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July 8, 2022

Tracy Zinn
Principal
T&B Planning, Inc.
200 El Camino Real, Suite 100
Newport Beach, California 92602
Transmitted via email to tzinn@tbplanning.com

RE: Paleontological Resource Assessment for the Majestic Chino Flight Project, City of Chino, San Bernardino County, California

Dear Ms. Zinn,

At the request of T&B Planning, Inc., acting on behalf of Majestic Realty Company, PaleoWest, LLC (PaleoWest) conducted a paleontological resource assessment for the Majestic Chino Flight Project (Project), in the city of Chino, San Bernardino County, California. The goal of the assessment is to identify the geologic units that may be impacted by development of the Project, determine the paleontological sensitivity of geologic units within the Project area, assess potential for impacts to paleontological resources from development of the Project, and recommend mitigation measures to avoid or mitigate impacts to scientifically significant paleontological resources, as necessary.

This paleontological resource assessment incorporates the results of a fossil locality records search from the San Bernardino County Museum (SBCM). The results of the records search were supplemented by a review of existing geologic maps, online fossil locality databases, and primary literature regarding fossiliferous geologic units within the proposed Project vicinity and region. This technical memorandum, which was written in accordance with the guidelines set forth by the Society of Vertebrate Paleontology (SVP) (2010), has been prepared to support environmental review under the California Environmental Quality Act (CEQA).

PROJECT LOCATION AND DESCRIPTION

The proposed Project site encompasses a 57.3-acre area comprised of six contiguous parcels (Assessor's Parcel Numbers [APNs] 105-507-101 and -102, 105-506-101 and -102, and 105-505-101 and -102) at the southeast corner of the Flight Avenue-Remington Avenue intersection within the city of Chino, San Bernardino County, California (Figures 1 and 2). The proposed Project also involves off-site improvements along Flight Avenue, Remington Avenue, and the eastern boundary of the Project site, which total 5.6 acres in area. The Project lies in an unsectioned area of Township 2 South, Range 7 West within the Santa Ana del Chino Land Grant, San Bernardino Baseline and Meridian (SBBM), as depicted in the Corona North, California U.S. Geological 7.5' Quadrangle (1979) (Figure 2). The elevation of the Project area is approximately 640 feet above mean sea level (amsl).

Figure 1. Project vicinity map.

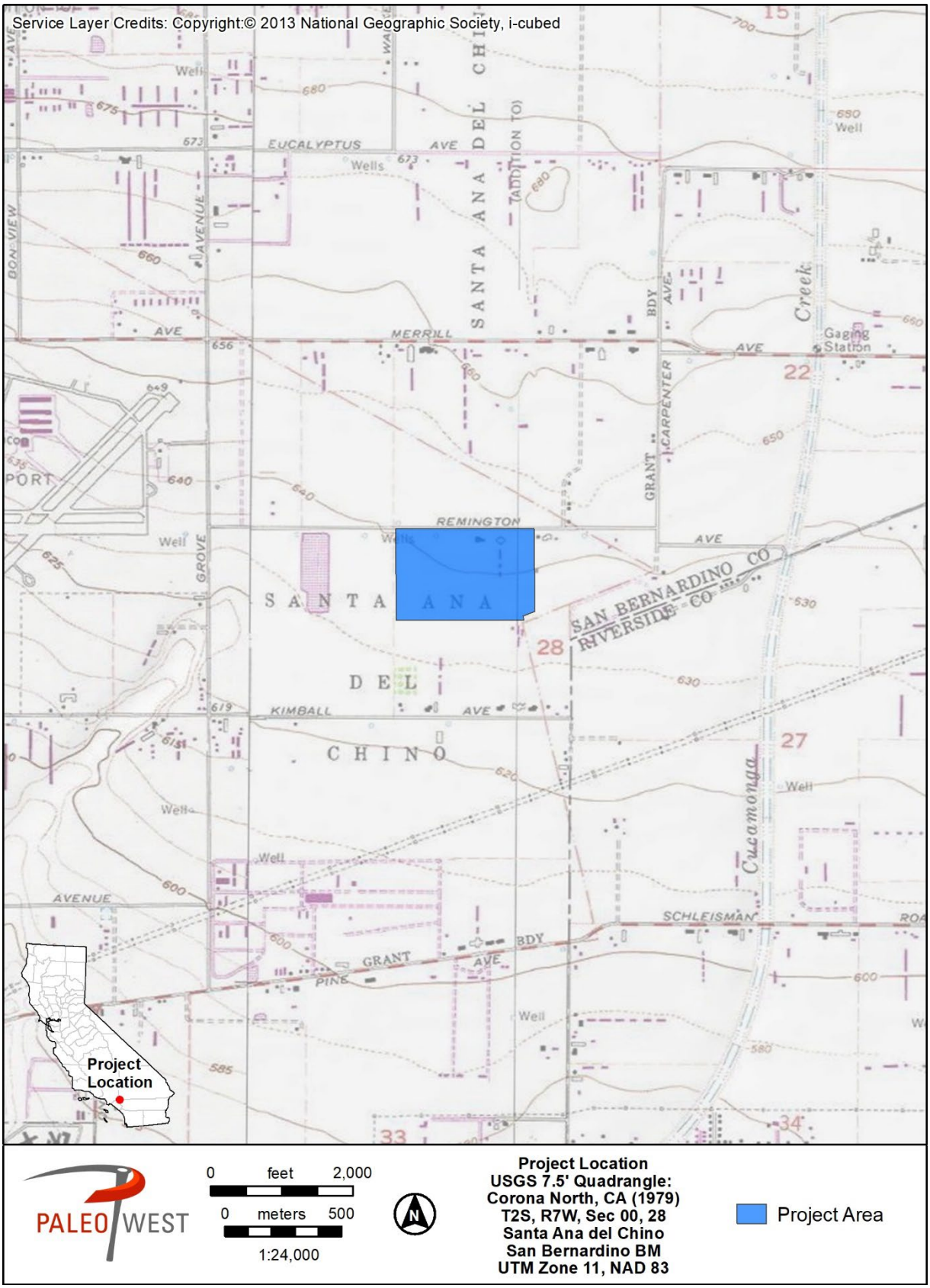

Figure 2. Project location map.

The proposed Project involves the development of a cross-dock light industrial building. The proposed building is designed to have approximately 925,362 square feet (s.f.) of floor space, including warehouse space, office spaces (both ground floor and potential floor office space), and up to 132 dock doors located along the northern-facing and southern-facing sides of the building. No development is proposed in the Chino Airport Runway Protection Zone other than an access driveway. Associated improvements to the Project site would include passenger vehicle parking spaces, truck trailer parking spaces, drive aisles, ornamental landscaping, utility infrastructure, employee break areas, guard houses, and a water detention basin located at the southern portion of the Project site.

The property is unoccupied but was formerly used as a commercial dairy. Based on the results of the Phase I Environmental Site Assessment (ESA) conducted by Nova Group (2021), imported artificial fill was brought into the northeastern corner of the Project area sometime between 2012 and 2018. Since 2018, the County of San Bernardino has taken possession of the property that encompasses the Project area.

REGULATORY CONTEXT

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws and regulations. Laws pertinent to this Project are discussed below.

STATE LAWS AND REGULATIONS

California Environmental Quality Act

CEQA requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [j]). Appendix G in Section 15023 provides an Environmental Checklist of questions (Section 15023, Appendix G, Section VII, Part F) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?"

CEQA does not define "a unique paleontological resource or site." However, the SVP has provided guidance specifically designed to support state and federal environmental review in absence of agency guidelines. The SVP broadly defines significant paleontological resources as follows (SVP, 2010, page 11):

> "Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years)."

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or could improve our understanding of paleochronology, paleoecology, paleophylogeography, or

depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered significant.

California Public Resources Code

Section 5097.5 of the Public Resources Code (PRC) states:

> "No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this PRC section, 'public lands' means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof."

Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

LOCAL

The City of Chino (2010) has one goal – **Goal OSC-7 Preserve Chino's Connection to Its History** – related to paleontological resources in the Open Space and Conservation Element of their General Plan 2025. The following presents the associated objective and policy associated with Goal OSC-7.

Objective OSC-7.1: Preserve and enhance historical, paleontological, and archaeological resources.

- **Policy P3:** In the event that unknown archaeological or paleontological resources are discovered during construction, the Planning Division shall be notified immediately. All construction shall stop and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historic archaeology should be retained to evaluate the discovered resources and recommend appropriate action.

PALEONTOLOGICAL RESOURCE POTENTIAL

Absent specific agency guidelines, most professional paleontologists in California adhere to the guidelines set forth by SVP (2010) to determine the course of paleontological mitigation for a given project. Geologic units are considered "sensitive" if they are known to contain significant nonrenewable paleontological resources anywhere in their extent. The area of sensitivity is typically defined as the entire rock unit (formation or member thereof) and not limited to areas where surface fossils may be exposed. Using baseline information gathered during a paleontological resource assessment or environmental document, the sensitivity of the

geologic unit(s) underlying a project area can be assigned to one of four categories defined by SVP (2010). These categories include high, undetermined, low, and no potential. The criteria for each sensitivity classification, and the corresponding mitigation recommendations, are summarized in Table 1.

Table 1. Paleontological Sensitivity Categories

Resource Potential*	Criteria	Mitigation Recommendations
No Potential	Rock units that are formed under or exposed to immense heat and pressure, such as high-grade metamorphic rocks and plutonic igneous rocks.	No mitigation required.
Low Potential	Rock units that have yielded few fossils in the past, based upon review of available literature and museum collections records. Geologic units of low potential also include those that yield fossils only on rare occasion and under unusual circumstances.	Mitigation is not typically required.
Undetermined Potential	In some cases, available literature on a particular geologic unit will be scarce and a determination of whether or not it is fossiliferous or potentially fossiliferous will be difficult to make. Under these circumstances, further study is needed to determine the unit's paleontological resource potential (i.e., field survey).	A field survey is required to further assess the unit's paleontological potential.
High Potential	Geologic units with high potential for paleontological resources are those that have proven to yield vertebrate or significant invertebrate, plant, or trace fossils in the past or are likely to contain new vertebrate materials, traces, or trackways. Rock units with high potential also may include those that contain datable organic remains older than late Holocene (e.g., animal nests or middens).	Typically, a field survey as well as onsite construction monitoring will be required. Any significant specimens discovered will need to be prepared, identified, and curated into a museum. A final report documenting the significance of the finds will also be required.

*Adapted from SVP (2010)

METHODS

To determine whether construction or implementation of a project has the potential to impact significant paleontological resources at the surface or within the subsurface, a paleontological resources assessment, which includes a review of published geologic maps, scientific literature, and museum records, is necessary. Therefore, this paleontological resource assessment consists of a review of geologic maps and scientific literature, which was supplemented by a search of pertinent local and regional museum repositories for fossil records within the Project area and its vicinity. A formal museum records search was conducted at the SBCM. Additionally, fossil locality records and published literature from the University of California Museum of Paleontology (UCMP) online fossil locality database, the San Diego Natural History Museum (SDNHM) online fossil locality database, the online Paleobiology Database (PBDB), the online Neotoma Paleoecology Database (Neotoma) were reviewed, as well as other published and unpublished geological and paleontological literature of the area. The UCMP, SDNHM, PBDB, and Neotoma online databases do not provide specific fossil

locality information, but they can be queried by county/region, geologic formation, and/or geologic age.

RESOURCE CONTEXT

GEOLOGIC SETTING

The Project area is in the northern portion of the Peninsular Ranges geomorphic province (referred to herein as the "Peninsular Ranges"). Northwest-trending fault-bound blocks of mountain ranges and valleys oriented subparallel to the San Andreas Fault distinguish the Peninsular Ranges from its neighboring provinces. The Peninsular Ranges are bounded on the east by the Colorado Desert geomorphic province, on the north by the Transverse Ranges geomorphic province, whose southern boundary is subparallel to the San Bernardino–Riverside County line, on the west by the submarine continental shelf, and on the south by the California state line (Norris and Webb, 1990). Most of the geologic history of the Peninsular Ranges is characterized by the formation of pluton complexes during the pre-Mesozoic and Mesozoic, tectonism resulting in subparallel fault-bound blocks during the late Mesozoic and Cenozoic, and the erosion of uplifted blocks and the subsequent deposition of thick sediments within the resulting basins throughout the Cenozoic.

Locally, the Project area is within the Upper Santa Ana Valley near the western boundary of the Perris Block (Dutcher and Garrett, 1963), one of several fault-bound blocks within the Peninsular Ranges (Morton and Miller, 2006). The Perris Block is bounded by the Cucamonga Fault Zone on the north, the Claremont and Casa Loma faults on the northeast, and the Elsinore Fault Zone on the southwest, all of which are associated with tectonic movement along the San Andreas Fault (Morton and Miller, 2006). Within the Upper Santa Ana Valley across the northern Perris Block, Pleistocene (approximately 2.4 million years ago [Ma] to 11,700 years ago) and Holocene (approximately 11,7000 years ago to present) alluvial fans emanate from the San Gabriel Mountains on the north and the San Bernardino Mountains on the northeast, resulting in thick accumulations of alluvial deposits (Dutcher and Garrett, 1963; Morton and Miller, 2006; Norris and Webb, 1990). A complex series of alluvial fans, ranging from large to small, emanate from Waterman and City Creeks and the Santa Ana River and Mill Creek (Morton and Miller, 2006).

SITE SPECIFIC GEOLOGY AND PALEONTOLOGY

Based on geologic mapping at a scale of 1:100,000 by Morton and Miller (2006), the surface of the Project area is mapped as middle Holocene young alluvial-fan deposits, Unit 3 (Qyf_3) and middle to early Pleistocene very old alluvial-fan deposits (Qvof) (Figure 3). Although not mapped at the surface within the Project area by Morton and Miller (2006), imported artificial fill is present at the surface along the northeastern portion of the Project area (Nova Group, 2021). These geologic units are included in this analysis and are described below in geochronological order (youngest to oldest) below.

Unmapped Artificial Fill: Unmapped artificial fill consists of sand, gravel, and bedrock from pits, quarries, and excavations related to construction, engineering, mining, or quarrying activities (Morton and Miller, 2006). Based on a review of aerial imagery of the Project area and the results of the Phase I ESA (Nova Group, 2021), the site has been previously improved with two buildings and associated diary facilities, the former of which were subsequently demolished. At the time of this

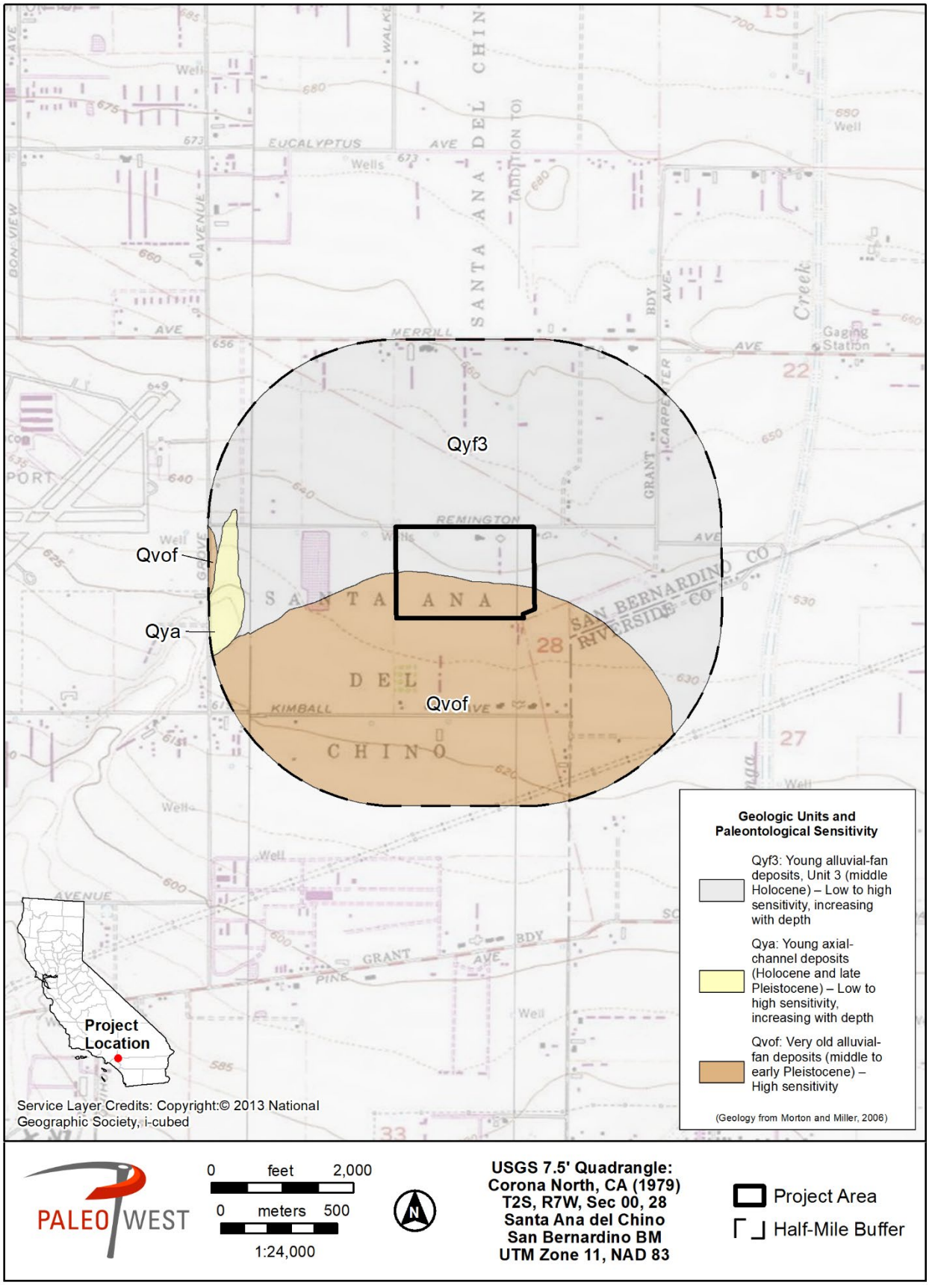

Figure 3. Geologic map.

paleontological assessment, no geotechnical study is available to characterize the artificial fill or its maximum depth. Although artificial fill has the potential to contain intact fossil material, any such fossil would be removed from its original geographic and stratigraphic context (i.e., provenance); therefore, any fossils from artificial fill are typically regarded as nonsignificant.

Young Alluvial-Fan Deposits, Unit 3 (Qyf_3): Sediments of middle Holocene (approximately 8,200 to 4,200 years ago) young alluvial-fan deposits, Unit 3 (Qyf_3) are mapped at the surface of the Project area by Morton and Miller (2006). These deposits consist of medium brown, slightly to moderately consolidated silt and sand, which are coarse-grained and contain sparse, matrix-supported granule- and pebble-dominated lenses, and have slightly to moderately dissected surfaces exhibiting rolling hills and incised channels (Morton and Miller, 2006). Within the Project area, these deposits may be overlain by unmapped artificial fill and/or relatively younger alluvium associated with axial-channel deposits from the Santa Ana River. Young alluvial-fan deposits, Unit 3 is middle Holocene in age and is differentiated from young or older alluvial deposits by the degree of dissection of the surface, degree of wash channel incision, superposition of nearby and overlapping alluvial fans, and amplitude of the gently rolling topography (Morton and Miller, 2006). Its overall thickness is unspecified, but in areas where it is mapped at the surface, moderately to deeply incised wash channels reveal as much as 13 feet (ft) of exposed sediments (Morton and Miller, 2006).

According to guidelines established by the SVP (2010), middle to early Holocene (i.e., older than 5,000 years old) or older sedimentary deposits may yield significant paleontological resources. The uppermost deposits of the middle Holocene young alluvial-fan deposits, Unit 3 are likely too young and/or previously disturbed to contain scientifically significant fossils but may transition at depth to deposits that may contain significant fossils. The depth to this transition within the Project area is unknown but likely very shallow (e.g., 3 ft below ground surface [bgs]) based on the proximity of Pleistocene-age deposits in the southwestern portion of the Project area (Kottkamp, 2022).

Middle to early Holocene and late Pleistocene deposits have yielded numerous significant paleontological resources within the vicinity of the Project area within the Upper Santa Ana Valley within the southwest corner of San Bernardino County. Fossil localities from similarly aged deposits have yielded mammoth, ground sloth, rodent, mustelid, canid, feline, horse, bison, camel, antelope, deer, bird, newt, frog, and bony fish (Dooley et al., 2019; Jefferson, 1991a, 1991b; Reynolds and Reynolds, 1991). The UCMP (2022) contains numerous records of late Pleistocene-age vertebrate, invertebrate, and plant fossil localities throughout San Bernardino County; however, none of the localities are from the vicinity of the Project area based on their brief location descriptions included with each record. The SDNHM (2022) and Neotoma (2022) databases contain no fossil locality records from similarly aged deposits from the same region. Along the eastern border of the Upper Santa Ana Valley, the PBDB (2022) reports one reference, Dooley et al. (2019), which cites at least one locality that yielded mastodon from late Pleistocene-age deposits.

Very Old Alluvial-Fan Deposits (Qvof): Sediments of the middle to early Pleistocene (2.4 Ma to 129,000 years ago) very old alluvial-fan deposits (Qvof) are mapped at the surface of the Project area within its southwestern and western portions (Morton and Miller, 2006). Very old alluvial-fan deposits consist of orangish-brown, moderately to well consolidated silt and sand, with some conglomerate, that is well dissected at the surface (Morton and Miller, 2006). Throughout most of its mappable extent, these deposits contain gravel- to cobble-sized clasts eroded from exposures of the Pelona Schist within the San Gabriel Mountains to the north (Morton and Miller, 2006). Although the thickness of this geologic unit is unspecified in the vicinity of the Project area, alluvial-fan deposits of similar age and lithology bear natural and artificial vertical faces of 33 ft (10 meters) high (Morton and Miller, 2006). Based on the distance to the

neighboring San Gabriel and San Bernardino mountains and the thicknesses of equivalent alluvial fans, very old alluvial-fan deposits may have thicknesses of at least 30 ft. Geotechnical investigations of the site would provide additional information as to the thickness (i.e., depth to the underlying geologic units) of this geologic unit. In general, alluvial-fan deposits are notably finer-grained in more distal regions and/or at depth due to differential sorting of sediments along the surface of the radiating alluvial fan.

Middle to early Pleistocene deposits have yielded numerous significant paleontological resources within the vicinity of the Project area within the Upper Santa Ana Valley within the southwest corner of San Bernardino County. Fossil localities from similarly aged deposits have yielded wolf, saber-toothed cat, mountain lion, horse, camel, llama, deer, antelope, bison, bighorn sheep, ground sloth, mammoth, rabbit, rodent, bird, tortoise, lizard, snake, and toad (Jefferson, 1991a, 1991b; Kottkamp, 2022; Reynolds and Reynolds, 1991). The UCMP (2022) contains at least one locality from middle to late Pleistocene that has yielded fossil tortoise. The SDNHM (2022), PBDB (2022), and Neotoma (2022) databases contain no additional fossil locality records from similarly aged deposits from the same region.

RECORDS SEARCH RESULTS

A museum records search request was submitted to the SBCM on March 31, 2022, the results of which were received on April 21, 2022. Based on the results of the SBCM records search, no paleontological resources have been discovered within the Project area; however, fossil localities from similar geologic deposits have been observed nearby (Kottkamp, 2022). Table 2 provides a summary of the museum records search results, and Attachment A provides the full results of the SBCM records search.

FINDINGS

This memorandum uses the SVP (2010) system to classify the paleontological sensitivity of the geologic units present at the surface or at depth within the Project area to determine the potential for impacts to paleontological resources and to assess the level of effort required to reduce potential impacts to less-than significant levels, pursuant to CEQA.

Imported artificial fill noted in the Phase I ESA may contain fossils, but any such fossil would be displaced from its original geologic or geographic location, making it scientifically invalid. Therefore, the unmapped artificial fill noted in the northeastern corner of the Project area has a low paleontological sensitivity but may be underlain by geologic units of relatively higher sensitivity. Middle Holocene young alluvial-fan deposits, Unit 3 (Qyf_3) that are mapped at the surface of the Project area by Morton and Miller (2006) may be too young in the uppermost sediments of this geologic unit to contain important fossils and may be overlain by unmapped artificial fill described above. However, they may transition at depth to sediments of appropriate age that can preserve scientifically important fossils. The depth to this transition is unknown but may be as shallow as 3 ft bgs based on the proximity of older sediments mapped at the surface of the Project area to the southwest and west. Therefore, young alluvial-fan deposits, Unit 3 have a low to high paleontological sensitivity, increasing with depth. Middle to early Pleistocene very old alluvial-fan deposits (Qvof) are mapped at the surface of the Project area. These deposits are of an appropriate age to yield scientifically significant paleontological

Table 2. SBCM Fossil Locality Records from the Project Vicinity, San Bernardino County

Locality No.	Geologic Unit	Age	Taxa	Distance and Depth
SBCM 5.5.55 - 5.5.58	Older alluvium and very old alluvial-fan deposits	Pleistocene	Bison (*Bison* sp.), camel (Camelidae), and indeterminant mammal (Mammalia)	1.4 miles (mi) away, 6 ft bgs
SBCM 5.5.48 - 5.5.54	Younger alluvium and older alluvium	Early Holocene and Pleistocene	Bony fish (Teleostei), snake (Serpentes), bird (Anatidae), mole (*Scapanus latimanus*), rabbit (*Sylvilagus* sp.), horse (*Equus* sp.), bison (*Bison* sp.), ground sloth (*Megalonyx* sp.), various rodents (Rodentia), various snails (Gastropoda)	2.2 mi away, early Holocene subfossils present near the surface; Pleistocene fossils at 5–8 ft bgs
SBCM 5.1.12	Older alluvium	Pleistocene	Indeterminant mammals (Mammalia)	2 mi away, 6.5–8.0 ft bgs
SBCM 5.1.9 - 5.1.10	Older alluvium	Pleistocene	Camel (Camelidae), indeterminant mammal (Mammalia)	4.5 mi away, 24 ft bgs
SBCM 1.116.290	Older alluvium	Pleistocene	Rodent (Rodentia), indeterminant mammal (Mammalia), indeterminant chordates (Chordata), various snails (Gastropoda)	4.5 mi away, unspecified depth

Source: Kottkamp (2022)

resources and comparable units throughout the region have yielded important fossils. Therefore, very old alluvial-fan deposits have a high paleontological sensitivity.

The construction of the industrial building and associated improvements will involve ground disturbances. In general, the potential for a given project to result in negative impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project; thus, the higher the amount of ground disturbances within geological units with a known paleontological sensitivity, the greater the potential for negative impacts to paleontological resources. At the time of this assessment, the extent of ground disturbing activities within the Project area are unspecified; nonetheless, excavations or ground disturbances in previously undisturbed sediments mapped at the surface by Morton and Miller (2006) as middle to early Pleistocene very old alluvial-fan deposits (Qvof), regardless of depth, or as middle Holocene young alluvial-fan deposits, Unit 3 (Qyf_3) at depths 3 ft bgs or deeper, have the potential to impact significant paleontological resources. Destruction of scientifically important fossils during Project-related earthwork activities would be considered a significant impact under CEQA. Paleontological mitigation would be required to reduce potential impacts to less-than-significant levels, pursuant to CEQA.

RECOMMENDATIONS

Earthwork activities in artificial fill or previously disturbed sediments are unlikely to result in impacts to significant paleontological resources; however, ground disturbances that impact previously undisturbed sediments in areas mapped as very old alluvial-fan deposits (Qvof), regardless of depth, or in young alluvial-fan deposits, Unit 3 (Qyf_3) at depths 3 ft bgs or deeper, may result in impacts to significant paleontological resources. Therefore, PaleoWest recommends the following mitigation measures to reduce potential impacts to less-than-significant levels, pursuant to CEQA:

- A Qualified Paleontologist should be retained to develop and implement a paleontological monitoring program to be implemented during preconstruction ground-disturbing activities that have the potential to impact previously undisturbed sediments identified in this assessment to have a high paleontological sensitivity, whether present at the surface in areas mapped as middle to early Pleistocene very old alluvial-fan deposits (Qvof), or at 3 ft bgs or deeper in areas mapped as middle Holocene young alluvial-fan deposits, Unit 3 (Qyf_3). Paleontological monitoring is not recommended for earthwork activities impacting artificial fill, previously disturbed sediments, sediments less than 3 ft bgs in areas mapped as middle Holocene young alluvial-fan deposits, Unit 3 (Qyf_3), or sediments determined by the Qualified Paleontologist to not be of an appropriate age to yield paleontological resources based on field observations. In consultation with the Lead Agency and the Project Proponent, the Qualified Paleontologist can reduce or cease paleontological monitoring efforts based on field observations and/or the nature of earthwork activities after the initial monitoring of the site.
- If significant paleontological resources are discovered during implementation of the monitoring program, they should be salvaged, assessed in a laboratory for taxonomic identification to at least the family-level, and curated at an appropriate repository (e.g., the SBCM).
- A final monitoring report should be prepared by the Qualified Paleontologist at the conclusion of the Project and should be filed with the Lead Agency. If paleontological resources are curated, the final monitoring report and all related fossil data should be filed at the curating repository.

Thank you for contacting PaleoWest for this Project. If you have any questions, please do not hesitate to contact us.

Sincerely,

Mathew Carson, M.S. | Senior Paleontologist/Project Manager
PALEOWEST

Attachments:

Attachment A: Confidential San Bernardino County Museum Records Search Results

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ATTACHMENT A:
San Bernardino County Museum Records Search Results

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www.SBCounty.gov

SAN BERNARDINO COUNTY

Museum
Division of Earth Science

Scott Kottkamp
Curator of Earth Science

21 April, 2022

Paleowest, LLC
Attn: Mathew Carson
517 S. Ivy Avenue
Monrovia, CA 91016

PALEONTOLOGY RECORDS REVIEW for proposed site of Majestic Chino Flight Project, San Bernardino County, California

Dear Mr. Carson,

The Division of Earth Science of the San Bernardino County Museum (SBCM) has completed a records search for the above-named project in Riverside County, California. The proposed project site (Majestic Chino Flight) is in the City of Ontario, California as shown on the United States Geological Survey (USGS) 7.5 minute Corona North, California quadrangle.

Geologic mapping of that region done by Morton et al. (2002) indicates the entire project area is located atop recent alluvial fan surficial deposits of late Pleistocene and Holocene age (Qyf). Older maps, and those of adjacent areas, call this "younger Quaternary alluvium" (Qa; e.g., Dibblee and Ehrenspeck, 2001), whereas Morton et al. (2002) distinguishes between the alluvial sediment originating from mountainous alluvial fans and that deposited by the Santa Ana River and its tributaries. These sediments are mostly unconsolidated and grey-colored arkosic sands, and are potentially fossiliferous.

Surface exposures of very old alluvial fan deposits (Qvof) flank the project area to the west (at Chino Airport) and to the south (Morton et al., 2002). This older alluvium is weakly indurated and composed mostly of reddish-brown sand with occasional silcrete. Such older alluvial deposits have been found to be highly fossiliferous in the local area, yielding the remains of mastodons, mammoths, *Smilodon*, camels, horses, bison, and ground sloths, as well as

microfossils including rodents. Though not exposed at the surface of the project site, this early Pleistocene age alluvium directly underlies the younger surface alluvium. Reynolds and Reynolds (1991) found that Pleistocene sediments in northwestern Riverside County generally lie about 5 – 15 feet below recent Holocene surface sediments. However, the depth of the recent sediments can be highly variable, and the recent alluvium at this site can generally be expected to thin as one travels towards the offsite surface contact with the older alluvium.

For this review, I conducted a search of the Regional Paleontological Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no paleontological resources have been discovered within the proposed project site. The nearest fossil localities, SBCM localities 5.5.55 – 5.5.58, are approximately 1.4 miles south-southeast of the project site. Permineralized *Bison* sp., Camelidae, and indeterminate mammal bones were discovered at these sites, within fluvial green-brown clayey sand and silty clay unearthed during construction grading. These stratigraphic units are part of the older alluvial sediments (Qoa, including Qvof) underlying the proposed project site, and contacted the younger alluvium and topsoil as little as 6 feet below the surface.

The next closest major fossil localities, SBCM 5.5.48 – 5.5.54, are approximately 2.2 miles southeast of the proposed project site. Holocene age recent and subfossil specimens were found at 5.5.48 in younger Quaternary alluvium of the same sort as at the project site. Radiocarbon dating revealed the specimens to range between 10500 ± 100 and 9750 ± 50 years old. Subfossil taxa recovered from 5.5.48 include: *Gyraulus parvus*, *Fossaria blumnoides*, *Fossaria* cf. *humilis*, *Fossaria modicella*, *Fossaria* sp., *Physella concolor*, *Physella* sp., Succineidae, Teleostei, Serpentes, Anatidae, *Scapanus latimanus*, *Sylvilagus* sp., *Thomomys* sp., Arvicolinae, cf. *Microtus* sp., *Equus* sp., and *Bison* sp. Localities 5.5.49 – 5.5.54 occurred at the same site as 5.5.48, albeit at depths of 4.9 – 8.2 feet below the surface in Pleistocene age Quaternary older alluvium underlying the younger alluvium of 5.5.48. The fossiliferous older alluvium at these sites was a grey silt with an olive tinge. The following fossils were found at sites 5.5.49 – 5.5.54: recrystalized *Fossaria blumnoides* and Succineidae shells; *Megalonyx* sp.; cf. *Microtus* sp.; *Equus* sp.; *Bison* sp.; and unidentifiable bone fragments of small and large mammals. All mammalian fossils were permineralized bone and enamel.

The RPLI records several other paleontological sites located in the same Pleistocene-age older alluvium within a 5 mile radius of the project site. SBCM 5.1.12, located approximately 2 miles south-southwest of the project site, contained indeterminate large and small permineralized mammal bones found 6.5 – 8 ft. below the surface in late Pleistocene-age alluvium. The fossiliferous units were comprised of the same green-brown silty clay and clayey sand as SBCM 5.5.48 – 5.5.54. SBCM 5.1.9 and 5.1.10, located 4.5 miles west of the project site,

are located in red-brown channel sands 24 feet underground and an overlying greenish clay with high organic content respectively. Permineralized camelid bones were recovered from 5.1.9, and unidentified large mammal bone fragments from 5.1.10. Finally, SBCM 1.116.290, also located 4.5 miles west of the project site, occurs in reddish-brown older alluvial sand similar to that underlying the project site as described by Morton et al. (2002). Rodent teeth, gastropod tests, and permineralized mammal and chordate bones were collected from SBCM 1.116.290.

Other fossil localities recorded in the RPLI within 5 miles of the project site occur in older marine sedimentary units, namely the Pliocene Norco Sandstone (possibly an eastern extension of the Fernando Formation) and the Miocene Puente Formation. No report of surface exposure or subsurface excavation of these units could be found within a mile of the project site. The Sycamore Canyon Member of the Puente Formation underlay Pleistocene older alluvium at SBCM 1.116.241, located about 4 miles southwest of the project site in the Puente Hills.

This records search covers only the paleontological records of the San Bernardino County Museum. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Please do not hesitate to contact us with any further questions that you may have.

Sincerely,

Scott Kottkamp

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