

# Geosciences

*Team members: Cooper Brossy, David Trench, and Mike Buga (Fugro Consultants)*

We started our day with John Wesling and went to examine the recently backfilled paleoseismic site at Alston Park. We saw no deformation or evidence of surface rupture.

From there we moved to the intersection of Old Sonoma Rd and Congress Valley Rd at the request of Tim Dawson. We photographed and measured the offsets in the road and documented surrounding ground cracks. We also discussed the experiences of the Napa County DPW Roads with Dave Cardwell at the site at Old Sonoma Rd.

The next site was just around the corner on Thompson Rd. We were situated at 1361 Thompson Rd and examined the road damage at that address. We also ran into Ben Brooks and Tim Dawson here and spent some time documenting the damage of the adjacent properties as well as the location, type of displacement, and continuity of ground cracking.

From here, we continued onto the Brown Valley Area at the request of Ben Brooks and Tim Dawson. Here we examined and documented ground deformation and damage near the Brown Valley School and in the vicinity of Glen Brook Ln, Sandy Brook, and adjacent streets.

South of this area we went up to a set of properties at Leaning Oak rd where there was a broken water main and significant (~1.1 ft) of right lateral offset observed in the road surface and curbing. Additionally, there was a thrust component associated with the faulting which emplaced the road surface onto itself. The fault trace here continued to the north towards the Brown Valley area where we were previously.

Overall, the observations seemed to suggest that surface rupturing was dominated by a series of fractures that were typically left stepping, en echelon with varying degrees of offset - typically on the order of 3-5 cm of lateral displacement. Vertical offsets of up to 7-8 cm. The exception to this was in the vicinity of Brown Valley and especially in the area of Leaning Oak rd.

## Questions for South Napa Earthquake Field Team

Group:

1. Please broadly summarize what you saw today in the field. What conclusions can you draw from what you've seen?

Surface deformation in the form of aligned ground cracking with minor (~3-5 cm) lateral offset in paved road surfaces; lateral deformation difficult to observe in an area of Thompson Road and intersection of Congress Valley Road and Old Sonoma Valley Road.

2. What in this area should investigators study tomorrow? Are there obstacles that we need to overcome (i.e. access) to study this area or topic tomorrow?

Measure and confirm estimates of deformation in area of Leaning Oak Drive and in area South of Glenbrook Lane; Private property but landowners have been accommodating.

3. What future research needs do you see from this area? What comprehensive studies would be helpful? What data would be useful for these studies?

Trenching and Lidar

4. Have you seen items in other areas or disciplines that need further study or investigation new or as a longer term topic?

In area of Glenbrook Lane:

- Consider contacting City of Napa Sanitation regarding using GPS locations of manholes or other elements of infrastructures with known locus that can be resurveyed to measure deformation.
- City of Napa Sanitation field crew suggested relatively high precision. GPS coordinates exist for all major system components.
- City of Napa Road repair crews have a GIS layer of surface formation they observed in road and adjacent natural ground surfaces
- Department Public Works: David Cardwell, Road Maintenance Supervisor, Main (707) 944-0196