

Los Alamos

NATIONAL LABORATORY

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Date: December 2, 1999
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James P. Bearzi
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**SUBJECT: RESPONSE TO HYDROGEOLOGIC WORKPLAN DATA QUALITY
OBJECTIVES LOS ALAMOS NATIONAL LABORATORY NM0890010515;
LETTER DATED SEPTEMBER 10, 1999**

Dear Mr. Bearzi:

I appreciate the efforts on the part of you and your staff to review the Data Quality Objective (DQO) process outputs, which form the basis of the Hydrogeologic Workplan. Your review and letter dated September 10, 1999 coincided with a planned LANL/NMED working session held September 13th to review and re-iterate on the DQO process outputs. A summary of the September 13th DQO Review is included in Attachment 1 to this letter. The issues raised in your letter were also discussed at the GIT Quarterly Meeting held on October 14th. The remainder of this letter will present how the issues raised in your September 10th letter were addressed by the joint LANL/NMED DQO Review, and provides a written response documenting the aforementioned two meetings that verbally responded to your letter of September 10th.

The first issue raised in your September 10th letter is the utility of water samples collected during the drilling process. It was concluded in the LANL/NMED DQO Review that water samples from intermediate zones collected during drilling are useful for the precise reason stated in your September 10th letter: i.e. "they are useful for screening purposes only, to determine the presence or absence of contaminants *only*." Having information on the presence or absence of contaminants during drilling is important to making decisions on subsequent well design. Therefore, when it is possible to sample intermediate perched water during drilling, samples will continue to be collected and analyzed to determine the presence or absence of contaminants.

The second issue discussed in your September 10th letter regards the requirement to characterize and monitor each intermediate perched zone encountered. This issue was discussed at the LANL/NMED DQO Review. There was general agreement that the DQO outputs in the Hydrogeologic Workplan, that was approved by NMED on March 25, 1998, state that the data collected regarding intermediate perched zones will be: presence of perched intermediate zones, yield of the zone, and presence of contaminants. The Hydrogeologic Workplan committed to identifying and characterizing all perched zones encountered, without regard to any definition of "groundwater". The yield of the perched zone is important in establishing which water quality standards can be applied to the water, not to whether it is considered groundwater.



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There was also recognition that while this degree of characterization was planned in the Hydrogeologic Workplan, there is no commitment to "monitor" these zones. "Monitor" in this context refers to repetitive sampling/analysis of water. The goal of the Hydrogeologic Workplan is to refine the understanding of the hydrogeologic setting in order to adequately protect the groundwater. Decisions about the scope of any potential monitoring network will be the end result of the Hydrogeologic Workplan. The decision flow that leads up to the development of a potential monitoring network is presented in the Hydrogeologic Workplan and was reviewed and concurred with at the LANL/NMED DQO review.

The intent of the Hydrogeologic Workplan is to ensure a comprehensive, well-integrated approach to addressing all relevant regulatory programs. Numerous federal and state requirements are relevant to groundwater protection, groundwater monitoring, and hydrogeologic characterization. For example, DOE Order 5400.1 "Environmental Protection" and the New Mexico Water Quality Control Commission (WQCC) regulations both address groundwater characterization, monitoring, and protection. However, the workplan is being implemented specifically to comply with issues delineated in the denial of groundwater monitoring waivers (NMED letters dated May 30 and August 17, 1995) and the requirements set forth in the Hazardous and Solid Waste Amendments (HSWA) portion of the Laboratory's Resource Conservation and Recovery Act (RCRA) operating permit. While we intend to comply with all relevant regulations, enforcement of those regulations through the Hydrogeologic Workplan is inappropriate.

The third issue raised in your September 10th letter was the drilling method being used for regional aquifer wells. The LANL/NMED DQO Review found that virtually all of the data needed from the regional aquifer boreholes could be collected from a borehole drilled with either casing advance or mud drilling methods. However, a number of issues associated with drilling with mud were discussed at the October 14th Quarterly Meeting. First, it was noted that collecting the kinds of data that require a "clean" borehole is more complex and time-consuming in a borehole filled with mud. Second, cleaning all of the mud out of the borehole is difficult, resulting in questionable data obtained from those samples, particularly for metals that sorb to mud. Third, the Environmental Protection Agency's Technical Enforcement Guidance Document specifically prohibits drilling with mud for compliance with RCRA. A fourth issue is the limitations of geophysical logging to identify perched zones. Fifth, the space and water requirements for mud drilling set up can be problematic for many LANL drilling sites. Sixth, the cost of disposal for drilling mud that has become contaminated is significant. Finally, a seventh issue is that drilling with mud is prohibited in the HSWA portion of LANL's RCRA Operating Permit.

One outcome of the LANL/NMED DQO review was that the drilling method(s) for each borehole was to be selected on a borehole-by-borehole basis. It was noted that the drilling method used must be capable of holding the borehole open, because for certain portions of the stratigraphy, the borehole will collapse without support. For this reason, open-hole logging was expected to be possible only in a fluid-filled borehole, with limited application in casing advance boreholes. LANL agreed to consider other drilling methods as the Field Implementation Plan (FIP) for each individual well is developed.

Recognizing the issues associated with mud drilling, at the LANL/DQO review LANL was nevertheless willing to drill specific boreholes with mud, provided that NMED signified by letter their concurrence, ensuring regulatory acceptance of the subsequent characterization data and use of the well for future RCRA/HSWA monitoring. As a demonstration of our willingness to utilize mud drilling this summer, LANL expended more than \$50K in reconfiguring documents and plans to provide for mud drilling. However, subsequent to the October Quarterly meeting, further meetings and discussions with HRMB staff have now discouraged the use of mud drilling because of the inability to ensure regulatory acceptance by HRMB. Please be aware that the changes to mud drilling and then back to casing advance drilling have resulted in two months delay in implementing the FY00 drilling schedule. Therefore, although LANL will continue to consider other drilling methods in the development of FIPs for future wells, we will require the above-mentioned regulatory acceptance of any other prospective drilling methods, by HRMB, prior to expending LANL resources planning construction of wells using drilling methods other than casing advance.

LANL appreciated the participation of your staff in the recent DQO Review, and we look forward to continuing to work closely with HRMB on this hydrogeologic characterization program. If you have any further questions, please feel free to call me at 665-4681.

Sincerely,



Charles L. Nylander
Program Manager
Groundwater Protection Program
Water Quality and Hydrology Group

CN/em

Enclosures: a/s

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Cy: Continued

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A. Pratt, E/ER, w/enc., MS M992
D. Broxton, E/ER, w/enc., MS M992
WQ&H File, w/enc., MS K497
CIC-10, w/enc., MS A150