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MEMORANDUM

TO: Steve Alexander, Technical Compliance Program Manager

THROUGH: Bruce Swanton, POC
AIP DOE/LANL

FROM: Teri D. Davis
LANL/DOE Oversight Program

DATE: August 29, 1993

SUBJECT: **Comments on LANL's May 1992, Operable Unit 1144 RFI Work Plan**

The Hazardous and Radioactive Materials Bureau (HRMB) Agreement in Principle (AIP) personnel have completed their review of the Operable Unit (OU) 1144 RCRA Facility Investigation (RFI) Work Plan. The following memo is divided into two sections. Section 1 contains technical comments and recommendations on Hazardous and Solid Waste Amendment (HSWA) issues. The AIP program is submitting these HSWA-related comments and technical recommendations to the HRMB's RCRA Permitting and Enforcement/Technical Programs because of eventual New Mexico HSWA authorization. Section 2 contains comments concerning non-HSWA issues and is provided in this memo for the sake of completeness of the Work Plan review. These non-HSWA issues are those that are not specific to the RCRA regulations.

SECTION 1, HSWA-RELATED ISSUES

General Comments

1. Differentiation between field lab and laboratory measurements is not made in Appendix E tables (see Appendix E, Table E-2(b)). The number of samples intended for field lab analysis should be indicated on these Appendix E tables.
2. The totals for laboratory measurements (e.g. U, Pu, metals and SVOC) do not equal the number of boxes marked in most of the Appendix E tables (see Appendix E, Table E-2(b)). This inconsistency should be corrected.
3. The level of QA/QC available for all analytical procedures using the mobile lab is not clearly stated. Clarification is needed concerning the limit of detection and QA levels attainable for individual constituents using the mobile lab.



Specific Comments

1. [E.1.5p3] The contaminant pathways of immediate concern should also include surface water and air pathways based on known surface contamination at Area 2 and Area 11.

The transport mechanisms for subsurface contaminant migration are not well understood. Figure B-8 in Appendix B shows that a concealed fault may exist in close proximity to the experimental shafts. Given the nature and quantities of contaminants present in the subsurface, the potential for groundwater pathways should be of more immediate concern.

2. [E.1.5.p4] Evaluation of potential risk at a site proposed for permanent disposal of RCRA metals or mixed-waste should be based on the possibility of transfer of contaminants (e.g. Pu, U(235)) to the environment over the life of the contaminants rather than for a period of 100 years. This evaluation should consider elements such as seismic hazard effects, cliff retreat rates, surficial erosion, and possible eventual vadose zone transport to zones of saturation (perched or main aquifer).

With regard to the extremely long-lived isotopes in the MDA and the uncertainty of continued DOE site control over this time period, this land use scenario may not be appropriate based on the nature of contaminants present.

3. [E.2.2] Some mention of QA/QC should be included in this section.
4. [3.2.6] "Likewise, measurable surface contamination attributable to TA-49 has never been found beyond the TA-49 boundary." What sampling has been done to confirm this statement?
5. [3.4.2p1] "Surface water and air pathways are not of immediate concern because the majority of TA-49 contaminants are buried in shafts." Landfill 47-004 is next to Water Canyon and Area 11 contains a leachfield and has soil contamination in near drainages. Please clarify the above apparent inconsistency.
6. [4.4.3.2, fl.4-3] Contour lines should not be drawn using different types of data (eg. production well screen intervals are different than test well screen lengths). Contouring this type of data may lead to significant error in flow direction interpretation.

OU1144

August 29, 1993

Page 3

7. [4.4.3.2p1] "The groundwater pathway is not likely to be important at the TA-49 OU over the 100 year time period assumed for institutional control". See Specific Comment #2.
8. [4.4.3.2p6] Flow velocity "is approximately 345 ft/hr." Should this be 345 ft/yr?
9. [4.4.3.3p6] Calculated ground water age is stated to be ">50 yrs (piston-flow model)"; Table 4.4-4 indicates >15 yrs. Please clarify.
10. [6.2.1b2] Does the statement "there are no aquifers known or expected in the area" refer specifically to perched aquifers?
11. [6.2.1p3] "The likelihood for significant impact to public health or the environment from Area 11 contaminants is minimal over the assumed institutional time frame of 100 yr." See Specific Comment #2).
12. [6.2.1t6.2-1] The method (SW 8270) listed in Table 6.2-1 is different than the method listed in Appendix E-2(b) (SW 8240) for SVOC analysis. This is the case for all Appendix tables vs tables in text. The method listed in SW 846 for SVOC is 8270; SW 8240 is for VOC.
13. [6.2.2p8] What is the depth of top and bottom of the leachfield? If these data are unknown, it seems inappropriate at this time to specify the exact depth that will be sampled.
14. [6.2.4] Decision Question: "Given the contamination levels and site properties, are runoff and infiltration significant transport mechanisms for the leachfield?" The above decision question should also include airborne dispersal to be considered as a significant transport mechanism.
15. [6.2.5.1p2] It is unclear how many surface soil samples are to be taken when comparing Table 6.2-1, Table E-2(a), Figure 6.2-5 and the text: "a 20- by -20ft mesh square grid over the leachfield area, as indicated in Figure 6.2-5". If a specific number of additional samples have been included in the total number of samples reported, this value should be specified.
16. [6.2.5.4] One surface soil sample cannot be statistically significant. Please clarify.

17. [6.2.5-5] There is no mention of the four surface soil samples shown in Figure 6.2-5 in the text.
18. [6.3.2.4p2] Were all of the "salvage materials" disposed of elsewhere?
19. [6.3.4.1p2] Specify what type of sampling is to be conducted (e.g. surface soil).
20. [6.3.4.2.p1] Will the five-foot sections from boreholes be composites or will discrete samples be taken from some interval within the section? Will this apply to all such sampling?
21. [6.3.4.2p1] If hot spots are located it is recommended that the same procedure as described for the open burning/landfill area be followed.
22. [6.3.4.2p2] Why are only the lowest 5 ft of the small landfills to be sampled? Is the depth of the landfills known? What is the rationale for this sampling plan?
23. [6.3.4.3] The number of soil samples to be taken should represent a specified confidence level that contamination within that gridded area is not missed.
24. [6.4.5] Near-surface soil samples should be analyzed for VOCs in areas of known source terms such as near trailer J-13-3 and associated drainlines.

Discrete sampling should be conducted at the known location of the former 6 ft diameter hole to "verify the absence of contaminants".

25. [6.4.5.1p3] See Specific Comment #23.
26. [6.4.5.2] Is the depth of accumulated materials within these sumps known? Just because "the sump holes were open when (and if) discharges were made to them" may not indicate that stratification of materials did not occur to some extent. Sumps may contain stratified layers of grain sizes, particularly clay sized materials which may impede migration of contaminants to the bottom of the sumps. This section needs clarification.
27. [6.4.5.4] NFA recommendations should not be based on Level I or II screening data. It is recommended that a

statistically significant number of samples be taken to "verify the absence of PCBs".

28. [6.5.1p2] In the sentence "migration pathway at Area 5", should this be Area 10?
29. [6.5.3p1] What potential contaminant sources exist within the experimental chamber? It is not clear if the source terms mentioned (materials that may have ended up at the bottom of the shafts) are the same as in the chamber. Is the calibration chamber unit the same as the experimental chamber?
30. [6.5.4p1] With reference to the sentence, "is not present in Area 11", should this be Area 10?
31. [b1.6.5.5] Explain the rationale for this assumption.
32. [6.6.4] It is recommended that near-surface soil samples be analyzed for VOCs in areas with known source term such as the Bottle House.
33. [6.6.4p4] NFA recommendations should not be based on screening results. The use of low confidence data (Quality Assurance (QA)/Quality Control (QC) Level II) is not adequate for use as a basis for NFA recommendations. This issue should be discussed with the appropriate stakeholders.
34. [app E.tE-6] QA/QC samples should be indicated for SVOC.
35. [f6.6-3] It is recommended that at least one sample be taken near A411(9) to "verify the absence of contamination".

Based upon topography, it is suggested that the radiological survey area be extended at least 5 feet south of the discolored soil area.

It is unclear from Table E-6 which samples are at which locations. The number of samples shown in this figure do not equal those in the table. Please clarify.

36. [7.0] Maps should be prepared that indicate the locations of the experimental shafts in relation to the proposed RFI sampling locations.

It is suggested that the results from the A411 sampling event be plotted on the Phase I RFI soil sampling and borehole location figures for comparison.

37. [f7.2-all] These figures lack scale and north arrow.
38. [t7.3-1] This table is misleading; as mentioned in Table 7.3-2, Area 1 had only 19 samples for Pu-238 not 34 as indicated in this table. A more comprehensive table could be constructed or a notation explaining this difference.
39. [7.3.5p3] At what depths were these (1987) soil samples collected?
40. [f7.3-1] It is recommended that concentrations detected be shown for each location.
41. [7.4.1p9] The statement, "deep groundwater and surface water at TA-49 has been monitored for over 30 years with no indication of water contamination, except in Core Hole 2" is based on 3 main aquifer wells may not be ideally located to monitor source terms. Area 1 is the only hydronuclear shaft area that may have three wells downgradient (DT-5A, DT-9, DT-10). The above statement should either be retracted or modified to fit the known physical conditions.
42. [7.4.2b1] See Specific Comment #32.
43. [f7.5-1] It is recommended that at least two 10 foot boreholes be drilled to characterize the subsurface. Table 7.3-2 shows that Cs-137 was detected in vegetation samples and numerous soil samples were above background levels. Is this an instrumentation problem, the result of fallout contamination (hence these values would be no larger than background), or do the data from the 1987 A411 survey suggest possible subsurface contamination? Please clarify.
44. [f7.5-2] It is recommended that a 10 foot and 150 foot corehole be drilled in Area 2B. Shaft areas that contain shots with Pu and U should be characterized individually due to the potential for subsurface variability (fractures, surge deposits, etc.).

Surface soil sampling locations do not reflect the Pu shot shafts concentrated in the northeast corner of Area 2B. Surface soil samples should be located as to characterize the areas near the shafts.

45. [f7.5-4] It is recommended that at least two 10 foot boreholes be drilled to characterize the subsurface. See Specific Comment #43.

46. [7.6.4.3] Explain the rationale for proposing a 700 ft vertical borehole at Area 1 and not at Areas 2B and 4.
47. [7.6.6] Explain the rationale for proposing a lateral borehole at Area 1 and not at Areas 2B and 4.
48. It is suggested that for all proposed angled (lateral) boreholes, the holes be completed as monitoring wells (soil-gas, moisture probe, etc.) This action will increase the efficiency of the RFI and provide valuable data which can be used to evaluate risk-based remedial selections for these MDAs.

SWMU Proposed For No Further Action

49. [8.4] Research has shown that the lack of humic material and nutrients in the soil will greatly retard degradation of HE. The degradation of HE over 30 years at LANL is in question and should not be used as a criteria for NFA.
50. [8.5] A reconnaissance of the "borrow pits" should be conducted prior recommending this site for NFA.
51. In general, a tour of NFA sites will be necessary before NMED/AIP can comment on the adequacy of NFA recommendations. Observations made at NFA sites by AIP staff will be reported to HRMB as an addendum to this review.

SECTION 2, NON-HSWA ISSUES

General Comments

1. Has soil deposition occurred over areas of concern since 1961? What impact, if any, would this have on the radiological survey results?

Specific Comments

1. [6.2.5.1p1] How was the value of 90% arrived at for the area to be covered by the radiological survey?

When tripod detection methods are used in radiological surveys, the node spacing should be specified.

2. [6.3.3b2] See Section 2, Specific Comment #1.

OU1144
August 29, 1993
Page 8

3. [f6.3-7] The radiological survey area cannot be seen in this figure.
4. [f7.5-1] The radiological survey area cannot be seen in this figure.
5. [f7.5-2] It is suggested that the radiological survey area include all locations to be sampled.
6. [f7.5-3] The radiological survey area cannot be seen in this figure.
7. [f7.5-4] The radiological survey area cannot be seen in this figure.

SWMU Proposed For No Further Action

8. [8.6] Radiological surveys should be conducted at the staging and drainage control areas to "verify lack of contamination".

cc: LANL Red/93
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