Appendix F

Paleontological Resources Assessment

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Rincon Project No: #18-06819

Ms. Chau Vu
Director of Public Works
City of Bell Gardens, Public Works Department
7100 Garfield Avenue
Bell Gardens, California 90201

Subject: **Paleontological Resources Assessment for the John Anson Ford Park Infiltration Cistern Project, Los Angeles County, California**

Dear Ms. Vu:

The City of Bell Gardens (City) Public Works Department retained Rincon Consultants, Inc. to conduct a paleontological resource assessment for the John Anson Ford Park Infiltration Cistern Project (project) in Los Angeles County, California. The goals of this assessment are to identify the geologic units that may be impacted by development of the project, determine the paleontological sensitivity of geologic units in the project area, assess potential for impacts to paleontological resources from development of the project, and recommend mitigation measures to reduce impacts to scientifically significant paleontological resources, as necessary. Figures are included in Attachment A.

Project Location and Description

The project area is located at John Anson Ford Park, a 12.5-acre recreational park within a 2,295-acre watershed in the city of Bell Gardens, approximately 12 miles southeast of Los Angeles (Attachment A, Figure 1). Specifically, the project encompasses portions of Township 2 South, Range 12 West, Sections 28, 29, 32, and 33 on the South Gate, California United States Geological Survey (USGS) 7.5-minute topographic quadrangle. The concrete-lined Rio Hondo Channel, a tributary to the Los Angeles River, runs along the southeastern side of the project area.

The primary goal of the project is to address the most recent waste discharge requirements for Municipal Separate Sewer System (MS4) dischargers within the entire Rio Hondo watershed portion of the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA) set forth by Order No. R4-2012-0175. This watershed drains through the upstream storm drain system directly into the Rio Hondo Tributary via a double-reinforced concrete box storm drain. It is intended to address the highest priority pollutants – metals and bacteria – identified in the Watershed Management Program. The project would capture, retain, infiltrate, and replenish urban runoff by installing a stormwater capture and subsurface infiltration system at John Anson Ford Park.

The project would construct a diversion structure and subsurface infiltration basin below John Anson Ford Park to capture and recharge dry-weather and storm runoff from a catchment area of 2,295 acres. The project would install bottomless cisterns beneath the northern parking lot and adjacent baseball

field and soccer field. The subsurface infiltration basin would divert stormwater flows from an existing storm drain (BI 0539 – Line A), maintained by the Los Angeles County Flood Control District. A multitude of lateral lines collect runoff and discharge into Line A of BI 0539. A 3.25-foot weir within a double box culvert in the storm drain would direct flows through a 3.5-foot diameter pipe leading to a pretreatment device. If necessary, a lowered-floor inlet drop structure may be constructed within the stormwater channel at the diversion to mitigate upstream disruptions. The bottom of the diversion structure would be sloped towards the diversion pipe to prevent ponding in the system.

Regulatory Setting

Fossils are remains of ancient, commonly extinct organisms, and as such are nonrenewable resources. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is a valuable scientific and educational resource, and individual fossils are afforded protection under federal, state, and local environmental laws, where applicable.

This study has been completed in accordance with the requirements of a California Environmental Quality Act (CEQA)-Plus investigation, and includes compliance with federal and state regulations in the case a federal nexus is established during the course of project execution. A federal nexus may be established if federal funding is acquired and/or federal permitting is necessary. Compliance with both sets of regulations allows the lead agency to apply the results of this technical study should a federal nexus be established at a later time. State and local regulations applicable to potential paleontological resources in the project area are summarized below.

Federal Regulations

A variety of federal statutes address paleontological resources specifically. They are applicable to all projects occurring on federal lands, and may be applicable to specific projects if the project involves a federal agency license, permit, approval, or funding.

The National Environmental Policy Act (United States Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), as amended, directs federal agencies to “preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b) (4)).” The current interpretation of this language includes scientifically important paleontological resources among those resources potentially requiring preservation.

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). The PRPA directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. The PRPA prohibits the removal of paleontological resources from federal land without a permit, establishes penalties for violations, and establishes a program to increase public awareness about such resources. While specific to activity occurring on federal lands, some federal agencies may require adherence to the directives outlined in the PRPA for projects on non-federal lands if federal funding is involved, or the project includes federal oversight.

State Regulations

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states in part that a project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section V(c) of Appendix G of the State CEQA Guidelines, the Environmental Checklist Form, the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review as follows:

> *Fossils and fossiliferous deposits, here defined as 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 typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).*

The loss of paleontological resources that meet the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code 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.*

Here "public lands" means those 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 Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

Methods

Rincon evaluated the paleontological sensitivity of the geologic units that underlie the project area using the results of the paleontological locality search and review of existing information in the scientific literature concerning known fossils in those geologic units. Rincon submitted a request to the Los Angeles County Museum (LACM) for a list of known fossil localities from the project area and immediate

vicinity (i.e., localities recorded on the USGS South Gate, California 7.5-minute topographic quadrangle), and reviewed geologic maps and scientific literature.

Rincon assigned a paleontological sensitivity to the geologic units in the project area. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. The SVP has defined paleontological sensitivity and developed a system for assessing paleontological sensitivity, as discussed below.

Paleontological Resource Potential

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 which 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 radiocarbon dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered highly significant.

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines, which are given here verbatim:

I. **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

III. **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Existing Conditions

Regional Geologic Setting

The project area is in the "petroliferous" Los Angeles Basin, a northwest-trending lowland plain at the northern end of the Peninsular Ranges Province, one of eleven major geomorphic provinces in California (California Geological Survey 2002; Yerkes and Campbell 2005). A geomorphic province is a region of unique topography and geology that is readily distinguished from other regions based on its landforms and diastrophic history (Norris and Webb 1990). The Los Angeles Basin is approximately 60 miles long and 35 miles wide and is defined by Yerkes et al. (1965) as the region bounded by the northern foothills of the Santa Monica Mountains to the north, the San Jose Hills and the Chino fault on the east, and the Santa Ana Mountains and San Joaquin Hills in the southeast. The Los Angeles Basin is underlain by a structural depression that was the site of extensive accumulation of interstratified fluvial, alluvial, floodplain, shallow marine and deep shelf deposits on underlying Mesozoic metamorphic and granitic plutonic basement rocks. Sediment accumulation and subsidence has occurred there since the Late Cretaceous and has reached a maximum thickness of more than 20,000 feet (McCulloh and Beyer 2004; Norris and Webb 1990; Yerkes et al. 1965). During that time, rise and fall of relative sea level, tectonic uplift and subsidence, and Pleistocene glaciation resulted in marine and terrestrial sedimentary deposition throughout the Los Angeles Basin (Beyer 1995; McCulloh and Beyer 2004). The Los Angeles Basin contains several major fault zones, including the Newport-Inglewood fault zone and the Los Alamitos fault in the vicinity of the project area (Saucedo et al. 2016; Yerkes et al. 1965).

The geology of the project area is mapped by Saucedo et al. (2016) and is entirely underlain by Quaternary young alluvium, unit 2 (Qya_2). The Quaternary young alluvium was deposited during the Holocene to latest Pleistocene and is composed of slightly to poorly consolidated and poorly sorted floodplain deposits composed of clay, silt, and sand (Attachment A, Figure 2). Intact Holocene alluvial deposits in the project area are too young to preserve paleontological resources; however, at moderate depth, the Holocene sediments may grade into older deposits of late Pleistocene age that could preserve fossil remains. Older Quaternary (Pleistocene) alluvial deposits in the Los Angeles Basin are typically composed of weakly to moderately consolidated, moderately bedded, pebble-cobble gravel and conglomerate, pebbly to conglomeratic sand and sandstone, and silt and siltstone. Pleistocene sedimentary deposits have a well-documented record of abundant and diverse vertebrate fauna throughout California, especially within the Los Angeles Basin. Fossil specimens of whale, sea lion, horse, ground sloth, bison, camel, mammoth, dog, pocket gopher, turtle, ray, bony fish, shark, and bird have been reported (Agenbroad 2003; Bell et al. 2004; Jefferson 1985, 1989, 1991; Maguire and Holroyd 2016; Merriam 1911; Reynolds et al. 1991; Savage 1951; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2011; Wilkerson et al. 2011; Winters 1954; University of California Berkeley Museum of Paleontology 2019).

The depth at which the Pleistocene strata underlies the surficial Holocene alluvium in the project area is unknown but may as shallow as 11 feet below ground surface (bgs), based on depth of recovery for nearby vertebrate fossil localities from older Pleistocene deposits (McLeod 2019).

Museum Fossil Locality Records

A search of the paleontological locality records at the LACM resulted in no previously recorded fossil localities in the project area; however, several vertebrate localities have been recorded nearby in Pleistocene alluvial deposits (which may underlie the project area at moderate depth below the younger Holocene surficial deposits). The closest vertebrate fossil localities, LACM 7701-7702, are located just northeast of the project area near the intersection of Atlantic Avenue and the Long Beach Freeway (Interstate 710) north of the Los Angeles River. This late Pleistocene locality yielded several fossil specimens of threespine stickleback (*Gasterosteus aculeatus*), salamander (*Batrachoseps*), lizard (Lacertilia), snake (Colubridae), rabbit (*Sylvilagus*), pocket mouse (*Microtus*), harvest mouse (*Reithrodontomys*), and pocket gopher (*Thomomys*) at depths ranging from 11 to 34 feet bgs (McLeod 2019).

Results

Paleontological Resource Potential of the Project Area

In accordance with SVP (2010) guidelines, Rincon determined the paleontological sensitivity of the project area based on a literature review and museum locality search. The results of the study indicate that the geologic units underlying the project area have a paleontological sensitivity ranging from low to high. Quaternary young alluvium (Qya_2) mapped at the surface of the project area has been assigned a low paleontological sensitivity because Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. The Holocene sediments may be underlain by Pleistocene alluvial sediments at a moderate depth of approximately 11 feet bgs. The Pleistocene alluvium has been assigned a high paleontological resource sensitivity based on the results of the LACM record search (McLeod 2019). Although not exposed at the surface in the project area, it is necessary to account for the buried Pleistocene alluvial deposits due to their high paleontological resource potential. Refer to Table 1 for paleontological sensitivity in the project area.

Table 1. Paleontological Sensitivity of the Geologic Units in the Project Area.

Geologic Unit[1]	Unit Symbol	Typical Fossils[2]	Paleontological Sensitivity[3]	Recommended Monitoring
Quaternary young alluvium unit 2	Qya_2	None	Low at surface	**At or below 10 feet** (depth where unit may overlie older sensitive deposits)
Older Quaternary Alluvium *(not mapped at the surface of the project area, but may be present in the subsurface)*	Qoa	Nonmarine and marine mammal	High	**Yes** (may be present at 11 feet or more beneath Holocene alluvium)

[1] Saucedo et al. 2016
[2] McLeod 2019
[3] SVP 2010

Impact Analysis

Ground-disturbing activities in previously undisturbed portions of the project underlain by geologic units with a high paleontological sensitivity (i.e., older Quaternary alluvial) may result in significant impacts to paleontological resources under Appendix G of State CEQA Guidelines. Impacts would be significant if construction activities result in the destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. The activities may include grading, excavation, or other activities that disturb substantial quantities of the surface or subsurface geologic units with a high paleontological sensitivity. Disturbance to intact Pleistocene sediments from well drilling would be limited due the small diameter of the auger; therefore, impacts to paleontological resources due to well drilling would be negligible.

As currently proposed, project ground disturbance will reach a maximum depth of 30 feet during excavation for the cisterns in the northern parking lot and adjacent baseball field and soccer field located at 8000 Park Lane (Terracon Consultants 2018). Based on the findings of the LACM, Holocene alluvium overlies the paleontologically-sensitive Pleistocene alluvium to a depth of approximately 11 feet bgs; therefore, impacts to paleontological resources are not expected above 11 feet bgs (McLeod 2019). Based on these currently proposed depths of disturbance for the project, paleontological monitoring would only be recommended for excavations at or below 11 feet bgs.

Recommendations

The following recommended measures would address the potentially significant impacts related to discovery of paleontological resources during project ground disturbance. These recommendations were developed in accordance with SVP (2010) standard guidelines and would apply to all phases of project construction to ensure that any significant fossils present on-site are preserved. Implementation of these mitigation measures would reduce potential impacts to paleontological resources to less than significant level under CEQA.

- **Paleontological Monitoring.** Prior to the commencement of ground-disturbing activities, a qualified professional paleontologist shall be retained. The Qualified Paleontologist (Principal Paleontologist) shall have at least a Master's Degree or equivalent work experience in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques.

  The surface and shallow subsurface of the project area is entirely underlain by geologic deposits with low paleontological sensitivity (i.e., Quaternary young alluvium, unit 2). The young Holocene alluvial deposits transition to older Pleistocene deposits with high paleontological sensitivity (i.e., older Quaternary alluvial) at approximately 11 feet bgs, where they may be impacted by project ground disturbance. As a result, monitoring is recommended for the specific project activities described below:

  - Full-time monitoring shall be conducted during excavation for the cisterns in the northern parking lot, baseball field, soccer field, and any other areas requiring ground disturbance at or below below 11feet bgs in previously undisturbed sediments.
  - If the Qualified Paleontologist determines that full-time monitoring is no longer warranted, they may recommend reducing monitoring or ceasing entirely. Monitoring would be reinstated if any new ground disturbances are required and reduction or suspension would need to be reconsidered by the Qualified Paleontologist.

- Monitoring shall be supervised by the Qualified Paleontologist and shall be conducted by a qualified paleontological monitor, who is defined as an individual who meets the minimum qualifications per standards set forth by the SVP (2010), which includes a B.S. or B.A. degree in geology or paleontology with one year of monitoring experience and knowledge of collection and salvage of paleontological resources.

- **Fossil Discovery, Preparation, and Curation.** In the event that a paleontological resource is discovered, the monitor shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammals) require more extensive excavation and longer salvage periods. In this case, the paleontologist should have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.

  Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition and curated in a scientific institution with a permanent paleontological collection (such as the LACM) along with all pertinent field notes, photos, data, and maps. The cost of curation is assessed by the repository and is the responsibility of the project owner.

- **Final Paleontological Mitigation Report.** At the conclusion of laboratory work and museum curation, a final report shall be prepared describing the results of the paleontological mitigation monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to the City of Bell Gardens Public Works Department. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.

If you have any questions regarding this Paleontological Resource Assessment, please contact us.

Sincerely,

Rincon Consultants, Inc.

Jorge Mendieta, BA
Associate Paleontologist

Jessica DeBusk, BS, MBA
Principal Investigator/Program Manager

Jennifer Haddow, PhD
Principal, Environmental Scientist

Attachments

Attachment A Figures

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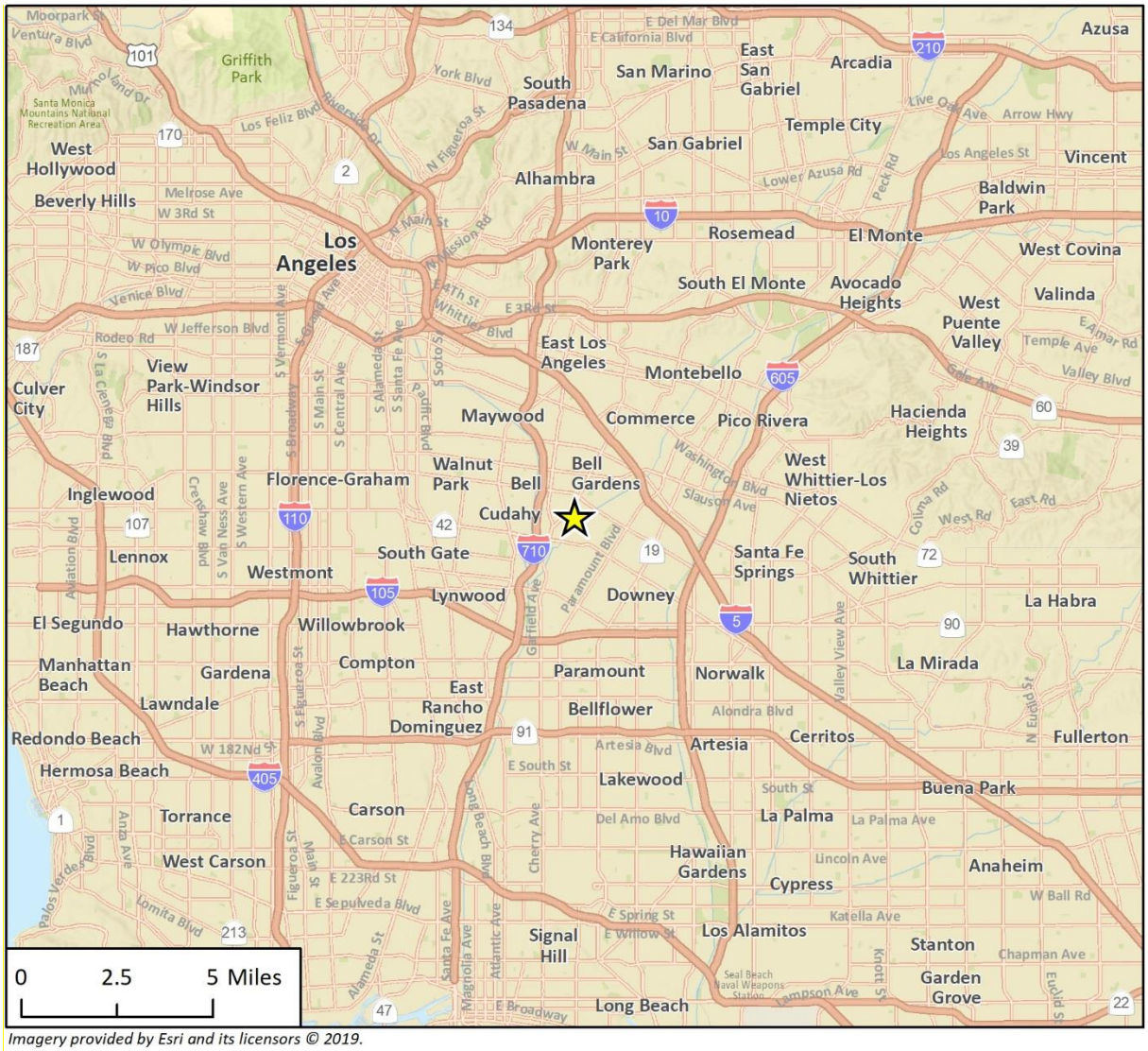
Attachment A

Figures

Figure 1 Project Vicinity Map



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Project Location

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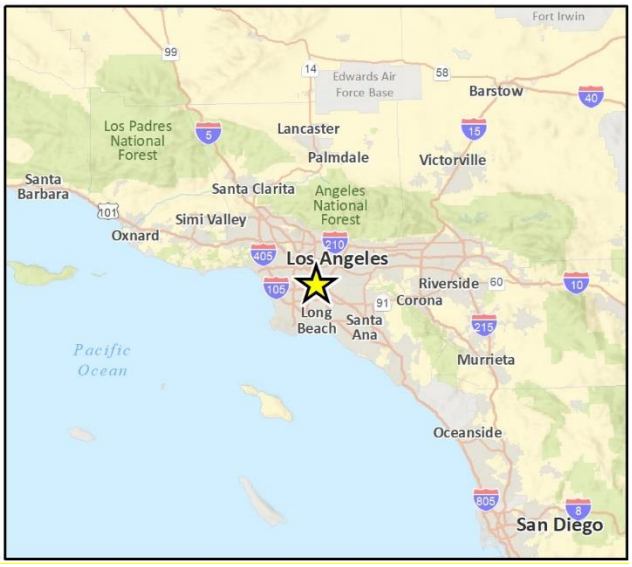
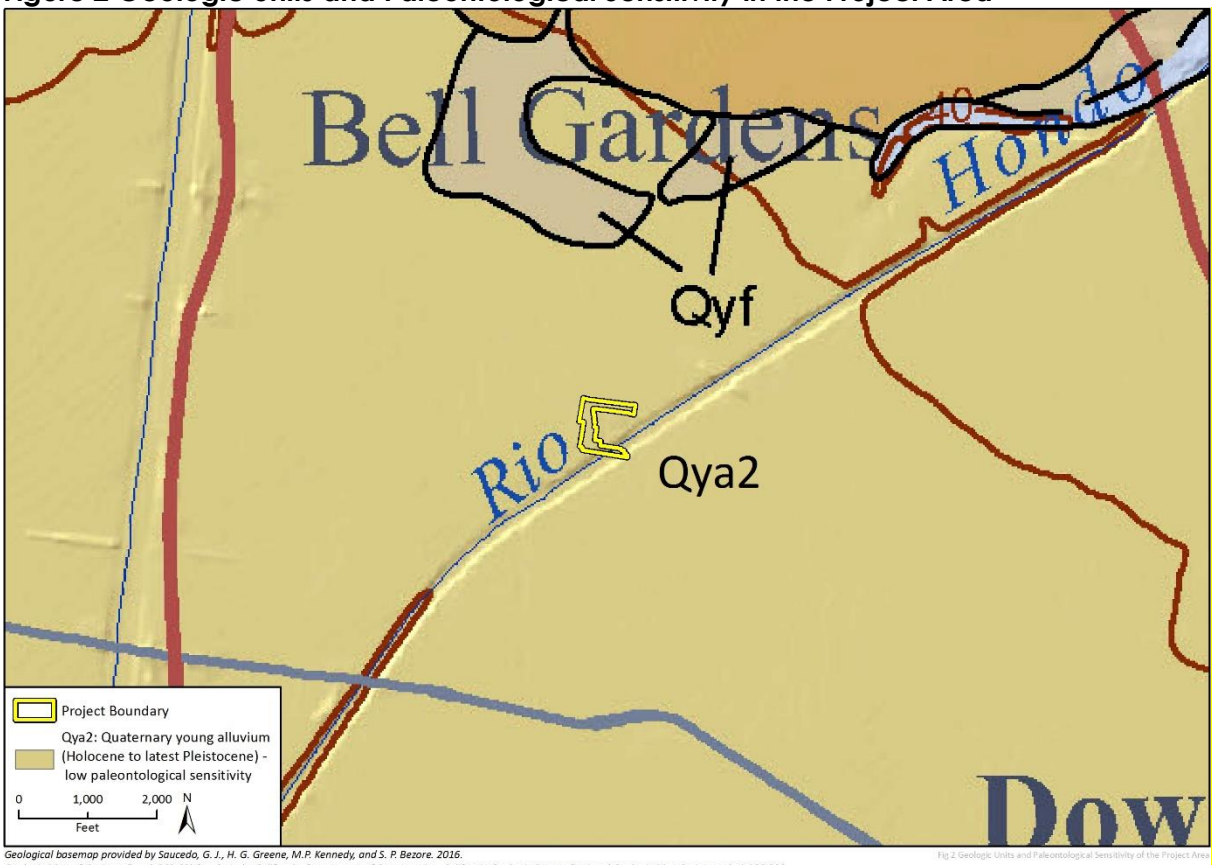


Figure 2 Geologic Units and Paleontological Sensitivity in the Project Area



Geological basemap provided by Saucedo, G. J., H. G. Greene, M.P. Kennedy, and S. P. Bezore. 2016.
Geologic Map of the Long Beach 30'x60' Quadrangle, California. Department of Conservation, California Geologic Survey, Regional Geologic Map Series, scale 1:100,000.