Alluvial Fan Geology
and Landuse Concerns

Alluvial Fan Task Force
Plenary Meeting 1
December 7, 2007

Thomas E. Spittler
California Geological Survey
(707) 576-2949
tom.spittler@conservation.ca.gov
Heath Canyon, Wrightwood
Sheep and Heath Canyons, Wrightwood
Slide Mountain, Nev. debris flow source area
Slide Mountain 1983 debris slide
Slide Mtn. 1983 debris flow
1997 debris flow path above Highway 50
Smoke from the 2007 Santiago fire as seen from space
1969 post-fire debris flow in Glendora
PLATE XV.

AERIAL MAP OF LA CRESCEITA
AND MONROSE FROM PHOTOGRAPHS
TAKEN A FEW DAYS AFTER THE
JANUARY FIRST FLOOD 1934.

(Original aerial photographs obtained through the courtesy of Fairchild Aerial Surveys Inc.)
A. TWO BOULDERS ON PAVEMENT AT END OF NEW YORK AVENUE.

These boulders were brought down Dunsmore Creek by the flood. Estimated weight over 60 tons each.
Day Canyon and East Etiwanda Canyon fans in 1973
Day Canyon and East Etiwanda Canyon fans in 2006
Geology of Day Canyon and East Etiwanda Canyon fans
Magnesia Canyon in 1979

Magnesia Canyon in 2006
Conclusions

• Alluvial fans form where mountain streams flow into valleys.
• Floods, debris floods and debris flows build alluvial fans and can pose risks to lives and property.
• Not all parts of alluvial fans are equally dangerous.
• Geologic hazards on alluvial fans change due to fires, storms, and earthquakes.
• Geologic mapping can help to identify hazardous areas and aid in developing sound landuse policies.