

SAN DIEGO NATURAL HISTORY MUSEUM

26 April 2024

Kelly Olauson
Optimus Building Corporation
121 Osprey Cove Lane
Ponte Vedra Beach, FL 32082

RE: Paleontological Resources Memorandum – Perris Gateway Project

Dear Ms. Olauson:

This letter presents a brief summary of the paleontological sensitivity of the geologic units underlying the proposed Perris Gateway project (Project) site, located in the northwestern portion of the City of Perris, Riverside County, California. The approximately 20-acre Project site is bordered to the west by the northbound on ramp to Interstate (I-) 215, to the south by the Ramona Expressway, to the east by Webster Avenue, and to the north by existing light industrial development.

Methods

A review of published geological maps covering the Project site and surrounding area was conducted to determine the specific geologic units known to underlie the Project site. Relevant published and unpublished geological and paleontological reports were also reviewed. The geologic units mapped as underlying the Project site were subsequently assigned a paleontological resource sensitivity following the tripartite scale utilized by the City of Perris (City of Perris, 2008).

Results

The proposed Project site is located within the Perris Block of the Peninsular Ranges Geomorphic Province (English, 1926; Norris and Webb, 1990). This structural block is surficially expressed as a relatively low relief, deeply weathered basin punctuated by resistant hills and small mountains, and is surrounded by the Sana Ana Mountains to the west and south, the San Jacinto Mountains to the east, and the San Gabriel and San Bernardino Mountains to the north. The Perris Block is a fault-controlled region, with the San Jacinto Fault to the northeast and the Elsinore Fault to the southwest. Faulting is responsible for the uplift of the surrounding mountain ranges and down dropping of the Perris Block. As a consequence, the surrounding mountain ranges are actively being eroded, and the sediments derived from this erosion have in the past been, and are still being, deposited in the basin lowlands as alluvial fans and/or stream channel deposits. These surficial deposits overlie a deeply weathered mass of Cretaceous plutonic igneous rocks of the Peninsular Ranges Batholith and older, pre-batholithic metasedimentary basement rocks.

Published geological mapping covering the Project area (e.g., Morton et al., 2002, 2003; Morton and Miller, 2006) primarily indicates that the proposed Project site is entirely underlain by early to middle Pleistocene-age (approximately 2.58 million to 129,000 years old) very old alluvial-fan deposits (Qvof; Figure 1). These deposits may be overlain by a veneer of younger Holocene-age (less than approximately 11,700 years old) alluvial sand and clay of valley areas, as indicated in published geological mapping by Dibblee and Minch (2003a,b).

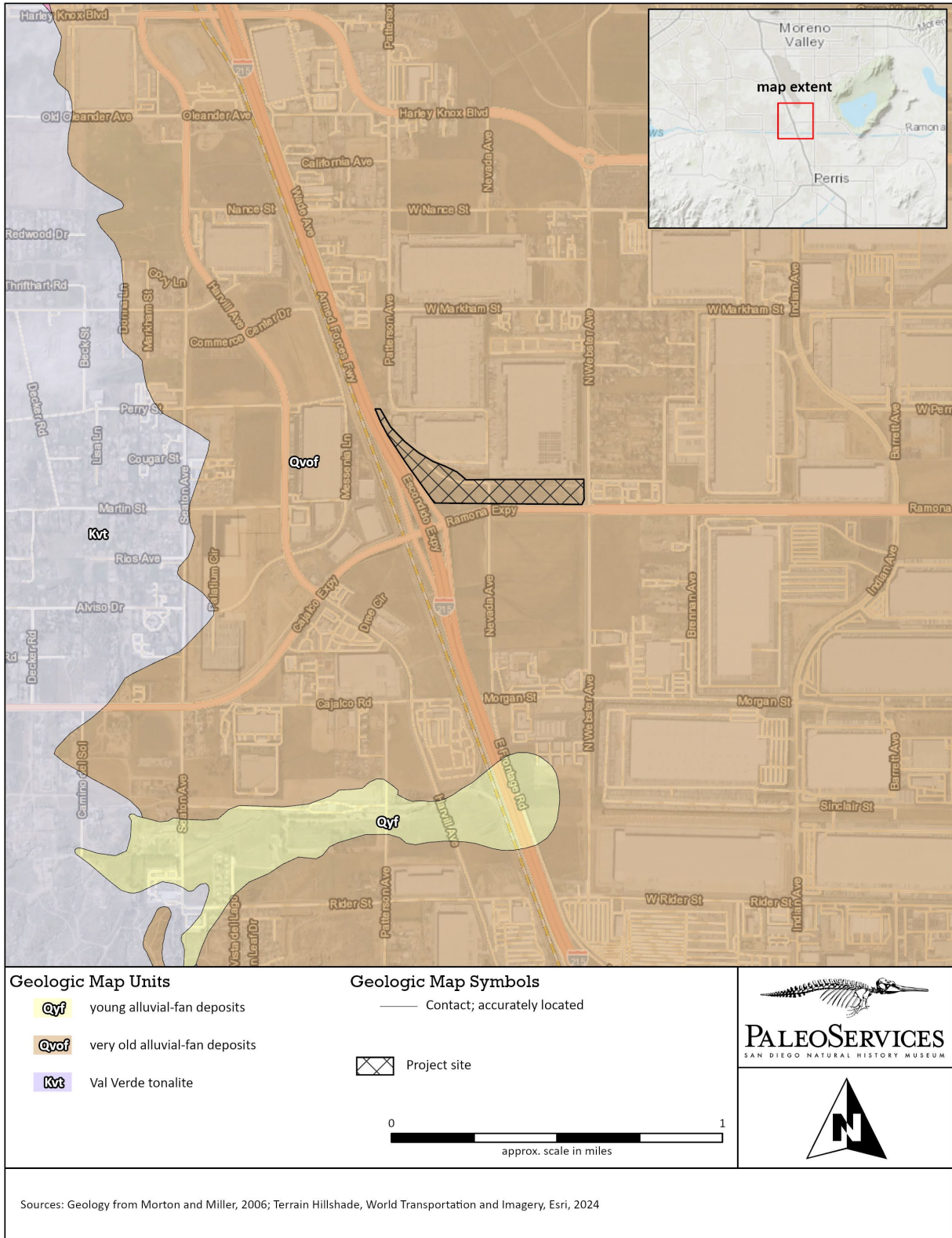


Figure 1. Geologic map of the Project site.

The SDNHM does not have any documented fossil collection localities within a one-mile radius of the proposed Project site. The closest SDNHM fossil locality from similar Pleistocene-age alluvial deposits is located approximately 18 miles to the east-southeast in the San Jacinto Valley within the City of San Jacinto, where fossil remains of physid snails, frogs, colubrid snakes, lizards, and rodents (including the pocket gopher *Thomomys* sp.) were discovered at a depth of 10 feet below ground surface (bgs) during paleontological monitoring of mass grading for a new middle school (SDNHM unpublished paleontological collections data).

More broadly, fossils have been documented in similar Pleistocene-age alluvial deposits elsewhere within western Riverside County. For example, multiple fossil localities were discovered in Pleistocene-age alluvial deposits during construction of the Aldi Distribution Center in the City of Moreno Valley, located approximately 10 miles northeast of the proposed Project site (LSA, 2014). These localities produced isolated fossil remains of giant ground sloth (*Megalonyx jeffersonii* or *Nothrotheriops shastensis*), camelid (*Hemiauchenia*), and horse (*Equus*) (LSA, 2014). The fossil-bearing deposits were exposed at depths of 11 and 13 feet bgs in an area where young alluvial-fan deposits are mapped at the surface (LSA, 2014). Additionally, significant fossils were discovered approximately 19 miles to the southeast of the Project site in Pleistocene-age braided stream and lake deposits exposed during construction of the Diamond Valley Lake project. Recovered fossils consist of large-bodied “Ice Age” mammals (e.g., ground sloth, weasel, skunk, badger, wolf, saber-toothed cat, American lion, puma, peccary, camel, pronghorn antelope, deer, bison, mastodon, and mammoth) (Springer et al., 2009, 2010). Pleistocene-age vertebrate fossils have also been recovered from wind-deflated paleosols preserved within alluvial fan deposits in the Mojave Desert of eastern Riverside County (Raum et al., 2014; Stewart et al., 2012).

According to the Conservation Element of the City of Perris General Plan (City of Perris, 2008), the Pleistocene-aged alluvial-fan deposits underlying the Project site are assigned a High Paleontological Sensitivity. The high sensitivity rating of Pleistocene-aged alluvial-fan deposits is supported by the known occurrence of scientifically significant fossils from similar deposits as encountered elsewhere in western Riverside County.

Summary and Recommendations

The high paleontological sensitivity of Pleistocene-aged alluvial-fan deposits in the City of Perris 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 at 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 earthwork monitoring, fossil salvage and data recovery, laboratory preparation and curation of recovered fossils into the permanent fossil collections of an appropriate regional repository, and production of a final paleontological mitigation report.

If you have any questions concerning these findings please feel free to contact me at 619-255-0264 or kmccomas@sdnhm.org.

Sincerely,



Katie McComas, M.S.
Paleontological Report Writer & GIS Specialist
San Diego Natural History Museum

Literature Cited

- City of Perris. 2008. City of Perris General Plan, Conservation Element. Adopted 18 February 2008.
- Dibblee, T.W., and J.A. Minch. 2003a. Geologic map of the Perris quadrangle, Riverside County, California. Dibblee Geological Foundations, Dibblee Foundation Map DF-112. Scale 1:24,000.
- Dibblee, T.W., and J.A. Minch. 2003b. Geologic map of the Steele Peak quadrangle, Riverside County, California. Dibblee Geological Foundations, Dibblee Foundation Map DF-111. Scale 1:24,000.
- English, W.A. 1926. Geology and oil resources of the Puente Hills Region, California: U.S. Geological Survey Bulletin 768. 110 p.
- LSA. 2014. Paleontological Mitigation Monitoring Report for the Aldi Distribution Center Project, City of Moreno Valley, Riverside County, California. Prepared by Sarah Rieboldt.
- Morton, D.M., and F.K. Miller. 2006. Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California. U.S. Geological Survey Open-File Report 2006-1217. Scale 1:100,000.
- Morton, D.M., R.M. Alvarez, and V.M. Diep. 2002. Geologic map of the Steele Peak 7.5' quadrangles, Riverside County, California. U.S. Geological Survey Open-File Report OF-2001-449. Scale 1:24,000.
- Morton, D.M., K.R. Bovard, and R.M. Alvarez. 2003. Preliminary geologic map of the Perris 7.5' quadrangle, Riverside County, California. U.S. Geological Survey Open-File Report OF-2003-270. Scale 1:24,000.
- Norris, R.M., and R.W. Webb. 1990. Geology of California. Wiley and Sons, New York.
- Raum, J., G.I. Aron, and R.E. Reynolds. 2014. Vertebrate fossils from Desert Center, Chuckwalla Valley, California. Desert Symposium Proceedings 2014: 68–70.
- SDNHM unpublished paleontological collections data and field notes.
- Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray. 2009. The Diamond Valley Lake local fauna: late Pleistocene vertebrates from inland southern California. In: L.B. Albright III (ed.) Papers on Geology, Vertebrate Paleontology, and Biostratigraphy in honor of Michael O. Woodburne. Museum of Northern Arizona, Bulletin 65:217-235.
- Springer, K., E. Scott, J.C. Sagebiel, and L.K. Murray. 2010. Late Pleistocene large mammal faunal dynamics from inland southern California: The Diamond Valley Lake local fauna. Quaternary International 217: 256–265.

Stewart, J.D., M. Williams, M. Hakel, and S. Musick. 2012. Was it washed in? New evidence for the genesis of Pleistocene fossil vertebrate remains in the Mojave Desert of southern California. *Desert Symposium Proceedings 2012*: 140–143.