State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
P.O. Box 1663, MS/J-993
Los Alamos, New Mexico 87545

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

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MEMORANDUM

TO: Benito J. Garcia, Chief, HRMB

FROM: Steve Yanicak, NMED DOE Oversight Bureau, POC/LANL

DATE: 25 August 95

SUBJECT: Review of Los Alamos National Laboratory's (LANL) Environmental Restoration (ER) Project Expedited Cleanup (EC) Plan for Solid Waste Management Unit (SWMU) 9-013, Field Unit 5, Operable Unit 1157, Technical Area (TA) 9

The DOE Oversight Bureau (DOE OB) has reviewed the subject document. The following comments are provided for the purpose of communicating the results of the DOE OB review. These comments are not provided or intended for the purpose of representing the regulatory position of the New Mexico Environment Department. All NMED DOE OB derived data (Table 1) will be submitted to the appropriate agency thirty (30) days from DOE's receipt of this letter.

SPECIFIC

1. Page 4, 2.1, Detailed Description of SWMU 9-013

   General Comment: Is there an earthen berm around the satellite site? If there is no berm or if a berm has been breached, downgradient soil samples are needed to define nature and extent of COCs that have moved laterally from the site.

2. Page 4, Section 2.1.2, Physical Setting, Third Paragraph, First Sentence

   Question: Why was the term "unsaturated" used knowing that ground-water discharges from volcanics (Bandelier Tuff) approximately 230 ft south of MDA M and several other

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locations across the laboratory, such as Burning Ground Spring (Latitude 35° 50' 56" N; Longitude 106° 20' 15" W), which is located at TA-16?

3. Page 4, Section 2.1.2, Physical Setting, Third Paragraph, Fifth Sentence

Once again, the existence of springs emanating from volcanics north and south of MDA M supports the fact that saturated conditions within the volcanics do exist, not "may exist" as stated in the EC plan.

4. Page 6, Section 2.2.2, RCRA Facility Investigation

General Statements: A single ground-water and surface-water sampling event may have not adequately addressed possible contaminant transport via surface water and/or ground water at MDA M. Recent investigations by the NMED's DOE OB have shown that ground water discharges from fractured volcanics which lie beneath MDA M. Flow may be perennial or seasonal. A high degree of horizontal and vertical fracturing of the tuff exists at MDA M. Field observations and ground-water sampling were conducted by NMED DOE OB from July 22, 1994, to June 22, 1995. Results (Table 1) and observations indicate that a complex hydrogeologic system is present at MDA M. The referenced springs in LANL's EC for MDA M, Charlie's and Homestead Spring, showed consistent flow throughout the sampling period; however, on April 28, 1995, four additional springs were observed discharging from the tuff at estimated flow rates ranging from 5 gallons per minute (gpm) to 0.5 gpm. This may be in response to snow-melt runoff or "spring recharge". That is, excess recharge may have exceeded the discharge potential, and subsequently caused an additional discharge flux through the unsaturated zone. On April 28, 1995, and May 19, 1995, ground-water sampling events at Homestead Spring and Charlie's Spring, and two of the four ephemeral springs, Upper Starmer's Spring and Perkins Spring occurred. Upper Starmer's Spring is located approximately 150 ft upgradient of Charlie's Spring. Perkins Spring is located approximately 30 ft upgradient of Starmer's Spring. Both springs emanate from the south-facing canyon wall of Starmer's Gulch, south of MDA M. Nitrite-nitrate as total nitrogen and total Kjeldahl nitrogen values (Table 1) from Upper Starmer's Spring were consistent with historical values from Homestead, Charlie's and Starmer's Springs; however, during the same sampling event, Perkins Spring showed elevated values of nitrogen. The ephemeral springs showed a decrease in total dissolved solids, specific conductance and flow through time.

Increased concentrations of dissolved barium at Charlie's and Homestead Springs (Table 1) have also been observed. The above indicates that the unsaturated (vadoze) zone is undergoing saturation, and possible flushing. We recommend ground-water characterization and periodic monitoring of all known ground water at MDA M. Vadoze and/or ground-water contamination via fracture flow may be occurring; hence, specific sampling of the fractures along the soil-tuff interface below MDA M is also recommended.

It should be noted that perennial flow occurs from each referenced spring to an unknown distance down Pajarito Canyon. Hence, the presence of perched ground water in the Pajarito Canyon alluvium is probable, and characterization should be performed.

5. Page 8, Section 2.2.2, Judgmental Sampling of Downgradient Sediments

Comment: Three samples are not enough to determine if there has been a release from the site. Additional samples of downgradient sediments along the south, east, and northeast sides of MDA M need to be taken to define nature and extent of contamination.

6. Page 8, Section 2.2.2, Spring and Creek Samples, First Paragraph, First sentence

Comment: It should be noted that Starmer's Spring (sample ID:09-7550) emanates from the north-facing canyon wall of Starmer's Gulch. Hence, it is doubtful that Starmer's Spring discharges ground water that interacts with the subsurface beneath MDA M.

7. Page 8, Section 2.2.2, Spring and Creek Samples, First Paragraph, Fourth sentence

Comment: Why would one assume a source of a spring or ground-water discharge point without making additional observations (i.e., tracer test data, flow-path data, etc.)?

8. Page 8, Section 2.2.2, Spring and Creek Samples, Second Paragraph

General Questions: Were surface waters from Pajarito Canyon, where sample ID 09-7561 was collected, flowing at Homestead Spring? Sample 09-7561 needs to be shown on a location map. On which side of the lab boundary shown on Figure 2-1 was the sample located? Have there been any

recorded lab activities on the west side of State Road 501? These are relevant questions in light of the high-explosive detects found in this surface water sample. Please define "comparative purposes"?

9. Page 9, Section 2.2.2.1, Summary of RFI Analytical Results

General Comment: It would be helpful to graphically illustrate in your data tables (Annex 6.9) each analyte (both detect or non-detect), detection limit, SAL, UTL and sampling date.

General Question: Were the analytical detection limits for each analyte less than its associated screening action level and/or upper tolerance limits?

General Question: Would it not be more appropriate to relate site-specific geochemistry to background geochemical data (soil, water, etc.) when defining or assessing environmental impacts?

10. Page 10, Section 2.2.2.1, Summary of RFI Analytical Results, Spring and Creek Samples

Comment: Sampling volatile organic compounds (VOCs) may not adequately characterize the presence of VOCs within the perched zone because of the increased rate of the natural degradation (i.e., biological) and volatilization at ground-water discharge points.

11. Page 10, 2.2.3 Evaluation of the RFI Results, Fifth Bullet

Comment: High-explosive (2,4-DNT) results for sample 09-7561 are suspect because the sample was taken up gradient from not only the MDA but also possibly from the lab boundary itself. Surface water west of State Road 501 in Pajarito Creek should be resampled to determine if this is truly a background location. The comment in bullet 5 should be supported with further spring and creek data.

Comment: It is probable that the high-explosive detects in the ground water are related to MDA M. Additional ground-water monitoring and characterization is recommended.

Comment: Using upgradient and downgradient in terms of the ground-water movement should not apply at this site because sufficient data do not exist to support it. Only broad-based assumptions should be used when comparing and/or relating ground-water to surface-water data.

12. Page 11, Section 2.4.1.1, SWMU - In Place, First Paragraph

    Comment: Contaminant transport via ground water needs to be added to the list because of the lack of sufficient ground-water data.

13. Page 14, Section 3.0, Expedited Cleanup

    General Comment: The twenty-two judgmental samples that were taken at the disposal area during the original RFI activities may not be representative of what is actually present at the site considering the volume of material at the site, and we recommend additional biased sampling during the Phase I remediation activities.

    General Comment: During the last forty-seven years the disposal area may have absorbed, collected, and transmitted water and contaminants, and contaminants may have leached to the soil-tuff interface and/or subsurface. If interflow (flow along the soil-tuff interface) is occurring, then contaminants may be transported along the soil-tuff interface and ultimately along vertical fractures. Hence, we recommend full characterization of the media (i.e., soils, tuff and fractures) beneath the debris, not field screening. This step should be performed immediately after the surface debris cell is removed so that horizontal and vertical mixing of contaminants between cells does not occur.

14. Page 14, Section 3.3.1, Cleanup Activities, Fifth and Sixth Bullets

    Question: Do field screening detection limits exceed UTLs or SALs? Will field screening instruments detect analytes down to their SALs, such as vinyl chloride (SAL at 0.013 mg/kg), beryllium (SAL at 0.16 mg/kg) or 2,6-dinotrotoluene (SAL at 1.0 mg/kg)?

15. Page 16, 3.5 Verification Plan, <u>Phase 1</u>, Paragraph 4

    Question and Comments: Will the off-site laboratory analyze for the same constituents as the on-site laboratory? Please specify what the QA level will be for each sample set; field screening, on-site laboratory, and off-site laboratory. The number of off-site laboratory confirmatory samples (5) may not be adequate for a SWMU of this size (3.2 acres).

16. Page 17, Phase II, First Paragraph

Comments: According to this paragraph, verification soil samples will be analyzed for total metals. SVOCs and PCBs will be analyzed for only if Phase I sampling indicates their presence. A representative number of samples should be analyzed for total metals, SVOC, PCB, and HE, regardless of Phase I sampling results.

17. Page 17, Phase II, First Paragraph

Question and Comments: Compositing is not a recommended sampling method. Is there a SOP for composite sampling? The Phase II confirmatory sampling plan should provide more detail. Please include a map of MDA M showing a grid with an example of how many samples from each grid cell will be composited. Will the random samples obtained from the soil surrounding the excavations be composited with the internal grid samples?

18. Page 17, Phase II, First Paragraph

Sampling below MDA M after excavation should be judgmental. For example, if soils contain levels above SALs, the tuff should be cored and sampled for COCs along well developed vertical fractures. Selective sampling will help determine if COCs have infiltrated along fractures and have potentially reached ground-water.

Please feel free to contact Michael Dale at 672-0449 or Martyne Kieling at 827-1536 if you have any questions concerning this matter.

Reviewed by: M. Kieling
M. Dale
W. Stone

attachment
cc: Ivan Trujillo, US DOE LAAO, AIP POC, MS A316
Mike Gilgosch,, US DOE FU5, FPC, MS A316
Cheryl Rofer, LANL, EES-1, MS D462
Tracy Glatzmaier, LANL ER Project, MS M992
Steve Rae, LANL, ESH-18, MS K490
Barbara Driscoll, US EPA Region 6
Gilbert Sanchez, San Ildefonso Pueblo, Environmental Director
Neil Weber, NMED, Chief, DOE Oversight Bureau
Steve Yanicak, NMED, DOE Oversight Bureau
John Parker, NMED, DOE Oversight Bureau
Teri Davis, NMED, HRMB
Jim Piatt, NMED, Chief, SWQB
Marcy Leavitt, NMED, Chief, GWPRB
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