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Revised Sampling and Analysis Plan for OU 1129 Aggregate J

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Los Alamos
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REVISED SAMPLING AND ANALYSIS PLAN FOR OU 1129 AGGREGATE J

Introduction

This document is designed to incorporate by reference pertinent information contained in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for Operable Unit (OU) 1129 (May 1992). Because of the extent of the RFI Work Plan, certain key elements of the Work Plan are summarized below, along with points unique to this document. Readers are encouraged to review Chapter 4.0, Conceptual Model, and Chapter 5.0, Technical Approach, of the May 1992 RFI Work Plan for a comprehensive explanation of data quality objectives (DQOs), exposure models, and data analysis.

Key features of this sampling plan are as follows:

- Data quality will be Level III (as defined in the May 1992 RFI Work Plan for OU 1129); field work will be performed in accordance with standards outlined in the RFI Work Plan, Environmental Restoration (ER) standard operating procedures (SOPs), and Installation Work Plan (IWP); and analytical work for the report will be done by a certified outside laboratory under contract to Los Alamos National Laboratory's (LANL's) Environmental Chemistry Group (EM-9).

- The OU Project Leader (OUPL) for OU 1129 will be responsible for the quality and data analysis of all work, and will coordinate with the Environmental Protection Group (EM-8), which will perform the actual field sampling work.

- The data will be treated as all other data gathered under the RFI Work Plan for OU 1129: data will be kept in the Facility for Information Management, Analysis, and Display (FIMAD) DBMS and copied to the Records Processing Facility (RPF); analysis will consist of statistical tests of the data and various modeling exercises to develop a three-dimensional picture of contamination extent for remedial plan use; and data reporting will follow ER Program guidelines and any special user-defined needs.

- Quality assurance (QA) guidelines of the ER Program will be followed throughout the process.

1.0 Interim Action TA-42

This sampling and analysis plan (SAP) is a revision of the SAP for Aggregate J in the RFI Work Plan for OU 1129 (May 1992). This SAP was revised to support an institutionally driven interim action. The interim action study of solid waste management units (SWMUs) in former Technical Area (TA)-42 is comprised of the investigation of six sites. The following SWMUs are included in this SAP (Figure 1):

- 42-001(a), an incinerator,
- 42-001(b and c), two ash storage tanks,
- 42-002(a), an indoor storage and decontamination area,
- 42-002(b), an outdoor decontamination area, and
- 42-003, an inactive septic system.

1.1 Background Information

Former TA-42 was located within the current boundaries of TA-55, north of Pajarito Road and Pecos Drive. A detailed description of the location, site activities, and history of Aggregate J SWMUs is found in Section 3.4, Description of Former TA-42, Incinerator Site, of the May 1992 RFI Work Plan for OU 1129. TA-42 was the site of an incinerator and ash holding tanks that were used to burn radioactive-contaminated waste. Archival information indicates that poor system performance caused incinerator operations to shut down in 1952, after about one year of intermittent use. The facility was used as a radioactive equipment decontamination site from 1957 to 1969. During decontamination and decommissioning (D&D) activities in 1978, structures were removed along with some contaminated soils. A detailed discussion of the D&D activities can be found in Harper and Garde (1981, 0591), and in the OU 1129 Work Plan (May 1992), Section 3.4.2.4, Environmental Surveys and D&D Activities.

The area under investigation is also the future site for construction of the Nuclear Safeguards Technology Laboratory (NSTL) (Figure 2). The need for NSTL construction to start in FY93, plus the results from a reconnaissance sampling program (Fresquez 1991, 04-0075), has accelerated the investigation and the development of an interim action work plan pursuant to Section 3.12.2 of the Laboratory's IWP and Section I of the Laboratory's RCRA Part B permit Hazardous and Solid Waste Amendments (HSWA) module. This investigation will focus on the extent of the contamination found at the SWMUs during the reconnaissance survey conducted in January 1991 (Fresquez 1991, 04-0075). Following the collection of field samples and the evaluation of analytical results, a remediation plan will be recommended. A schedule of activities is detailed in Attachment I.

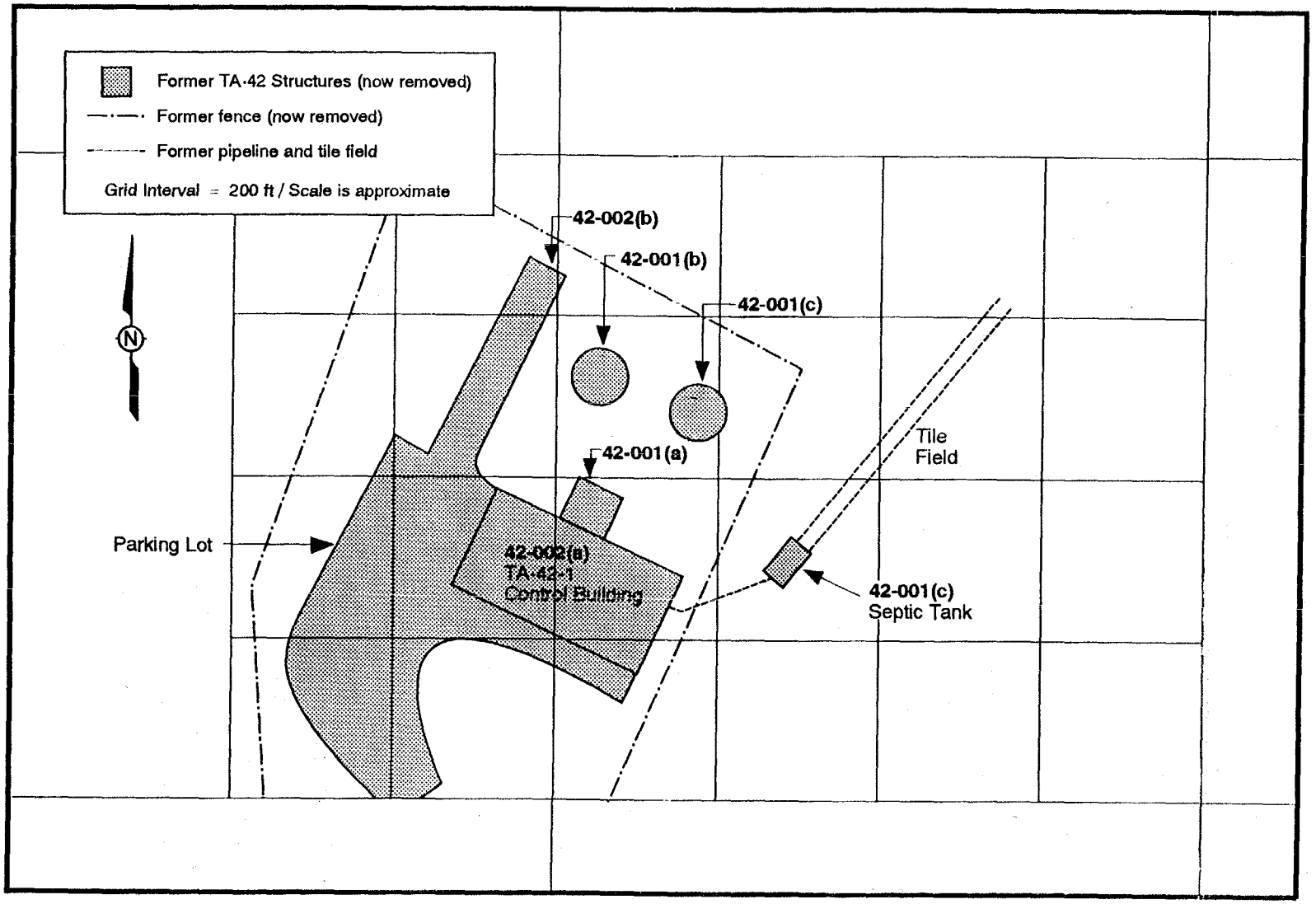


Figure 1. Schematic location map and grid bondary for SWMU Aggregate J.

As part of this interim action, the investigation of the SWMUs has been prioritized to concentrate on those SWMUs or SWMU areas that will be impacted by the construction of the NSTL. Therefore, surface sampling below the canyon rim will be conducted during the previously scheduled OU 1129 field investigation.

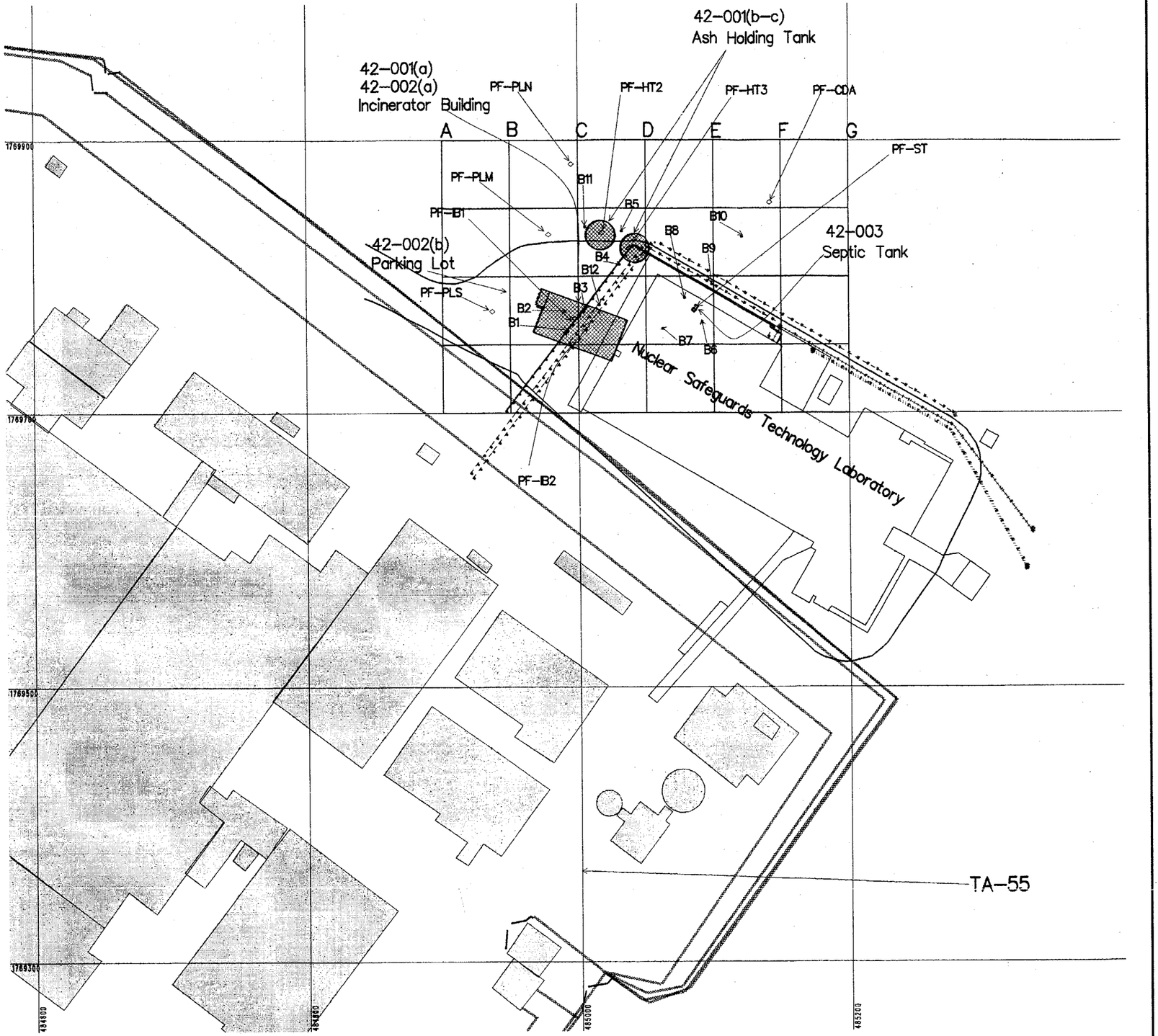
1.2 Reconnaissance Survey

Soil samples were collected at the former TA-42 site in January 1991 by Philip Fresquez of EM-8 to document soil contamination levels at the site of the proposed NSTL. For detailed information, refer to the RFI Work Plan for OU 1129 (May 1992), Section 3.4.2.4 and Fresquez (1991, 04-0075). During the reconnaissance survey, the sampling locations were selected to coincide with the SWMU locations. Figure 2 depicts the location of reconnaissance sampling within SWMU Aggregate J (samples are labeled PF-XXX). The sampling protocol followed is described in SW-846 (EPA 1986, 0291), the Environmental Protection Agency (EPA) sampling manual, and ER SOPs. Complete chain-of-custody documentation was kept.

Soil samples collected at the former incinerator/control site, SWMU No. 42-002(a), revealed background concentrations of gross-alpha, -beta, and -gamma activity. No volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), or polychlorinated biphenyls (PCBs) were detected in any of the samples taken at this site. Concentrations of toxicity characteristic leaching procedure (TCLP) metals (Ag, As, Ba, Cd, Cr, Hg, and Se) were all less than EPA guideline limits (Fresquez 1991, 04-0075). Pb was less than the EPA guideline limits for all samples except for the PF-IB1 surface sample (Figure 2), which measured 11.4 ppm. Analyses of radionuclides (U, Cs-137, Pu-238, Pu-239) were all below background (defined in the following text) concentrations except for the surface sample at the PF-IB2 location in Figure 2.

Soil samples collected at the former ash holding tank site, SWMU Nos. 42-001(c and b) showed background levels of beta and gamma activity, and concentrations of PCBs and TCLP metals below EPA guidelines. No VOCs or SVOCs were detected. Alpha activity at the site of sample PF-HT2 (Figure 2) ranged from background to <25pCi/g, or below Department of Energy (DOE) guidelines levels. However, surface soils at the site of sample PF-HT3 had alpha activity that ranged from 59 to 97 pCi/g, and subsurface samples had alpha activity of >75 pCi/g. These values exceeded the DOE guideline values of 25 pCi/g for surface soils and 75 pCi/g for subsurface soils, however, the radionuclide analysis (U, Pu-238, Pu-239, and Cs-137) did not confirm these high alpha-activity levels. It is believed that this high alpha-activity was the result of natural radon emissions.

TA-42 - Former Structures and NSTL



LEGEND

- Electrical, Proposed
- Fence, Security
- Gas Line, Proposed
- Gate
- Road, Access
- SWMU, Probable
- Telephone Line, Proposed
- Water Line, Proposed
- Former Structure
- Permanent Structure
- Proposed Structure
- Temporary Structure
- Previous Samples
- Proposed Samples

Figure 2

NORTH, NM State Plane

Grid provides NMSP coordinates, in feet

Grid interval, in feet: 200

0 40 80 120 FEET ON GROUND

NOTICE: Information on this map is provisional and has not been checked for accuracy

University of California
Los Alamos National Laboratory
Earth & Environmental Sciences Division
FIMAD Facility for Information Management, Analysis and Display
Produced by: Marcia Jones
Date: 92-07-10

Environment: Plonas
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Plotfile: 1129-ta42_samp-7-10.plt

3) Is there any risk of exposure, and if there is, what is the risk of exposure from the present amount and location of contamination at the site?

1.4 Field Activities

The sampling plan is designed to locate potential contaminants at their most likely source. The field activities will include an engineering survey, a radiation survey, an environmental survey, and subsurface sampling.

1.4.1 Engineering Survey

The engineering survey (which will be performed by the LANL Design Group [ENG-3]) will locate the former incinerator building, both ash holding tanks, the septic tank and associated tile drain field and outfall, the outdoor decontamination area and associated drainage channel, and the utility lines associated with the NSTL building. In preparation for this revised SAP, extensive research into as-built drawings and survey data has produced significant information on building and facility locations. This information has been converted to New Mexico State Plane (NMSP) coordinates and compiled into a FIMAD map. All available information will be used in the engineering survey. Accuracy will be quantified in the final report. The location of the structures and the utility lines will be marked with stakes and the sampling points will be established before field work begins. All points associated with the SAP will be recorded in the NMSP Coordinate System. After all field activities are completed, all sample locations will be surveyed and results registered on the site base map. A 300-ft (east-west) by 200-ft (north-south) grid will be established across the entire site and appropriately flagged (Figure 1); individual grid blocks will be 50 ft by 50 ft. The grid will facilitate locations of finding and assist in mapping the extent of contamination. For additional information on the survey, refer to the RFI Work Plan for OU 1129 (May 1992), Section 7.4, Surveys.

1.4.2 Radiation Survey

Following the engineering survey, a radiation survey will be conducted across the TA-42 grid to identify potential radiological anomalies within the grid area for health and safety reasons. Scintillation detector surveys will be conducted across the first 100 ft of both the outfall drainage channel of the septic system (SWMU No. 42-003) and the drainage channel of the outdoor decontamination area, or until topographic limitations are reached.

1.4.3 Geologic Survey

During the geologic survey, observations will be made to note any drainage arroyos to the canyons; if any exist, they will be mapped because they are potential transport pathways for contaminated sediment. Observations will also be made on the canyon edges to identify fracture patterns in the tuff underlying the soils; if any prevailing fracture geometry that could impact contaminant migration is observed, these will be mapped.

1.4.4 Sample Collection

Twelve locations will be sampled in the areas in which the reconnaissance has shown higher concentrations of radionuclides or metals (Figure 2– NOTE: The information in Figure 2 is approximate and will be verified and updated in the future).

SWMU No. 42-002(a)

Soil samples will be collected at the former control building site to confirm the presence of lead that may exist in the soil. The lead contamination (11.4 ppm by the TCLP method) found in the surface sample (sample PF-IB1, Figure 2) collected from the decontamination area of the containment building (incinerator building) is believed to be an anomaly as discussed in the conceptual model. Three borings will be installed in the vicinity of the control building (Figure 2). B_1, B_2, and B_3 will be drilled at the former location of the incinerator/control building to a depth of 6 ft. Because no lead was detected at the location of sample PF-IB2, which is to the east of PF-IB1 (Figure 2), B_1, B_2, and B_3 will be drilled and sampled to bound the north, west, and south extent of the lead contamination. The borings at this site are intended to assess if soil contamination exists at a shallow depth below these former structures. Soils in the area of the incinerator building are about 2 to 3 ft deep (Fresquez personal communication in Gainer 1992, 04-0276); tuff was encountered below 3 ft of soil during reconnaissance sampling. Two intervals of the sampled section will be collected as samples. Each sample will be screened for radioactivity before submittal to the analytical laboratory, including a few samples that will be sent to the Separations and Radiochemistry Group (INC-12) for Pu-238 and Pu-239 quick-turnaround analysis. Samples will only be analyzed for total lead (Table 2) if the INC-12 analyses show the Pu-238 and Pu-239 are not present at concentrations higher than background.

SWMU No. 42-001(a)

Soil samples will be collected at the former incinerator building site to estimate the extent of COCs that may exist in the subsurface. One boring, B_{12}, will be installed in the former location of the incinerator building (Figure 2). B_{12} will be drilled at the former location of the incinerator/control building to a depth of 6 ft. The boring at this site is intended to assess if soil contamination exists at a shallow depth below these former structures (this site was not investigated during the reconnaissance study in 1991). Two intervals of the sampled section will be collected as samples. Each sample will be screened for radioactivity before submittal to the analytical laboratory. Samples will be analyzed for Pu-238, Pu-239, and Am-241 (Table 2).

TABLE 2

SAMPLING SUMMARY FOR TA-42

Location	Depth of Samples Collected in feet	Type of Analysis Required			
		Pu-239	Pu-238	Am-241	Pb
B_1	0 - 3				x
	3 - 6				x
B_2	0 - 3				x
	3 - 6				x
B_3	0 - 3				x
	3 - 6				x
B_4	0 - 3	x	x	x	
	3 - 6	x	x	x	
B_5	0 - 3	x	x	x	
	3 - 6	x	x	x	
B_6	10-15	x	x	x	
	15-20	x	x	x	
	20-25	x	x	x	
B_7	10-15	x	x	x	
	15-20	x	x	x	
	20-25	x	x	x	
B_8	10-15	x	x	x	
	15-20	x	x	x	
	20-25	x	x	x	
B_9	10-15	x	x	x	
	15-20	x	x	x	
	20-25	x	x	x	
B_{10}	0-5	x	x	x	
	5-10	x	x	x	
	10-15	x	x	x	
B_{11}	0 - 3	x	x	x	
	3 - 6	x	x	x	
B_{12}	0 - 3	x	x	x	
	3 - 6	x	x	x	

SWMUs Nos. 42-001(b and c)

Soil samples will be collected at the two former ash holding tank sites to help define the extent of radiological contamination in the subsurface. During D&D activities the drain lines that connected the tanks to the incinerator were filled with hot asphalt and either left in place or removed. Alpha activity in surface soils from SWMU No. 42-001(c) ranged from 59 to 97 pCi/g (during the 1991 reconnaissance) for surface samples. Three borings will be installed in the vicinity of the ash holding tanks (Figure 2). B_4, B_5, and B_{11} will be drilled at the former location of the holding tanks to a depth of 6 ft. The borings at this site are intended to assess the extent of contamination at a shallow depth below these former structures. In addition, B_4 will possibly identify the drain line between the incinerator building and the holding tanks, and define the concentration of contaminants at the site of excavation for NSTL utility lines. Two intervals of the sampled section will be collected as samples. Each sample will be screened for radioactivity before submittal to the analytical laboratory. Samples will be analyzed for Pu-238, Pu-239, and Am-241 (Table 2).

SWMU No. 42-002(b)

Soils samples will be collected at the former outdoor equipment decontamination area located at the end of the asphalt driveway northwest of TA-42 (Figure 2). Samples at B_{11} will be taken to help define the extent of radiological contamination in the soils to the east of sample PF-PLM. During D&D activities, this area was not addressed, but the 1991 reconnaissance study found alpha activity in this area. It is suspected that this activity is from radon emissions. Alpha activity in surface soils from SWMU No. 42-002(b) ranged from 61 to 130 pCi/g (during the 1991 reconnaissance survey) in this area; however, the presence of radionuclides was not confirmed by the radionuclide analysis. One boring will be installed between the ash holding tank (SWMU No. 42-001[b]) and the parking lot area (Figure 2). B_{11} will be drilled to a depth of 6 ft. The boring at this site is intended to assess if soil contamination exists at the surface and at a shallow depth below the former structures. Two intervals of the sampled section will be collected as samples. Each sample will be screened for radioactivity before submittal to the analytical laboratory. Samples will be analyzed for Pu-238, Pu-239, and Am-241 (Table 2).

SWMU No. 42-003

Subsurface (tuff) samples will be collected at the former septic tank site to confirm the presence of radiological contamination that was identified in the subsurface during reconnaissance activities. During D&D activities, the lines that connected the septic tank to the incinerator building were filled with hot asphalt and

either left in place or removed. Alpha activity in surface soils collected from the tile drain field in 1978 had gross-alpha readings ranging from <25 pCi/g to 99 pCi/g. Sample collection at the tile drain field was not documented during the 1991 reconnaissance survey. Three borings will be installed in the vicinity of the septic tank (Figure 2). B_6, B_7, and B_8 will be drilled around the former location of the septic tank to a depth of 25 ft. The borings at this site are intended to determine the extent of the contamination in a lateral and vertical direction at depth around the former structure. In addition, B_7 will possibly identify the location and associated contamination of the line between the incinerator building and the septic tank. Three intervals of the sampled section will be collected as samples. Two borings will be installed in the vicinity of the drain pipe and tile leach field (Figure 2). B_9 and B_{10} will be drilled to a depth of 25 ft and 15 ft, respectively (Figure 3). The borings at this site are intended to determine the extent of the contamination in a lateral and vertical direction at depth around the former tile field. In addition, B_9 will possibly define the concentration of contaminants at the site of excavation for NSTL utility lines. Three intervals of the sampled section will be collected as samples. Each sample will be screened for radioactivity before submittal to the analytical laboratory. Samples will be analyzed for Pu-238, Pu-239, and Am-241 (Table 2).

General Sample Collection Guidelines

The target is to sample locations in which contamination boundaries are expected to occur and in which construction activities may impact residual contamination around the structures as predicted by the conceptual model and as found during the screening process.

Samples will be taken by hollow-stem auger and split-spoon sampler (hand auger in the shallow holes [power-assisted if necessary], i.e., 6 ft). Logs describing soil horizon changes will be prepared. Two to three samples will be taken per location, 0 to 3 ft and 3 to 6 ft for the shallow borings; and 10 to 15 ft, 15 to 20 ft, 20 to 25 ft for the deep holes. On the split-spoon samples, not all the section may be used. After screening, the section of sample that shows the highest rad screening value may be collected for analysis (if the section shows some levels of radiation in the rad screening, the entire section will be aggregated and samples will be taken from the aggregate). The field log will document selection criteria.

1.5 Sample Screening and Analysis

Each sample will be screened for radiation with a Micro R meter or a FIDLER, a Geiger-Muller meter, and scintillation detector for contact radiation. All sample packages will be screened for surface contamination and contact radiation.

All the samples will be screened for gross-alpha, -beta, and -gamma to detect the extent of contamination before laboratory analysis, and to select more sampling sites if necessary.

Table 3 outlines the total number of analyses, QA/QC samples required for this field investigation, the corresponding analyses, and sample requirements. Appendix B, the Field Operations Plan, of the RFI Work Plan for OU 1129 (May 1992) should be consulted for procedures regarding the use of specified field sampling equipment, sample handling, packaging and shipping, equipment decontamination, and Level I and II field instruments. All sampling will be done under the appropriate SOPs and administration.

Soil samples collected at depths of 10, 15, 20, and 25 ft beneath the former site of the septic tank, SWMU No. 42-003, contained gross-alpha activities of 67, 37, 26 and 18 pCi/g, respectively. These values are below the DOE guideline value of 75 pCi/g for subsurface soil (Fresquez 1991, 04-0075). Gross-beta and -gamma activities were at background for all sample depths. No VOCs or PCBs were detected, however, eight SVOCs were detected in the 15 ft depth. Seven of these SVOCs were polyaromatic hydrocarbons thought to be derived from paving tar or asphalt present in the fill material beneath the septic tank. The other SVOCs, bis-2-ethyl-hexylphthalates, were detected at 400 ppb, which is well below EPA guideline levels (Fresquez 1991, 04-0075). Also, all TCLP metals were below the guidelines.

Soil samples collected at the site of the former parking lot area/outdoor decontamination area, SWMU No. 42-002(b), contained gross-alpha activities of 130 pCi/g in the PF-PLN sample (Figure 2). These values are above the DOE guideline of 25 pCi/g for soils samples; however, the radionuclide analysis of the PF-PLN sample revealed at or below background limits of U, Cs-137, Pu-238 and Pu-239. It is believed that the high alpha- activity detected in this area was the result of natural radon. No VOCs were detected in any of the samples. PCBs ranged from 0.12 to 0.52 ppm (mixed-aroclor) well below action guidelines. One of the samples in the north end of the parking lot contained trace amounts (400 ppb) of the SVOC bis-2-ethyl-hexylphthalate. This amount, however, is well below the EPA action-level guideline of 83 ppm (EPA 1989, 0088). All TCLP metals were below the EPA guidelines.

For the purposes of this sampling plan, background levels of radionuclides of concern will be referenced to the background levels presented in the annual LANL environmental surveillance report (Environmental Protection Group 1992, 0740). The background soil concentration levels quoted are based on soil samples collected throughout northern New Mexico from 1974 through 1986. This sampling was conducted for the purpose of establishing statistical background levels of certain radionuclides, including Pu-238 and Pu-239, -240. The background concentrations (the mean plus two standard deviations, encompassing 97.5% of all sample values) is established in the LANL environmental surveillance report (Environmental Protection Group 1992, 0740) and adopted in this sampling plan. The surveillance report puts the soils background concentration at 0.005 pCi/g for Pu-238 and 0.025 pCi/g for Pu-239, -240. Residual contamination above the referenced background level for soil includes subsurface amounts of Pu at the former septic tank (SWMU No. 42-003), at the former ash holding tanks (SWMU Nos. 42-001[b and c]), and at the former outdoor decontamination site (SWMU No. 42-002[b]), and near-surface amounts of Pb at the old incinerator (SWMU No. 42-001[a]) (Figure 2 and Table 1).

The results of the reconnaissance sampling indicate some contamination remaining after D&D that was conducted at this site in 1978 (Harper and Garde 1981, 0591). Contamination includes subsurface amounts

of Pu-238 and Pu-239 above background at the former septic tank (SWMU No. 42-003) and at the former ash holding tanks (SWMU Nos. 42-001[b and c]), and near-surface amounts of Pb at the incinerator (SWMU No. 42-001[a]) and of Pu-238 at the former outdoor decontamination site (SWMU No. 42-002 [b]) (Figure 2 and Table 1).

TABLE 1

CONTAMINANT CONCENTRATIONS FOR SELECTED RECONNAISSANCE SAMPLES

SAMPLING SITE [a, b]	Pu-238pCi/g	Pu-239pCi/g	Pb (TCLP)ppm
PF-ST-10	***0.015***	***0.151***	2.2
PF-ST-15	***2.48***	***4.77***	0.45
PF-ST-20	***0.155***	***0.40***	<0.01
PF-ST-25	***0.016***	0.0032	<0.01
PF-HT2-5	***0.009***	***0.0628***	0.04
PF-HT3-10	0.0016	***0.0292***	0.04
PF-PLM-0	***0.009***	0.0148	<0.01
PF-IB1-5	***0.007***	0.0002	0.29
PF-IB1-0	0.0004	0.015	***11.4***
PF-IB2-0	0.003	***0.0554***	0.05

NOTE: Samples in bold italic are samples of concern, others were added for comparison.

[a] Last number on sampling site identifier indicates the depth of sampling in feet.

[b] PF = Philip Fresquez (sample collector), ST = septic tank, HT = holding tank, PLM = parking lot middle (sample), IB = incinerator building.

The septic tank contamination identified during the reconnaissance study is believed to be at the base of the former septic tank. At the location at which the septic tank was sampled, the depth of the contaminated area in the subsurface (i.e., in the 15-ft interval) appears to indicate that the fill placed after D&D was contaminated because the 15-ft interval coincides with the location of the new fill. However, it is more likely that the samples were contaminated from the tile field drain to the north of the septic tank.

Subsurface samples that were found to contain concentrations greater than surface background are shown in Table 1 as samples of concern because of the potential for exposure of the subsurface during the construction of the NSTL, and therefore the increased potential for worker exposure.

1.3 Sampling Rationale and Objectives

The objective of this sampling plan is to detect and quantify contaminants and determine the extent of contamination at SWMU Aggregate J within former TA-42. The SAP takes into consideration the reconnaissance studies discussed in Section 1.2, Reconnaissance Survey. This SAP is based on the following broad assumptions:

- The short-term land use is institutionally controlled with no public access.
- Sampling will be conducted at locations that will be excavated for utility lines in such a way that the risk to the worker can be evaluated.
- Data from this SAP will be used to design an interim action remediation plan leading to a final remedy for the SWMUs impacted by the NSTL construction.

The characterization process will fulfill the following sampling objectives:

1) Collecting geologic data (e.g., size and attitude of fill materials) to support transport and exposure model calculations,

2) Classifying contaminant pathways (if any exist) on the surface and subsurface,

3) Detecting and quantifying contaminants, and

4) Conducting investigations to determine the extent of contamination.

Sampling activities are based on the following conceptual model for the existence of contamination at this site:

1) Previous D&D activities removed most of the contaminants of concern (COCs), although the reconnaissance study indicates some contaminants are still present.

2) Remaining contaminants are localized within the vicinity of the structures (i.e., septic tank, holding tanks, etc.) and in the shallow subsurface. The septic tank system could have leaked sludge to the subsurface, but the contamination would be constrained to a few feet (about 10 ft) from the septic tank because Pu is very strongly retarded in soil and tuff media. Figure 3 shows a schematic cross section showing the conceptualization of the contaminant migration around the septic tank and tile field. The septic tank contamination identified during the reconnaissance study is believed to be associated with leakage from the base of the tank.

3) Surface contamination is likely to be nonexistent because the existing surface material is fill that was brought into the area during the D&D activities. Additionally, nearly 15 ft of fill was added to the site in 1986 in conjunction with security

enhancements for TA-55. Figure 4 shows a schematic cross section of the area; the abrupt change in elevation is because of the fill material.

4) The lead contamination (11.4 ppm by the TCLP method) found in the surface sample collected from the decontamination area of the containment building (incinerator building) is believed to be an anomaly. None of the other samples collected in both the surface and subsurface exceeded the EPA guidelines of 5 ppm. The sample collected to the west of this location contained 0.51 ppm. It is believed that the lead contamination observed at this sample point originated from the fill that was placed in this location during D&D activities and is localized. There is no reason to believe that the lead contamination resulted from activities in the control building.

5) Workers placing utility lines for the NSTL building could dig through the contaminated area and expose contaminated soils, which could disperse those soils over a larger area or create an inhalation (dust) hazard from the plutonium and other contaminants.

6) Contaminants deposited on the surface are transported by water off site and/or infiltrate into the soil horizon (unsaturated zone) as colloids. The depth of migration of colloidal particles is controlled by flux and sorption. In the mesa top environment, migration is expected to be nil because of low flux and high sorption. Therefore, Pu is not expected to have migrated beyond a few feet from the source term based on accepted geochemical assumptions (sampling data will be used to test this hypothesis).

7) Because of the separate locations of contaminant findings, no locations are considered to contain mixed waste. If mixed wastes are encountered during the sampling phase, approval for chemical analysis of samples is covered under memorandum ADO-92-442 (Environmental Chemistry for Mixed Waste). Additionally, guidance will be developed in the remediation plan, in cooperation withe EM-7 Waste Management Group, for the removal of any potential mixed waste.

8) The anomalous high gross-alpha reading taken during the reconnaissance sampling is considered to be from radon because it is common in the area and no source could be determined from the analytical suite tested at the location.

The investigations at Aggregate J are designed primarily to answer the following questions:

1) Will subsurface contamination that currently exists in Aggregate J be exposed during the construction phase of the NSTL?

2) Based on the results from sampling and analysis, can a realistic remediation plan be developed?

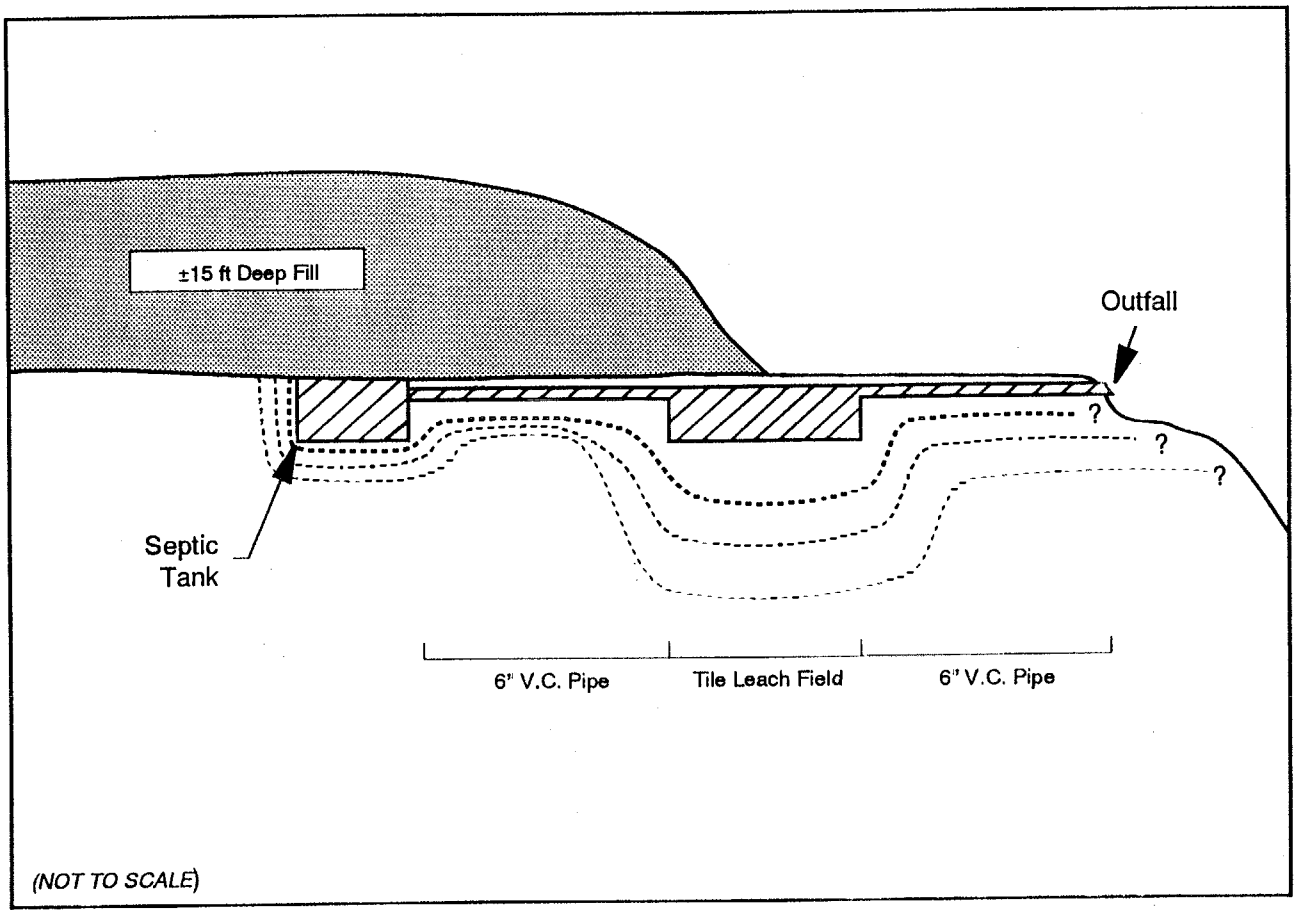

Figure 3. Schematic cross section of the conceptualization migration around the septic tank and tile drain field.

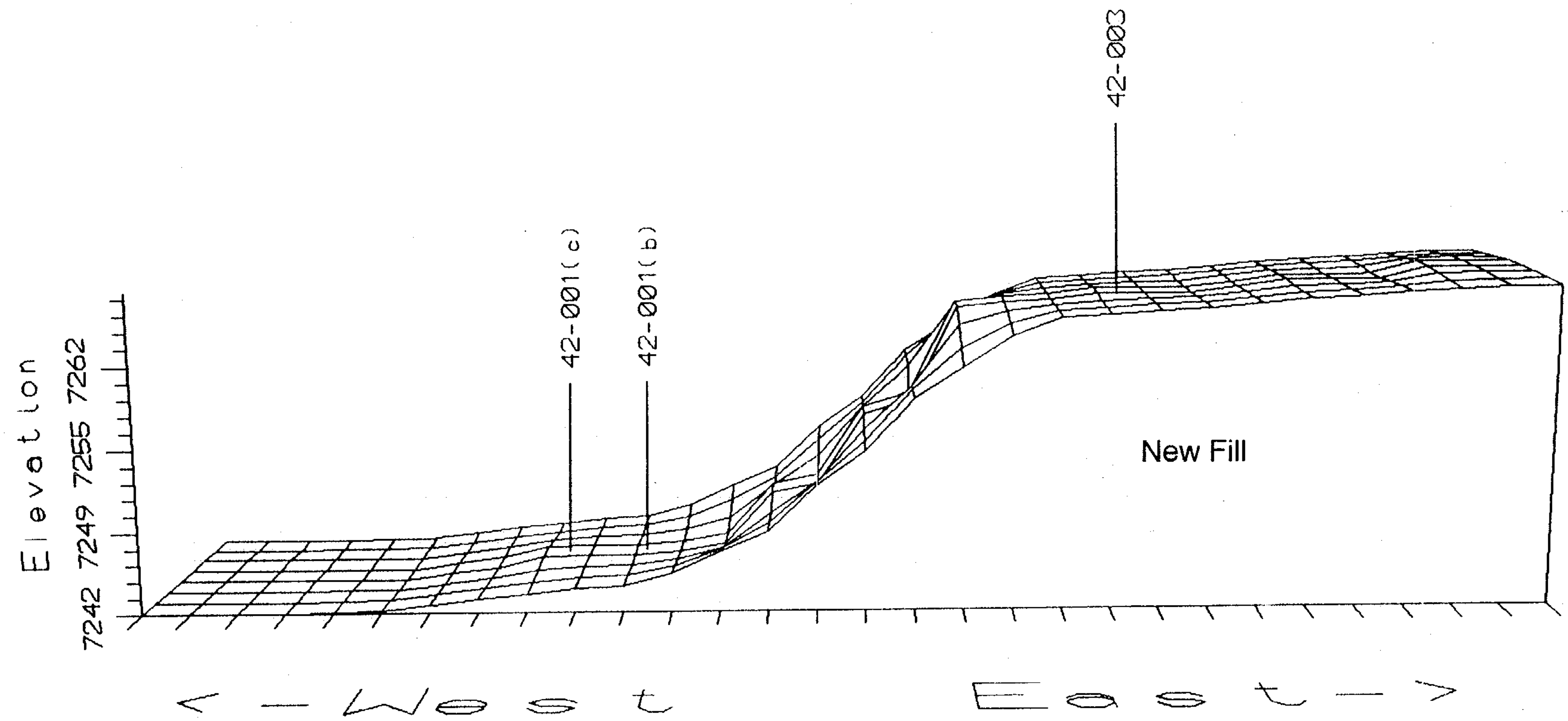

Figure 4. Cross section of TA-42, west to east.

TABLE 3

ESTIMATED ANALYTICAL REQUIREMENTS FOR TA-42 SAMPLING

	TYPE OF ANALYSIS REQUIRED			
SAMPLE	Pu-238	Pu-239	Am-241	Pb (ICPES)
TOTAL	41	41	41	9
B-1-1	0	0	0	1
B-1-2	0	0	0	1
B-2-1	0	0	0	1
B-2-2	0	0	0	1
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B-4-1	1	1	1	0
B-4-2	1	1	1	0
B-5-1	1	1	1	0
B-5-2	1	1	1	0
B-6-1	1	1	1	0
B-6-2	1	1	1	0
B-6-3	1	1	1	0
B-7-1	1	1	1	0
B-7-2	1	1	1	0
B-7-3	1	1	1	0
B-8-1	1	1	1	0
B-8-2	1	1	1	0
B-8-3	1	1	1	0
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B-9-3	1	1	1	0
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DUPLICATES	2	2	2	1
BOTTLE BLANK	2	2	2	1
RINSATE BLANK	2	2	2	1

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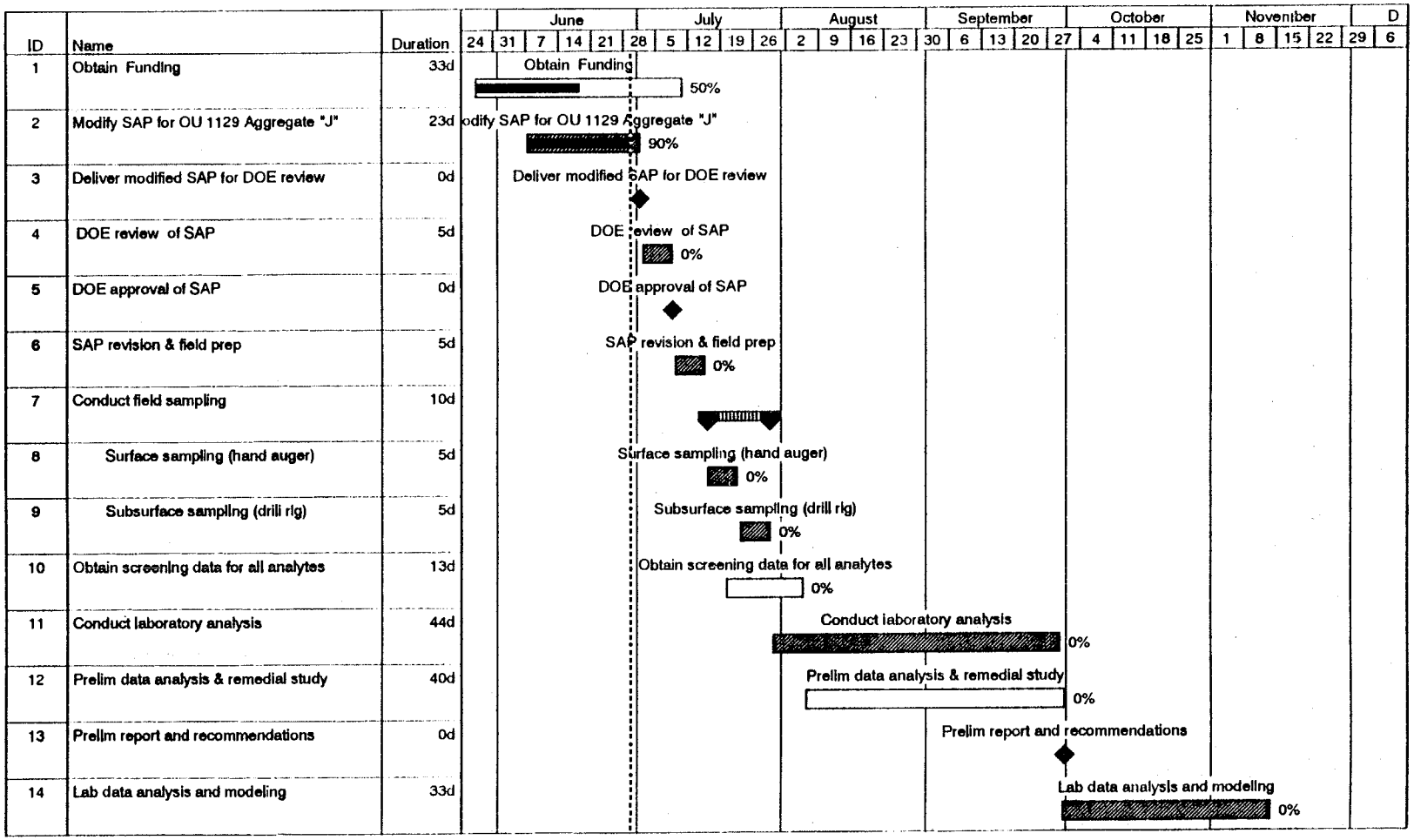
Attachment I

NSTL (TA-42) Interim Action Projected Schedule

Manager: Allyn Pratt, OU 1129

ID	Name	Duration
1	Obtain Funding	33d
2	Modify SAP for OU 1129 Aggregate "J"	23d
3	Deliver modified SAP for DOE review	0d
4	DOE review of SAP	5d
5	DOE approval of SAP	0d
6	SAP revision & field prep	5d
7	Conduct field sampling	10d
8	Surface sampling (hand auger)	5d
9	Subsurface sampling (drill rig)	5d
10	Obtain screening data for all analytes	13d
11	Conduct laboratory analysis	44d
12	Prelim data analysis & remedial study	40d
13	Prelim report and recommendations	0d
14	Lab data analysis and modeling	33d



Project: NSTL (TA-42) Interim Action
Date: 6/29/92

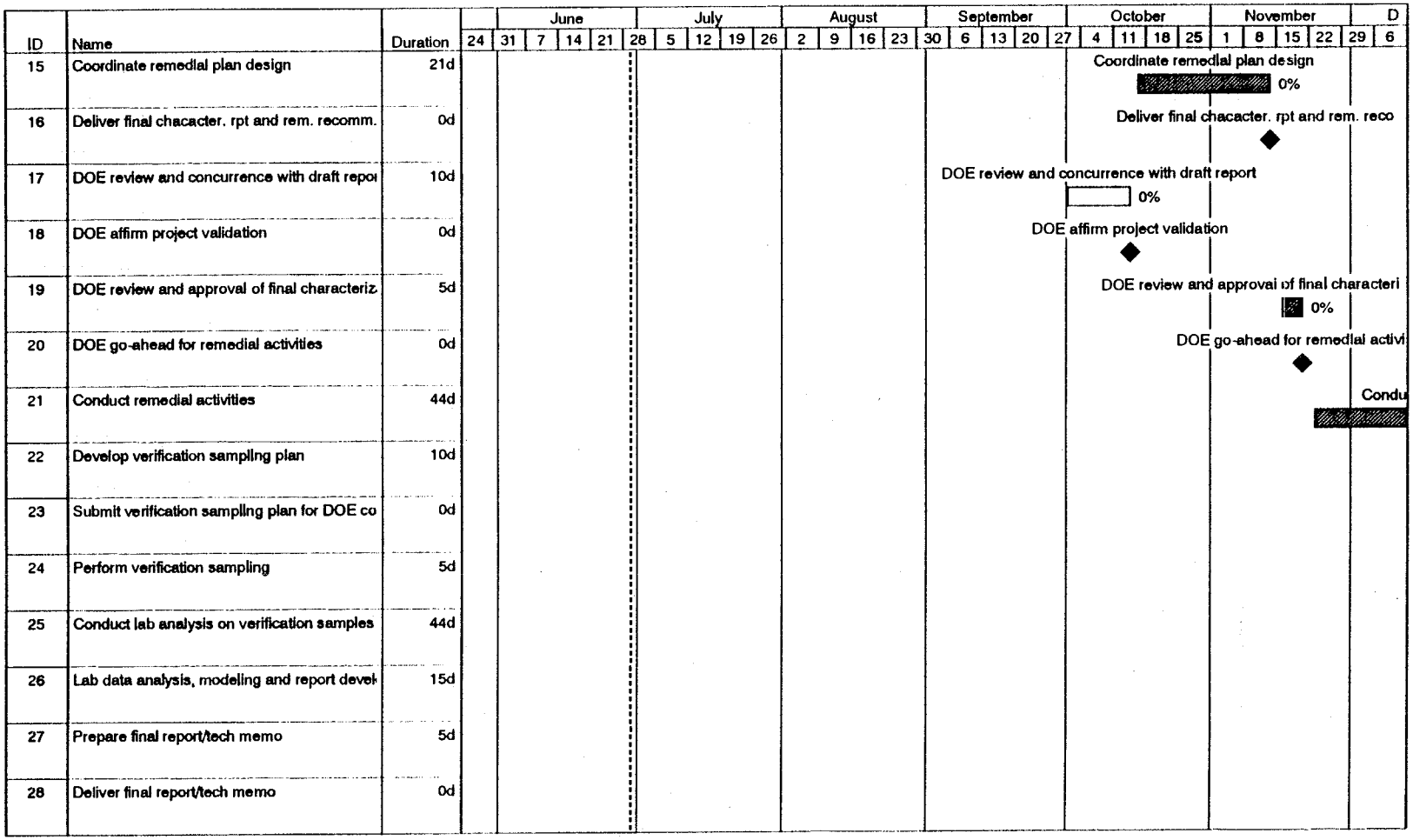
Critical
Noncritical
Progress
Milestone
Summary
Rolled Up

Attachment I

NSTL (TA-42) Interim Action Projected Schedule

Manager: Allyn Pratt, OU 1129

ID	Name	Duration
15	Coordinate remedial plan design	21d
16	Deliver final chacacter. rpt and rem. recomm.	0d
17	DOE review and concurrence with draft repo	10d
18	DOE affirm project validation	0d
19	DOE review and approval of final characteriz	5d
20	DOE go-ahead for remedial activities	0d
21	Conduct remedial activities	44d
22	Develop verification sampling plan	10d
23	Submit verification sampling plan for DOE co	0d
24	Perform verification sampling	5d
25	Conduct lab analysis on verification samples	44d
26	Lab data analysis, modeling and report devel	15d
27	Prepare final report/tech memo	5d
28	Deliver final report/tech memo	0d



Project: NSTL (TA-42) Interim Action
Date: 6/29/92

Critical
Noncritical
Progress
Milestone
Summary
Rolled Up

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NSTL (TA-42) Interim Action Projected Schedule

Manager: Allyn Pratt, OU 1129