Appendix F

Paleontological Resources Inventory Report (2022)

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November 14, 2022 14413

Ricon Homes
Cameron St. Claire
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Carlsbad, CA 92008

Subject: Paleontological Resources Inventory Report for the Guajome Crest Project, City of Oceanside, San Diego County, California

Dear Cameron St. Claire:

This letter documents the results of the paleontological resources inventory conducted by Dudek for the proposed Guajome Crest (project). The approximately 16.78-acre project site is located north of Guajome Lake Road and to the east of Albright Street, in the eastern section of the City of Oceanside, California. The project site is located south of Guajome Regional Park, which separates the project site from additional single-family residential development. Highway 76 is located approximately 0.5-mile north of the project site adjacent to Guajome Regional Park. (Figure 1 – Project Location Map) (Figures provided at the end this memorandum).

The project proposed the construction of 83 single-family homes on approximately 12.45 acres of the approximately 16.78 acre project site. The project would also include approximately 34,391 square feet of private recreationally and amenity area place throughout the development.

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 County of San Diego's Guidelines. The inventory consisted of a field survey, a Natural History Museum of San Diego (SDNHM) paleontological records search, and a review of geological mapping and geological and paleontological literature. The results of the paleontological records search were negative for paleontological resources within the project site; however, the SDNHM reported four fossil localities near the project site, but they are from geological units that do not underly the project site.

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 5,500 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, undetermined, low, and no paleontological resource potential, or sensitivity, as set forth in and by the County of San Diego's (2009) Guidelines for Determining Significance: Paleontological Resources.

Table 1. Paleontological Resources Sensitivity Criteria

Resource Sensitivity/Potential	Definition
High	High resource potential and high sensitivity are assigned to geologic formations known to contain paleontological localities with rare, well preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing important information about the paleoclimatic, paleobiological and/or evolutionary history (phylogeny) of animal and plant groups. In general, formations with high resource potential are considered to have the highest potential to produce unique invertebrate fossil assemblages or unique vertebrate fossil remains and are, therefore, highly sensitive.
Moderate	Moderate resource potential and moderate sensitivity are assigned to geologic formations known to contain paleontological localities. These geologic formations are judged to have a strong, but often unproven, potential for producing unique fossil remains (Deméré and Walsh 1993).
Low	Low resource potential and low sensitivity are assigned to geologic formations that, based on their relatively young age and/or high-energy depositional history, are judged unlikely to produce unique fossil remains. Low resource potential formations rarely produce fossil remains of scientific significance and are considered to have low sensitivity. However, when fossils are found in these formations, they are often very significant additions to our geologic understanding of the area.
Marginal	Marginal resource potential and marginal sensitivity are assigned to geologic formations that are composed either of volcaniclastic (derived from volcanic sources) or metasedimentary rocks, but that nevertheless have a limited probability for producing fossils from certain formations at localized outcrops. Volcaniclastic rock can contain organisms that were fossilized by being covered by ash, dust, mud, or other debris from volcanoes. Sedimentary rocks that have been metamorphosed by heat and/or pressure caused by volcanoes or plutons are called metasedimentary. If the sedimentary rocks had paleontological resources within them, those resources may have survived the metamorphism and still be identifiable within the metasedimentary rock, but since the probability of this occurring is so limited, these formations are considered marginally sensitive.
No Sensitivity	No resource potential is assigned to geologic formations that are composed entirely of volcanic or plutonic igneous rock, such as basalt or granite, and therefore do not have any potential for producing fossil remains. These formations have no paleontological resource potential, i.e., they are not sensitive.

Source: County of San Diego 2009.

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, Paleontological Survey, Literature Review, and Paleontological Records Search

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

Dudek paleontologist, Jason Collins conducted the preconstruction pedestrian survey of the project site on May 03, 2022. 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 where ground surface exposure was observed.

A paleontological records search request was sent to the SDNHM on April 26, 2022. The purpose of the records search is 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 (California Geological Survey 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 the continental shelf. The eastern boundary is the Colorado Desert Geomorphic Province (California Geological Survey 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 125 to 90 million years ago [mya]) (Abbott 1999).

The approximately 16.84-acre project site is located at the foothills of the Peninsular Ranges and is mostly vacant with some drainages associated with the San Luis Rey watershed and a dirt road graded out (Figures 1-4). There is one property at 2839 Guajome Lake Road that exists within the project area on the north side of the site (Figures 5-6). The project area consisted of low-lying grasses that limited the amount of exposed ground surface other than the graded road. There was siltstone spoils and rocks that appeared to be associated with the graded road that are known to be a part of Santiago Formation. No paleontological resources were observed during the pedestrian survey

According to the published geological mapping at a scale of 1:100,000 by Kennedy et al.(2007) and the chronostratigraphic chart (Cohen et al. 2022), the majority of project site is underlain by middle Eocene-age (approximately 49 million years ago [mya] – 40 mya) Eocene deposits (the Santiago Formation - map unit Tsa). Holocene (< 11,700 years ago) alluvial flood plain deposits (map unit Qya) from a tributary of the San Luis Rey River underlies the north side of the project site.

The Santiago Formation, formerly the Tejon Formation (English and Prutzman 1926), was first described and named by Woodring and Popenoe (1945) based on the type section located in the Santa Ana Mountains of Orange County. The formation consists of sparsely fossiliferous marine siltstones and sandstones; however, the upper Santiago Formation is likely non-marine due to the presence of petrified wood (Schoellhamer et al. 1981). As discussed in Mihlbacher and Deméré (2009, 2010), the Santiago Formation was divided into three distinct units. The basal unit (Member A) consists of coarse-grained arkosic sandstone that is generally not bedded; the middle unit (Member B) consists of medium-grained arkosic sandstone; and the upper unit (Member C) consists of coarse-grained arkosic sandstone and grit (Kennedy et al. 2007; Mihlbacher and Deméré 2009, 2010). The type section and exposures in northern San Diego County include marine and nonmarine, mudstone, siltstone and sandstone beds, being differentiated by their depositional environment and fossil content. The lower member (Member A) and middle member (Member B) are marine deposits, whereas the upper member (Member C) is non-marine in origin (Mihlbachler and Deméré 2010).

While Holocene alluvial deposits are generally too young to yield significant paleontological resources, Santiago Formation deposits are known to produce significant terrestrial fossil vertebrates (e.g., rodent, horse, creodont, and brontothere) in the northern San Diego County, along with assemblages of marine and estuarine mollusks.

Holocene alluvial deposits have low paleontological sensitivity that increases with depth where they potentially are old enough to produce significant fossils. The Santiago Formation has high paleontological sensitivity throughout its stratigraphic extent.

The SDNHM records search results letter was received on May 09, 2022. No records of fossil localities were found within the boundaries of the project site; however, the SDNHM reported four fossil localities in a 1-mile radius of the vicinity of project (Confidential Attachment A). All four localities are from the Bay Point Formation which crops out nearby but is not anticipated to be impacted by implementation of the project since it is not mapped within or near the project site. Fossil localities, 6047, 6488, 6489, and 6580 were all collected from unnamed nonmarine deposits (Confidential Attachment A).

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, Eocene siltstone rocks and debris from road improvements was observed and documented. The paleontological records search conducted by the SDNHM revealed four nearby localities, all of which are not from the same geological unit that underlies the project site on the surface or at depth. Eocene deposits mapped within and throughout most of the project site have high paleontological sensitivity; Holocene alluvial deposits have low paleontological sensitivity on the surface, increasing with depth; and artificial fill if present has no paleontological sensitivity. Based on the survey and records search results, map, and literature review, the project site has high potential to produce paleontological resources during planned construction activities in areas underlain by Eocene deposits and Holocene deposits at 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 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 Impact 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 Impact Mitigation Program (PRIMP) 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. The PRIMP shall also include a statement that any fossil lab or curation costs (if necessary due to fossil recovery) are the responsibility of the project proponent. 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 Santiago Formation and below a depth of five feet below the ground surface in areas underlain by Holocene alluvium to determine if they are old enough to preserve scientifically significant paleontological

resources. 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.

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

Att.: *Figure 1, Regional Location Map*
Figure 2, Geological Map
Attachment A, Survey Photos
Attachment B, Confidential LACM Paleontological Records Search Results

cc: *Sarah Siren, Dudek*
Jason Collins, Dudek
Vanessa Scheidel, 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.

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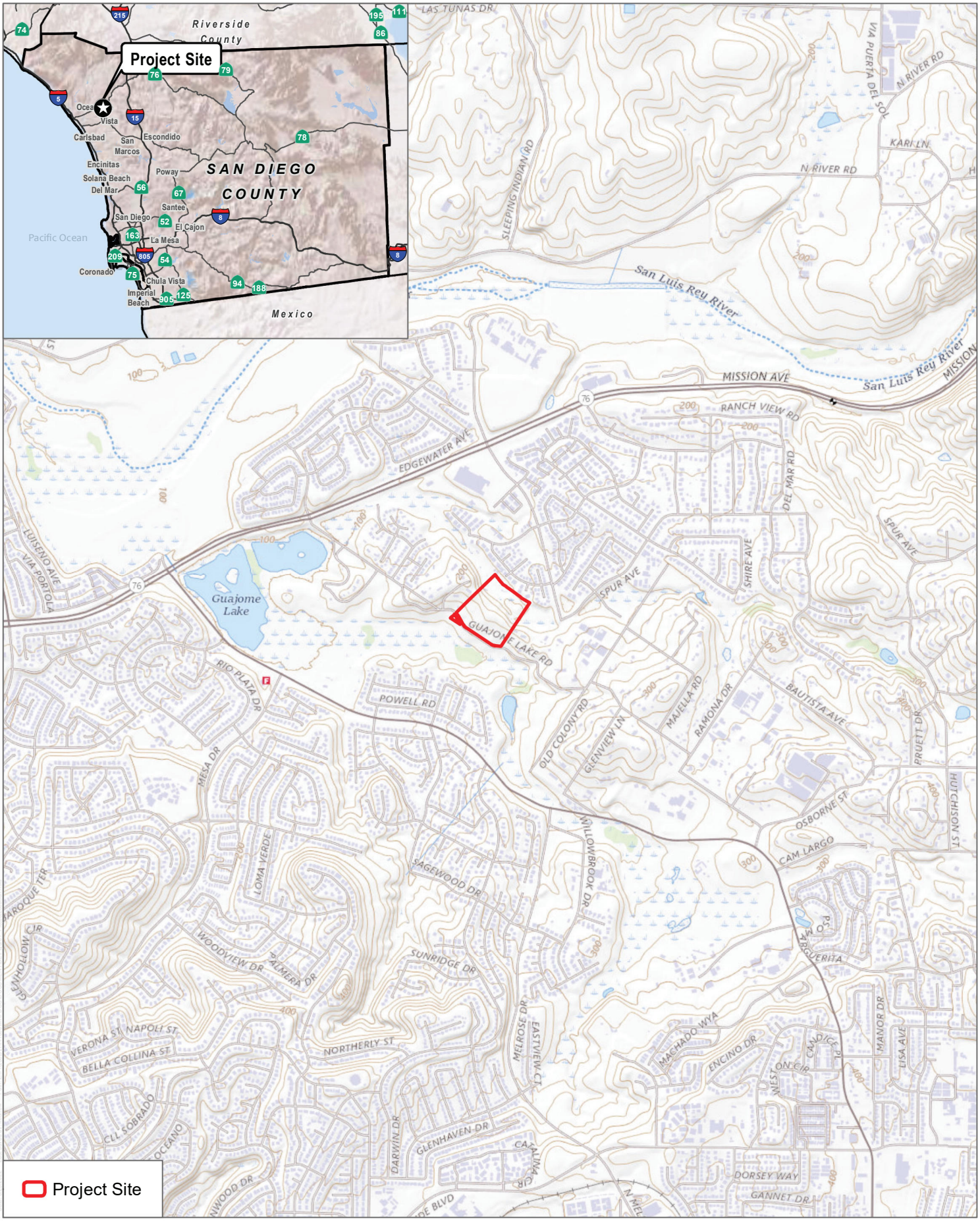


SOURCE: USGS 7.5-MinuteSan Luis Rey Quadrangle
Township 11S / Range 4W / Section 02

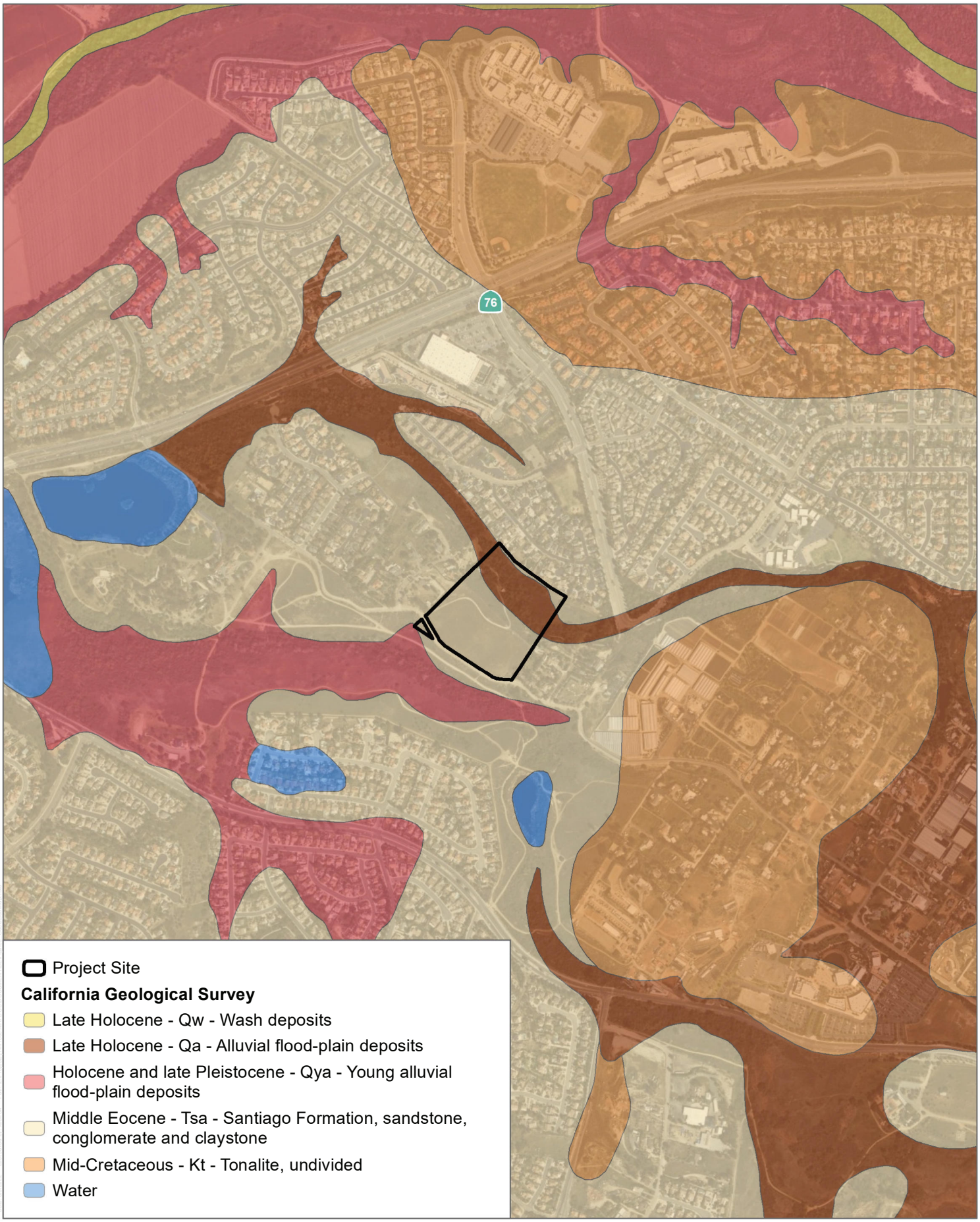
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Guajome Crest Project



SOURCE: Bing Maps Aerial, California Geological Survey

DUDEK

0 500 1,000 Feet

FIGURE 2

Geological Map

Guajome Crest Project

Attachment A
Survey Photos

Photograph showing limited visability of project sediments. View to the south.

Photograph showing north side of the Project site and access. View to the east.

Photograph showing vegetation growth and limited visability on Project site. View to the west.

Photograph graded access road with material base on it within Project site. Eocene Sediments visible. View to the west.

Photograph showing siltstone debris from access road grading on Project site. View to the northeast.

Photograph showing oxidized siltstone clumps on Project site next to access road. Overview.

Confidential Attachment B

SDNHM Records Search Results (Confidential)

9 May 2022

Jason Collins
Dudek
605 Third Street
Encinitas, CA, 92024

RE: Paleontological Records Search – Guajome Crest, Oceanside

Dear Mr. Collins:

This letter presents the results of a paleontological records search conducted for the Guajome Crest project (Project), located in the northeastern portion of the City of Oceanside, San Diego County, California. The Project site is located north of Guajome Regional Park and is bordered to the southwest by Guajome Lake Road, to the northwest by residential properties along Albright Street, to the northeast by residential properties along Seattle Slew Way, and to the southeast by existing residential development.

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 (Deméré and Walsh, 1993). 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., Kennedy and Tan, 2007) covering the Project area indicate that the proposed Project has the potential to impact the middle Eocene-age Santiago Formation and late Holocene-age alluvial flood plain deposits. These geologic units and their paleontological sensitivity are summarized below. The SDNHM has four recorded fossil localities within a one mile radius of the Project site (Figure 1). All of these localities are from Pleistocene-age nonmarine deposits of the Bay Point Formation, which is not anticipated to be impacted by Project construction.

Alluvial flood plain deposits – Late Holocene-age (less than approximately 4,200 years old) alluvial flood plain deposits underlie the northeastern portion of the Project site at the surface. These deposits consist of unconsolidated sandy, silty, or clay-bearing alluvium deposited by the action of recently active streams. These deposits are assigned a low paleontological sensitivity based on their relatively young geologic age and lack of recorded fossil collection localities (Deméré and Walsh, 1993). However, they are likely underlain in the relatively shallow subsurface by a geologic unit with high paleontological sensitivity (i.e., the Santiago Formation, see below).

Santiago Formation – Strata of the middle Eocene-age (approximately 49 to 40 million years old) Santiago Formation underlie the southern portion of the Project site. The SDNHM does not have any recorded fossil localities from the Santiago Formation within a one-mile radius of the Project site.

However, the Santiago Formation has produced significant terrestrial fossil vertebrate localities in northern San Diego County, along with assemblages of marine and estuarine mollusks, and is considered to have a high paleontological sensitivity (Deméré and Walsh, 1993).

Summary and Recommendations

The high paleontological sensitivity of the Santiago Formation in San Diego County (Deméré and Walsh, 1993) 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 this geologic unit (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 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 Guajome Crest project is prohibited.

If you have any questions concerning these findings please feel free to contact me at kmueller@sdnhm.org.

Sincerely,

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

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.

Kennedy, M.P., and Tan, S.S. 2007. Geologic Map of the Oceanside 30' x 60' Quadrangle, California. California Geological Survey, Regional Geologic Map Series 1:100,000 scale, map no. 2.

San Diego Natural History Museum (SDNHM), unpublished paleontological collections data.

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

Locality Number	Locality Name	Location	Elevation (feet)	Geologic Unit	Era	Period	Epoch
6047	North Coast Church	City of Vista, San Diego County, California	255	Bay Point Formation, unnamed nonmarine deposit	Cenozoic	Quaternary	Pleistocene
6488	SR-76 Middle Segment	City of San Diego, San Diego County, California	180	Bay Point Formation, unnamed nonmarine deposit	Cenozoic	Quaternary	late Pleistocene
6489	SR-76 Middle Segment	City of San Diego, San Diego County, California	164	Bay Point Formation, unnamed nonmarine deposit	Cenozoic	Quaternary	late Pleistocene
6580	SR-76 Middle Segment	City of Oceanside, San Diego County, California	157	Bay Point Formation, unnamed nonmarine deposit	Cenozoic	Quaternary	Pleistocene