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State of New Mexico
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December 20, 2001

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Gene Turner, LAAO
AIP Point of Contact
U.S. Department of Energy
Los Alamos Area Office
528 35th Street, MS A316
Los Alamos, NM 87544

RE: NMED Concerns over the Plugging and Abandoning of Borehole MCOBT-8.5

Dear Mr. Turner:

During the month of June 2001, the Laboratory drilled borehole MCOBT-8.5 (referred to here as 8.5) to an approximate depth of 740 feet on DOE property in Mortandad Canyon, near the eastern extent of alluvial/canyon-bottom saturation and about one-half mile north of the Pueblo of San Ildefonso boundary. The borehole was drilled per the Work Plan for Mortandad Canyon in conjunction with the site-wide hydrogeologic characterization program. During the drilling of 8.5, partial saturation (no free-flowing water) was encountered, and one water sample (probably drilling fluid) was collected and analyzed. Perchlorate, being a very mobile and persistent contaminant, was not detected in the water sample; however, chemical analysis of conventional and sidewall core did detect perchlorate. This was not unexpected due to the fact that historical and recent water-quality data show that elevated levels of radionuclides (strontium-90, tritium, plutonium, etc.) and non-radionuclides (perchlorate, nitrate, etc.) have been previously detected in each ground-water mode of occurrence (perched canyon-bottom and intermediate aquifers and the regional aquifer) upgradient of the borehole. In the vicinity of the borehole, the top of saturation for the intermediate perched and regional aquifers are estimated to lie approximately 650 to 900 feet and 900 to 1000 feet below ground surface respectively. Therefore, a ground-water characterization/monitoring well at the 8.5-borehole location, be it intermediate and/or regional, would have been beneficial to the overall ground-water characterization/monitoring program (e.g., TA-50 discharge permit, Hydrogeologic Workplan).

Soon after 8.5 was drilled, a decision was made to plug and abandon the borehole, and in early July it was plugged without consultation to NMED. After discussing this course of action with NMED's Hazardous Waste Bureau, we feel that this was both a questionable decision and use of budgetary resources because of the following:

- 1) The borehole only needed to be extended another 200-250 feet (2 to 3 days of drilling) to tap the regional-aquifer water table. As noted above, a regional-aquifer characterization/monitoring point at this location would have been extremely important to the overall hydrogeologic/contaminant conceptual model.

- 2) The decision was not in accordance with the Laboratory Field Implementation Plan (ER2001-0419, 5/24/01 copy, page 14), which states: “ **The planned depth of the borehole MCOBT-8.5 is nominally 740 ft; however, if intermediate-depth perched groundwater is not found, the borehole may be deepened to approximately 1200 ft so that a well can be installed at the top of the regional aquifer**”.
- 3) Liability (i.e., moving contaminants to the regional aquifer) concerns at borehole were nominal, especially in comparison with R-15, which penetrated several hundred feet of contaminated unsaturated rock as well as a contaminated perched aquifer before entering the regional aquifer saturation. Alternatively, to accommodate budget and schedule concerns if necessary, extended drilling could have been delayed by installing surface casing to temporarily stabilize the hole to allow for borehole deepening at a future date.
- 4) The overall cost reported for MCOBT-8.5 (\$457,914; see October 16-18 quarterly-meeting handout) does not appear to complement the amount of data/information obtained.

In summary, we recommend that technical decisions affecting an action, specifically the plugging and abandonment of a new well, be discussed in detail with the regulatory authorities as well as other stakeholders (e.g., Pueblo of San Ildefonso) prior to making a final determination.

Please note that this is an Oversight Bureau recommendation only, and we do not require any further discussion or action on this matter.

Sincerely,



Steve Yanicak, Natural Sciences Manager-2
DOE OB White Rock Office

cc: John Parker, NMED, Chief, DOE OB
Tom Whitacre, DOE LAAO, MS A316
Mat Johansen, DOE LAAO, MS A316
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