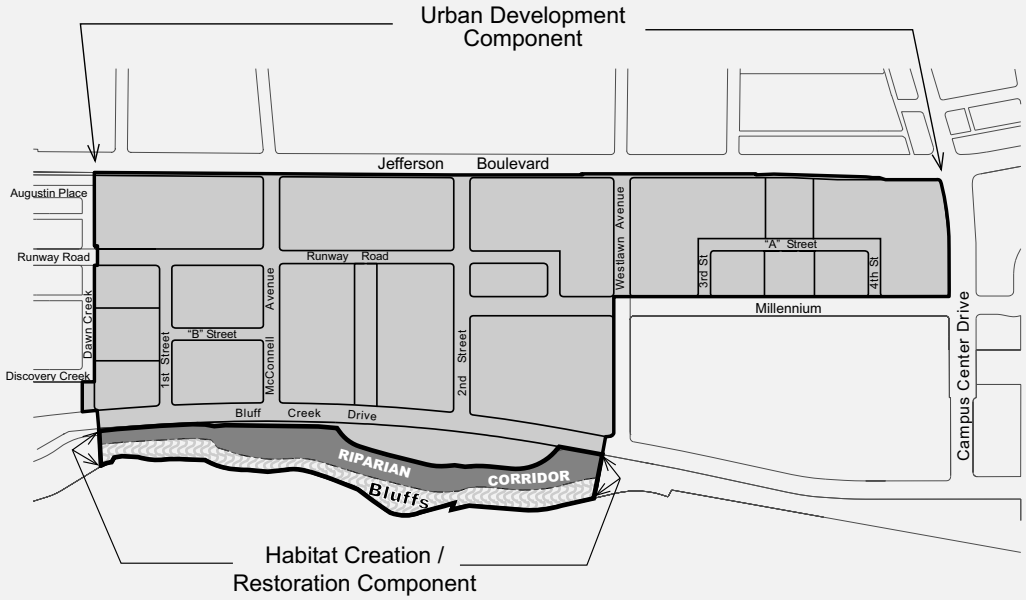
Draft Environmental Impact Report (DEIR)
Village at Playa Vista



Volume III
Technical Appendix D

D. Earth

City of Los Angeles/EIR No. ENV-2002-6129-EIR

2003

State Clearinghouse No. 2002111065

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ENVIRONMENTAL IMPACT REPORT (EIR)

VILLAGE AT PLAYA VISTA

TECHNICAL APPENDICES

VOLUME III

APPENDIX D:

EARTH TECHNICAL APPENDIX

City of Los Angeles
EIR No. ENV-2002-6129-EIR

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EARTH TECHNICAL APPENDIX

APPENDIX D-1:
DAVIS AND NAMSON CONSULTING GEOLOGISTS, TECHNICAL ASSESSMENT RE: SEPTEMBER 16, 2000, MAGNITUDE 3.3 EARTHQUAKE

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April 25, 2001

Mr. David Nelson
Playa Capital Company
12555 West Jefferson Boulevard
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Los Angeles, CA 90066

RE: September 16, 2000 earthquake (M_L=3.2) and the postulated Charnock fault of Poland, et al. (1959)

Dear Mr. Nelson,

At the request of Playa Vista, I have investigated the possible relationship between the September 16, 2000 earthquake and the postulated Charnock fault of Poland, et al. (1959). The earthquake occurred at a depth of 7.6 miles (12.2 km) and had a local magnitude (M_L) of 3.2 (Figure 1). Vertical projection of the earthquake focus to the earth's surface intersects the surface just northeast of the Playa Vista project site and about 1.0 mile west of the postulated Charnock fault. However, vertical projection of this type of earthquake to the surface and relating it to a shallow structure is incorrect. As discussed below, I could find no scientific basis for associating the earthquake and the postulated Charnock fault.

The September 16, 2000 earthquake was a small seismic event that occurred deep below the surface. Dozens to hundreds of earthquakes in this magnitude range occur throughout southern California each year. Except for aftershocks of major earthquakes, few of these smaller seismic events can be associated with a known fault. The September 16, 2000 earthquake was well recorded and a reliable focal mechanism was generated by Caltech for the earthquake (Figure 1). A focal mechanism is a common type of seismological

analysis and shows the geometry of the fault plane and the movement direction during an earthquake. The focal mechanism for the September 16, 2000 event shows a 45 degree-dipping thrust fault with an east-west striking fault plane. The focal mechanism analysis does not determine whether the fault surface is north-or south-dipping. A north-south cross section through the earthquake focus shows the focal plane solution and the two possible fault orientations (Figure 2). Projection of the faults upward along the 45 degree-dipping planes indicate that the south- dipping fault could project to the surface on the south flank of the Santa Monica Mountains, and the north-dipping fault plane could project to the near surface at Hermosa Beach. In either case, because of the fault dip, the projected fault planes could only intersect the shallow subsurface miles from the Playa Vista site. It should be noted that the earthquake occurred deep in the crystalline basement (Catalina Schist) under the Los Angeles Basin and most likely along a minor fault that does not propagate to shallow levels.

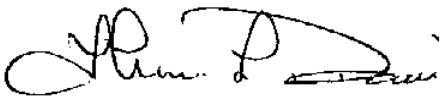
The postulated Charnock fault is a north-striking, very shallow structure interpreted to explain a variation in the groundwater table (Poland, et al., 1959). If the Charnock fault exists it should have strike-slip type movement given its north-south strike and the regional tectonic setting. Both 2D and 3D seismic reflection surveys completed at the Playa Vista site and a Chevron seismic line located just south of the site show no evidence for the postulated Charnock fault under the site or to the south (Davis and Namson, 2000). If the Charnock fault exists it must be north of the Playa Vista site.

There are several reasons why the September 16, 2000 earthquake could not have occurred along the postulated Charnock fault. First, the focal mechanism shows that the earthquake occurred along an east-west striking fault, whereas the Charnock is a north-south striking fault. Second, the earthquake was a thrust type earthquake, whereas the Charnock, if it exists, is most likely a strike-slip fault based on its strike similarity to nearby strike-slip faults such as the Newport Inglewood fault. Third, the earthquake focus occurred 7.6 miles below the Playa Vista site and projection of the possible fault plane solutions upward places the surface projections of the faults 7-8 miles to the south or north of the Playa Vista site (Figure 2).

It has long been common practice to analyze earthquake-generating faults in their 3-dimensional context, as we have done above. Simple projection of a hypocenter miles upward to the surface is only warranted if the focal mechanism allows it. And even then is acceptable only if there is geologic evidence for such a fault. Deep, small earthquakes, such as the September 16, 2000 event are numerous and common in the Los Angeles region. Seldom are they related to slip on large, dangerous faults. Usually they represent merely auxiliary cracking and minor adjustments along very small faults within the blocks between the major faults. In this particular case, this small earthquake was caused by a small thrust fault deep within the crystalline basement miles beneath the surface. We have no reason to believe that the causative fault plane is more than a few tens of meters in dimension and that the slippage was any more than a few centimeters.

Dr. Kerry Sieh, California Institute of Technology, and Sue Perry and Tania Gonzales of Earth Consultants International provided earthquake data and review for this letter.

Respectfully submitted by Davis and Namson Consulting Geologists



Thomas L. Davis PhD
Geologist/Partner
Registered Geologist 4171

Attached: Figures 1 & 2

References

Davis and Namson, 2000, An evaluation of the Subsurface Structure of the Playa Vista Project Site and Adjacent Area, November 10, 2000, prepared for Playa Capital Company by Davis and Namson Consulting Geologists, San Fernando, California, 47 p.

Poland, J.F., Garrett, A.A., and Sinnott, A., 1959, Geology, Hydrology, and Chemical Character of the Ground Waters in the Torrance-Santa Monica Area, California: U.S. Geological Survey Water Supply Paper 1461, 425 p.

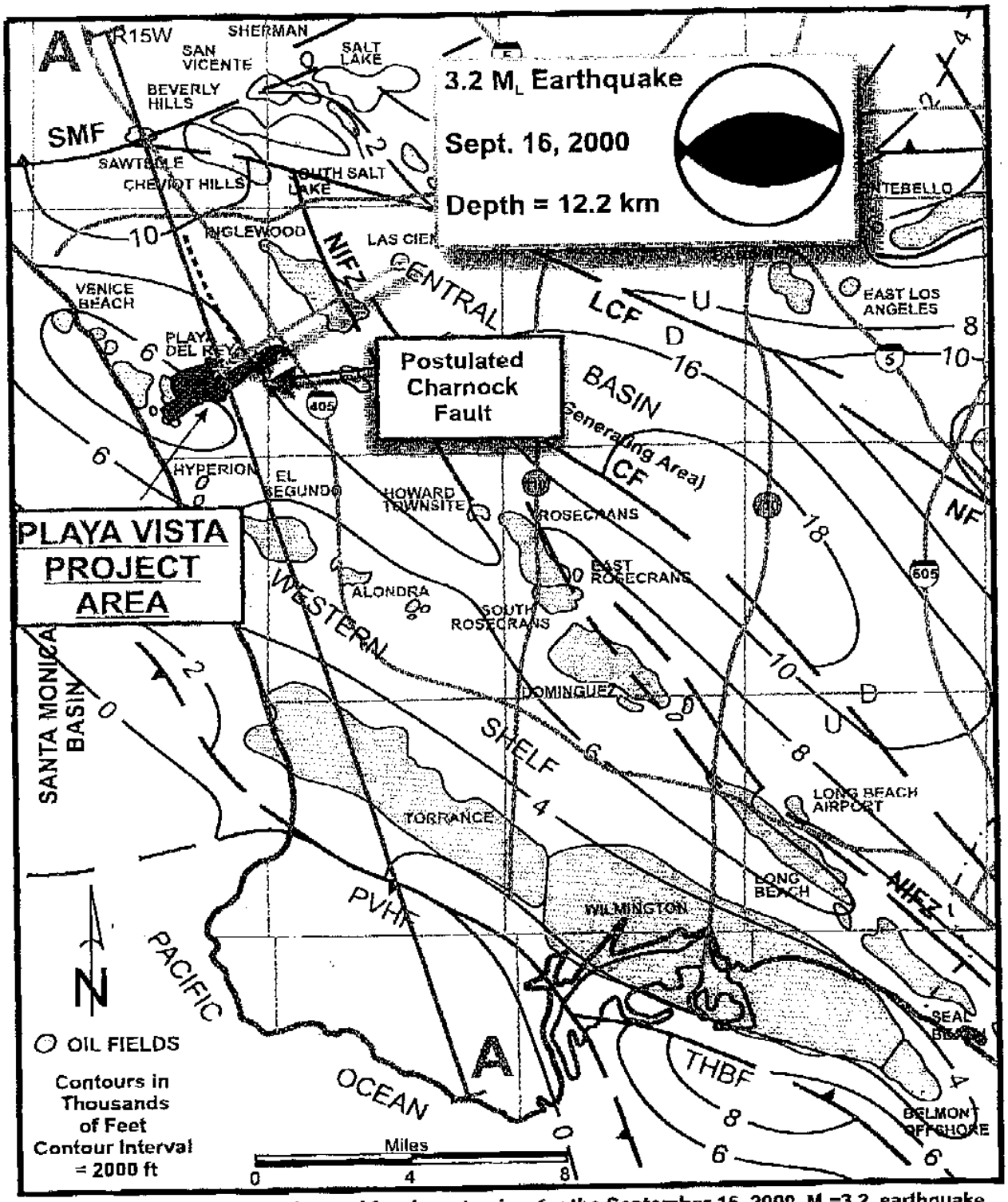


Figure 1. Map showing location and focal mechanism for the September 16, 2000, M_L=3.2, earthquake. Earthquake occurred at 12.2 km (7.6 miles) depth. Focal mechanism shows a 45° dipping thrust event with an east-west striking fault plane. The depth and geometry of the focal mechanism are inconsistent with the earthquake occurring along the postulated Charnock Fault (Poland et al., 1959). Base map is a structure contour and oil field map of the Los Angeles Basin (modified from DOG, 1974; Wright, 1991, Davis et al., 1989,1996). Contours on base of Repetto Formation (approx. 4.0 Ma) or Top of Puente Formation (Monterey Fm equivalent). CF = Compton fault, LCF = Las Cienegas fault, NF = Norwalk fault, NIFZ =Newport-Inglewood fault zone, PVHF = Palos Verdes Hills fault, SMF = Santa Monica fault, THBF = Thums-Huntington Beach fault

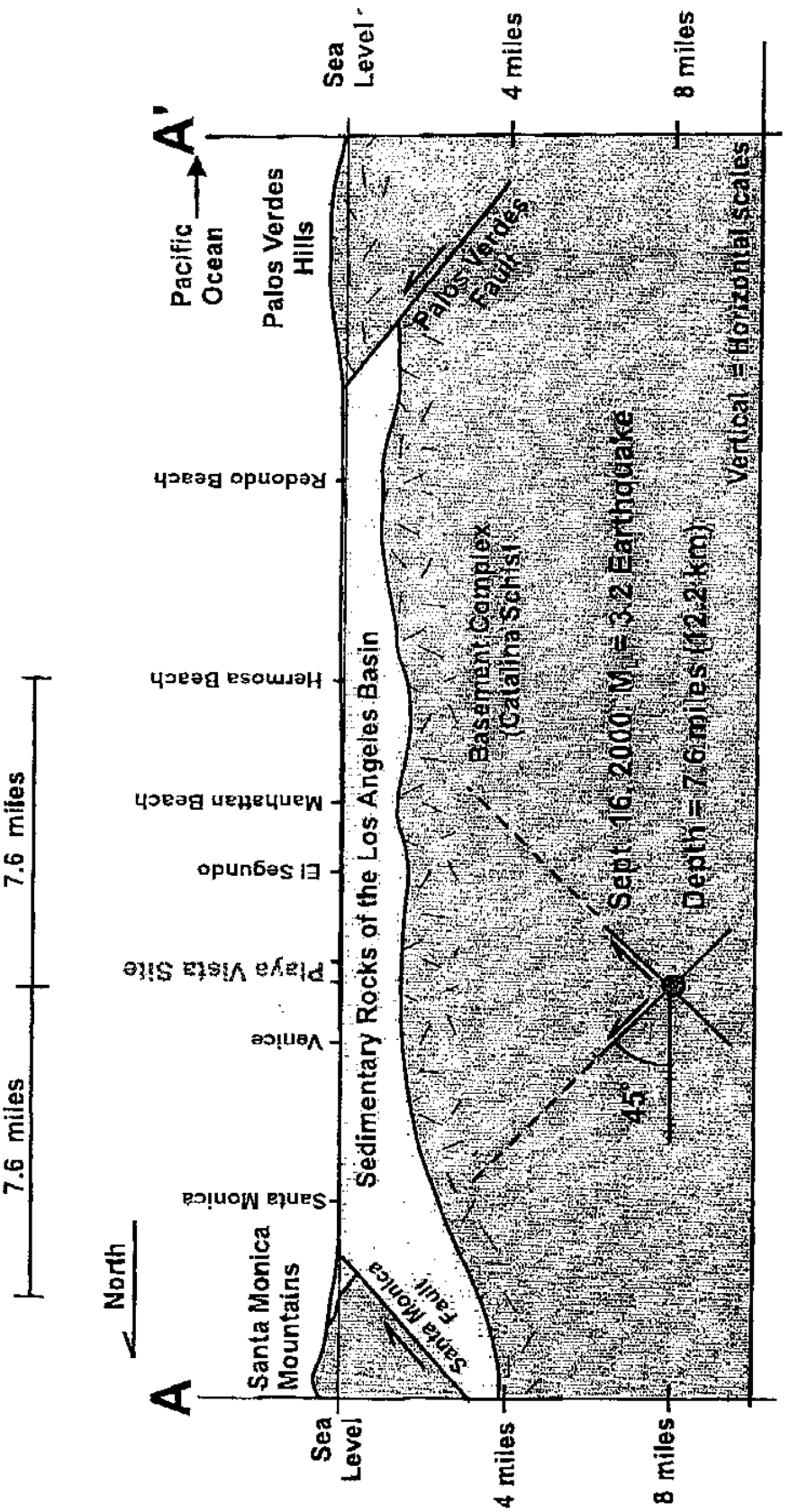


Figure 2. Regional Cross Section showing Sept. 16, 2000, M_L = 3.2 earthquake at 12.2 km depth below the Playa Vista site. Focal mechanism for earthquake shows a 45° dipping thrust event with an east-west strike. There are no additional data to indicate either a north dipping or south dipping solution for the thrust. Projection of the 45° north dipping solution upward intersects the near surface at Hermosa Beach, while the south dipping solution intersects the near surface in the Santa Monica Mountains.