
Memorandum

To: Ed Dolan, Caltrans Associate Environmental Planner
From: Kelly Dunlap, Senior Environmental Project Manager
CC: Greg Hefter, AECOM; Dennis Mak, OCTA
Date: June 30, 2014
Subject: Paleontological Technical Memorandum for I-5 HOV Improvements EA 12-0C8900

Project Description

The California Department of Transportation (Caltrans) proposes to improve Interstate 5 (I-5) between State Route (SR) 55 and SR-57, within the city of Santa Ana in Orange County. The I-5 (SR-55 to SR-57) HOV Lanes Improvement Project (project) proposes the addition of one high-occupancy-vehicle (HOV) lane in each direction on a 2.9-mile stretch of I-5 through the urban core of Orange County, providing additional HOV capacity and reducing freeway congestion. In addition to the HOV lane improvements, the project proposes the removal of the southbound off-ramp and northbound on-ramp HOV structure at Main Street (referred to as the "Main Street HOV drop structure"). All of the proposed improvements would be constructed within the existing Caltrans and/or local road right-of-way limits.

Affected Environment/Paleontological Sensitivity

The ground upon which the project is located slopes gently to the northwest. Elevations along the project corridor range from approximately 110 feet at the southern end to approximately 140 feet at the northern end. The project corridor traverses the ancient flood plains and alluvial fans of Santiago Creek and the Santa Ana River. The major drainage in the area is the Santa Ana River which is located at the northern end of the project corridor and flows southwesterly toward the Pacific Ocean.

The site area is at the east-central portion of the Los Angeles physiographic basin, a large, relatively flat, low-lying, coastal plain surrounded by mountains on the north, east, and southeast. The western margin of the Los Angeles Basin is bordered by the sea and the Palos Verdes Hills. The eastern margin is bordered by the Puente Hills and Santa Ana Mountains.

Geologic formations directly underlying the site are comprised primarily of river flood plain and alluvial fan alluvium. Materials within both these units are primarily sands with mixtures of silts, clays, and gravels. Regional studies (e.g. Morton, 2004; Morton and Miller, 1981) indicate that the site area is underlain by Quaternary sediments overlying older Quaternary and Tertiary sediments and sedimentary rocks. The surficial deposits are primarily Holocene and Pleistocene alluvial fan deposits. The geologic structure at the site is characterized by flat-lying Quaternary sediments overlying gently folded Tertiary sedimentary rocks.

Table 1 shows the results of the literature and map reviews conducted for paleontology for the proposed project as well as the potential for the geologic formation to yield important paleontological resources. Figure 1 shows the locations of the geologic formations within the proposed project area.

Table 1
Geologic Formations/Paleontological Sensitivity in Project Area

Geologic Formation	USGS Code	Paleontological Sensitivity
Young alluvial fans	Qyfa and Qyfsa	Low
Old alluvial fan deposits	Qwa	Potentially High

Paleontological Environmental Consequences

As shown on Figure 1, the vast majority of the proposed project is within areas of low paleontological sensitivity. In addition, the proposed project is within areas previously disturbed by the construction activities associated with the building of I-5 and associated local roadways. For example on I-5 at Main Street, the existing foundation of the Main Street HOV drop ramp varies from approximately 6 feet below existing ground to about 12 feet below existing ground. The foundation includes two components – the footing which is a rectangular block of concrete 6 to 12 feet below ground and driven piles that extend from the footing into the ground. The driven piles extend to approximately 26 feet below the foundations. The piles are 12” concrete squares and there are 12 piles per column. At the abutment near the center of the freeway there are approximately 50 driven piles below the foundation. The removal of the Main Street HOV drop ramp is not anticipated to require excavation beyond those depths.

Similarly, the retaining walls near the 17th Street overcrossing will require excavation of approximately 16 feet below the existing slope on the NB side and approximately 13 feet on the SB side. Again, the excavation would be in an area that has been previously disturbed and is of low paleontological sensitivity.

The only area of potential high paleontological sensitivity (designated as Qwa, old alluvial fan deposits) is at Santiago Creek. No excavation is proposed within this area. The addition of the HOV lanes would take place on the existing bridge structure above the creek.

Therefore, the proposed project is not anticipated to have adverse effects to sensitive paleontological resources.

Avoidance and Minimization Measures

Although no adverse effects to sensitive paleontological resources are anticipated, the following measure is included in the proposed project in case unanticipated resources are discovered during project construction:

- If paleontological resources are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified paleontologist can assess the significance of the find.

References

Morton, D.M., 2004, Preliminary digital geological map of the 30' x 60' Santa Ana quadrangle, southern California: U.S. Geological Survey, Open-File Report 99-172.

Morton, P.K. and Miller, R.V., 1981, Geologic map of Orange County, California showing mines and mineral deposits: California Division of Mines and Geology, Bulletin 204.

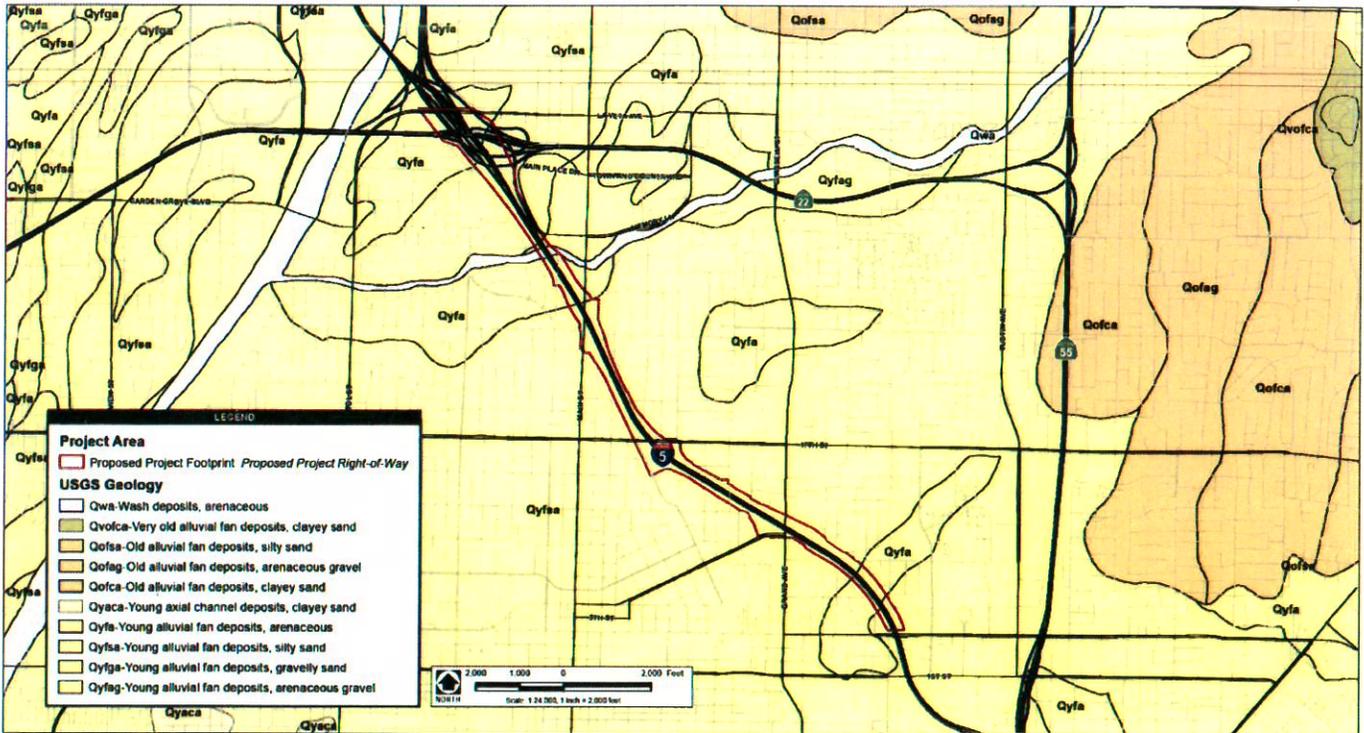


Figure 1: Geologic Formations within Project Area

I-5 HOV Improvements Projects EA 12-0C8900, PM 31.3-34.2

Sinopoli, Cheryl L@DOT

From: Sinopoli, Cheryl L@DOT
Sent: Thursday, July 03, 2014 12:10 PM
To: Dolan, Edward C@DOT
Subject: EA 0C8900 (I-5 HOV) Paleo Tech Memo

Hi Ed,

I've reviewed the Paleontological Technical Memorandum for the I-5 HOV Improvement Project (EA 0C8900) dated June 30, 2014, and am fine with the findings. Paleo standard specs apply.

Cheryl
