

Annual Project Summary

3D QUATERNARY STRATIGRAPHY AND GEOMORPHIC EVOLUTION OF THE SAN  
GABRIEL VALLEY, SOUTHERN CALIFORNIA

NEHRP Grant No. 00HQGR0011

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Program Element II.5: Identify active faults, define their geometry, and determine the characteristics and dates of past earthquakes.

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**INVESTIGATIONS UNDERTAKEN**

This project is phase concentrated on publication of a monograph on the geomorphic evolution and Quaternary stratigraphic development of the San Gabriel Valley. A first draft of this monograph was written by the author in 1978 after I completed the surficial geologic mapping of the 7 quadrangles. However, I left the USGS before this monograph could be successfully transformed into an Open-File Report. In the ensuing 20 years much has been learned about the Valley's tectonics, about tectonic geomorphology in general, the surface geology and subsurface data have been digitized, and I have gained more understanding of how tectonics affects depositional systems. So, the time is now ripe to finally combine this data into a synthesis, and to see if a facies-based model can explain the variation in subsurface geotechnical properties better than existing, more empirical methods.

The FY 2000 proposal to NEHRP contained 5 tasks, to be spread out over FY 2000 and 20001, as listed below:

Task 1; Finish Digital Surficial Geologic Map of San Gabriel Valley (FY 2000)

Task 2; Import Existing Borehole Data Into MapInfo (FY 2000)

Task 3; Compare Subsurface Geology with Surficial Map Units (FY 2000)

Task 4; Write Monograph on Quaternary Geology and Geomorphic Evolution (FY 2001)

Task 5; Make Map of NEHRP Soil Classes Based on Deposits in Upper 30 m (FY 2001)

However, the NEHRP review panel voted to fund the proposal at a reduced level. Year 1 funding (described in the previous Annual Summary) was awarded at the level proposed, with the work to consist only of Tasks 1 and 4. Year 2 funding was recommended at a reduced level, to consist of only publication funds for the monograph (Task 4; described in this report). The panel recommended that a new proposal be submitted to accomplish Tasks 2, 3, and 5. **Such a new proposal was submitted to NEHRP in response to the FY2002 RFP, however, it was not funded.**

Accordingly, effort in FY 2001 has been limited to Task 4 (described below) and my attendance at the 2001 GSA Cordilleran Section meeting in Universal City, CA. At that meeting I attended sessions involving ongoing USGS work on the Quaternary stratigraphic framework of the LA Basin (FOQUS)..

## RESULTS

Task 4; Write Monograph on Quaternary Geology and Geomorphic Evolution

At the time of this writing (Nov. 1, 2001) the monograph is only about ¼ completed. Work done to date includes compiling all the soil profile field descriptions in the 8-quadrangle area. Writing of the monograph has stalled because of a long delay in getting the 1938 airphotos from USGS in Menlo Park. These airphotos were taken in summer of 1938 and were the photos used for the surficial geologic mapping begun in 1977 and finished in 1997. To write most of the monograph narrative, I need to re-examine these airphotos in each of the geomorphic sub-provinces of the San Gabriel Valley, particularly in the complex fanhead zones at the range front. Only after this reexamination can I begin writing the body of the monograph.

I requested the loan of these photographs from USGS on Jan. 5, 2001. The photos were finally delivered to me on Oct. 1, 2001, **a delay of 10 months**. Because I could not start writing the main body of the monograph without the airphotos, I made little progress on the monograph during FY2001.

Timeframe for Remaining Work (pushed into FY 2002)

Now that I finally have the airphotos I can begin the body of the monograph. However, scheduling will be difficult because the 10-month delay runs me up against other scheduled

projects, including 2 NEHRP FY2002 projects that are scheduled to start in early 2002.

REFERENCES- none for this period