10520 Alskog St.
Sun Valley, CA 91352

28 December, 2003

Ms. Maya Zaitzevsky
Project Coordinator
Department of City Planning
Environmental Review Section
City of Los Angeles
200 North Spring St., Room 763
Los Angeles, CA 90012

Dear Ms. Zaitzevsky,

Please accept the attached comments regarding the Draft Environmental Impact Report [EIR] for the Canyon Hills Development proposed for the northern Verdugo Hills in the vicinity of Sunland and Tujunga.

The comments relate specifically to Part IV, pages A- 1 through A- 29 as they cover the geology and geologic hazards in the proposed residential housing development.

My qualifications to assess the geology of the area include two professional academic degrees in Geology; a B.S. from Tufts University on the east coast and a M.S. from the University of Arizona in Tucson. In addition I have over 30 years of environmental assessment experience related to atmospheric chemistry and air pollution. 126-1

In 1985, I moved to the Shadow Hills section of Sunland and later moved to Sun Valley Hills on the southern slope of the Verdugo Mountains. For these past 18 years I have become very familiar with the local geology and topography of these mountains.

Since retiring four years ago I have worked as an Adjunct Professor at Glendale Community College teaching geology classes which include field trips in the La Tuna Canyon area of the Verdugo Mountains where the proposed Canyon Hills Development is situated.

Thank you for accepting my evaluations of the EIR. They are presented from the point of view of a professional individual who has no vested interest in the outcome of the project.

Sincerely,

William D. Green

To: Department of City Planning
Environmental Review Section
City of Los Angeles

Re: Draft Environmental Impact Report
Canyon Hills Development
City of Los Angeles

COMMENTS

By: **William D. Green**
Adjunct Professor - Geology Department
Glendale Community College

I have a M.S. degree in Geology from the University of Arizona and have worked professionally in the environmental assessment field for 38 years. For the past 4 years I have taught Geology and other physical sciences at Glendale Community College here in the Los Angeles area.

In the course of teaching Geology I have used the area around La Tuna Canyon and the proposed Canyon Hills Development as one of the stops on my field trips to demonstrate the existence and effects of landslides, rockfalls, mud slides and other mass wasting phenomenon.

A drive on La Tuna Canyon Rd will show any observer the results of these phenomenon. In many places, wooden retaining walls have been placed to catch rocks and boulders that are shaken from the hillsides by heavy rains or minor earthquakes. In places the pavement has been "white striped" and narrowed to keep cars away from unstable hillsides. 126-2

Several years ago, shortly after the Northridge Earthquake, a "solid" rock face bordering La Tuna Canyon Rd. just east of the Canyon Hills Development collapsed onto the road. The scar left by this rock slide measures about 60' by 30'.

The following comments address specific pages in Part IV Section A of the EIR relating to the Geology of the area.

A-2 *"Faulting and fracturing of the rock due to uplift over the past 1.6 million years".*

The area of the Canyon Hills Development has experienced extreme tectonic stress resulting in the shattering of the rock into relatively small pieces, often as small as a few inches to a few feet on each side. 126-3

A-3 *"Landslides - loose material unsuitable for support of embankments or engineering improvements".*

Numerous known landslides [eleven] were identified in the EIR. Nothing was said about the possibility of undetected or fossil landslides hidden under recent alluvium. Failure of such an ancient landslide is one of the six factors that led to the collapse of the St. Francis Dam [Wm Mulholland] in 1928 with the loss of 600 lives. 126-4

A-11 *"Leucocratic granitic rock".*

The report says this is a good foundation rock, which it is when the rock is coherent and unfractured. My observations in the area find the rock heavily shattered and subject to rock falls in steep terrain. Shortly after the Northridge earthquake a rock slide occurred at a location about 100 yards east of the Canyon Hills property when an outcrop of this granite measuring 30 feet wide by 60 feet high collapsed onto La Tuna Canyon Road. 126-5

"Quartz diorite rock, which is the major rock unit in the area of the Canyon Hills Development, is completely intruded by units of the Leucocratic granite".

Again, the principle of the weakest link applies to these rock formations.

A-12 *"Gneissic [metamorphic] rock exists in small pockets in the western portions of the development area".*

Gneiss exhibits foliation zones which can weaken the rock. Normally, gneiss, if it has not been excessively stressed, can be an excellent foundation rock., however the presence of high percentages of mica bordering on a transition to schistosity can weaken the rock. Again, one of the suspect causes for the failure of the St. Francis dam was the fact that the east abutment of the dam was anchored in the Pelona Schist. 126-6

A-13 *"There are no known active faults in the area".*

True, there are no identified active faults which traverse the development area, however several active faults exist within 2 miles of the site. The Verdugo fault which parallels Glen Oaks Blvd in Sun Valley forms the southern face of the Verdugo Mountains. Peak ground acceleration [PGA] values listed on page A-16 of the EIR indicate that ground motion in the Canyon Hills Development could reach 0.82 g during an earthquake on the Verdugo fault. The ground motion in the same area during the Northridge earthquake was 0.35 g..

["g" is the acceleration due to gravity, perpendicular to the surface of the earth, ie; - the constant pull we feel on our feet as we stand on the surface. In an earthquake, that "g" force is expressed parallel to the surface and is the force that rips buildings off their foundations.] 126-7

During the Northridge earthquake, considerable damage was done to houses in lower La Tuna canyon and in the vicinity of Bluffdale, Wheatland and Vinedale streets in Sun Valley, adjacent to the canyon. Although the EIR states that the distance to the epicenter of the Northridge earthquake is 7 miles, I have measured it to be approximately 10 miles: considerably farther than the 2 mile distance to the Verdugo fault. A magnitude 6.7 earthquake similar to the Northridge quake, that close to Canyon Hills, would trigger mass wasting in the form of landslides, rock slides and rockfalls as well as the lateral ground motions that could separate houses and their foundations from the stabilized pads they are seated on.

A-14 *"Other active faults in the area include the Sierra Madre fault 1.5 miles to the E-NE and the San Fernando fault 2.0 miles to the NW."*

Although the Sierra Madre fault has been quiet recently, the western extension of it, the San Fernando fault, was responsible for the Sylmar earthquake in 1971. Many houses under construction in the foothills of Sylmar at that time were sheared off their foundations and collapsed in upon themselves like houses of cards. Ground motions 0.8+ g were measured at Pacioma dam during that quake. 126-8

A-19 *"Approximately 50% of the natural slopes are in the earthquake induced landslide hazard zone"*

Will the residents of this development really feel comfortable in these houses? This area seems to be one that cries to be left alone.[my opinion] 126-9

They speak of 11 landslides in the general area with 7 existing on the development project land. These range in size up to 370' wide, 150' high and 20' deep. To remove these will take a lot of earth movement, dust and noise in these quiet mountains.

A-21 through 24

"Slope stability is a function of joint set orientation."

Joints are cracks which extend through solid rock and, due to the tectonic forces which create them, tend to have a common orientation or direction. 126-10

According to the EIR, all 5 sectors of the development exhibit unstable joint sets in a southerly direction. Sector II also has unstable joint sets in the westerly and northwesterly directions and a southeasterly set is evident in Sectors IV and V. A short drive down La Tuna Canyon provides ample evidence of the failure of these joint sets in the region.

"Fall slopes have a 1.5 safety factor during an earthquake."

Again, I refer back to page A-19 and my question regarding the comfort the residents will feel if their children are in the area during an earthquake. 126-11

A-25 *"On site bedrock is highly weathered and fractured. A seismic refraction profile indicated a low velocity indicative of low physical strength [fractures and jointing] in the bedrock."*

126-12

Although the EIR indicates that this is good because it will make excavation on the site easier, and will preclude the need for blasting, it also points to the weakness of the underlying rock foundation throughout the entire project area.

A-26 *"Ground water- not a problem. The ground water table is 18-60 feet below the project land surface."*

Although liquefaction and water induced soil creep are not a problem in the area due to the alluvial nature of any sediments [coarse sands and gravels] and the excellent surface and ground water drainage, there are frequent temporary springs and seeps which can persist for 2-6 weeks after moderate rains. Again, due to the shattered nature of the bedrock and the extensive joint system, water is quickly absorbed in these cracks and eventually appears in unpredictable places at lower elevations. This can lead to softening of fill dirt and soil collapse. In some cases it can induce seepage under the concrete pads of buildings and the establishment of persistent mold infestations. 126-13

CONCLUSIONS

The Environmental Impact Report [EIR] does not adequately address the seismic vulnerability of the proposed Canyon Hills development project.

The extremely shattered nature of the rock and the close set joint patterns have led to chronic problems of landslides, rockfalls and massive failures of rock faces, as evident in road cuts along La Tuna Canyon Road, the principal local road in the area. 126-14

The proximity of three [3] active faults within 2 miles of the project, and the fractured nature of the bedrock, invites a potential disaster if any of these faults experience a magnitude 6.5 or higher earthquake, as occurred in 1971 on the San Fernando fault.