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Los Alamos National Laboratory

ENVIRONMENTAL RESTORATION

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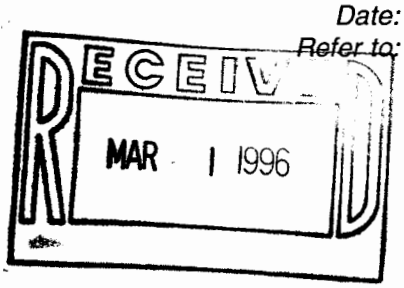
Date: February 28, 1996
Refer to: EM/ER:96-085



Mr. David Neleigh
NM Federal Facilities Section
EPA, Region 6, 6PD-N
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

SUBJECT: SAMPLING AND ANALYSIS PLANS FOR POTENTIAL RELEASE SITE (PRS) 21-018(b)

Dear Mr. Neleigh:

The subject sampling plan is enclosed and is submitted as an addition to the Resource Conservation and Recovery Act Facility Work Plan for Operable 1106. This sampling plan was unintentionally omitted from the work plan. Los Alamos National Laboratory agreed to submit this Phase I Sampling and Analysis Plan by February 29, 1996. The plan has undergone Laboratory and Department of Energy review.

If you have any questions, please call Garry Allen at (505) 667-3394 or Bonnie Koch at (505) 665-7202.

Sincerely,

Jorg Jansen, Program Manager
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Los Alamos Area Office

JJ/TT/bp

Enclosure: Sampling And Analysis Plan For PRS 21-018(b)

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Sampling and Analysis Plan for

Solid Waste Management Unit 21-018(b) Former Laundry Facility at TA-21

Field Unit 1

Environmental Restoration Project

February 1996

A Department of Energy
Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY

LA-UR-96-648

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EXECUTIVE SUMMARY

This sampling and analysis plan describes the Phase I Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) at solid waste management unit (SWMU) 21-018(b), the former laundry facility (building TA-21-20), at Technical Area (TA) 21. The objective of Phase I sampling at SWMU 21-018(b) is to characterize the site by collecting data necessary to determine if hazardous or radiological contamination resulted from operation of the former laundry at TA-21-20. (Although radionuclides are not regulated under RCRA, they will be considered in Phase I sampling.) Results of the Phase I investigation will be used to propose the site for no further action or to recommend an appropriate corrective action. The approach to Phase I sampling and analysis at SWMU 21-018(b) is to obtain enough analytical laboratory data to support a final recommendation. The exact location of Phase I sample points will be determined by using scaled measurements from the original construction drawings to determine the former locations of structures where contaminated materials were handled. Soil samples will be collected at 2-ft depth intervals until tuff is reached. Samples will be screened in the field using hand-held radiation detection instruments and mobile radiation laboratory analyses. Samples will be sent for laboratory analyses and analyzed for gamma-, beta-, and alpha-emitting radionuclides, volatile and semivolatile organic compounds, and metals. Results from all surveying, screening, and analysis will be used to identify the absence or presence of contamination at SWMU 21-018(b).

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1.0 INTRODUCTION

This sampling and analysis plan will be used to conduct the Phase I Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) at solid waste management unit (SWMU) 21-018(b), the former laundry facility at Technical Area (TA) 21, TA-21-20. SWMU 21-018(b) is listed in the Hazardous Solid Waste Management (HSWA) Module (Module VIII) of the Laboratory's RCRA operating permit. The original TA-21 RFI work plan did not contain a sampling and analysis plan for SWMU 21-018(b) (LANL 1991, 0689).

1.1 Description and Site History

TA-21 is located on DP Mesa, immediately east-southeast of the Los Alamos townsite and on the northern boundary of Los Alamos National Laboratory (LANL). TA-21 is described in detail in the TA-21 RFI work plan (LANL 1991, 0689). The former laundry facility, TA-21-20, was built in 1945 to launder radioactively contaminated clothing and was operated until 1961.

Liquid wastes from laundry operations were routed to three absorption beds located in Material Disposal Area (MDA) V. Sewage was routed to septic tank TA-21-123 and its outfall (Fig. 1). MDA V [SWMU 21-018(a)] and septic tank 123 and its outfall [SWMU 21-024(e)] were HSWA-listed SWMUs and were investigated in 1993 and 1994. In a 1995 notice of deficiency (NOD), the Environmental Protection Agency (EPA) recommended SWMU 21-024(e) for a Class 3 permit modification with no further action (NFA) for RCRA hazardous constituents (LANL 1995, 01-0014). A voluntary corrective action (VCA) was completed at SWMU 21-024(e) in September 1995 which verified that no plutonium-239 contamination remains above accepted cleanup levels in the septic tank or outfall (LANL 1995, 01-0021). A Phase I RFI report will be prepared and submitted to the EPA for SWMU 21-018(a).

Building TA-21-20 (Fig. 1) was a wood-frame structure with both concrete slab floors and wood framing on pier floors. The eastern portion of TA-21-20 had wood framing on concrete pier floors resulting in the finished floor elevation between 3 to 4 ft above the ground surface. This area of the building was used for sorting, mending, folding, radiation screening, and storing clean laundry, as well as for offices and general storage. The western portion of TA-21-20 had concrete slab floors on top of fill material placed so that the finished floor elevation was the same as the eastern portion of the building. The western portion of TA-21-20 was used for receiving, washing and drying laundry, and included a boiler room and a storage room.

The western portion of the laundry had several floor drains in the washing, drying, storage, and boiler rooms (Fig. 1). Because the finished floor elevation of the western portion of the building was above the grade that existed in 1945, all subfloor drain lines or structures in the western portion of the building were placed in the fill material that was used to raise the ground level. The wet laundry, room 2002, had concrete troughs that carried wastewater from the laundry machines to a concrete well that was 4-ft long x 4-ft wide x 4-ft deep. This well was drained by a 6-in. cast iron pipe leading to the MDA V absorption pits. Rooms 2014, 2015, and 2016 had floor drains that were also connected to the 6-in. cast iron drain line leading to the MDA V absorption beds. The boiler room had a concrete slab floor that was built at the existing grade. The boiler room contained equipment that generated hot water for washing and drying machines and for space heating in the laundry. The boiler equipment and three floor drains in the boiler room were connected to a blow-down sump located outside the south wall of the boiler room. The blow-down sump was connected to a drainpipe that ran south approximately 50 ft to the surface of DP Mesa. There is anecdotal evidence that the boiler equipment was not used extensively because steam supply lines from the main steam plant were connected to the laundry after 1945.

A memorandum regarding contamination problems encountered during the razing of building TA-21-20 indicates widespread radioactive contamination on the interior of the building, especially in rooms 2002, 2013, 2014, 2015, and 2016 (Meyer 1964, 01-017). The eastern portion of the building contained one room, room 2013, where contamination was identified. Room 2013 was identified in the memorandum as having a small amount of radioactive contamination in the trap and drain line of a metal sink. Because this contamination was contained within the drain line and the room was used to handle clean items, no samples will be collected from the footprint of this room. Sampling the main waste lines from TA-21-20 should identify any contamination released to the environment from room 2013. Based on this memorandum and knowledge of the processes used in the eastern portion of the building, no significant contamination sources or releases are expected. Therefore, no samples will be collected from the soil beneath rooms 2003 through 2013.

1.2 Physical Setting

The laundry was located directly north of MDA V in approximately the center of the east-west axis of DP Mesa (Fig. 1). The facility operated for about 16 years, from 1945 to 1961. The structure was decommissioned and decontaminated in 1965 and taken to TA-54, Area G, where it was burned. The site is now occupied by temporary office trailers and a paved parking lot.

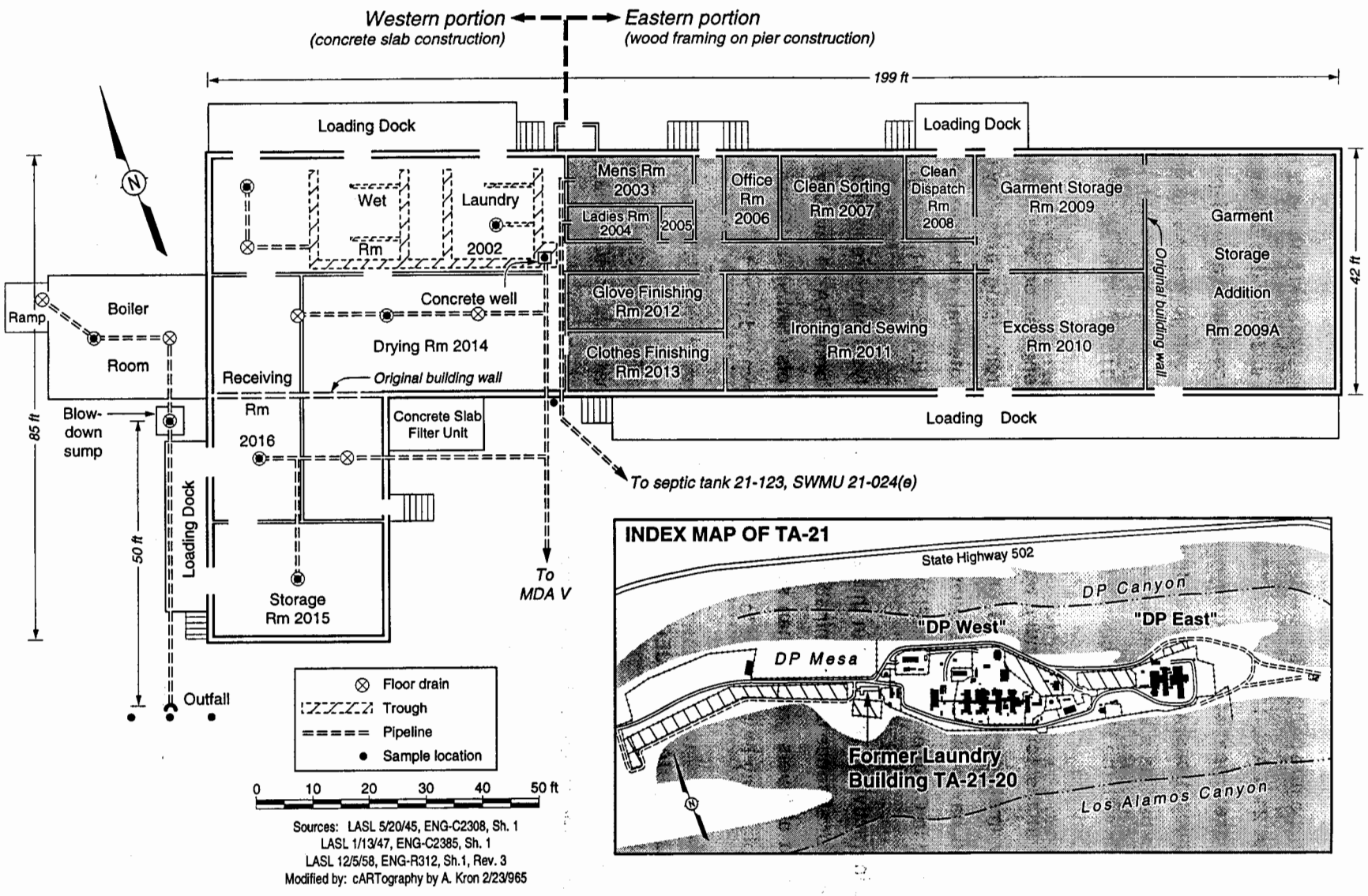

Fig. 1. Sample locations for former laundry building, TA-21-20.

2.0 CONCEPTUAL EXPOSURE MODEL

Potential exposure pathways were developed and are presented in Section 5.1 of the RFI Work Plan for TA-21 (LANL 1991, 0689). The pathways were subdivided into four categories: deep liquid releases, near-surface liquid releases, subsurface solid waste disposal, and surface contamination areas. SWMU 21-018(b) was incorrectly categorized as a deep liquid release (defined in part as a large volume resulting in relatively deep contamination) because of its association with the MDA V absorption beds, SWMU 21-018(a). SWMU 21-018(b) should have been categorized as a near-surface liquid release because the processes that produced waste materials at the former laundry were connected to engineered waste disposal systems. Relatively small release volumes, primarily as leakage from piping, are likely to have occurred and would have resulted in shallow contamination. Potential receptors are identified and discussed in Chapter 6 of the RFI Work Plan for TA-21 (LANL 1991, 0689).

Sampling activities proposed in this sampling and analysis plan are intended to confirm the presence or absence of contamination at the site of the former TA-21 laundry. If contamination is present at levels greater than screening action levels (SALs), a Phase II sampling and analysis plan may be prepared to support a final recommendation for this SWMU.

3.0 DATA QUALITY OBJECTIVES

The objective of this plan is to determine if radioactive materials or RCRA hazardous materials were released to the environment from the former laundry facility.

The following are SWMU 21-018(b) data needs.

1. Determine the location of the former laundry building, TA-21-20, and sample locations by surveying using scaled measurements from engineering drawings.

2. Confirm the presence or absence of contamination in areas that were associated with the laundry operations by analyzing subsurface soil samples and comparing results to SALs. Because the purpose of this plan is to confirm the absence of contamination, contamination is defined as a release of hazardous or radioactive constituents to the environment at levels that exceed SALs.

3. If contamination is identified, a Phase II sample and analysis plan may be needed to determine vertical and lateral extent of contamination.

4.0 SAMPLE AND ANALYSIS PLAN

Samples will be collected from locations in and around the footprint of TA-21-20. Samples will be field screened and analyzed in a mobile laboratory for radiological contamination prior to fixed laboratory analyses. The analyses will include a full suite of radiological isotopes that may be present at TA-21, RCRA metals, volatile organic compounds, and semivolatile organic compounds. (Although radionuclides are not regulated under RCRA, they will be considered in Phase I sampling.)

4.1 Field Surveys

4.1.1 Geodetic Survey

Licensed surveyors will mark sample locations based on measurements taken from engineering drawings of TA-21-20 and its distance to existing structures. The survey coordinates of the northeast and the northwest corners of the footprint of TA-21-20 will be derived by scaling distances from existing structures, such as the centerline of DP Road and building TA-21-14. Survey markers will be placed at the corners of the building's footprint and these markers will be the basis for all other measurements to sample locations.

4.1.2 Radiological Surveys

Radiological surveys will be limited to screening samples with hand-held instruments for beta, gamma, and alpha radiation to ensure worker health and safety.

4.2 Sample Locations and Methods

The former location of TA-21-20 is now occupied by temporary office trailers and a paved parking lot (Fig. 2). Comparison of topographical data from 1948 and 1995 indicates that there has been no significant change in the elevation of the ground surface. If contamination from laundry operations is present, it is expected to be in the fill material or at the existing interface of the soil and the underlying tuff.

4.2.1 Selection of Sample Locations

Twelve sample locations (Fig. 1) were selected to represent areas with the greatest likelihood of receiving contaminated material and releasing it to the environment. The sample locations proposed in this plan are based on engineering drawings of building TA-21-20 and are typically at outlet pipes, floor drains, and areas where materials may have been released to the environment. Coordinates for the northeast and northwest corners of TA-21-20 will be determined by calculating survey coordinates from Engineering drawing ENG-R 1191. The accuracy of the coordinates will be checked, and adjusted if necessary, before sample locations are staked by measuring from the footprint of TA-21-20 back to the northwest corner of existing building TA-21-14 (which was built at the same time as TA-21-20) and comparing the scaled measurement to the actual distance. The distance and direction of TA-21-14 relative to TA-21-20 is documented in Engineering drawing ENG-R 1191, Sheet 3 of 8. Sample locations within the footprint of TA-21-20 will be staked based on scaled measurements from the original construction drawings (ENG-C 2308 through 2323 and ENG-C 2385 through 2388). The scaled distance to each sample location will be measured from the staked location of the northeast and northwest corners of TA-21-20.

The former locations of floor drains will be sampled to confirm the absence of contamination. One floor drain each in rooms 2014, 2015, 2016, and the boiler room will be sampled. Two floor drains in room 2002, the wet laundry, will be sampled because the receiving area of this room contained contaminated laundry and a floor drain near the concrete well in the southeast corner of room 2002 was located near a storage unit(s) of an unknown function that could have leaked. A total of six floor drain locations will be sampled.

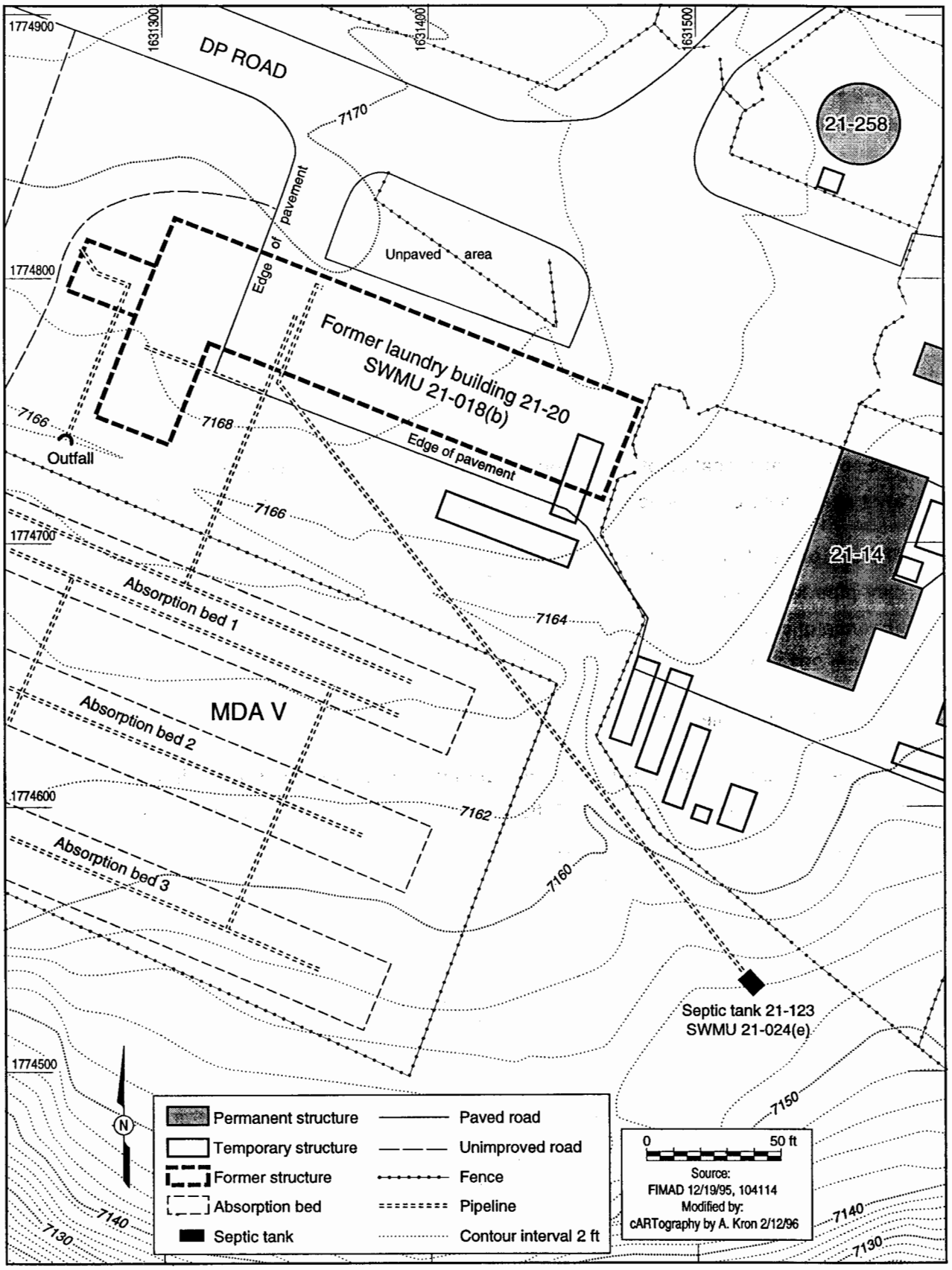

Fig. 2. Topographic map of the former laundry facility and surroundings.

The former locations of a blow-down sump and a concrete well will be sampled to confirm the absence of contamination that could have leaked into the surrounding soil. The blow-down sump was located outside the south wall of the boiler room and the concrete well was located in the southeast corner of room 2002 (Fig. 1). A total of two sump/well locations will be sampled.

The discharge point of a former drain line outfall will be sampled to confirm the absence of contamination. The drain line was connected to the blow-down sump located outside the south wall of the boiler room. The three outfall sample points shown in Fig. 1 will be placed based on a field inspection at the time of collection. If a drainage channel from the discharge point is evident, three sample points will be placed along the channel where sediment traps are observed or, if no sediment traps are found, every 5 ft downgradient. If no drainage channel is evident, then three sample points will be placed in a line perpendicular to the flow of the drain line. One sample point will be placed in the center of the expected flow line of the drain line. The spacing and location of the two outer sample points will be based on field inspection of the area at the time of collection. A total of three drain line outfall locations will be sampled.

The exit point where both the 6-in. cast iron drain line leading to MDA V and the 6-in. vitrified-clay pipe leading to septic tank TA-21-123 exited TA-21-20 will be sampled to confirm the absence of contamination. The exit point would have been located near the southeast corner of room 2014. A total of one exit point location will be sampled.

4.2.2 Sample Collection

Samples will be collected using a hand-held auger and processed for shipping through the Laboratory's Sample Management Office. Appropriate LANL Environmental Restoration (ER) Project standard operating procedures (SOPs) will used to perform the work described in this plan.

For each sample location described in Section 4.2.1, one sample will be collected from each 2-ft sample interval (0–2 ft, 2–4 ft, 4–6 ft, etc.) to a depth 6-in. below the interface of existing soil and undisturbed tuff. Sample locations that are in the paved area will require removal of a small amount of paving material before samples can be collected. A small amount of fill material is expected to be immediately under the paving and will be removed prior to sampling, but no more than 4 in. of fill material will be removed before sampling begins.

4.2.3 Number of Samples

Twelve locations will be sampled. At least one sample will be collected from each sample location, resulting in a minimum of 12 samples. Additional samples will be collected from 2-ft intervals (0–2 ft, 2–4 ft, 4–6 ft, etc.) as needed to reach the interface of the existing soil and the tuff. Table 1 indicates that a total of 36 samples will be collected based on the assumption that three intervals are sampled at each location.

4.2.4 Sample Quality Assurance and Quality Control

Appropriate quality control (QC) samples, including one blank, one replicate, and one rinsate for every 20 or fewer soil samples, will be submitted to the analytical laboratory to provide the means to assess the quality of the data resulting from field samples. Blank samples will be analyzed to determine whether procedural contamination or ambient conditions at the site may have caused sample contamination. Replicate samples will be analyzed to verify sampling and analytical reproducibility.

4.3 Laboratory Analyses

Table 1 identifies the field screening methods and the field laboratory and fixed laboratory analyses to be performed on each sample collected. All samples will be analyzed using the same methods and suite of analyses listed in Table 1. The fixed laboratory radiological suite of analyses is based on knowledge of processes that were performed at TA-21. Because there is insufficient knowledge of the processes related to RCRA hazardous materials to use a narrow suite of analyses, the nonradiological suite of analyses is broad and is intended to identify contaminants that may be present in the footprint of TA-21-20.

5.0 FIELD DOCUMENTATION

The following sampling documentation is required under LANL-ER-SOP-1.04, R2, ICN, Sample Control and Field Documentation: sample labels, sample collection logs, chain-of-custody/ request for analysis forms, and custody seals (LANL 1993, 0875). Sample information shall be collected and entered on the forms and subsequently initialed and signed by the field team leader. The data will be stored in a field management database and uploaded to the ER Project's central database repository, the Facility for Information Management, Analysis, and Display (FIMAD). A field logbook will be used for detailed summaries of information pertaining to the field investigation and for recording field data.

TABLE 1

SAMPLE ANALYSES MATRIX FOR SWMU 21-018(b)

		Field Survey			Field Screening			Field Laboratory Analysis				Fixed Laboratory Analysis								
		Visual Survey	Land Survey	Radiological	Organics	Alpha	Beta/Gamma	Gross Gamma	Gross Alpha	Gross Beta	Organics	Gamma Spectroscopy[a]	Tritium	Isotopic plutonium	Isotopic uranium	Strontium-90	Americium-241	VOAs[b], Method 8240	Semivolatiles, Method 8270	Metals, Method 6010
1	Room 2002, NW floor drain																			
	0-2 ft	X[c]	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P[d]			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
2	Room 2002, SE floor drain																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
3	Room 2002, well																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
4	Room 2014, floor drain																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
5	Room 2015, floor drain																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
6	Room 2016, floor drain																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
7	Boiler room, floor drain																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P

TABLE 1 (Continued)

SAMPLE ANALYSES MATRIX FOR SWMU 21-018(b)

		Field Survey			Field Screening			Field Laboratory Analysis				Fixed Laboratory Analysis								
		Visual Survey	Land Survey	Radiological	Organics	Alpha	Beta/Gamma	Gross Gamma	Gross Alpha	Gross Beta	Organics	Gamma Spectroscopy[a]	Tritium	Isotopic plutonium	Isotopic uranium	Strontium-90	Americium-241	VOAs[b], Method 8240	Semivolatiles, Method 8270	Metals, Method 6010
8	Boiler room, sump																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
9	Outfall, point 1																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
10	Outfall, point 2																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
11	Outfall, point 3																			
	0-2'	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4'		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6'		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
12	Building drain lines																			
	0-2 ft	X	X			X	X	X	X	X		X	X	X	X	X	X	X	X	X
	2-4 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P
	4-6 ft		P			P	P	P	P	P		P	P	P	P	P	P	P	P	P

Total samples possible	37
Minimum samples possible	12

[a] Gamma spectroscopy analysis will identify. cesium-137 as well as other gamma emitters.
[b] VOCs = Volatile organic compounds.
[c] X = Planned.
[d] P = Possible..

The field team leader will submit a daily sampling report to the field project leader and the field operations manager. This report will briefly summarize daily sampling activities and will be submitted in electronic format. The format of this report will follow Attachment G of LANL-ER-SOP-1.04, R2, ICN, Sample Control and Field Documentation and will contain all required information (LANL 1993, 0875).

6.0 EQUIPMENT DECONTAMINATION

Decontamination is performed as a quality assurance (QA) measure and a safety precaution. It prevents cross contamination among samples and helps to maintain a clean working environment for the safety of personnel. Sampling tools are decontaminated by washing, rinsing, and drying. All efforts will be made to minimize fluids used for equipment decontamination because these fluids are wastes and must be collected and contained for proper disposal. The effectiveness of the decontamination process is documented through rinsate blanks submitted for laboratory analysis.

7.0 WASTE MANAGEMENT

Requirements for segregating, containing, characterizing, treating, and disposing of each type and category of waste are provided in LANL administrative procedure, LANL-ER-AP-05.3, R0, Management of Environmental Restoration Program Waste and in the approved site-specific waste characterization strategy (SSWCS).

The on-site waste manager shall be responsible for completing all waste forms and ensuring that all waste containers are labeled in accordance with the SSWCS. Records will be kept of wastes generated on site. Waste analyses will be evaluated for appropriate waste disposal. The on-site waste manager will assist with the coordination of waste disposal.

10.0 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). "Los Alamos National Laboratory Environmental Restoration Program Standard Operating Procedures," Los Alamos National Laboratory report, Los Alamos, New Mexico. **(LANL 1993, 0875)**

Meyer, D. D., March 23, 1964. "Radioactive Contamination Survey of Laundry Building, DP-20, TA-21," Los Alamos Scientific Laboratory Memorandum from Dean D. Meyer (H-1) to S. E. Russo (ENG-3), Los Alamos, New Mexico. **(Meyer 1964, 01-017)**

LANL (Los Alamos National Laboratory), April 14, 1995. "Response to the Notice of Deficiency (NOD) for the Resource Conservation and Recovery Act Facility Investigation (RFI) Reports 1B, !C, and Addendum 1B-1C, Operable Unit (OU) 1106," Memo EM/ER: 95-141 from J. Jansen (EM/ER) and T. Taylor (DOE LAAO) to B. Driscoll (EPA), Los Alamos, New Mexico. **(LANL 1995, 01-0014)**

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

8.0 HEALTH AND SAFETY

Samples acquired as part of this sampling plan will be screened at the point of collection to identify the presence of gross contamination or other conditions that may pose a threat to the health and safety of field personnel.

The site safety officer (SSO) is responsible for health and safety procedure development and implementation in accordance with the approved site-specific health and safety plan. The SSO coordinates health and safety monitoring activities and ensures that LANL's health and safety officers are kept informed of health and safety procedures and problems. In addition, the SSO ensures that safe and environmentally sound work practices are followed during the sampling campaign.

9.0 SITE RESTORATION

Sample collection methods used during the field investigation will create minor disturbances to the existing soils profile. Each sample location will be restored to its previous condition upon completion of the field investigation.