

Appendix B.2
Paleontological Resources Memo



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August 17, 2015

Ms. Nancy M. Ferguson
Environmental Planning Manager
The Altum Group
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RE: Paleontological Resource Assessment for the Medical School Parcels Project in the City of Colton, San Bernardino County, California

Dear Ms. Ferguson:

At the request of The Altum Group, Applied EarthWorks, Inc. (Æ) performed a paleontological resource assessment for the Medical School Parcels Project (Project) in the City of Colton (City), San Bernardino County, California. The scope of work included a museum records search, a literature and geologic map review, and preparation of this technical memorandum (memo). This memo, which serves as a summary of our findings, was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010) and will satisfy the requirements of the California Environmental Quality Act (CEQA).

Project Description and Background

The Project area is located within the City of Colton, north of the Santa Ana River and less than one-quarter mile north of Interstate 10, west of the State Route 201 interchange. The Project site consists of Assessor's Parcel Numbers (0162-28-104, -134, -151, -167) located in Planning Area 24 of the Colton Hub City Centre Specific Plan project area. Planning Area 24 is located on the east side of the Project area bounded on the south by Valley Boulevard, on the north by C Street, on the east by Hermosa Street, and on the west by Meridian Street. The Project area encompasses approximately 11.7 acres within portions of Township 1 South, Range 4 West, Section 19 on the San Bernardino Baseline & Meridian, as depicted on the San Bernardino South, CA 7.5' U.S. Geological Survey quadrangle (Attachment 1). The Project proposes to construct a new medical school campus, including a three-story, 100,000 square foot office building to be used for a combination of classroom, office and meeting space; a new surgery center; urgent care facility; and parking lot, landscaping, and utilities. At this time, depth and extent of ground-disturbing activities have not been defined; however, a variety of ground-disturbing activities are expected to occur during these improvements, including grading and trenching for the preparation and construction of the building sites.

This technical memorandum was prepared in accordance with the Project's approved Mitigation Monitoring and Reporting Program, specifically mitigation measure (MM) CR-4, which requires that a site-specific paleontological assessment shall be prepared prior to construction. MM CR-4 states:



In conjunction with the preparation of site-specific geotechnical reports for individual development projects, the applicant shall also have a site specific Paleontological assessment prepared to establish the probability that paleontological resources have the potential to occur on an individual project site. If the assessment results in a determination of moderate or high paleontologic(al) sensitivity, a paleontologic(al) monitoring program shall be implemented. This monitoring program shall be consistent with the current provisions of CEQA and with the guidelines of the Society of Vertebrate Paleontology. If the assessment determines that the project area has low paleontologic(al) sensitivity, no program to mitigate adverse impacts to paleontologic(al) resources will be necessary. This measure shall be implemented to the satisfaction of the Development Services Director [City of Colton, 2014].

Regulatory Context

Paleontological resources cannot be replaced once they are destroyed. Therefore, paleontological resources are considered nonrenewable scientific resources and are protected under the CEQA. Specifically, in Section V(c) of Appendix G of the CEQA Guidelines, the “Environmental Checklist Form,” the question is posed: “Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?”

In order to determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, mitigation of adverse impacts to paleontological resources is mandated by CEQA. In addition, paleontological resources are addressed under the Conservation Element of the County of San Bernardino General Plan (2007). The following policies are set forth under GOAL CO 3 in the Cultural/Paleontological Resources Section (V-C2), which stipulates that San Bernardino County will preserve and promote its historic and prehistoric cultural heritage:

1. In areas of potential but unknown sensitivity, field surveys prior to grading will be required to establish the need for paleontologic monitoring.
2. Projects requiring grading plans that are located in areas of known fossil occurrences, or demonstrated in a field survey to have fossils present, will have all rough grading (cuts greater than 3 feet) monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Fossils include large and small vertebrate fossils, the latter recovered by screen washing of bulk samples.
3. A report of findings with an itemized accession inventory will be prepared as evidence that monitoring has been successfully completed. A preliminary report will be submitted and approved prior to granting of building permits, and a final report will be submitted and approved prior to granting of occupancy permits. The adequacy of paleontologic reports will be determined in consultation with the Curator of Earth Science, San Bernardino County Museum [V-18–V-19].

Paleontological Resource Potential

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by the SVP (2010) to determine the course of paleontological mitigation for a given



project. These guidelines establish protocols for the assessment of the paleontological resource potential of underlying geologic units and outline measures to mitigate adverse impacts that could result from project development. Using baseline information gathered during a paleontological resource assessment, the paleontological resource potential of the geologic unit(s) (or members thereof) underlying a Project area can be assigned to one of four categories defined by the SVP (2010). These categories include high, undetermined, low, and no paleontological resource potential.

Methodology

In order to assess whether a particular project area has the potential to contain significant fossil resources at the subsurface, it is necessary to review published geologic mapping to determine the geology and stratigraphy of the area. Geologic units are considered to be “sensitive” for paleontological resources if they are known to contain significant fossils anywhere in their extent. Therefore, a search of pertinent local and regional museum repositories for paleontological localities within and nearby the project area is necessary to determine whether fossil localities have been previously discovered within a particular rock unit. For this Project, a museum records search was conducted at the Los Angeles County Museum of Natural History (LACM) on August 6, 2015. The records search was supplemented by a review of the University of California Museum of Paleontology’s (UCMP’s) online database, which contains paleontological records for San Bernardino County.

Resource Context

The proposed Project area is located in the alluvial plain of the Santa Ana River within the geologically complex Peninsular Ranges geomorphic province (Morton and Miller 2006). A geomorphic province is a region of unique topography and geology that is distinguished from other regions based on its landforms and diastrophic history (Norris and Webb 1976). The Peninsular Ranges are a northwest-southeast oriented complex of blocks that extend 125 miles from the Transverse Ranges and Los Angeles Basin to the tip of Baja California. The Peninsular Ranges are bounded to the east by the Colorado Desert and range in width from 30 to 100 miles (Norris and Webb 1976). The proposed Project area is situated within the Perris Block, a relatively stable rectangular structural unit positioned between the Santa Ana Mountains of the Peninsular Ranges and the San Jacinto Fault Zone. The proposed Project area is approximately one mile southwest of the northwest-trending strike-slip San Bernardino Valley section of the San Jacinto Fault Zone (Rialto-Colton fault), which extends from the San Andreas Fault Zone in the north to the Imperial Valley in the south (Treiman and Lundberg 1999). The geology in the vicinity of the proposed Project area is dominated by Cretaceous plutonic rocks of the Peninsular Ranges Batholith, local Mesozoic metasedimentary rocks, and widespread Pleistocene-age alluvial fan and valley deposits (Morton and Miller 2006).

According to Dibblee and Minch (2003, 2004), the proposed Project area is directly underlain by Quaternary alluvium and eolian drift sand deposits (Qa/Qe) of Holocene age. The eolian sediments are yellowish-brown sand dune deposits composed of poorly to moderately consolidated, well- to poorly-sorted, fine- to medium-grained sand, silty sand, and fine gravelly sand. The alluvial deposits contain coarser material and are poorly to moderately sorted. The eolian deposits are widespread on the Rialto-Colton terrace, and are exposed from the southern base of the Cajon Pass to the Santa Ana River (Morton and Miller 2006). Accumulation of the old eolian sand dune deposits ranges from several feet to



80 feet thick above older alluvial fan surfaces. The eolian deposits form large north-trending longitudinal dunes that have accumulated as the result of erosion and subsequent wind transportation.

Although Holocene-age eolian and alluvial deposits are typically too young to contain fossils, they may be shallowly underlain by older, sensitive Pleistocene deposits, which have proven to yield scientifically significant paleontological resources throughout southern California from the coastal areas to the inland valleys (Springer et al. 2009). Several vertebrate localities are known north and south of the Santa Ana River valley, in the vicinity of the Project area. Approximately ten miles southeast of Colton near Eastvale, a fossil specimen of whipsnake was recovered from Quaternary older deposits at a depth of 9 to 11 feet below the surface. South of the Santa Ana River, near Norco, Pleistocene sedimentary deposits produced a fossil specimen of deer (McLeod 2015). Farther south near Corona, *Ustatochoerus* cf. *californicus* (ground dwelling herbivore) and fossilized camel remains were recovered within Pliocene fluvial and alluvial deposits at Lake Matthews (Woodford et al. 1971). To the southwest, near Lakeview, a diverse assemblage of fossil resources has been recovered, including *Mammuthus* sp. (mammoth), *Smilodon* sp. (sabre-toothed cat), *Equus* sp. (extinct horse), *Bison* sp. cf. *B. antiquus* (bison), and numerous small mammals, reptiles, invertebrates, and plant remains (Springer et al. 2009).

Records Search Results

The LACM reports that there are no previously recorded vertebrate fossil localities in the Project area or in the immediate vicinity from within Quaternary alluvial and eolian deposits. However, LACM museum collections identify two vertebrate localities that were recorded nearby from within older fine-grained Pleistocene-age sedimentary deposits. According to McLeod (2015), these Pleistocene sedimentary deposits are likely similar to older deposits that underlie the younger Quaternary alluvial and eolian deposits at an unknown depth within the Project area. The localities were identified approximately 10 miles west of the Project area and yielded vertebrate fossil specimens of deer and whipsnake, depth of recovery 9 to 11 feet below ground surface (bgs) (McLeod 2015; Table 1). A supplemental review of online museum collections records maintained by the UCMP identified no previously recorded vertebrate localities from similar Pleistocene-age deposits in the vicinity of the Project area. The results of the museum records search and literature review are presented in Table 1.

Table 1
Vertebrate Localities Reported from within Pleistocene Alluvial Deposits
in the Vicinity of the Project Area

Locality No.	Geologic Unit	Age	Taxa
LACM 7811	Quaternary older sedimentary deposits (present at unknown depth in the Project area)	Pleistocene	<i>Masticophis</i> (whipsnake)
LACM 1207	Quaternary older sedimentary deposits (present at unknown depth in the Project area)	Pleistocene	<i>Odocoileus</i> (deer)

Source: McLeod (2015)



Findings and Recommendations

Based on the literature review and museum records search results, the paleontological sensitivity was determined in accordance with the SVP's (2010) sensitivity scale. The Quaternary alluvial and aeolian deposits are determined to have a low to high paleontological resource potential because although they are likely too young to contain fossilized material at the surface, they may be underlain at relatively shallow to moderate depth by older Pleistocene-age deposits that have been known to yield significant paleontological resources throughout the region. As a result, the potential for encountering fossil resources during Project-related ground disturbance is low to high, dependent on depth. Therefore, it is recommended that a qualified professional Paleontologist be retained to be on call should excavations reach or exceed 10 feet bgs, at which time the paleontologist will examine the sediments at that depth and determine if construction monitoring is warranted. In addition, prior to the start of earthmoving activities, it is recommended that all construction workers and other on-site personnel receive environmental awareness training on paleontological resources. The training will provide a description of the fossil resources that may be encountered in the Project area, outline steps to follow in the event that a fossil discovery is made, explain the importance of fossils, and describe the laws protecting fossils.

It has been a pleasure assisting you with this Project. If you have any questions, please do not hesitate to contact Jessica DeBusk at jdebusk@appliedearthworks.com or (626) 578-0119.

Sincerely,

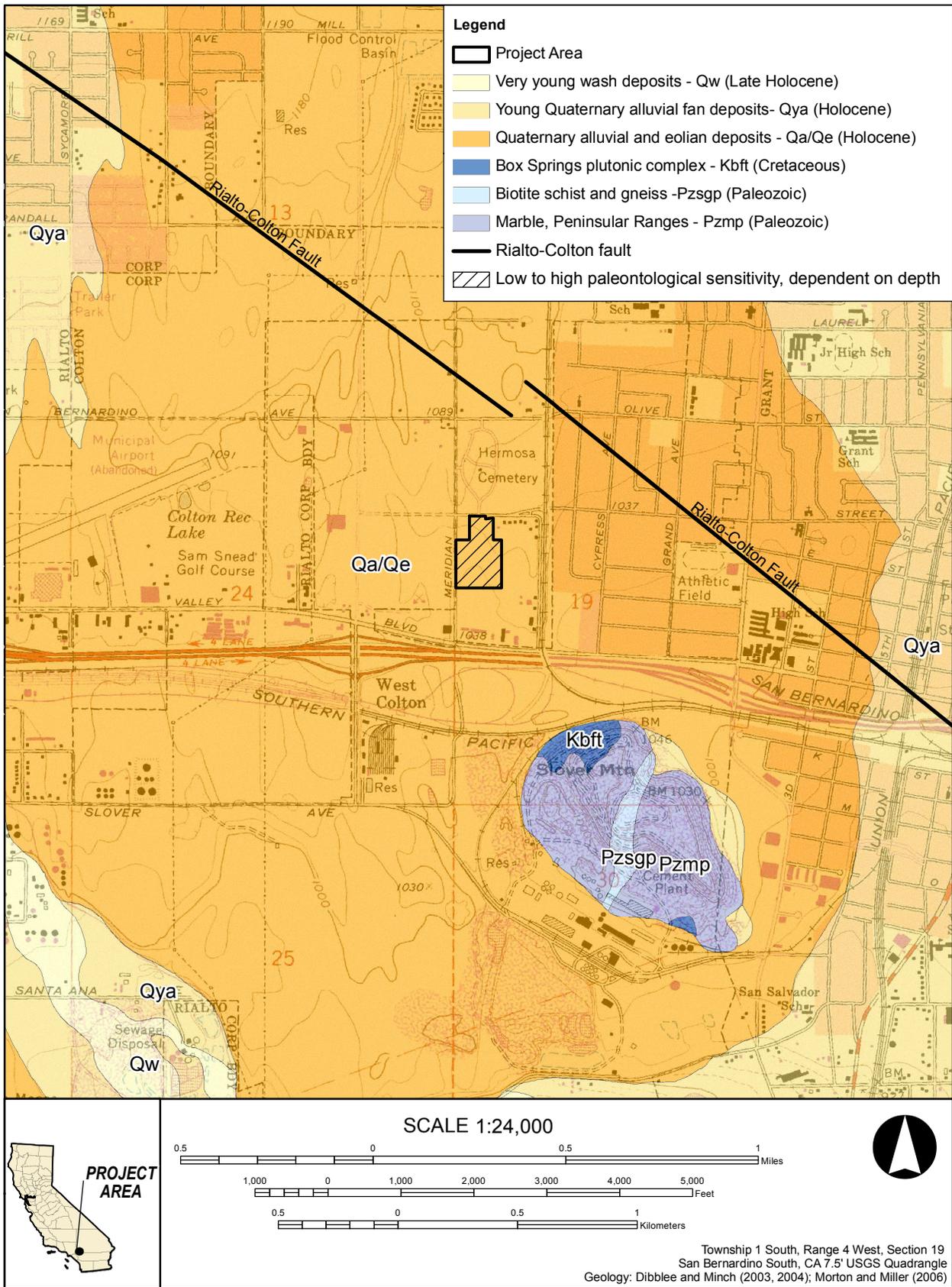
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Attachment 1. Geologic Units and Paleontological Sensitivity in the Project Area.