

**ENVIRONMENTAL  
RESTORATION  
PROJECT**

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TA-54

Date: January 29, 2002  
Refer to: ER2002-0044

Mr. John Young, Corrective Action Project Leader  
Permits Management Program  
NMED – Hazardous Waste Bureau  
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**SUBJECT: SUMMARY OF SUPPLEMENTAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY INVESTIGATIONS (RFI) FIELD ACTIVITIES CONDUCTED FROM DECEMBER 4 THROUGH DECEMBER 20, 2001, AT MATERIAL DISPOSAL AREA (MDA) H, POTENTIAL RELEASE SITE (PRS) 54-004**

Dear Mr. Young:

The following is a description of the supplemental sampling conducted at MDA H in response to a letter received from the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB-LANL-01-001). The letter was dated December 3, 2001.

During the week of December 17, 2001, the Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project collected soil-vapor samples at MDA H, Technical Area (TA) 54, in accordance with the December 3, 2001, letter. The letter indicated that sufficient data had not been collected at MDA H. Boreholes 54-1023, 54-15461, and 54-15462, which were drilled in 1995 and 2001 and remain open, had not been sampled to the bottoms because each hole contained drilling debris or slough. Therefore, NMED requested that the debris be removed and the boreholes re-sampled. A straddle packer system was first used to measure the concentrations of carbon dioxide and oxygen at specified sample location depths and the available bottom of each borehole. Because the straddle packer failed, total borehole measurements were not collected at borehole 54-15461 at this point. An airlift system was then used to remove the slough from the bottom of each borehole. While slough was being removed from borehole 54-15461, measurements of carbon dioxide and oxygen were collected from the airlift vacuum exhaust. Final total depth achieved in each borehole is as follows: borehole 54-1023, total depth is 258 ft below ground surface (bgs); borehole 54-15461, total depth is 99 ft bgs; and borehole 54-15462, total depth is 257 ft bgs.



Borehole 54-15462 had been drilled to a total depth of 300 ft but remains blocked below 257 ft because of the instability of the geological formation. Next, a vacuum was applied to each borehole for 30 minutes to purge any remaining ambient air in the borehole and the surrounding matrix pore space. The boreholes were then monitored until carbon dioxide and oxygen measurements were comparable to concentrations measured before the slough was removed to confirm re-equilibration of soil vapor. These concentrations and the concentrations measured before the slough was removed are presented in Table 1. Soil-vapor samples were collected using an adsorbent column (analyzed for tritium) and a SUMMA canister (analyzed for volatile organic compounds [VOCs]). The samples were collected in accordance with LANL-ER-SOP 6.31, "Sampling of Subatmospheric Air," and as described in "Plan for Supplemental Sampling for the RCRA RFI at MDA H," LA-UR-01-2516. Soil-vapor samples were shipped to a fixed analytical laboratory to be analyzed for VOCs and tritium. Table 2 provides sample locations, depths, and sample ID numbers.

Analytical results are expected back from the laboratory by the end of January 2002. After validation, results from the supplemental RCRA RFI will be presented in an addendum to the MDA H RFI report. In the meantime, the raw data will be tabulated and sent to MDA High-Performing Team members.

Table 1  
Carbon Dioxide and Oxygen Measurements  
Before and After Slough was Removed from Boreholes at MDA H

Analyte	Measurements Before Slough Was Removed			Measurements Before Soil-Vapor Sampling					
	<b>Borehole 54-1023</b>								
	50 ft (%)	245 ft (%)	Ambient Air (%)	250 ft (%)	Ambient Air (%)	100 ft (%)	Ambient Air (%)	50 ft (%)	Ambient Air (%)
Methane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carbon dioxide	1.2	1.2	0.5	0.7	0.2	0.3	0.0	0.1	0.0
Oxygen	19.8	19.9	20.5	20.1	20.7	21.1	21.6	20.5	21.0
<b>Borehole 54-15462</b>									
	50 ft (%)	233 ft (%)	Ambient Air (%)	250 ft (%)	Ambient Air (%)	100 ft (%)	Ambient Air (%)	50 ft (%)	Ambient Air (%)
Methane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carbon dioxide	0.9	0.7	0.5	0.2	0.0	0.4	0.0	0.4	0.0
Oxygen	20.0	19.9	20.5	20.7	21.0	20.7	21.0	20.6	21.0
<b>Borehole 54-15461*</b>									
	Initial (%)	Final (%)	Ambient Air (%)	95 ft (%)	Ambient Air (%)	50 ft (%)	Ambient Air (%)		
Methane	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Carbon dioxide	0.6	0.3	0.2	0.5	0.0	0.5	0.0		
Oxygen	20.7	20.8	21.0	20.7	21.0	20.7	21.0		

\* The soil-vapor measurements from this borehole were collected from the exhaust of the vacuum before and after the slough was removed.

Table 2  
Sample Locations and Numbers for Soil-Vapor Samples Collected at MDA H

Borehole	Depth (ft)	Sample Number (adsorbent column)	Sample Number (SUMMA)
54-1023	50	MD54-01-0219	MD54-01-0228
	100	MD54-01-0217	MD54-01-0226
	250	MD54-01-0218	MD54-01-0227
54-15461	50	MD54-01-0221	MD54-01-0230
	95	MD54-01-0220	MD54-01-0229
54-15462	50	MD54-01-0222	MD54-01-0231
		MD54-01-0223	MD54-01-0232
	100	MD54-01-0224	MD54-01-0235
	250	MD54-01-0225	MD54-01-0236
Field blank	n/a*	n/a	MD54-01-0233
Equipment blank	n/a	n/a	MD54-01-0234

\* n/a = not applicable.

Sincerely,



Julie A. Canepa, Program Manager  
Environmental Restoration Project  
Los Alamos National Laboratory

Sincerely,



Mat Johansen, Project Manager  
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