CALIFORNIA DIVISION OF MINES AND GEOLOGY

FAULT EVALUATION REPORT FER-131

January 22, 1982

1. Name of fault

Unnamed fault just west of Milliken Peak, informally referred to in this FER as "Milliken Peak" fault.

2. Location of fault

Sonoma quadrangle, Napa County (figure 1)

3. Reason for evaluation

Part of 10-year fault evaluation plan (Hart, 1980).

4. List of References

Aerial photos (source unknown), 1964, NAP 6-5 and 8, black and white, vertical, scale approximately 1:98,000.

Fox, K.F., Jr., Sims, J.D., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of eastern Sonoma County and western Napa County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-483 (also Basic Data Contribution 56), scale 1:62,500.

Hart, E.W., 1980, Fault rupture hazard zones in California: California Division of Mines and Geology Special Publication 42.

Helley, E.J. and Herd, D.G., 1977, Map showing faults with Quaternary displacement, northeastern San Francisco Bay Region, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-881, scale 1:125,000.

Herd, D.G., (in press), Map of principal late-Quaternary faults, San Francisco Bay Region, California: U.S. Geological Survey Open-file Report, scale 1:250,000. (faults compiled from 1:24,000-scale maps for FER-131).

Pampeyan, E.H., 1979, Preliminary map showing recency of faulting in north-central California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1070, scale 1:250,000.

U.S. Department of Agriculture, 1952, Aerial photos CSI-6k- 9 to 14, black and white, vertical, scale approximately 1:20,000.

5. Review of available literature and air photo interpretation

A north-trending zone of faults located about 1 mile west of Milliken Peak is mapped by Helley and Herd (1977) (figure 1,2). This approximately 2 mile long fault is unnamed, but will be referred to in this Fault Evaluation Report (FER) as the "Milliken Peak fault". The magnitude and sense of offset along this fault is not known. However, the linear fault traces, linear bedrock scarps and drainages along the mapped traces of Helley and Herd (1977) observed by this writer suggest a vertical to near vertical strike-slip fault (figure 2). Stratigraphic evidence of the sense of displacement is lacking because the "Milliken Peak fault" is located entirely within andesite of the Pliocene Sonoma Volcanics (Fox, et al, 1973).

The "Milliken Peak fault" is located in an area of rugged topography. Land surfaces along the fault have not been modified by man, although rates of erosion and downhill movement are relatively high. In addition, Holocene-age deposits are extremely sparse along the mapped traces of the "Milliken Peak fault" (Fox, et al, 1973).

The "Milliken Peak fault" is depicted as historically active by Helley and Herd (1977). However, this was due to a drafting error. The original intent was to depict this fault as Quaternary-active with no evidence of Holocene offset (Herd, pc., 1981). Fox, et al (1973) and Pampayen (1979) do not map this feature. Herd (in press), in a subsequent map showing revised trace of late-Quaternary active faults of Helley and Herd (1977), does not map the "Milliken Peak fault."

Differential erosion along bedding planes or planar flow features in andesite of the Sonoma Volcanics has resulted in very strong, linear topographic features in the area where Helley and Herd map the "Milliken Peak fault." Geomorphic features along the trace of the "Milliken Peak fault" are characterized primarily by linear scarps in bedrock, short linear drainages, benches, and occasional tonal lineaments, based on air photo interpretation by this writer (figure 2). There is no systemmatic offset of drainages along the faults mapped by Helley and Herd (1977), and the geomorphic features that do characterize this fault zone are primarily erosional. The "Milliken Peak fault" is not well-defined, principally because geomorphic features characterizing the fault zone are common within Sonoma Volcanic terrane and are not necessarily unique to faulting.

6. Conclusions

The "Milliken Peak fault" is not considered to be Holocene-active by Helley and Herd (1977) (Herd, p.c., 1981). Fox, et al. (1973), Pampeyan (1979), and Herd (in press) do not map this fault. Geomorphic features delineating the "Milliken Peak fault" are characteristic of differential erosion along a fault in bedrock, or bedding planes, rather than recent faulting, based on brief air photo interpretation by this writer (figure 2). The "Milliken Peak fault" is not considered to be a well-defined fault because of the difficulty of distinguishing between geomorphic features formed by differential erosion along bedding planes and faulting.

7. Recommendations

Recommendations for zoning faults for special studies are based on the criteria of sufficiently active and well-defined (Hart, 1980).

Do not zone traces of the "Milliken Peak fault" mapped by Helley and Herd (1977). This fault is not sufficiently active or well-defined.

8. Report prepared by William A. Bryant, 1-22-82.

William A Bryant

I agree with recommendations
EWH
2/4/82