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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

August 20, 2009

David Gregory
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David McInroy
Remediation Services Deputy Project Director
Los Alamos National Security, L.L.C.
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RE: PILOT TEST TO EVALUATE SOIL-VAPOR EXTRACTION AT MATERIAL DISPOSAL AREA G AT TECHNICAL AREA 54, EPA ID #NM0890010515 HWB-LANL-08-048

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) requires that the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C. (LANS) (collectively, the Permittees) conduct a second pilot test at Material Disposal Area (MDA) G. The pilot test conducted in 2008 (*see* "Pilot Test Report for Evaluating Soil-Vapor Extraction at Material Disposal Area G at Technical Area 54, Revision 1"), did not include sufficient information to determine whether or not soil vapor extraction (SVE) has the potential to be an effective part of the remediation at MDA G. The Permittees must submit a Supplemental Soil Vapor Extraction Pilot Study Work Plan for MDA G (Work Plan); NMED has developed the following list of actions to be included in the pilot test. All of the requirements specified in this letter must be proposed in the Work Plan.

1. The objective of the pilot test is to determine the capabilities and optimal design for an SVE system at MDA G. Based on the pilot test results, the Permittees will develop the preliminary design of a full-scale SVE system that must consider the optimal

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radius of influence, wellhead vacuum, vapor extraction flow rate, initial vapor concentrations, required final constituent concentrations and system running time, and cost estimates for the site. The proposed system must be capable of achieving all or part of the remediation goals (extraction of volatile organic compounds (VOCs) from the subsurface) and prevent migration of contaminants to the groundwater. The final design and plan for the SVE system must be adequate for inclusion in the MDA G Corrective Measures Evaluation (CME). The pilot test must generate the evidence as to whether SVE can serve as part of a final remedy for MDA G.

2. The pilot test must be designed to target permeable zones identified in the Tshirege Member of the Bandelier Tuff, the contacts between stratigraphic units, and any permeable layers in the geologic column. In addition, the Permittees must assess the ability of major stratigraphic units (such as the Cerro Toledo and the Otowi members) to act as either a barrier to contaminant migration or an effective extraction interval.

3. The Permittees must propose to install additional observation wells within the estimated radius of influence based on the 2008 SVE pilot test. The wells must be logged in detail. The observation well network must include these new wells and existing wells 54-01116, 54-01117, 54-24378, and 54-24388. The new observation wells must have sample ports installed in the Otowi, Cerro Toledo, Qbt 1v, and across the contacts between: Qbt2/Qbt1v, Qbt1v(u)/Qbt1v(c), Qbt1g/Qbtt, Qbt1v-c/Qbt1g.

4. The Permittees may use the existing deep extraction borehole, so long as the following conditions are met: Slough must be cleared from the hole and the casing must be pulled back far enough to expose the Qbt2/Qbt1v contact interval. The shallow extraction well must be abandoned in accordance with Section X.D of the March 1, 2005 Order on Consent (Order). If removing the casing in the deep extraction well is not possible, the Permittees must abandon the existing deep extraction borehole and propose drilling a new extraction borehole in the vicinity of the current extraction wells (i.e., at a location where the existing observation wells may still be used, within 50 feet of the observation wells). The extraction intervals in the vapor extraction boring used for each test must be isolated from the rest of the boring and must not exceed 10 feet in length. Monitoring ports in the observation wells must be installed in the: Otowi (5 feet below the upper contact), Cerro Toledo, and Qbt 1v units across the contacts between Qbt2/Qbt1v, Qbt1v(u)/Qbt1v(c), Qbt1g/Qbtt, Qbt1v-c/Qbt1g, and within any surge beds encountered in the boreholes or interpolated between boreholes. With the exception of the Otowi, the extraction intervals must correspond to the locations listed in the section above.

5. The details and specifications of the blower, piping, sampling ports, exhaust stack and instrumentation from the extraction well head to the exhaust emission point must be provided to NMED. General manufacturer plans are not sufficient; the Permittees must provide the details of the equipment and capabilities of the instrumentation used in the field. The Permittees must collect flow rates, VOC concentrations, and tritium levels from the exhaust pipe.

6. The Permittees must propose to conduct step tests at each screened interval. Baseline measurements must be collected prior to the start of each test. Step tests must be performed at each depth interval with specified increased vacuum pressures for equal time periods. The step tests must include a four hour test at each extraction rate at each interval. There are seven intervals to be tested. The applied levels must be 15 inches of water and incrementally increase to 30, 50, 70, 90, and 120 inches of water or other extraction vacuum levels approved by NMED. The Permittees must use a blower system capable of pulling this range of vacuums. If the higher vacuum pressures cause debris to be extracted, the Permittees may end the test. If the system is turned off overnight, the Permittees must start the system at the last vacuum pressure used and operate the system for two hours to reach static conditions before continuing with the next step test. If the system is turned off for more than 12 hours (e.g., a weekend) the Permittees must restart the system and operate the system at the previous vacuum extraction rate for at least four hours to reach static conditions. The Permittees must measure all observation wells every 15 minutes for the first two hours of each test and then after two hours the Permittees must collect measurements every 30 minutes.

7. The Permittees must propose to collect extraction vacuum pressures and pressure differentials at specified intervals in all of the observation wells. Additionally, atmospheric barometric pressure during the tests and extraction air flow rates, VOC and tritium concentrations, percent oxygen, carbon dioxide, and moisture must be measured and recorded. The unit of measure must be reported in inches of water except that barometric pressure may be reported in inches of mercury. The Permittees must use the same scale for any data plots used in the report (e.g, if pressure is presented as box plots and as scatter plots, both plots must be on the same scale). The Permittees must provide status updates to NMED by email at the end of each step test and must include field data measurements, deviations from the work plan, and any other observations made in the field that could affect test results.

8. Permeability testing must be conducted in conjunction with the pilot test. The original SVE Pilot Test concluded that, "the results of the permeability test were inconclusive in defining the permeability of specific stratigraphic units and probably underestimate the actually permeability as a result of the sampling system design" (*MDA G SVE Pilot Test Report, Revision 1*). The Permittees must ensure that the data collection methods are adequate to provide valid results. The Permittees must test the permeability of each stratigraphic unit to collect detailed permeability data concerning the stratigraphy at MDA G.

9. Conclusions must be based on the field data; however, field data can be used to calibrate the models for comparison. The Permittees must provide NMED with direct field measurements as part of the final report. The Permittees must provide both quantitative and qualitative data. For example, the Permittees may state that the pressure response was "strong" but must also quantitatively describe the pressure

response.

NMED notes that it provides these comments without the benefit of having direct knowledge of field conditions, data collection activities, or physical properties observed at the site during previous investigations. Moreover, the Permittees have not provided adequate or relevant input that would have supplied some of this information; such input potentially could have obviated the need for the test directed by this letter.

Nevertheless, the Permittees must submit the Work Plan on a date to be determined by NMED in separate correspondence; the Work Plan must be approved by NMED prior to implementation. A report summarizing the results of the pilot study must be submitted no later than a date to be determined by NMED. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order.

Please contact Kristen Van Horn at (505) 476-6046 should you have any questions.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
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