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John:

I attended the public-comment hearing in White Rock for the proposed CMRR on Pajarito Road two or three weeks ago. The staff was very professional but unconvincing that the TA-55 site is appropriate. Here is the first of several problems:

For some small fraction of the cost of the CMRR, one could do a much better job on the risk assessment. The CMRR spokesman at the hearing discussed the *discontinuities* in the ash from forest fires long ago, diagnosed and dated by ^{14}C and possibly other radio-isotopes. He stated that the rate of a significant earthquake was two or three per 10,000 years. The issue here is the *time rate of change* of displacement. Surely, a large earthquake could displace one side of the ground explosively in a few seconds. The spokesman mentioned ~30-cm discontinuities. He did not mention that this same displacement could also have taken a lot longer, decades or even centuries, in which case there would be no shock at all. Given the length of time involved, erosion could have leveled the landscape, removing any discontinuity from the surface. Hence, same effect, but no earthquake involved. More evidence of earthquakes is necessary to justify the estimates of 3 per 10,000 years. NNSA is risking expenditure of lots of cash (see below) on account of something that may not have happened.

Secondly, if a fault problem does exist, the unstable layer of earth beneath the site apparently represents a threat that may only be cured with nearly a *two-year delay* and the *expenditure of vast sums of money*. Obviously, the CMRR is being proposed on *the wrong site*. There are areas at LANL where a building may be placed without being on top of this geological problem – anywhere that the elevation is below about ~7200 ft from what I learned at the meeting. At such elevations, the unstable layer of earth, *the root cause for the great expense*, would not exist. It has eroded away long ago. Something else may exist, but not that. The map on the next page from the USGS Frijoles quadrangle shows the presently proposed location at TA-55. What if it were placed in Pajarito Canyon below the

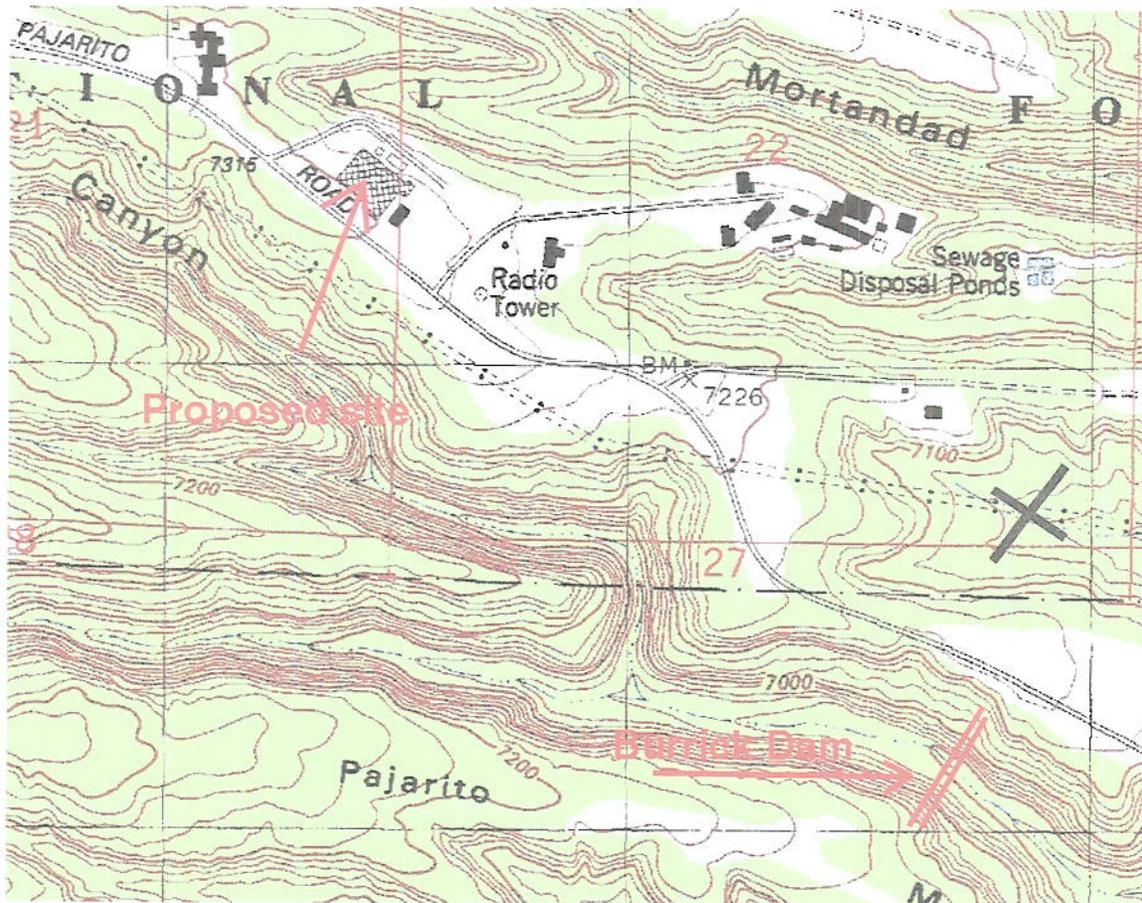


Figure 1. Topo of CMRR locations – The black X is an alternate site.

Pajarito Dam? That elevation is below the offending material in the earth's crust. The dam, a water retention structure, could provide a worthwhile protective function in that case. It's called *a site credit*. Alternately, the CMRR could be placed north of Pajarito Road in the head of the canyon just east of one of the sites proposed for the batch concrete plant. Nature has already excavated a portion of this site, and the water runoff is minimal since the entire drainage area is only a few acres. See Fig. 1 above.

Keep in mind that if the present site requires the thick concrete pad, so too does *the existing plutonium site, PF4*. This situation must be rectified if this is so important. Imagine the expense of fixing this facility. If the fix is not required for PF4, it is more than a little ridiculous to require it for the CMRR. Saying PF4 is 'grandfathered' is less than satisfying if the treat is real. Fix it or shut it down.

There are other problems with the present design. The 100-ft concrete pad is only under the proposed building. The underground edges of the foundation represent a 90° angle that is not protected by the 100-ft pad from shear that could be induced by a ground wave. The technicians at the public

hearing mistakenly believed that the feared 8.0 earthquake would rise up vertically from below. This is not the case. It depends on where the epicenter of the monster quake is. Statistically, it will come with a lateral component so that the wave front hits a vulnerable edge, launching massive lateral forces into your building. I believe it is imperative that if the present site is approved, even more study must be done to make it safe from huge, edge-incident waves.

This is all relative of course. If the building were struck by a magnitude 8 quake, it really doesn't matter if it survives or if radioactive sources are vented. Most of the whole county will not survive. Dead is dead. Such an event could well be accompanied by the re-eruption of the Jemez volcano.

Perhaps the largest barrier facing the laboratory on this issue is the lack of credibility it has earned from previous less-than-prudent DOE-LANL activities. One of these is the Pajarito Dam. The entire drainage of Pajarito Canyon above this dam is less than 10 or 15 square miles, yet the flow of water it was built to stop exceeds the flow rate of the Rio Grande. Another example is the "large intestine" – the security gate at the entrance on Diamond Drive. Twenty million dollars were spent here to appease security interests, and presently this facility hangs limp like a useless arm and is ignored except for the speed bumps. I am afraid the laboratory has become more famous for indiscretion than for good science. The smell of some of this is similar to that of the Los Alamos County compost heap at the East-Jemez-Diamond Drive traffic light, which I am sure you have enjoyed with the rest of us locals when stopped there to wait during the summer.

Finally, there are serious safety concerns with closing Pajarito Road to traffic. It means that emergency access for an accident east of TA-55 is compromised. Transporting a victim to LAMC through White Rock is now a 17-mile trip instead of a 3-mile trip. It would take ~20 minutes longer. Someone's life could hang in the balance. No one is satisfied by claims that Pajarito Road would be opened up for an emergency operation. We have heard this before. It should be uniformly disbelieved. Building 87 at TA-35 is surrounded by a security fence. For several years, 'lab planners' placed the emergency assembly area for that site to the south between the building and the security fence – away from any exits. Emergency personnel were to open the locked gate to the west of the building in the event of an emergency to provide access to safety for building tenants. No one believed that this directive was safe. During fire drills, we left the building through the *front door* and went outside the security perimeter. No reasonable person with a wish to survive would place themselves between a fence at the canyon wall

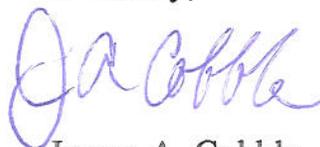
and a burning inferno (or whatever emergency arose at 87) to wait for the fire department instead of simply leaving the building/security area in the front. This *reductio ad absurdum* argument holds for Pajarito Road. Imagine a 100-ft crane blocking the construction site road at the time of the emergency. It is obvious that closing this road is a bad idea. One remedy is to build a parallel road on the north side of TA-55 to access TA-35 and connect it to Pajarito Road east of the construction. While expensive perhaps, this would alleviate the risk. The cost is apparently small compared to the total building cost. We were always taught that *whenever our programmatic goals conflict with our safety goals, that our safety goals take precedence*. This is the first rule of the laboratory. It cannot be done 'on the cheap'. It must be done.

It could be that one of the best options for CMRR is to place it east on the mesa between TA-46 and TA-54. It skirts around the issue of the unstable, subterranean soil. That saves a ton of money. The mesa is sufficiently wide at that point too that Pajarito Road need not be closed. No access road would be required. Maybe there are also superior sites on other mesas.

In closing, here are the issues I have raised:

- 1) The measure of the hazard – the risk – is not credible. More work needs to be done to justify that the Pajarito site is 'at risk'.
- 2) If this is done, then TA-55 is not appropriate because of the unstable rock. An alternate site below the bad rock gets credit for vastly reduced expense and time of construction.
- 3) If there is a risk, PF4 needs to be fixed in kind whether CMRR is built or not.
- 4) If there is a risk, then the design for this site may be inadequate for shear waves incident at other-than-vertical directions.
- 5) The project, as well as the laboratory as a whole, has a serious-public relations problem. The community and northern New Mexico need to see some good-faith effort by the laboratory to fix this – to not act 'dumb'.
- 6) Closing Pajarito Road to through traffic is a bad safety idea.

Sincerely,



James A. Cobble