March 2018 to include the following for paleontological resources:

### Section 142.0151: Paleontological Resources Requirements for Grading Activities

- a) Paleontological resources monitoring shall be required in accordance with the General Grading Guidelines for Paleontological Resources in the Land Development Manual for any of the following:
  - (1) Grading that involves 1,000 cubic yards or greater, and 10 feet or greater in depth, in a High Resource Potential Geologic Deposit/Formation/Rock Unit; or
  - (2) Grading that involves 2,000 cubic yards or greater, and 10 feet or greater in depth, in Moderate Resource Potential Geologic Deposit/Formation/Rock Unit; or
  - (3) Grading on a fossil recovery site or within 100 feet of the mapped location of a fossil recovery site.
- b) If paleontological resources, as defined in the General Grading Guidelines for Paleontological Resources, are discovered during grading, notwithstanding [San Diego Municipal Code] Section 142.0151(a), all grading in the area of discovery shall cease until a qualified paleontological monitor has observed the discovery, and the discovery has been recovered in accordance with the General Grading Guidelines for Paleontological Resources.

## 2.4 City of San Diego Paleontology Guidelines

Since it is the underlying formation and geologic rock units that contain the fossil remains, resource sensitivity/potential levels are rated for individual geologic formations. The resource sensitivity levels and potential ratings are adapted from the resource sensitivity levels and potential ratings described by the City (City of San Diego 2022).

## 3 Methods

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

Published geological maps and published and unpublished reports were reviewed to identify geological units on the surface of the Project site and determine their paleontological sensitivity.

Dudek dual paleontologist/archeologist Patrick Hadel along with archeologist Matthew DeCarlo conducted the preconstruction pedestrian survey of the Project site on May 28, 2024. The survey was conducted to determine if any surficial paleontological resources are present within the Project site prior to Project earthmoving activities and verify geological mapping. The survey utilized standard paleontological survey procedures and consisted of systematic surface inspection of the Project site on 15 m interval transects.

A paleontological records search request was sent to the SDNHM on April 18, 2024. The purpose of the records search 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, Paleontological Survey, Literature Review, and Paleontological Records Search

The Project site lies within the Peninsular Ranges Geomorphic Province (CGS 2002). This province extends from the tip of the Baja California Peninsula to the Transverse Ranges (the San Gabriel and San Bernardino Mountains) and includes the Los Angeles Basin, offshore islands (Santa Catalina, Santa Barbara, San Nicholas, and San Clemente), and continental shelf. The eastern boundary is the Colorado Desert Geomorphic Province (CGS 2002; Morton and Miller 2006). The ancestral Peninsular Ranges were formed by uplift of plutonic igneous rock resulting from the subduction of the Farallon Plate underneath the North American Plate during the latter portion of the Mesozoic era (approximately 90 to 125 million years ago) (Abbott 1999).

According to the published geological mapping at a scale of 1:24,000 by Tan and Kennedy (2002), the SDNHM records search results (SDNHM 2024 – Confidential Attachment B), and the international chronostratigraphic chart (Cohen et al. 2023), the Project site is underlain by middle to early Pleistocene (approximately 129,000 – 2.58 million years ago) alluvial deposits mapped as the Lindavista Formation (map unit Qvoa). These deposits consist of well consolidated, poorly sorted gravel, sand, silt, and clay from flood plains. In mapping by Todd (2004) at a scale of 1:100,000, the Project site is underlain by the Lindavista Formation (map unit QI) which is the equivalent of Kennedy and Tan (2002) mid to late Pleistocene alluvial deposits. The Lindavista Formation consists of reddish-brown interbedded sandstone and conglomerate (Todd 2004). Pleistocene alluvial deposits (Lindavista Formation) have produced fossils within San Diego County and is assigned moderate paleontological sensitivity in this area of San Diego County (SDNHM 2024 – Confidential Attachment B).

Given the moderate paleontological sensitivity of the Lindavista Formation and undeveloped nature of the Project site an intensive pedestrian survey was conducted on May 28, 2024. The Project site has been disturbed by years of agricultural activities. Visibility of the ground surface was very high (90-100%) throughout the Project site due to the recent plowing of the field (Photos 1 and 2). Only limited remnants of grasses were present to obscure ground visibility. The recent plowing of the field disturbed the ground surface over the entire Project site. Modern debris including scraps of plastic, paper, and metal are scattered throughout the Project site. No paleontological resources were discovered during the survey.

The nearby San Diego Formation and Otay Formation may be impacted as one or both of the formations may underlie the Pleistocene unit mapped at the surface of the Project site (SDNHM 2024 – Confidential Attachment B, Todd 2004). These formations have high paleontological sensitivity, as both formations have produced numerous fossils throughout San Diego County (SDNHM 2024 – Confidential Attachment B).

The SDNHM records search results letter was received on April 30, 2024. No records of fossil localities were found within the boundaries of the Project site; however, the SDNHM reported two fossil localities within a 1-mile radius of the vicinity of Project site (SDNHM 2024 – Confidential Attachment B). Both localities are from the San Diego Formation which crops out just to the west of the Project site and has the potential to be impacted by implementation of the Project at depth. Fossil localities 6734 and 6738 produced bivalve burrows (SDNHM 2024 – Confidential Attachment B).

## 5 Summary and Management Recommendations

No paleontological resources were identified within the Project site as a result of the institutional records search, desktop geological review, and paleontological survey. During the survey, only relatively freshly plowed, weathered sediments were observed. The paleontological records search conducted by the SDNHM revealed two nearby localities, both of which are not from the same geological unit that underlies the Project site on the surface but may be encountered at depth. Pleistocene alluvial deposits mapped throughout the Project site have moderate paleontological sensitivity. Based on the survey and records search results, map, and literature review, the Project site has a moderate potential to produce paleontological resources during planned construction activities. 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 augering 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 Resources Mitigation Program and Paleontological Monitoring.** Prior to commencement of any grading activity on site, the applicant shall retain a qualified paleontologist per the Society of Vertebrate Paleontology (2010) guidelines. The qualified paleontologist shall prepare a Paleontological Resources Mitigation Program (PRMP) for the Project that shall be consistent with the SVP (2010) guidelines and outline requirements for preconstruction meeting attendance and worker environmental awareness training, where paleontological monitoring is required within the Project site based on construction plans and/or geotechnical reports,

procedures for adequate paleontological monitoring and discoveries treatment, and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils), reporting, and collections management. A qualified paleontological monitor shall be on site during initial rough grading and other significant ground-disturbing activities (including augering) in areas underlain by the Pleistocene alluvial deposits and the underlying San Diego and Otay formations. In the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find. Any fossil lab or curation costs (if necessary due to fossil recovery) are the responsibility of the Project proponent.

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

Respectfully Submitted,



**Michael Williams, PhD**  
Senior Paleontologist  
Mobile: 225.892.7622  
Email: [mwilliams@dudek.com](mailto:mwilliams@dudek.com)

Att.: *Figure 1, Location Map*  
*Attachment A, Survey Photos*  
*Attachment B, Confidential SDNHM Paleontological Records Search Results*

cc: *Sarah Siren, Dudek*  
*Chelsea Ohanesian, Dudek*

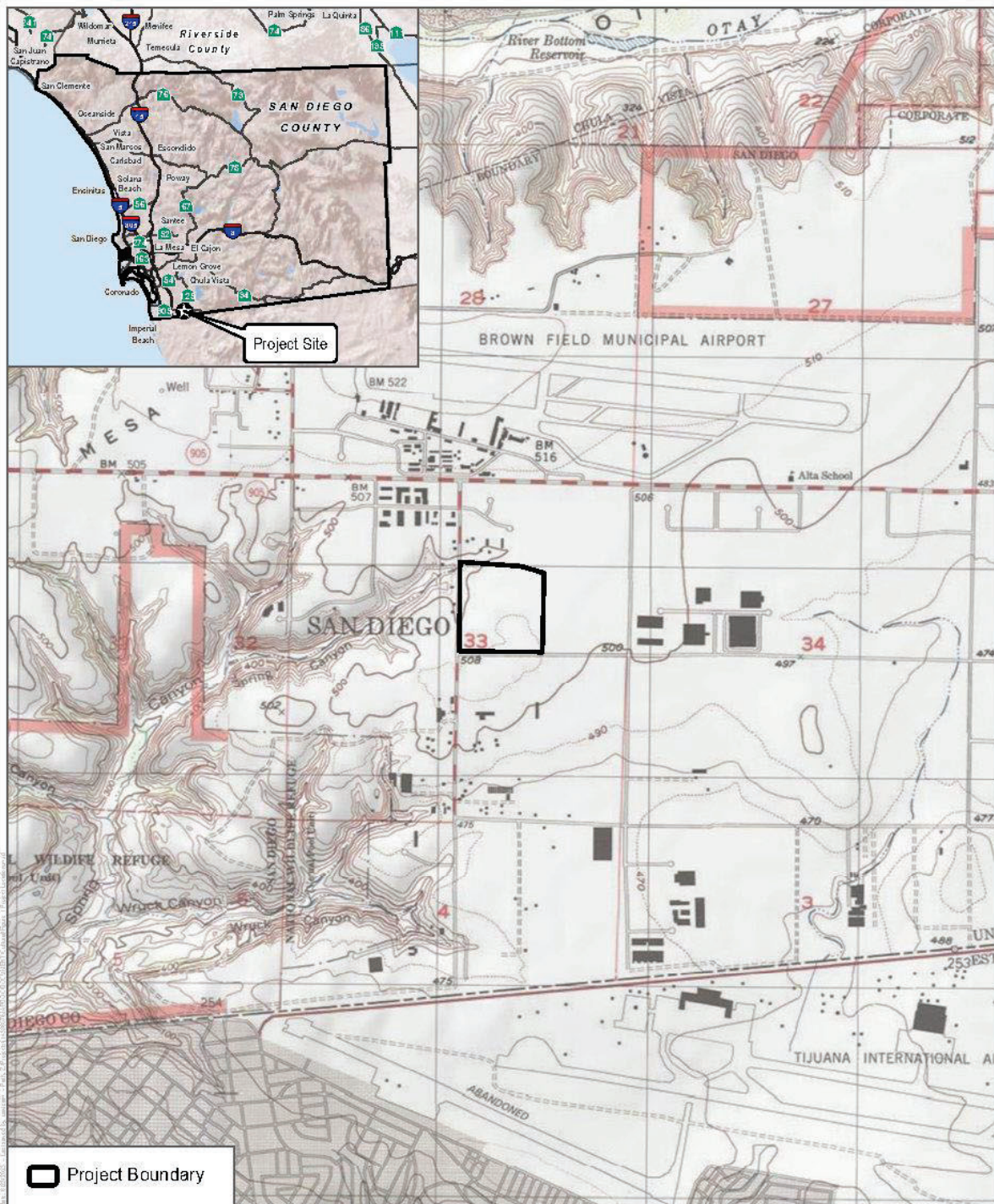
## References

Abbott, P.L. 1999. *The Rise and Fall of San Diego: 150 Million Years of History Recorded in Sedimentary Rocks*. San Diego, California: Sunbelt Publications.

CGS (California Geological Survey). 2002. "California Geomorphic Provinces." CGS Note 36. Accessed June 5, 2024. <https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/>

- CGS-Note-36.pdf.Cohen, K.M., S.C. Finney, P.L. Gibbard, and J.X. Fan. 2023. "The ICS International Chronostratigraphic Chart" Episodes 36: 199-204. Last updated 2023. Accessed June 5. <https://stratigraphy.org/ICSchart/ChronostratChart2023-09.pdf>.
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- SVP (Society of Vertebrate Paleontology). 2010. "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources". Accessed May 2024. [https://vertpaleo.org/wp-content/uploads/2021/01/SVP\\_Impact\\_Mitigation\\_Guidelines.pdf](https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf).
- Tan, S.S. and M.P. Kennedy. 2002. "Geologic map of the Otay Mesa 7.5-minute quadrangle, San Diego County, California: A digital database" [map]. 1:24,000. California Geological Survey.
- Todd, V.R. 2004. "Preliminary Geologic Map of the El Cajon 30' x 60' Quadrangle, Southern California" [map]. 1:100,000. U.S. Geological Survey.

TO: SUNTI KUMJIN  
 SUBJECT: PALEONTOLOGICAL RESOURCES INVENTORY REPORT FOR THE COLLECTION AT CACTUS APARTMENTS  
 PROJECT, CITY OF SAN DIEGO, CALIFORNIA



SOURCE: USGS 7.5-Minute Series Otay Mesa Quadrangle  
 Township 18S, Range 1W, Section 33



**FIGURE 1**  
 Project Location  
 The Collection at Cactus

# Attachment A

## Survey Photos



Photo 1. Project overview from northwest corner of Project boundary. View to the southeast.



Photo 2. Project overview from NW corner of Project boundary. View to the east.

# **Confidential Attachment B**

## SDNHM Records Search Results (Confidential)

# SAN DIEGO NATURAL HISTORY MUSEUM

April 30, 2024

Michael Williams  
Dudek  
605 3<sup>rd</sup> Street  
Encinitas, CA 92024

RE: Paleontological Records Search – The Collection at Cactus Apartments Project

Dear Dr. Williams:

This letter presents the results of a paleontological records search conducted for The Collection at Cactus Apartments Project (Project), located in the Otay Mesa Neighborhood and Community Planning Area of the City of San Diego, San Diego County, California. The Project site is located at 7020 Airway Road and is bordered to the north by State Route (SR-) 905, to the east by Continental Street and a lot undergoing development, to the south by Airway Road, and to the west by Cactus Road.

## Methods

A review of published geological maps covering the Project site and surrounding area was conducted to determine the specific geologic units underlying the Project site. Each geologic unit was subsequently assigned a paleontological resource sensitivity (City of San Diego, 2022). In addition, a search of the paleontological collection records housed at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur at the Project site or within the immediate surrounding area.

## Results

Published geological reports (e.g., Todd, 2004) covering the Project area indicate that the proposed Project has the potential to impact the early to middle Pleistocene-age Lindavista Formation, and may also impact the underlying late Pliocene- to early Pleistocene-age San Diego Formation and/or late Oligocene-age Otay Formation. These geologic units and their paleontological sensitivity are summarized below.

The SDNHM has two fossil collection localities within a one-mile radius of the Project site, both of which are from the San Diego Formation. A map (Figure 1) and list (Appendix A) of the fossil localities are attached at the end of this report for reference.

**Lindavista Formation** – Marine and/or non-marine terrace deposits of the early to middle Pleistocene-age (approximately 2.58 million to 129,000 years old) Lindavista Formation underlie the entire Project site at the surface. The SDNHM does not have any fossil collection localities from the Lindavista Formation located within a one-mile radius of the Project site. Elsewhere in San Diego County, the Lindavista Formation has produced remains of nearshore marine invertebrates (e.g., clams, scallops, snails, barnacles, and sand dollars), as well as sparse remains of marine vertebrates (e.g., sharks and baleen whales). Fossils have primarily been recovered from localities in Tierrasanta and Mira Mesa where the Lindavista Formation is assigned a high paleontological sensitivity; elsewhere in San Diego

County, including in the vicinity of the Project site, the Lindavista Formation is assigned a moderate paleontological sensitivity.

**San Diego Formation** – Marine sedimentary deposits of the late Pliocene- to early Pleistocene-age (approximately 3 to 1.5 million years old) San Diego Formation are exposed at the surface to the west of the Project site and may underlie the Lindavista Formation in the relatively shallow subsurface within the site. The SDNHM has two fossil collection localities from the San Diego Formation within a one-mile radius of the Project site, which produced fossil impressions or remains of marine invertebrates in the form of pholad clam burrows. Elsewhere in southwestern San Diego County, the San Diego Formation has produced diverse assemblages of marine clams, scallops, snails, crabs, barnacles, sand dollars, sharks, rays, bony fishes, sea birds, and marine mammals (e.g., walrus, fur seals, sea cows, dolphins, baleen whales) (Deméré and Walsh, 1993). Rare remains of terrestrial mammals, including cat, wolf, skunk, peccary, camel, antelope, deer, horse, and gomphothere, have also been recovered from the San Diego Formation, along with fossil wood and leaves of terrestrial plants (Deméré and Walsh, 1993). Based on the important fossil remains recovered from this geologic unit, the San Diego Formation has been assigned a high paleontological sensitivity.

**Otay Formation** – The fluvial deposits of the late Oligocene-age (approximately 29 million years old) Otay Formation are exposed at the surface just outside of the northwestern corner of the Project site, and may underlie the Lindavista Formation in the subsurface within the Project site. The SDNHM does not have any recorded fossil localities from the Otay Formation within a one-mile radius of the Project site. The upper sandstone-mudstone unit of the Otay Formation has been assigned a high paleontological sensitivity based on the recovery of significant vertebrate fossils remains from these deposits, while the lower fanglomerate and gritstone units have produced vertebrate fossils at only a few localities and have been assigned a moderate paleontological sensitivity. However, as these units are undifferentiated on existing geologic maps of the Project area, the entire formation should be treated as having a high paleontological sensitivity.

## Summary and Recommendations

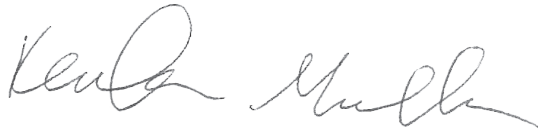
The high paleontological sensitivity of the San Diego Formation and Otay Formation and the moderate paleontological sensitivity of the Lindavista Formation in the vicinity of the Project site, as well as the presence of documented fossil localities from the San Diego Formation in the vicinity of the Project site, suggests the potential for construction of the proposed Project to result in impacts to paleontological resources. Any proposed excavation activities that extend deep enough to encounter previously undisturbed deposits of these geologic units (i.e., below the depth of any previously imported artificial fill or disturbed sediments present within the Project site) have the potential to impact the paleontological resources preserved therein. If such excavation is required for Project construction, implementation of a complete paleontological resource mitigation program during ground-disturbing activities is recommended. The mitigation program must include, at a minimum, measures for construction monitoring, fossil salvage and data recovery, laboratory preparation and curation of the fossils into the permanent fossil collections of an appropriate regional repository, and production of a final paleontological mitigation report.

The fossil collection locality information contained within this paleontological record search should be considered private and is the sole property of the San Diego Natural History Museum. Any use

or reprocessing of information contained within this document beyond the scope of The Collection at Cactus Apartment Project is prohibited.

If you have any questions concerning these findings please feel free to contact me at [kmueller@sdnhm.org](mailto:kmueller@sdnhm.org).

Sincerely,

A handwritten signature in black ink, appearing to read "Kirstin Mueller". The signature is fluid and cursive, with the first name "Kirstin" written in a larger, more prominent script than the last name "Mueller".

Kirstin Mueller  
Assistant Report Writer  
San Diego Natural History Museum

*Enc: Figure 1: Project map  
Appendix A: List of SDNHM fossil localities in the vicinity of the project*

### Literature Cited

- City of San Diego. 2022. California Environmental Quality Act, Significance Determination Thresholds. Development Services Department, 86 p.
- Deméré, T.A., and S.L. Walsh. 1993. Paleontological Resources, County of San Diego. Unpublished technical report prepared for the San Diego County Department of Public Works: 1–68.
- SDNHM unpublished paleontological collections data.
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Figure 1: Records Search Map, The Collection at Cactus Apartments Project, City of San Diego, San Diego County, CA

**Appendix A: Locality List**  
 San Diego Natural History Museum  
 Department of Paleontology

Locality Number	Locality Name	Location	Elevation (feet)	Geologic Unit	Era	Period	Epoch
6734	Caltrans SR-905, Phase 1B	City of San Diego, San Diego County, California	447	San Diego Formation, member 1	Cenozoic	Neogene	late Pliocene
6738	Caltrans SR-905, Phase 1B	City of San Diego, San Diego County, California	469	San Diego Formation, member 5	Cenozoic	Neogene	late Pliocene