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HSWA LANL 2/11/00/53

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December 18, 1998

Mr. David A. Gurule, Program Manager
Los Alamos Area Office
Department of Energy
528 35th Street, MS A100
Los Alamos, New Mexico 87544

Dr. John C. Browne, Director
Los Alamos National Laboratory
P. O. box 1663, MS A100
Los Alamos, New Mexico 87545

Re: Request for Supplemental Information for RFI Work Plan/SAP for TA-53 Surface Impoundments, PRS 53-002(a, b) and TA-53 SAP Addendum for PRS 53-006(a-e)

Dear Mr. Gurule and Dr. Browne:

The RCRA Permits Management Program (RPMP) of the Hazardous and Radioactive Materials Bureau (HRMB) has reviewed the DOE/LANL's June 18, 1998 (EM/ER:98-203) RFI Work Plan/SAP for TA-53 Surface Impoundments, PRS 53-002(a, b) and October 30, 1998 (EM/ER:98-430) TA-53 SAP Addendum for PRS 53-006(a-e) and found them to be incomplete. A request for supplemental information is included as Attachment A.

DOE/LANL must respond to the request for supplemental information items listed in Attachment A within thirty (30) calendar days of receipt of this letter. If DOE/LANL does not submit a complete response within thirty (30) calendar days a Notice of Deficiency will then be issued.

Furthermore, DOE/LANL should contact the NMED Surface Water Quality Bureau to address their concerns with the best management practices at the lagoon area outfall.

Should you have any questions regarding this letter, please contact me or Mr. John Kieling, HRMB's LANL Facility Manager, at (505) 827-1558.

Sincerely,

Robert S. (Stu) Dinwiddie, Ph.D., Manager
RCRA Permits Management Program
Hazardous and Radioactive Materials Bureau

RSD:lw



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December 18, 1998
Supplemental Information Request
TA53 RFI Work Plan & Addendum
EM/ER:98:203 & 430

Los Alamos National Laboratory
NM0890010515

CC w/ attachments:

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File: Reading and HSWA LANL 2/1100/53
Track: LANL, 12/18/98, NM, DOE/LANL, HRMB/Dinwiddie, RE, File

ATTACHMENT A
Request for Supplemental Information (RSI)
For the RFI Work Plan/SAP for TA-53
Surface Impoundments, PRS 53-002(a, b) and
TA-53 SAP Addendum for PRS 53-006(a-e)

Because the SAP Addendum for PRS 53-006(a-e) will be conducted during the investigation of the surface impoundments and because these two areas should be aggregated during ecological risk assessment, they are being reviewed and commented on in one RSI. The specific comments which apply to the SAP A addendum for PRS 53-006(a-e) are numbers 8, 9, and 10.

GENERAL COMMENTS:

1. LANL should include the minimum requirements of a closure and post closure care plan in the performance objectives for this RFI work plan.
2. LANL should describe what values were used for naturally occurring background metals and radiation. LANL should use the values included in the 1998 (ER ID 58093), Ryti, *et al* "Inorganic and Radionuclide Background Data for Soils, Canyons Sediments and Bandelier tuff at Los Alamos National Laboratory."
3. In addition to the data summary tables presented in this work plan, LANL should present all historical and future analytical data (including QA/QC data) in electronic format.
4. LANL should not eliminate any data from the list of contaminants of potential concern (COPCs) before the screening assessment.
5. The co-location model of contamination does not appear to be supported by historical sampling at this site. LANL should provide the basis for this hypothesis or propose alternative or additional sampling.
6. LANL should not perform human health risk assessment nor ecological risk assessment at this site until all aggregate investigation data determining nature, rate, and extent of contamination have been collected. This aggregation should include the proposed PRSs as well as the piping to the surface impoundments, the underground tanks (MPF- in building 1, and tanks 68, 69, 144, and 145), the vadose zone, and ground water. Examples of locations in the text which reflect this comment are:
 - A) Page 1-8, Section 1.1 Objective and Scope, paragraph 1. "The data collected... will be used in two ways: to determine the extent (to a 12 ft depth) of contamination and to conduct both a baseline human health risk and ecological screening assessments.", and
 - B) Page 2-6, Section: Relation to Other PRSs, paragraph 1. "These three PRS will be aggregated into one RFI report because of their close geographical proximity

and the need to evaluate the entire area in the ecological screening assessment.”

7. All tables reporting values for historic data in the Appendices and text (and in future reports) should include values above detection limits not just above naturally occurring background. Furthermore, LANL should provide practical quantitation limits (PQLs)/estimated quantitation limits (EQL) and qualified data as well.

SPECIFIC COMMENTS:

8. Regarding PRS 53-006(a-e), LANL should provide all previous “waste characterization strategy forms” and “waste profile forms” for all septic systems and underground tanks which were discharged to the surface impoundments including MPF-1 in building 1, and tanks 68, 69, 144, and 145. LANL should also provide MSDSs for all chemicals that were added to the tanks including corrosion inhibitors. Furthermore, LANL should sample the sludge in all holding tanks for all Appendix IX volatiles, semivolatiles, metals, and PCB’s as well as radioactive isotopes.
9. Regarding PRS 53-006(a-e), LANL should follow all applicable comments found herein regarding naturally occurring background data, analytical sampling suites and methodology, co-location, data reporting, and risk assessment.
10. Regarding PRS 53-006(a-e), LANL should delineate the horizontal and vertical extent of contamination in the vadose zone for each holding tank and provide more sampling locations beneath the associated piping during this phase of investigation.
11. Page 1-2, Section 1.0 Introduction, paragraph 2. “Before 1997, PRSs 53-002(a) and (b) were considered treatment, storage, and disposal (TSD) units regulated under RCRA, and thus requiring a closure plan. On July 21, 1997, in response to a request from LANL, the Hazardous and Radioactive Materials Bureau of NMED informed DOE that there was an approved change in status for the TA-53 surface impoundments. Under the Hazardous and Solid Waste Amendments (HSWA), the TA-53 surface impoundments were changed from TSD units to corrective action units.” The units were not changed from TSD units to corrective action units. LANL is being allowed to clean up the units using the corrective action process. LANL should revise this statement to reflect this clarification and include performance standards to meet closure and post closure care requirements.
12. Page 1-10, Section 1.3.1 Regulatory Issues, last paragraph. “This investigation may reveal additional regulatory drivers such as the need to obtain information regarding surface water, groundwater, or biological species uptake.” There will be a need to obtain information about groundwater regardless of results found from this work plan. The lack of COPCs found in the upper 12 feet does not preclude the fact that COPCs have migrated to further depths.
13. Page 1-11, Section 1.4 Data Quality Objectives Process, last paragraph. “Based on the conceptual model, the next step was to perform a human health screening assessment (Appendix F), which resulted in a list of COPCs that will be carried forward to a human health risk assessment.” The nature, rate, and extent of contamination are undetermined at this site, thus,

human health screening assessments performed for the northeastern and northwestern surface impoundments are premature.

14. Page 2-7, Section: Physical Description. LANL should describe the geographic features such as ditches, arroyos, etc., where contaminants of potential concern (COPCs) may collect.
15. Page 2-7, Section: Physical Description. LANL should describe soil types and properties.
16. Page 2-10, Section: Groundwater Hydrology, paragraph 1. LANL should provide depth to ground water and in which aquifers it occurs (e.g. alluvial, perched intermediate, and regional) water values in PM-3 and report any COPCs detected in this groundwater.
17. Page 2-10, Section: Groundwater Hydrology, paragraph 2. "Otowi-4 also evidenced perched groundwater [at a depth of 253 ft] when installed in 1990...". Because of:
 - A) the unknown volume of liquid and gas phase contaminants which may have escaped from the surface impoundments,
 - B) the fact that tritium has been detected to 150 ft,
 - C) the possible shallow depth of perched water,
 - D) The Tshirege Member of the Bandelier Tuff (where the units are installed) is "very porous" and,
 - E) "The moisture values are relatively higher at the impoundments than what is typically observed in similar material at TA 53",

LANL should propose investigating the vadose zone both vertically and horizontally for the extent of contamination in this phase of the work plan.

18. Page 2-14. Section 2.1.2 Operational History, paragraph 1. Mixed waste may have been disposed of in all three impoundments. See general comment number 7 above.
19. Page 2-14. Section 2.1.2 Operational History. LANL should describe the past and present operation of the facility in more detail. The description should including maintenance, cleaning, storage, and hazardous waste management.
20. Page 2-15. Section 2.1.2 Operational History. Regarding the overflow pipe, LANL should describe the estimated discharge quantity and physical description of all spills.
21. Page 2-17. Section 2.1.3 Waste Characteristics. LANL should include all detected constituents as contaminants of potential concern(COPCs) in this work plan . In addition to the proposed sampling suite the following should be included for all three impoundments and surrounding area:

PCBs:	Aroclor-1254 and Aroclor-1260
Pesticides:	BHC(alpha-), BHC (gamma-, Dieldrin, DDT and metabolites, Endrin, Endosulfin I, Endosulfin II, Heptachlor
SVOCs:	Bis(2-ethylhexyl)phthalate, Benzidine, Di-n-butylphthalate, Benzoic acid,

Benzyl acid, Fluoranthene, 2-methyl phenol, 4-methyl phenol, Pyrene

VOCs: Acetone, Methylene chloride, T-butanone, Toluene,
Trichlorofluoromethane; Carbon disulfide, Chloroform, 4-isopropyl toluene,
1,2,4-trimethylbenzene

Metals: TAL metals plus mercury

Radionuclides: All radionuclides identified in previous sampling events and their stable
daughter products for the short half-life(<2 years) isotopes.

22. Page 2-22. Results of 1994/1995 Sampling (paragraph 2). "The number of samples collected from the northern surface impoundments is adequate to characterize the nature of contamination within the surface impoundments and potentially released from the surface impoundments, because of the systemic nature of the sampling effort." This statement may not be accurate because of the way the VOCs were collected. Using the new 5035 series for collecting will ensure more confidence in VOC results.
23. Page 2-22. Results of 1994/1995 Sampling (last paragraph). LANL should describe selection of naturally occurring background values (see general comment number 2 above).
24. Page 2-27, Section: Vadose Zone Characterization (paragraph 1). "Metals were detected at background concentrations, and VOCs and SVOCs were not detected, therefore the data are not presented in any table. These measurements indicate that tritium is the only contaminant that has migrated into the vadose zone below the surface impoundments; the lateral tritium migration is at most 30 ft from the impoundment, while vertical tritium migration is at least 100 ft in this location."
 - a. LANL should use background concentration values for metals (for the appropriate tuff unit), as described in general comment number 2 above.
 - b. Previous sampling data indicate tritium at 200 pCi/L at 150 ft (boring 53-6), a couple of VOCs were detected at depth (with QA/QC qualifiers) in borings 53-6 and 53-7. The methodology for collecting the VOC samples is in question. For example, explain how the samples were collected, were caps placed on the ends of the core sampler when collected? LANL should qualify this statement more accurately.
 - c. LANL should explain the statement "the lateral tritium migration is at most 30 ft from the impoundment, while the vertical tritium migration is at least 100 ft in this location."
25. Page 2-27. Vadose Zone Characterization. LANL should submit maps illustrating both surface and vertical extent of contamination.
26. Page 2-29. Conceptual Model. LANL should clearly define the problem and provide the questions to be answered (see general comment number 1 above).

27. Page 2-30. Conceptual Model. Figure 2.2-3 conceptual exposure model for surface impoundments. LANL should include the exposure pathway for human ingestion of groundwater.
28. Page 2-31. Section 2.2.2.1 Nature and Extent of Contamination. "Previous sampling efforts have found a variety of contaminants to be present in the sludge, clay liner, and to some extent the underlying tuff. Such contaminants include radionuclides, SVOCs (including PCBs) and heavy metals." LANL failed to include VOCs in this statement. LANL should include VOCs in this statement.
29. Page 2-33. Section 2.2.2.1 Nature and Extent of Contamination, paragraph 3. "Contaminants that exceed the Laboratory background are...." Background values are not applicable within a land treatment unit. LANL should remove background comparisons for COPCs within the units and liner samples.
30. Page 2-34, Section 2.2.2.2 Fate and Transport, paragraph 4. "The apparent absence of VOCs in sample results reveals that VOCs that may have been present in discharges to the impoundments volatilized, biodegraded, or were otherwise removed from solution and thus were not available for transport." This statement does not account for the presence of VOCs in the impoundments and possibly in boring samples around the impoundments. LANL should expand this statement to reflect the presence of VOCs at the site.
31. Page 2-37, Section 2.2.2.2 Vertical Migration, paragraph 5. "Measurements of other contaminants (metals, VOCs, SVOCs) indicate that tritium is the only contaminant that has migrated into the vadose zone below the surface impoundments." Because of insufficient investigation to date this state is premature. LANL should revise this statement.
32. Page 2-38, Section 2.2.2.2 Atmospheric Release. "A calculation of the current contaminant levels at PRS 53-002(a) was completed to determine that there are no human health risks associated with inhalation of the sludge particles." To verify this statement, LANL should provide these calculations as an Appendix to this work plan.
33. Page 2-39, Section 2.2.3 Proposed Sampling Activities. From evaluating data from 1994/95 sampling HRMB suggest that LANL should propose sampling under the Gunitite berms around the two northern impoundments.
34. Page 2-39, Section 2.2.3 Proposed Sampling Activities, paragraph 2. "The 12-ft sampling depth was chosen primarily for practical reasons, and secondarily for scientific reasons. First locating a drill rig within the impoundments would be difficult for several reasons. The sides of the impoundments make directly driving into them impossible. A ramp would have to be built to accomplish this; however, adding material into the impoundments would potentially increase the volume of waste. In addition, driving the rig in the impoundments would disrupt the existing clay liner in the northern impoundments. Angle drilling is not a cost effective option due to the size of the impoundments." See item number 17 above for reasons to evaluate the vadose zone below this site during this phase of the work plan.
35. Page 2-40, Section 2.2.3, Proposed Sampling Activities, paragraph 8. "The full suite of analyses that will be requested to help determine extent of possible contamination for the northern surface

- impoundments are PCBs, SVOCs, and TAL metals including mercury." LANL should add to the proposed constituents the list of COPCs described in comment number 21 above.
36. Page 2-41, Section 2.2.3 Proposed Sampling Activities, VOC Sampling Procedures in Solid Media, paragraph 3. LANL should perform all VOC sampling in solid media following SW846 series 5035 collection and analytical procedures.
 37. Page 2-47, Section 2.2.3.1 Contaminant Source, paragraph 2. "The contaminant concentrations of the unfiltered water samples will be added to the concentrations of the laboratory dried sludge after the percent moisture difference between the two is taken into account." Please clarify this statement especially the phrase "after the percent moisture difference between the two is taken into account." LANL should describe how the effects of water content attenuating Beta and Alpha particles will be compensated. LANL should provide rationale for sampling twice (wet and dry sludge). LANL should propose different sampling locations for dry sampling to provide better coverage. LANL should compare screening assessment to wet sludge which would contain more Tritium and VOCs than dry sludge. LANL should include an alternative for further sludge sampling if the contamination is found to be heterogenous.
 38. Page 2-47, Section 2.2.3.1 Contaminant Source, paragraph 3. "Sludge samples within the southern surface impoundment will be collected using a similar grid system to that recommended by the NMED in its March 19, 1992 letter responding to the proposed RCRA closure sampling plan for this PRS...". Grid sampling assumes normal distribution of contaminants. As evidenced from recent sampling efforts this is not the case. LANL should supplement this sampling and analysis plan with a biased sampling strategy to include finding the maximum concentrations of COPCs in the sludge and media beneath the impoundments. LANL should consider finding leaking areas in liners, clay, rubber, or Gunitite berm, rubber seams, and where piping enters or exits impoundments. LANL should sample the tuff beneath these areas.
 39. Page 2-50, Section 2.2.3.2 Media Characterization, paragraph 3, & Figure 2.2-7 Location of proposed tuff samples inside the northern surface impoundments, PRS 53-002(a). There are only four sample locations for tuff inside the northwestern impoundment. LANL should include a sampling location in the tuff where there was a detection of 0.07 ppm total volatiles (see figure G-3, distribution of total detected VOCs in tuff). LANL should also include sampling for VOCs in tuff using SW846, 5035 series test method.
 40. Page 2-50, Section 2.2.3.2 Media Characterization, last paragraph on the page. ("elevated" is defined as two times the background based on background in the field at the time of sampling). It is not clear that the detection limits for radioactivity will be sufficiently low to compare with natural background because of the activity within the impoundments. LANL should address this concern in detail.
 41. Page 2-50, Section 2.2.3.2 Media Characterization, last paragraph on page. "This screening tool can be used effectively because co-location of radionuclides and other contaminants was observed in the northern surface impoundments." The co-location sampling bias is not verified especially in the tuff sampling beneath the gunite liner around the impoundments (Figure F-3). To prove co-location, it will be necessary to perform confirmatory off-site analytical sampling

where field screening shows no activity above background. If analytical data show COPCs above SALs or background, the methodology is faulty. LANL should propose a sampling strategy to adequately validate this supposition (see general comment number 5 above). If co-location is not verified, then LANL should propose systematic sampling.

42. Page 2-51, Section 2.2.3.2 Media Characterization, paragraph 2. Berm Sampling of Southern Impoundment "The berm surrounding the southern surface impoundment will be sampled at eight locations for two depth intervals (12-24 in..." It is important that LANL find the hot spots where the material from the old ditch was used in the berm. This material will likely be the most elevated in radioactivity. LANL should sample every 50 ft around the berm. If co-location is verified, LANL should use field screening for sampling the berm for radioactivity. If co-location is not verified then LANL should propose systematic sampling for the berm. In addition, to prevent possible air borne contamination, LANL should include a surface sample at each sampling location.
43. Page 3-3, Section 3.2 Quality Assurance/Quality control, paragraph 4. "Rinsate blanks will undergo analyses of PCBs/pesticides, gamma-emitting isotopes by gamma spectroscopy, and TAL metals, which will indicate if there has been cross contamination." LANL should include VOCs in this list.
44. Pages F-1 - F-42. Appendix F: 1994/1995 Data Screening Assessment. There is no description of how the SALs were defined. There is no rationale for the comparisons of the sludge, clay liner, and tuff sampling results to SALs. Therefore, any interpretation of its results becomes impossible prior to performing any comparison to health-based values or criteria, LANL should identify the goal(s) or objectives of comparisons, e.g. state why the screening assessment is needed, how the results will be used to focus any future site investigations and/or decisions. LANL has failed to provide a conceptual site exposure model or discuss receptors and or exposure scenarios of concern. In addition, the nature, rate, and extent of contamination appear to be undetermined at this site, thus, human health screening assessments performed for the northeastern and northwestern surface impoundments are premature.