



University of California
 Environmental Restoration Project, MS M992
 Los Alamos, New Mexico 87545
 505-667-0808/FAX 505-665-4747



U. S. Department of Energy
 Los Alamos Area Office, MS A316
 Environmental Restoration Program
 Los Alamos, New Mexico 87544
 505-667-7203/FAX 505-665-4504

Date: November 14, 1997
 Refer to: EM/ER:97-480

NOV 17 1997
 RECEIVED

1/1106/21

Dr. Stu Dinwiddie
 NMED-HRMB
 P.O. Box 26110
 Santa Fe, NM 87502

**SUBJECT: RESPONSE TO REQUEST FOR SUPPLEMENTAL
 INFORMATION FOR SAP FOR PRS 21-018(b) IN TA-21
 (FORMER OU 1106)**

Dear Dr. Dinwiddie:

Enclosed is the Los Alamos National Laboratory's Response to the New Mexico Environment Department Hazardous and Radioactive Bureau's Request for Supplemental Information for the Sampling and Analysis Plan for Potential Release Site 21-018(b) in Technical Area 21.

If you have any questions, please contact Gary McMath at (505) 665-4969 or Bonnie Koch at (505) 665-7202.

Sincerely,

Julie A. Canepa, Program Manager
 LANL/ER Project

Sincerely,

Theodore J. Taylor, Program Manager
 DOE/LAO

JC/TT/ss

Enclosures (1) Response to Request for Supplemental Information for SAP for PRS 21-018(b) in TA-21 (former OU 1106)

TL



Cy (w/enc.):

D. Griswold, AL-ERD, MS A906
J. Harry, EES-5, MS M992
B. Koch, LAAO, MS A316
G. McMath, EM/ER, MS E525
D. Neleigh, EPA, R.6, 6PD-N
C. Rodriguez, CIO/ER, MS M769
T. Taylor, LAAO, MS A316
J. White, ESH-19, MS K490
S. Dinwiddie, NMED-HRMB
M. Leavitt, NMED-GWQB
J. Parker, NMED-HRMB
G. Saums, NMED-SWQB
S. Yanicak, NMED-AIP, MS J993
EM/ER File (CT# C326), MS M992
RPF, MS M707

Information Only (w/o enc.):

T. Baca, EM, MS J591
T. Glatzmaier, DDEES/ER, MS M992
T. Longo, DOE-HQ, EM-453
D. McInroy, EM/ER, MS M992
J. Plum, LAAO, MS A316
S. Rae, ESH-18, MS K497
G. Rael, AL-ERD, MS A906
J. Vozella, LAAO, MS A316
EM/ER File, MS M992

**Response to
Request for Supplemental Information for the
Sampling and Analysis Plan for SWMU 21-018(b)**

INTRODUCTION

To facilitate review of this response, the New Mexico Environmental Department's (NMED) comments are included verbatim. Los Alamos National Laboratory's (LANL) responses follow each NMED comment.

NMED Comment

1. *LANL must obtain samples at deeper intervals at the outfall area, deep well area and the pipe connection with the septic tank. Samples must be obtained from the 2- to 4- foot interval and the 4- to 6- foot interval at the outfall area and septic tank connection area. These samples must be analyzed for the same constituents as the 0- to 2- foot samples.*

For the deep well area, samples must be obtained from the 4- to 6- foot interval and the 6- to 8- foot interval. These samples shall also be analyzed for the same constituents as the 0- to 2- foot samples.

LANL Response

1. One of the objectives of the Sampling and Analysis Plan (SAP) for Solid Waste Management Unit (SWMU) 21-018(b) is to determine whether releases from the former Technical Area (TA) 21 laundry facility have contaminated the soil and tuff at the laundry facility location. As stated in objective 3 in Section 3.0 of the SAP, additional plans (Phase II or voluntary corrective action [VCA]) will be prepared to assess vertical and lateral extent issues if contamination is determined to be present at the locations sampled during the initial investigation.

Outfall Area. Table 1 of the SAP indicates that samples will be collected from the 0- to 2-ft interval, and that they may also be collected from the 2- to 4-ft and 4- to 6-ft intervals at all three of the outfall sampling locations. LANL assumes that NMED's comment is based on the designators used in Table 1, which indicate that samples from the 2- to 4-ft and 4- to 6-ft intervals are "possible" rather than "planned." The reason these intervals are marked as possible is that the depth to undisturbed tuff is unknown. If the tuff is encountered in the 0- to 2-ft interval there is no need to sample deeper given the objective stated above. LANL proposes no changes to the sampling plan for the outfall area. NMED Comment 2 is related to this topic and a more complete discussion of LANL's reasoning is presented in the response to Comment 2.

Septic Tank Area. NMED's comment regarding the septic tank connection is associated with Solid Waste Management Unit (SWMU) 21-024(e) rather than SWMU 21-018(b). LANL proposes that comments regarding a SWMU not addressed in the reviewed document be made relative to documents associated

with the SWMU in question. There are four documents that pertain to actions at the septic tank and outfall system associated with SWMU 21-024(e):

- TA-21 Operable Unit RFI Work Plan for Environmental Restoration (LANL 1991, 0689)
- Phase Report 1C, TA-21 Operable Unit RCRA Facility Investigation, Outfalls Investigation (LANL 1994, 1260)
- Phase Report Addendum 1B and 1C Operable Unit 1106 RCRA Facility Investigation (LANL 1995, 1261)
- Voluntary Corrective Action Completion Report: Potential Release Site 21-024(e) Septic Tank, Revision 1 (LANL 1995, 01-0021)

Deep Well Area. NMED's comment related to the deep well area at SWMU 21-018(b) indicates that one sampling interval (6 to 8 ft) should be added to the plan. LANL assumes that NMED intends the additional sampling interval to address the vertical extent of contamination at this location given that the well is 4-ft deep as stated in the SAP. However, LANL wishes to clarify that the 4-ft well depth is measured from the finished floor elevation of building TA-21-20. As discussed in the SAP, the finished floor of the building was raised 3 to 4 ft above the grade at the site using fill material. Thus, as shown in Fig. 1 of this response, the bottom of the well may have been either entirely above, at, or just below the existing soil tuff interface. Regardless, sampling will continue to an undisturbed interval in the tuff, which will characterize the entire column of soil/tuff in the location of the well. Sampling below this undisturbed interval will not contribute to meeting the objective of the SAP, which is to determine whether contaminants are present. LANL proposes no changes to the SAP for the deep well area. NMED Comment 2 is related to this topic and a more complete discussion of LANL's reasoning is presented in that response.

NMED Comment

2. *LANL must not consider the soil-tuff interface as a contaminant boundary. In other words, LANL must sample below the soil-tuff interface if it occurs above the sampling intervals as required in Comment 1.*

LANL Response

2. LANL does not consider the soil/tuff interface to be a contaminant boundary as stated in NMED's comment. However, LANL does consider the soil/tuff interface to be an important interval for other reasons.

First, the soil/tuff interface is a useful marker for delineate the boundaries of former site features, such as previously excavated areas and areas that were disturbed but have currently been revegetated or reclaimed. At SWMU 21-018(b), it is known that the deep well at building TA-21-20 did not penetrate more than slightly below the soil/tuff interface, if at all. This is useful information for characterizing the site because a sample collected from the soil/tuff interface will likely be from material

beneath the level of the well. Data from this location will indicate whether contaminants were released beneath the well.

Secondly, the hydrogeologic properties of the soil/tuff interface warrant consideration when evaluating the migration of contaminants released at or near the surface. There is typically a significant change in permeability between the overlying soil and the underlying tuff. The tuff is very porous, but the pores are not well connected; thus the conductivity of liquids in the tuff is very low. The effect of the physical differences between the soil and tuff is that a release at or near the surface will percolate through the soil column relatively quickly compared to the percolation or infiltration rate in the tuff. The bulk of a liquid release will typically be stored in the soil with relatively small volumes infiltrating into the tuff. In addition, the clay and organic material content of the soil is relatively high compared to the tuff, and most types of contaminants will preferentially sorb to these materials, further limiting contaminant migration into the tuff.

The material disposal area (MDA) V absorption beds [SWMU 21-018(a)] located south of SWMU 21-018(b) offer an example of the low infiltration rates one can expect in the tuff on DP Mesa. The beds were designed in 1945 assuming a percolation rate of 0.5 gallons per 1 ft² of tuff per day. More recent estimates of percolation or infiltration rates for the tuff underlying MDA V and the former laundry are approximately 0.125 gallons per 1 ft² of tuff per day. Water from laundry operations at SWMU 21-018(b) that was placed in the absorption beds at SWMU 21-018(a) did not infiltrate the tuff at a rate sufficient to eliminate the water from the beds (LANL 1991, 0689; LANL 1996, 01-0062). Thus, the beds were saturated for approximately 16 years. The RFI at MDA V found contaminants had been driven relatively short distances into the tuff given the long duration of saturation and the depth and volume of water present in the beds. Radioactive contaminants were found to have been driven approximately 20 ft and inorganic contaminants were found to have been driven approximately 30 ft into the tuff. These depths did not appear to be affected by fracture flow, but rather the slow saturation of the tuff matrix over time.

While this discussion is not quantitative, it puts into context the infiltration concerns for potential releases from the outfall, drains, and sump at SWMU 21-018(b). The absorption beds at SWMU 21-018(a) received approximately 40 million gallons of waste water from the laundry facility, resulting in the depths of contamination discussed above. The potential for contaminants to have been released from the concrete structures and piping systems designed to contain and convey liquids at SWMU 21-018(b) is minuscule relative to the release potential of the absorption beds at SWMU 21-018(a). The outfall at SWMU 21-018(b), which was designed as a disposal system for water originating as blow down from a boiler system, also has a relatively small infiltration potential compared to the absorption beds described above given the smaller volumes released and the lack of containment of the release.

Thus, the soil/tuff interface offers useful information about the boundaries of former site features, and the hydrogeologic properties of the soil/tuff interface offer information about how potential contaminants might migrate beneath the site. The objective of the SWMU 21-018(b) investigation as outlined in the SAP is to

determine whether contaminants have been released to soils and tuff beneath the site. The soil/tuff interface is a useful sampling interval in making this determination. LANL recognizes that other sampling intervals will be necessary to evaluate the extent of contamination at SWMU 21-018(b). As stated in objective 3 in Section 3.0 of the SAP, additional plans (Phase II or VCA) will be prepared to assess vertical and lateral extent issues if contamination is determined to be present.

Based on the information in this response, LANL proposes that sampling be conducted at the intervals discussed in the SAP. However, LANL does agree that the "planned" and "possible" designation on sampling intervals in Table 1 be changed so that at least two sample intervals will be collected at each sample location and that samples will be collected such that the last interval collected penetrates several inches into the tuff.

NMED COMMENT

3. *LANL must clarify how it intends to collect valid volatile organic compound samples using a hand-held auger (Section 4.2.2, paragraph 1).*

LANL Response

3. LANL acknowledges the comment and proposes to develop a standard operating procedure that addresses NMED's concern.

NMED Comment

4. *LANL shall provide the following pertinent information in the RCRA Facility Investigation Report: a tabulated summary of field screening instrumentation readings, calibration records, and detection limits, auger logs, boring logs, log books, and a accounting of visual contamination or noticeable odors.*

LANL Response

4. LANL acknowledges NMED's comment. LANL proposes that resolution of what information is to be provided in RFI reports be deferred until the document of understanding between NMED and LANL is finalized.

REFERENCES

LANL (Los Alamos National Laboratory), May 1991. "TA-21 Operable Unit RFI Work Plan for Environmental Restoration," Volumes I-III, Los Alamos National Laboratory Report LA-UR-91-962, Los Alamos, New Mexico. **(LANL 1991, 0689)**

LANL (Los Alamos National Laboratory), February 28, 1994. "Phase Report 1C, TA-21 Operable Unit RCRA Facility Investigation, Outfalls Investigation," Los Alamos National Laboratory Report LA-UR-94-228, Los Alamos, New Mexico. **(LANL 1994, 1260)**

LANL (Los Alamos National Laboratory), January 1995. "Phase Report Addendum 1B and 1C Operable Unit 1106 RCRA Facility Investigation," Los Alamos National Laboratory Report LA-UR-94-4360, Los Alamos, New Mexico. **(LANL 1995, 1261)**

LANL (Los Alamos National Laboratory), January 25, 1996. "Voluntary Corrective Action Completion Report: Potential Release Site 21-024(e) Septic Tank, Revision 1," Los Alamos National Laboratory Report LA-UR-96-257, Los Alamos, New Mexico. **(LANL 1995, 01-0021)**

LANL (Los Alamos National Laboratory), August 1996. "RFI Report for Potential Release Sites in TA-21, 21-018(a), Material Disposal Area V, (located in former Operable Unit 1106)," Los Alamos National Laboratory Report LA-UR-96-2735, Los Alamos, New Mexico. **(LANL 1996, 01-0062)**

This page intentionally left blank.