August 26, 1992

Mr. Steve Slaten
DOE ES & H Branch
DOE Los Alamos Area Office
Los Alamos, NM 87544
(505) 665-5050

SUBJECT: **LANL WATER MONITORING SYSTEM TOUR.**

Dear Mr. Slaten:

The New Mexico Environment Department (**NMED**) has completed the first of three tours planned to visit all existing water-monitoring stations at Los Alamos National Laboratory (**LANL**). As stated in our request letter, May 13, 1992, the purpose of the tours is to gain an understanding of the Environmental Surveillance (**ES**) that is being conducted at LANL. A collective effort between the NMED's bureaus [Surface Water Quality Bureau (**SWQB**), Ground Water Protection & Remediation Bureau (**GWPRB**) and Hazardous and Radioactive Materials Bureau (**HRMB**)] to review the adequacy of the existing environmental surveillance system is being conducted.

The following are NMED's Environmental Surveillance Tour (July 13-17, 1992) findings:

1. Inadequate groundwater monitoring of Lower Los Alamos Canyon. Currently, only production wells screened over very large intervals are used for monitoring.

2. Los Alamos and Guaje municipal wells are not properly cemented or sealed as to isolate upper flow zones from the main aquifer. Flow within the annulus of the wellbore could be a possible pathway for contaminant transport to the "main aquifer". As the hydrologic connection between the alluvial, perched and main aquifer in the vicinity of Pueblo-Los Alamos Canyons is not clearly understood, proper monitoring wells should be installed to regulate the individual zones.

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3. Open holes no longer in use should be properly plugged and abandoned. Specific holes noted for which plans for plugging were not mentioned include TW1-B and LA-3. These and all other such holes need to be appropriately decommissioned (re ASTM or other standards).

4. All monitoring wells should be completed with adequately mounded and sufficiently thick cement to prevent potential contamination from surface runoff or shallow groundwater. Erosion of the bank away from MCO-4 revealed that this is not done everywhere.

5. A number of monitoring wells are in need of repair and or replacement:
   a. TW-1, well inactive.
   b. LAO-C, cement has been eroded away.
   c. MCO-4, well has been damaged.
   d. MCO-3, well has been damaged.

6. All piezometer wells throughout Mortandad Canyon should be capped.

7. The wells drilled under the HSWA Permit condition are not included as a part of the Environmental Surveillance monitoring. These wells should be monitored as a part of the Environmental Surveillance Program.

8. TW-1 is a deep groundwater observation well that shows a 50 foot water mound. TW-1A is completed in a perched aquifer above the screened interval of TW-1. The perched water from TW-1A and the alluvial water in this area have similar chemistry. This raises questions concerning the effectiveness of the Bandelier Tuff as a barrier to vertical migration and needs to be investigated.

9. Lack of water-level measurements in DT-5A, DT-10 and DT-9 at TA-49; water level contour maps submitted in current closure plans, RFI documents, operating permit applications, etc. all use data collected over ten years ago from the above wells. Sparse measuring points and use of old data could give false impressions of the water level in the SW portion of the Pajarito Plateau.

10. No water level map is provided with the last Surveillance Report. Such maps normally accompany monitoring reports and provide essential information on the hydrologic system. In fact, water chemistry data can not be interpreted without such maps. Page size versions may not suffice; a 1:24000 plate would be ideal (folded in a pocket at the back of the report). If digitized, it should be a simple matter to update such a map for subsequent annual reports.

11. Previously published water level maps essentially depict predevelopment conditions; no impact of pumping at production wells (cones of depression) are indicated. As such features certainly exist and groundwater flow is towards them, their position and extent is critical to both designing and evaluating the monitoring scheme.

12. Additional sampling locations should be included within the on-site ES system to sample the most probable areas of possible or known contamination. Sampling location guidance should be based on historical data of discharges or NPDES outfalls and contamination residuals in the environment.

13. The map of monitoring wells and sites in the Surveillance Report should also show the sites/sources of contamination being monitored. As the map is quite busy already, these could be screened so as to be apparent without conflicting. If still too busy, perhaps groundwater and surface-water sites could be shown on separate maps.

14. In general, surface station locations should be above retention/ diversion ponds, culverts or other such segregation structures.

15. There is inadequate marking of the sampling station locations. All stations should be designated with permanent markers to avoid possible deviations in sampling locations over time. Also a written description of the sampling location should be on file.

16. An alluvial unit (the Epiclastic Unit), similar to Puye Conglomerate lithology-texture, was observed to outcrop along the canyon wall near the confluence of Pueblo Canyon and Acid Canyons. LANL has presented information to NMED suggesting that in unsaturated conditions the Epiclastic Unit may serve as a barrier to vertical migration, but that it has been observed to have up to 90% saturation locally. The noted location of this outcrop raises concern. It occurs down canyon of both the Larry Walkup Center, where approximately 800,000 gallons of chlorinated water are discharged annually, and the decommissioned untreated liquid radioactive wastewater center (SWMU #1-00). The Epiclastic Unit may be serving as a pathway for contaminant transport and should be investigated.

17. The methodology used for sediment sampling in the canyons presents the likelihood that sand-size and coarser sediments comprise the bulk of the individual sample. There is a greater tendency for ion-exchange and adsorption of transuranic elements to silt-clay sized particles than to sand-gravel sized particles. In order to obtain a confidence on the levels of contamination that may actually be stored in the canyons (and therefore available for down canyon transport) sampling should target the silt and clay-sized fraction of the sediment.

The second tour of White Rock Canyon ES stations has been tentatively set for September 8-11, 1992. As with the first tour, Mr. Alan Stoker (EM-8) is coordinating with NMED. The third tour will be scheduled in accordance with the completion of the Canada Del Buey monitoring wells. Please find enclosed a list of NMED personnel planning to attend the White Rock Canyon tour.

Please note that oversight duties by HRMB at LANL have been divided between groups led by John Parker and myself. My group will focus on oversight of ER and RCRA assessment and remediation activities, as well as all miscellaneous environmental actions at LANL. In the future, surveillance oversight will be conducted by Mr. Parker's group. "Surveillance" includes monitoring of air, springs and any surface water runoff not being evaluated by NMED's Surface Water Quality Bureau. Mr. David Englert, a member of Mr. Parker's staff, will be organizing the next LANL water monitoring system tour. If you should have any questions concerning the White Rock Canyon Tour please contact David Englert at (505) 827-4355.

Thank you for your cooperation in this matter. If you have any questions regarding this matter please contact Ms. Teri Davis of my staff at (505) 827-4313.

Sincerely,

Dr. Bruce Swanton
Program Manager

BS:td

cc: Ed Horst, RCRA Program Manager
John Parker, Mixed Waste Program Manager
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