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HSLOA LANL 1/1071/19 HF

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

June 10, 1998

Mr. Theodore Taylor, 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, Mail Stop A100  
Los Alamos, New Mexico 87545

**RE: Request for Supplemental Information  
RFI Report for TA-19  
Potential Release Sites (PRSs) 19-001, 19-003, and C-19-001  
Los Alamos National Laboratory (LANL)  
NM0890010515**

Dear Mr. Taylor and Dr. Browne:

The RCRA Permits Management Program (RPMP) of the Hazardous and Radioactive Materials Bureau (HRMB) has reviewed the "RFI Report for TA-19 Potential Release Sites (PRSs) 19-001, 19-003, and C-19-001" dated September 1997, and found it to be insufficient. Because of the length and severity of these deficiencies LANL shall follow the HRMB Position Paper - "RCRA Facility Investigation Report Outline" format for the resubmission of this report.

LANL must respond to the request for supplemental information (Attachment A) within sixty (60) calendar days of the receipt of this letter. If DOE/LANL does not submit a complete response to the request for supplemental information within sixty (60) calendar days a Notice of Deficiency will then be issued.

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

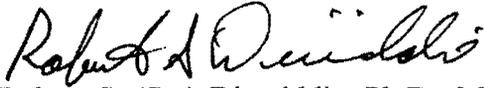


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Sincerely,



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

RSD:rw

cc w/attachments:

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J. Davis, NMED SWQB  
B. Garcia NMED HRMB  
M. Johansen, DOE LAAO, MS A316  
J. Kieling, NMED HRMB  
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H. LeDoux, DOE LAAO, MS A316  
D. McInroy, LANL EM/ER, MS M992  
D. Neleigh, EPA, 6PD-N  
J. Parker, NMED DOE OB  
S. Yanicak, NMED DOE OB, MS J993  
File: Reading and HSWA LANL 1/1071/19  
Track: LANL, 6/10/98, NA, DOE/LANL, RPMP/Dinwiddie, RE, File

**ATTACHMENT A**  
**Request for Supplemental Information**  
**RFI Report for TA-19**  
**Potential Release Sites (PRSs) 19-001, 19-003, and C-19-001**

**General Comments**

1. Some of the references that were provided in the RFI Work Plan to document the historic information were not provided in the RFI Report. For example, "LANL 1947" and "Montoya 1974" were not provided.

LANL shall include the correct references for the archival documentation in the revised RFI report.

2. The site history information did not include all site history nor sufficient detail. For example, the RFI Work Plan indicated that the site was established in 1944 for the purpose of testing of electrical equipment but the RFI Report does not mention this. Furthermore, if complete site history cannot be obtained, the SAP or the RFI report should explicitly state this and any future conceptual models should address any uncertainties associated with incomplete site history. For example, a combination of biased sampling and grid sampling could be used to address uncertainties associated with not knowing the exact locations of the sources of contamination. Also, a broader suite of analytical methods could be used to address uncertainties associated with not knowing exactly what chemicals and radionuclides were used at the site.

LANL shall revise the site history to include all site history and complete description of the nature and location of all potential sources of contamination. This site history information should include the following, if this information can be obtained:

- a. A complete description of the types of facility processes or activities that were conducted inside and outside of each building or structure that could have contaminated the site. Some examples are:

Provide descriptions of the processes or activities that were conducted during the use and maintenance of the batteries, scintillation studies, the testing of electrical equipment, and the irradiation of monkeys and other items.

Clarify if PCB-contaminated oil was used in equipment (e.g., hydraulic equipment, electrical equipment, vacuum pumps, X-ray machines) at the site.

Describe the use of herbicides and pesticides used at the site to minimize weeds and pests.

Describe the use of diesel fuel or fuel oil at the site. If generators were used at the site (e.g., to recharge the batteries), clarify if they were powered with some kind of fuel or oil.

- b. Provide a complete description of the kinds of equipment that were used inside or outside of each building or structure that could have contaminated the site. For example, it is not clear if lead-lined sinks and pipes, vacuum pumps, X-ray machines were used at the site. It is not clear if generators were used at the site (e.g., to recharge the batteries).
- c. Describe the kinds of chemicals used inside or outside the laboratory building or other structures (e.g., solvents, acids, diesel fuel, fuel oil, pesticides, etc.).
- d. Include a complete description of the cleaning operations (e.g., solvent use for cleaning electrical equipment) and maintenance activities (e.g., changing vacuum pump oil, use of pesticides) that were performed at the site (inside and outside each building).
- e. Describe the waste management practices and storage locations of chemical materials and wastes including biological wastes (i.e., animal tissue and carcasses).
- f. List the type and amounts of radioactive waste that were generated by the processes and activities conducted at the site. The site history should indicate the storage and disposal locations for these wastes.

✓3. The presence of dibenzofuran in one or more samples at each of the three PRSs may indicate that PCB-containing oil, herbicides, or pesticides were managed at the site. Dioxins/furans are frequently associated with PCBs and are found in some pesticides and herbicides. Analyses were not performed for PCBs, pesticides, herbicides, or dioxins/furans.

LANL shall revise future sampling to include analyses for PCBs, pesticides, herbicides, and dioxins/furans.

✓4. The sampling plan in the RFI Work Plan indicates that the radiological field screening would be used to identify locations for the gamma spectroscopy samples. However, the radiological field screening did not effectively identify radioactive contamination at this site. The field screening did not indicate any radiation above background. However,

based on the laboratory analyses, several samples had elevated levels of cesium-137 (one sample exceeded the SAL for cesium-137).

LANL shall not use radiological field screening to guide the sampling for gamma-emitting radionuclides or to determine whether to collect a sample for alpha-emitting radionuclides unless the site-specific field screening results can be shown to correlate with the site-specific offsite laboratory results.

✓ 5. LANL shall revise the report to include a data summary table of all non-detectable concentrations, detection limits, and all analyses performed as part of the approved work plan. A data summary table would enable HRMB to evaluate the adequacy of the data and would eliminate a series of information requests on the subject.

✓ 6. The analytical results for the QC samples were not provided.

LANL shall revise the report to include a QC data summary table, including at least the following:

- sample numbers, environmental sample analytical results, detection limits, qualifiers for the environmental samples that were in each QC batch, and
- all the QC results associated with each batch (e.g., method blanks, internal standards, matrix spikes, matrix spike duplicates, performance assessment samples, surrogate recoveries).

✓ 7. LANL shall revise the report to be consistent with HRMB's risk assessment protocol currently being developed. Please contact Barbara Toth of my staff, at 827-1558, for further information on this item.

✓ 8. LANL shall specify which samples were grab or composite samples.

✓ 9. LANL shall revise the report to describe the sampling technique that was used to collect the VOC samples and specify how volatilization was minimized. In addition, the report shall indicate how the sampling tools minimize the volatilization of VOCs.

✓ 10. Chromium concentrations, although always reported in the form of total chromium, must always be considered to be in the hexavalent chromium form unless laboratory analysis provides justification otherwise. The hexavalent chromium Screening Action Level (SAL) of 31mg/kg should also be used in subsequent screens and risk assessments.

✓ 11. Neither the LANL document *Risk-Based Corrective Action Process* (LA-UR-96-2811) nor the Multiple-Chemical Evaluation (MCE) outlined in this document have been approved

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by HRMB. Furthermore, the comparison of site data to industrial preliminary remediation goals (PRGs) in screening assessments is inappropriate. LANL shall follow the HRMB Position Paper - "Risk-Based Decision Tree".

- ✓ 12. The domain of PRS Group 19-1 shall extend to the bottom of the Pueblo Canyon to ensure complete coverage up to the investigation of Pueblo Canyon.
13. LANL shall use SW-846 Method 5000 to prepare any future soil or sludge samples collected at these site. This will assure that representative samples are collected for volatile analyses. This method was designed by the EPA to prevent volatilization and degradation of VOCs after the sample is placed in the container.

**Specific Comments:**

1. Page 1, Section 1.1, General Site History

*"PRS C-19-001 is associated with possibly contaminated soil beneath the former laboratory, battery building, guard house, latrine, retreat building, and shelter building."*

It is not clear if the latrine was a part of the guard building. LANL shall provide a clear description of the latrine and indicate its location on the figures.

2. Page 1, Section 1.1, General Site History

*"In 1947 the site consisted of a storage hutment and a laboratory building, which was used for a variety of experiments, some of which used radioactive sources and chemicals."*

LANL did not collect samples below or around the former storage hutment. The location of the storage hutment is not provided on Figure 5.1-1 nor on Figure 5.2.4.1-1. LANL shall provide a description of the site history of the hutment and indicate its location on the figures.

3. Page 1, Section 1.1, General Site History

*"The retreat building was used by East Gate Laboratory personnel for breaks and meals."*

LANL shall provide documented site history that explains what activities were conducted in the retreat building that could have resulted in contamination at the site and what chemicals and radioactive materials were managed in the building. The documented use of the building is not consistent with contaminants that were found during the investigation.

4. Page 2, Section 1.1, General Site History

*"...actinides (were) used in microgram quantities for spontaneous fission experiments."*

LANL shall specify exactly which actinides were used in the spontaneous fission experiments and identify where they were used or stored. LANL shall also specify whether alpha-, beta or gamma-emitting radioactive materials were used or managed at the site. If so, future sampling shall include isotopic analyses for these contaminants.

5. Page 2, Section 1.1, General Site History

*"...a 300-Curie cobalt-60 source (was) used for irradiation at the site as late as 1961."*

LANL shall clarify how irradiation experiments with the sources could have impacted the site. In addition, the report shall describe how the sources were used and where the irradiated items were stored or disposed of.

6. Page 2, Section 1.1, General Site History

*"Sanitary waste may have been discharged from the guard house, retreat building, the septic system, and the drainline from the laboratory."*

LANL shall describe how the sanitary waste was discharged from the guard house and describe whether any septic tank, drain line, or outfall area was associated with the guard house. If these structures existed, their locations shall be indicated on the figures and future sampling be conducted to determine the nature and extent of contamination associated with these locations.

7. Page 6, Section 1.3.3, Structure Removal and Subsurface Sampling

The report states that the septic tank at PRS 19-001 was uncovered during July 1997 and 300 gallons of water were pumped out of the tank into 55-gallon drums. The RFI Work Plan indicates that samples of the sludge would be collected and analyzed.

- a. LANL shall indicate whether any sludge was present in the septic tank and the amount of sludge, if any.
- b. LANL shall provide analytical results for all water and sludge samples (if any) that were acquired from the septic tank and any decontamination wastes, if any. In addition, LANL shall specify if these wastes were classified as hazardous or mixed waste for disposal purposes and provide the location of disposal.
- c. LANL shall provide a physical description of the septic tank, including the dimensions, capacity, design, construction, and the integrity at the time it was uncovered.
- d. LANL shall specify the location of these samples in relation to the bottom of the septic tank (i.e., how many inches or feet below the bottom of the septic tank).

8. Page 15, Section 3.1.2, Data Validation

*"Laboratory contaminants are sometimes found in method blanks used by the analytical laboratories during organic analyses. When this occurs, there is a potential for samples to also be contaminated. To account for method blank contamination in samples, the "ten*

*times” and “five times” rules are applied as described in the EPA document “Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 1994, 1205). The “10 times” rule states that when a common laboratory contaminant is found in the method blank, any values of that analyte detected in the samples at levels less than 10 times the method blank concentration should be considered nondetected and a U qualifier should be added to the data. ...The “5 times” rule states that when an analyte that is not a common laboratory contaminant is found in the method blank, any values of that analyte detected in the samples at levels less than 5 times the method blank concentration should be considered nondetected and a U qualifier should be added to the data.”*

Acetone was found in the method blank associated with all the soil samples submitted for volatile organic analysis and was also found in every soil sample. LANL considered any value of acetone at levels less than 10 times the method blank concentration to be nondetected and added at U qualifier to the data. The data was qualified as nondetected even though some of the soil samples had levels of acetone greater than 10 times the method blank concentration which indicates that acetone is present in the soil at the sites. (Acetone was considered detected in six soil samples above 10 time the blank level in the following samples: three out of 10 samples from PRS 19-001, two out of two samples from PRS 19-003, and one out of six sample from PRS C-19-001). Site history indicates that solvents were used at this site and LANL commonly used acetone as a solvent.

Because common laboratory contaminants are expected to be (and are) present at the site, the EPA “10 times rule of thumb” shall not be applied to any of the samples.

Additionally, the U-qualified acetone data must be considered unusable and additional samples be collected to determine the presence or absence of acetone.

Furthermore, if LANL is concerned about laboratory quality control, performing analysis on additional laboratory blanks should reduce uncertainty about laboratory contamination.

Note: Methylene chloride, another common laboratory contaminant, was detected in eight out of ten samples from PRS 19-001, two out of two samples from PRS 19-003, and one out of six samples from PRS C-19-001. However, these values were considered detected because methylene chloride was not detected in the method blank.

9. Page 16, Section 3.2.1, Inorganic Chemicals

*“These background screening values are derived from LANL-wide soil, sediment, and/or tuff background data, and details on the calculation of these values are presented in Longmire et al. (1995, 1266).”*

LANL shall, in the RFI Report, use the background values found in the revised report titled "Inorganic and Radionuclide Background Data for Soils, Canyons Sediments and Bandelier Tuff at Los Alamos National Laboratory" written by Ryti, R.T., P.A. Longmire, D.E. Broxton, S.L. Reneau, and E.V. McDonald.

10. Pages 17-18, Section 3.2.2, Radionuclides

- a. UTL's and background "screening" values are no longer appropriate terminology. LANL shall use the fallout radiation values found in the Ryti, *et al*, report referred to in item number 9 above.
- b. LANL shall provide all the radiochemical data including the analytical results for americium-241, plutonium-238, plutonium-239/240, tritium, uranium-234, uranium-235, and uranium 238. In addition, the report shall clearly define "minimum detectable activity" and describe its relation to the calculated MDA.

11. Page 23 & 24, Sections 4.2.1 & 4.2.2, Volatile Organic Compounds and Semivolatile Organic Compounds and Page B-2, Table B-1, Summary Table of Quality Control Results for TA-19

- a. The organic qualifiers described in this section and in Table A-1 are not consistent with the qualifiers provided in the Summary Table B-1. For example, all analytes associated with Sample Request Number 3385R, Sample ID 0119-97-0061 should have been qualified with an "R" because the surrogate had 0% recovery. Also, all the sample results that should have been qualified with a J- or a J+ as discussed in Sections 4.2.1 & 4.2.2 and Table B-1 were not qualified with a J- or a J+ in Table A-1 nor in the appropriate Tables in Section 5 (e.g., Table 5.1.7.1-1).

LANL shall revise the report to clearly indicate the appropriate qualifiers in the tables (e.g., Table A-1, the Tables in Section 5, etc.).

- b. Numerous organic and inorganic sample results were biased low as a result of matrix interferences. When the data are qualified as biased low, conclusions cannot be made regarding the absence of contamination or the extent of contamination at a site.

LANL shall, in future sampling plans, provide details that specify how the matrix interference problems will be reduced or eliminated for samples collected for VOC, SVOC, and metal analyses. For example, LANL shall re-analyze, re-digest the sample, or use another approved method of analysis. LANL may also perform additional extraction and clean up techniques to reduce certain interferences.

12. Pages 27 and 80, Figures 5.1-1 and 5.2.4.1-1

LANL shall revise Figure 5.1-1 to depict all of the buildings associated with PRS C-19-001. Figure 5.2.4.1-1 shall be revised to depict all of the buildings and the building names associated with PRS C-19-001.

13. Page 29, Section 5.1.4, Field Investigation of Aggregate 19-A and Page 78, Section 5.2.4, Field Investigation

The extent of contamination was not defined for PRSs 19-001, 19-003, and C-19-001. The horizontal and vertical extent of contamination must be defined before a risk-based screening assessment is conducted. According to HRMB policy, the extent of contamination will be considered determined once concentrations of inorganic and organic constituents have been defined relative to background.

LANL may petition HRMB to substitute other criteria for this requirement by demonstrating the protection of human health and the environment. An example of a site where the extent of contamination determination substitution may be made is that of an intact surface impoundment where the horizontal and vertical extent of contamination are known to be the entire contents of the impoundment. HRMB will consider, the following factors when evaluating a substitution to this requirement:

- contaminant concentration gradient,
- contaminant migration potential (geology, hydrogeology, topography, etc.),
- site history,
- adequate number and location of sampling,
- contaminant characteristics which influence transport,
- detection limits,
- media evaluated,
- type of area of concern (AOC) and source, and
- AOC or site integrity.

LANL shall either obtain an "extent of contamination" substitution from HRMB or collect additional samples to define the horizontal and vertical extent of contamination at these

three PRSs and in their associated drainage. Future investigations at PRS 19-003 should include PRS 19-002 (i.e., they should be investigated as one aggregate).

14. 5.1.4.1 Field Activities

LANL shall submit the analytical results for the drainline pipe material, sample 0119-97-0001. Phase I characterization is not adequate to determine that PAH contamination in both PRS 19-001 and 19-003 is due to leaching of the pipe material. Results may also indicate that contamination was waste-borne since contamination is found at points of pipe linkage out of which waste may have leaked. LANL shall sample in areas below the former solid drainline where pipe linkage did not exist to provide evidence regarding the source of polycyclic aromatic hydrocarbon (PAH) contamination.

Regardless of the origin of the contamination found at both PRS 19-001 and PRS 19-003, a phase I investigation has determined that a contaminant release to the environment has occurred. PAH detects are several orders of magnitude above human health screening levels, and the extent of contamination should be determined before risk assessments are performed. The Workplan specifically states that "if levels above action levels are observed, phase II investigations may be required to support a baseline risk assessment and Corrective Measures Study (CMS) (page 5-146)." The fact that LANL wishes to transfer this property further emphasizes the need for thorough characterization. LANL shall determine the vertical and lateral extent of contamination at PRS 19-001, PRS 19-003, and their respective outfall areas.

15. Page 34, Section 5.1.4.2, Deviations and Page 81, Section 5.2.4.2, Deviations

There were one and possibly two major deviations between the RFI Report and the RFI Work Plan. These deviations were not approved by HRMB.

- Because the site survey did not reveal the location of all buried structures (i.e., the septic system associated with the guard house), a geophysical survey should have been conducted.
- The RFI Work Plan stated that one sludge sample would be collected from the retreat building septic tank, but the RFI Report did not indicate that the sample had been collected and did not provide any analytical results for the sludge.

LANL shall revise the RFI report to include a description of the geophysical survey that was performed to reveal the location of the septic system associated with the guard house.

16. Pages 38 & 41, Figure 5.1.5-1, Inorganics and radionuclides above background values at PRS 19-001 and Figure 5.1.5-2, Inorganics and radionuclides above background screening values at PRS 19-003

LANL shall revise these figure to include all contaminants that have been identified at these PRSs (i.e., organics).

17. Page 47, Section 5.1.6.3, Evaluation of Radionuclides at PRS 19-003

*“When MDAs are not reported, a value of three times the measurement uncertainty (3 sigma or three standard deviations) is used to calculate a sample-specific MDA, which is then employed in the same manner as a detection limit.”*

LANL shall demonstrate the validity of using the calculated MDA as a detection limit by providing the supporting QC data that shows that the samples were “in control.”

18. 5.1.7.1 Evaluation of Organic Chemicals at PRS 19-001

LANL shall add Estimated Quantitation Limits (EQLs) for all constituents (organic, inorganic, and radiological) to summary tables. Comparison of analytical data to EQLs helps determine the uncertainty of sample results.

19. 5.1.9 Risk-Based Screening Assessment

LANL shall not make conclusions regarding risk after a phase I investigation. The nature and extent of contamination have not been adequately characterized at any of these PRSs.

20. 5.1.9.1 PRS 19-001

Residential land use should be assumed for the outfall drainage area to provide a conservative estimate of risk at both PRS19-001 and 19-003.

21. HRMB believes that a thorough review of the provided risk assessments is ineffectual at this time, as LANL has not determined the extent of contamination at any of these Potential Release Sites.

22. 5.1.9.2 Human Health Risk Assessment for PRS 19-003 Mesa Slope

LANL states that “soil contamination relating to the battery disposal area of PRS 19-002 will be revisited and will include the outfall area previously identified as part of PRS 19-003 since the outfall contaminants of potential concern (COPCs) are associated with batteries and not the drain line.”

If LANL wishes to omit the Mesa Slope from further site and risk characterization of PRS 19-003, then LANL shall submit a permit modification request to transfer the Mesa Slope area from PRS 19-003 to PRS 19-002.

23. Page 71, Section 5.1.9.2, Human Health Risk Assessment for PRS 19-003 Mesa Slope

*"As can be seen on Figure 5.1.4.1-1, the outfall area of 19-003 is contained within the battery disposal area identified for PRS 19-002. A VCA was conducted for PRS 19-002 in 1995 which involved removal of battery debris. Soil was not removed at that time, as nothing was detected greater than the SALs in use at that time...However, based on the results of the current samples in the 19-003 outfall (0119-97-0066 and 0119-97-0067) which are located in the battery debris area, it appears that the extent of contamination may not have been adequately defined for 19-002..."*

LANL shall revise Section 5.1.3 to include a complete description of PRS 19-002 and the VCA that was conducted, including the site history, the analytical methods used, the analytical results that were obtained, the number of samples that were collected, the sample depth intervals, sample type, and the sample locations. LANL shall present this information in table format. Also, all the figures shall be revised to include the name (i.e., Building Debris and Battery Disposal Area) and number of PRS 19-002.

Note: The RFI Work Plan identifies PRS 19-002 as a surface disposal area which includes building debris and battery debris. The RFI Report should specify that PRS 19-002 includes building debris and should provide a detailed description of the building debris (e.g., wood, concrete, asbestos-containing materials, lead-lined sinks, equipment, transformers, ballasts, mercury switches, etc.).

24. Page 71, Section 5.1.9.2, Human Health Risk Assessment for PRS 19-003 Mesa Slope

*"As such, soil contamination relating to the battery disposal area of PRS 19-002 will be revisited and will include the outfall area previously identified as part of PRS 19-003 since the outfall COPCs are associated with batteries and not the drain line."*

LANL shall revise the report to indicate that contaminants associated with PRS 19-003 were found within PRS 19-002 and that any future investigation of PRS 19-003 will include the battery disposal area (PRS 19-002) (i.e., they will be investigated as an aggregate).

25. Page 78, Section 5.2.4, Field Investigation

The sampling numbers and locations were not sufficient to determine the presence or absence of contamination at PRS C-19-001. LANL shall add future sampling to include

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collection and analyses of samples below and around any of the former buildings and all the drainage that potentially received contaminated run off associated with the buildings.

26. Pages A-1 through A-10, Tables A-1 through A-3

LANL shall revise the report to clarify if PRS 19-001 is actually PRS 19-001(c). If so, the PRS number should be corrected throughout the report.

27. The RFI Workplan for Operable Unit 1071 makes provisions for determining "specific data requirements for source characterization in Phase I investigations" which include "contaminants in potential release areas (pages 5-146 and 5-150)." However, LANL has conducted Phase I sampling for PRS C-19-001 only in drainage channel sediments which are downgradient and outside the boundary of PRS C-19-001. Soil which actually defines PRS C-19-001 and exists within the boundaries of PRS C-19-001 may contain higher contaminant concentrations and may act as a continuing source of runoff contamination to those downgradient soils where contamination below SALs were found.

LANL shall propose further sampling of surface and subsurface samples at the former location of each building which comprised PRS C-19-001.