

APPENDIX C

PALEONTOLOGICAL RECORD SEARCH



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November 2, 2018

Dr. Samuel McLeod
Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

Subject: Paleontological Locality Search for the Mission Foothills Residential Project, Mission Viejo, Orange County, California

Dear Dr. McLeod:

LSA Associates, Inc. (LSA) is requesting the Natural History Museum of Los Angeles County conduct a fossil locality search for the Mission Foothills Residential Project (project) in Mission Viejo, Orange County, California. The project seeks to demolish six of the existing commercial buildings within the project area and construct 105 new residential homes, 339 parking spaces, and community facilities. The project area is located at 28715-28719 and 28813-28815 Los Alisos Boulevard, and is bounded by State Route 241 to the north, a hotel development to the east, Los Alisos Boulevard to the south, and a residential apartment complex to the west. The attached figure (Fossil Locality Search) depicts the project area on the *El Toro, California* 7.5-minute United States Geological Survey (USGS) topographic map in Township 6 South, Range 7 West, and Section 17, San Bernardino Baseline and Meridian (USGS, 1982).

LSA is interested in knowing the location of fossil localities within an approximately 1-mile radius around the project area. In addition, LSA would like to know what specimens have been found from those localities. If there are no known fossils localities within a 1-mile radius, please provide the location of the closest localities within similar sediments to those found within the project area, as well as the fossils recovered.

Please send an invoice to my attention, including a reference to LSA project number **SHO1704.02**. If possible, LSA is requesting receipt of the results by **November 23, 2018**. Please send the results via e-mail to kelly.vreeland@lsa.net.

Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Kelly Vreeland, M.Sc.
Paleontologist

Attachment: Fossil Locality Search

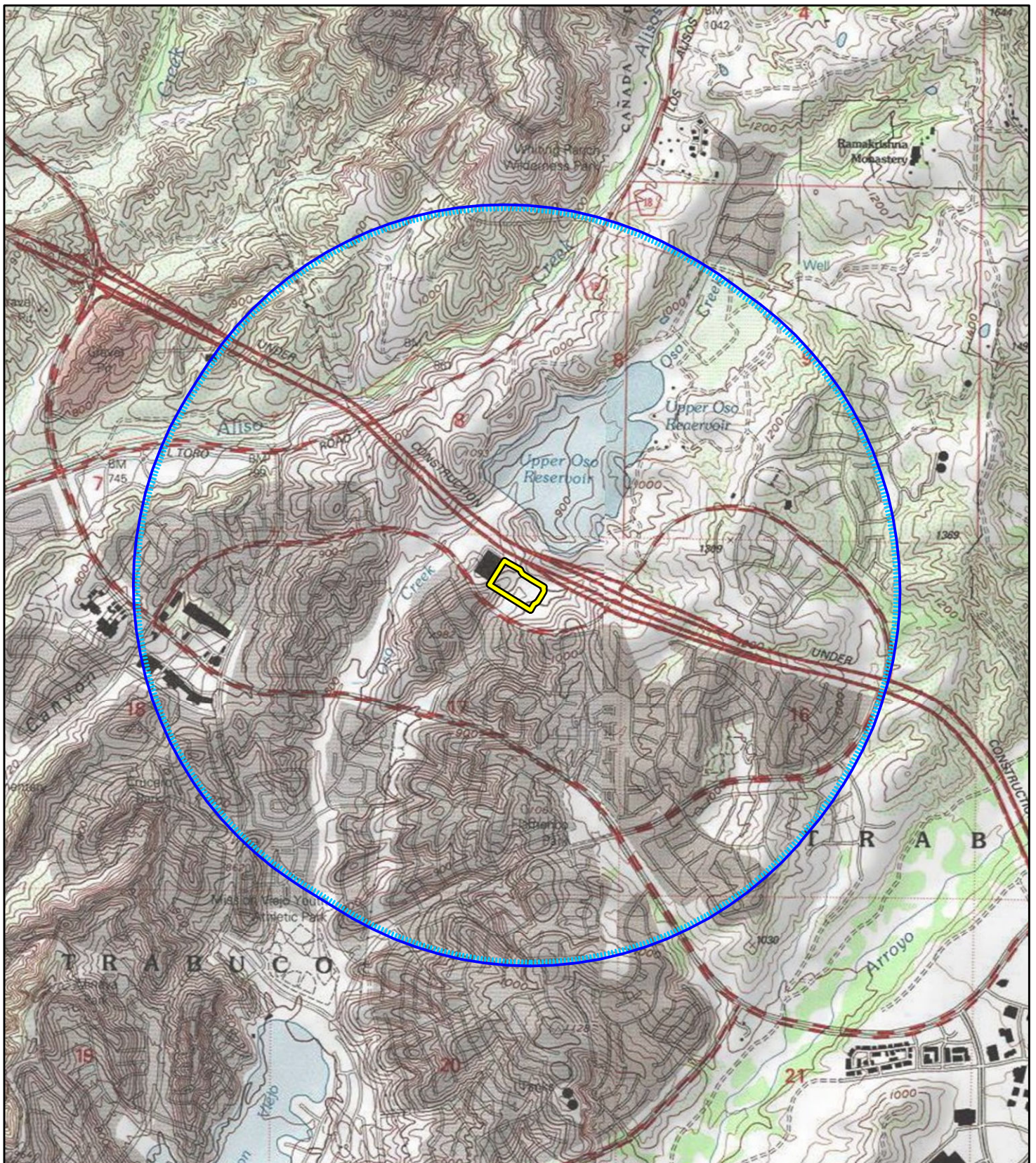


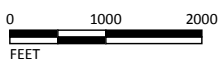


FIGURE 1

LSA

LEGEND

-  Project Location
-  1-mile Buffer of Project Location



SOURCE: USGS 7.5' Quad - El Toro (1982) and Santiago Peak (1988), CA
 I:\SHO1704.02\GIS\MXD\FossilLocalitySearch.mxd (10/22/2018)

Mission Foothills
 Residential Project
 Fossil Locality Search

Natural History Museum
of Los Angeles County
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Los Angeles, CA 90007

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Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

16 November 2018

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, California 92614

Attn: Kelly Vreeland, Paleontologist

re: Paleontological Resources Records Check for the proposed Mission Foothills Residential Project, LSA Project # SHO1704.02, in the City of Mission Viejo, Orange County, project area

Dear Kelly:

I have thoroughly searched our paleontology collection records for the locality and specimen data for the proposed Mission Foothills Residential Project, LSA Project # SHO1704.02, in the City of Mission Viejo, Orange County, project area as outlined on the portion of the El Toro USGS topographic quadrangle map that you sent to me via e-mail on 2 November 2018. We do not have any vertebrate fossil localities that lie directly within the proposed project site boundaries, but we do have localities nearby from the same sedimentary units that occur in the proposed project area.

In the less elevated terrain in the very northern and southern portions of the proposed project area the surficial deposits consist of younger Quaternary alluvium in the two drainages. These deposits typically do not contain significant vertebrate fossils in the uppermost layers, but older sedimentary deposits occurring at relatively shallow depth may well contain significant fossil vertebrate remains. Otherwise, more or less the eastern portion of the proposed project area has exposures of the marine early to middle Miocene Topanga Formation, and the western portion of the proposed project area has exposures of the marine middle to late Miocene Monterey Formation.

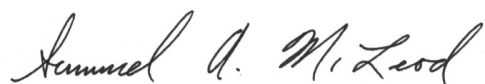
Our closest Topanga Formation vertebrate fossil localities, LACM 4464, 4545-4552, 4556-4558, 4961, and 5494-5496, occur around Upper Oso Reservoir immediately northeast of the proposed project area. These localities produced a composite fossil fauna of marine vertebrates including smoothhound shark, *Mustelus*, horn shark, *Heterodontus*, bonito shark, *Isurus hastalis*, eagle ray, Myliobatidae, guitarfish, *Rhinobatos*, eels, Anguilliformes, surgeonfish, *Prionurus*, leatherback turtle, Dermochelyidae, duck, Anatinae, auklet, *Alcodes ulnulus*, booby, Sulidae, albatross, *Diomedea milleri*, shearwater, *Puffinus priscus*, sea lions, *Allodesmus*, *Neotherium*, *Pelagiarctos*, and *Eotaria citrica*, primitive baleen whale, Cetotheriidae, delphinoid, *Lamprolithax*, primitive dolphin, Kentriodontidae, and four-legged marine mammal, *Desmostylus*. H. Howard and L.G. Barnes (1987. Middle Miocene Marine Birds from the Foothills of the Santa Ana Mountains, Orange County, California. LACM Contributions in Science, 383:1-9) published in the scientific literature on specimens of the duck, Anatinae, and booby, Sulidae, from these localities and also figured specimens of the Auklet, *Alcodes ulnulus*, albatross, *Diomedea milleri*, and shearwater, *Puffinus priscus*. J. Vélez-Juarbe (2017. *Eotaria citrica*, sp. nov., a new stem otariid from the "Topanga" formation of Southern California. PeerJ, 5(3022):1-25) published on the sea lion *Pelagiarctos* from these localities and in the same publication designated the holotype (the name bearing specimen for a species new to science) of the sea lion *Eotaria citrica* from locality LACM 4546. J. Vélez-Juarbe and F.M. Salinas-Márquez (2018. A dwarf walrus from the Miocene of Baja California Sur, Mexico. Royal Society Open Science, 5(8):1-10) subsequently published on that specimen of *Eotaria citrica*.

Our closest Monterey Formation locality, LACM 4947, occurs immediately northeast of the proposed project area immediately south of the Upper Oso Reservoir. An as yet undetermined fossil whale skeleton, Cetacea, was recovered from locality LACM 4947.

Shallow excavations in the younger Quaternary Alluvium in the less elevated terrain of the proposed project area probably will not uncover any significant vertebrate fossils. Deeper excavations there that extend down into older sedimentary deposits, and any excavations in the Topanga Formation or the Monterey Formation exposed elsewhere in the proposed project area, however, may well encounter significant fossil vertebrate remains. Any substantial excavations in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any specimens without impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. 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.

Sincerely,



Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice