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DEC 16 1994

LANL

Mr. William Honker, Chief
RCRA Permits Branch
U. S. Environmental Protection Agency
Region 6
1445 Ross Ave., Suite 1200
Dallas, Texas 75202-2733

Dear Mr. Honker:

Enclosed is our response to EPA's NOD for the OU 1100 RFI Work Plan. If you have any questions, please call me at (505) 665-7203.

Sincerely,

For Theodore J. Taylor
Program Manager
Environmental Restoration Program

LAAMEP:2TT-033

Enclosure

cc w/enclosure:
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CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Response to NOD for RFI Work Plan for OU 1100

Name: _____ Date: 12/15/94

Dennis Erickson
Division Director
Los Alamos National Laboratory

Name: _____ Date: 12/16/94

For Joseph Vozella, Chief
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

RESPONSES TO COMMENTS PROVIDED IN THE NOTICE OF DEFICIENCY FOR THE RFI WORK PLAN FOR OU 1100

COMMENT 1. *LANL shall submit a schedule for each of the SWMUs in this workplan which are required to be investigated under the HSWA portion of the RCRA permit. This schedule shall include start field work dates, end field work dates and submittal of final RFI Report dates. Geophysical survey dates should also be included.*

Discussion:

Field work associated with the geophysical and radiological surveys was completed in October 1994. Final data reports for both activities are due to be completed in December 1994. Field sampling activities identified in the workplan are scheduled to start on May 29, 1995 and continue through September 29, 1995. The sampling schedule for each individual SWMU has not been defined due to logistical uncertainties primarily associated with site access. The final RFI Report is scheduled to be completed by October 31, 1996.

Proposed Text Changes

None

COMMENT 2. ***4.5.1.1 Explosive Constituents, p. 4-7*** *- In the third paragraph of this subsection, text indicates that the production impurities of pentaerythritol tetranitrate(PETN) have never been detected in the environment. LANL needs to elaborate on this statement, and explain why the by-products from PETN might not be found in the environment.*

Discussion:

Historically PETN has been used as a booster explosive, mixed with TNT, in small caliber projectiles and grenades. Because PETN was primarily used as a booster explosive, PETN typically constitutes < 0.1 % by weight of a particular explosive composition. The decomposition products of PETN at 210°C are NO, CO, NO_2, N_2O, CO_2, H_2 and N_2 (Layton et al. 1987, 16-0035). Only an incomplete firing would result in PETN production impurities being present in the environment and in such small quantities that detection would be difficult at best.

Proposed Text Changes:

In addition to its presence as a production impurity, HMX may have been used as an explosive; and RDX may be present as a production impurity of HMX. Other explosives that may have been used include PETN (pentaerythritol tetranitrate) and tetryl. **Because PETN was primarily used as a booster explosive, it typically constitutes < 0.1 % by weight of a particular explosive composition.** The production impurities of PETN (pentaerythritol trinitrate, dipentaerythritol hexanitrate, and tripentaerythritol acetonitrate) have never been detected in the environment (Layton et al. 1987, 16-0035) and are not considered. There are virtually no production impurities of consequence in tetryl.

COMMENT 3. 4.5.3 POTENTIAL IMPACTS, P. 4-17 *In determining remediation levels for sites, LANL may use a risk assessment based on actual land use. If risk assessment is to be used for a no further action determination, then a residential exposure scenario or a scenario agreed to with public input should be used. No response required.*

Proposed Text Changes:

No response requested.

COMMENT 4. ***4.6.1 No Further Action, p. 4-18*** *- EPA does not agree with Criterion 2. A comparison of analytical results should be made against background for inorganics and practical quantitation limits (PQLs) for organics to determine the extent of a release or if a release has occurred.*

Discussion

LANL accepts the comment. The reference to "background" in the criterion was specific to those constituents (such as arsenic and beryllium) where the calculated SAL is within or below the normal range of background for soils or tuff at LANL. It is our understanding that comparison of measured concentrations of inorganic constituents against normal background and of organic constituents against PQLs provides an indication of the extent of a release, or if the site has been remediated, the extent of the remediation. However, LANL believes that for sites where measured concentrations of hazardous constituents are substantially above background concentrations can qualify for No Further Action status as long as the constituents present an acceptable risk under an agreed-to future land use. LANL understands that EPA concurs with this approach..

Proposed Text Changes

Section 4.61, page 4-18 is revised as follows:

Criterion 2. It ~~has been established (on the basis of Phase I data or other reliable data) that the concentrations of the PCOCs are below background levels and SALs. This conclusion has taken into account the combined effects of multiple contaminants as well as ALARA requirements for radioactive contaminants.~~

The PRS has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants of concern are either not present or are present in concentrations that would pose an acceptable level of risk under the projected future land use. The determination of both the acceptable level of risk and the proposed future land use has considered stakeholder involvement.

COMMENT 5. 4.7.1 Statistical Basis, p. 4-19 *- EPA does not necessarily agree with how the proposed statistical method will be used in the sampling plans. EPA will indicate for each SWMU whether an adequate number of samples is being collected regardless of the statistical approach being used. No response required.*

Proposed Text Changes:

No response requested.

COMMENT 6. ***4.8.2 Sampling of Soils, Sediments, and Wastes, p. 4-26*** *- LANL shall elaborate on why they want to increase the number of field duplicates from 1 in 20 to 1 in 10.*

Proposed Text Changes:

~~To enhance our understanding of variability among samples we have increased the number of field duplicate samples from 1 in 20 (as recommended in the QAPP) to 1 in 10.~~ The specific numbers of field duplicates, rinsate blanks, and field blanks that will be collected are tabulated in Chapter 5. (Reagent blanks and trip blanks will be submitted with each shipment in accordance with the QAPP, but are not identified in the Chapter 5 sampling plans.)

TABLE 4-6

RECOMMENDED LEVEL OF QUALITY CONTROL SAMPLES FOR FIELD SAMPLING

Sample Type	Applicable Matrix	Sample Frequency
Field duplicate	Soil	1 per ~~10~~ **20** samples
Rinsate blank	Soil	1 per 20 samples
Matrix spike	Soil	1 per 20 samples
Matrix spike duplicate	Soil	1 per 20 samples

COMMENT 7. ***5.1.4.2 Sampling and Analysis, p. 5-11-*** *Sampling plans for these areas are much too sketchy to be approved. How will LANL determine how many trenches for each landfill? What field screening will be used? LANL shall provide the dates of the proposed geophysical surveys, and revised sampling plans should be submitted based on the geophysical information.*

Discussion:

Agree. We have completed the field work associated with the geophysical survey of the landfill areas and have received a preliminary report with the final report due by late December. The preliminary geophysical survey is somewhat inconclusive but, the presence of subsurface anomalies are present at each landfill. We will bias the trench locations based on this information.

Proposed Text Changes:

~~After the geophysical surveys have been completed, one to four trenches will be cut (by backhoe) across each area designated as a former landfill, from the surface to the backfill/native-soil interface. The number of trenches will depend on the estimated area of the landfill in question, as determined by the geophysical survey. For each PRS, seven sampling locations in the trenches will be selected, to meet the design criteria of DQO Step 6 (see Table 4-5), and soil samples will be collected using the spade and scoop method (see LANL-ER SOP-06.09).~~ **After the geophysical surveys have been completed, a trench will be excavated (by backhoe) across each area designated as a former landfill, from the surface to the backfill/native soil interface. For each PRS, seven sampling locations in the trench will be selected. The sampling locations will be biased toward soil staining or other field observations, to meet the design criteria of DQO Step 6 (see Table 4-5). In the event that there is no evidence of a former landfill, sampling locations will be determined by sampling from randomly selected points along the same grid used for the geophysical survey. The soil samples will be collected from the excavated backfill closest to the trench floor** ~~Samples will be collected from the trench floor~~ (the top of the native soil profile), where the highest concentrations of PCOCs are expected. (If the backfill/soil interface cannot be identified, the trench will be excavated to a maximum depth of 10 ft, and samples will be collected at that depth.) If either alluvial groundwater or bedrock is encountered before 10 ft, the excavation will be stopped, and soil samples will be collected from the interval immediately above the water table or bedrock surface.

The ~~lithology~~ **soils** will be observed and ~~described~~ **logged** as each trench is excavated.

All samples will be field screened for radioactivity and HE, **as discussed in Chapter 4 Section 4.8.3 "Field Screening"**, using Laboratory-approved standard operating procedures (SOPs), to identify gross concentrations of PCOCs. All samples will be analyzed in an onsite mobile laboratory for gross alpha, beta, and gamma radioactivity. Samples sent to an offsite analytical laboratory will be analyzed for all potential contaminants of concern (hazardous and radioactive).

COMMENT 8. ***5.2.4.1.3 Radiation Surveys, p. 5-27-*** *How will this radiation survey be conducted. Will a grid pattern be employed? What type of coverage of the area will there be.*

Discussion:

A grid pattern will be used for each area surveyed for radiation. The surveys themselves will be conducted using hand-held instruments in accordance with LANL SOPs. For smaller areas (100 ft x 100 ft) or areas where contamination is expected, radiation levels will be measured and recorded every 10 feet. A larger grid pattern will be employed in larger areas (200 ft x 200 ft) however, this pattern will not exceed 20 feet spacings.

Proposed Text Changes:

5.2.4.1.3 Radiation Surveys

Each PRS having radiological PCOCs will be surveyed for radiation using a field instrument (e.g., FIDLER or phoswich) capable of detecting low-energy gamma emissions. **A grid pattern will be employed, using a 10 ft x 10 ft grid pattern for smaller areas and 20 ft x 20 ft pattern for larger areas.** The surveys, which will be performed according to Laboratory SOPs, will verify the results of previous surveys and collect data that can be used to bias sampling locations.

COMMENT 9. ***5.2.4.2.1 PRS 20-002(a) - Steel Lined Pit, p. 5-29 -*** *How will the location of the 22 samples be determined? How will sample locations be determined if field screening is negative?.*

Discussion:

Sampling locations will be, to the extent possible, biased by the results of the radiation survey. Should the survey results fall below background values, or are inconclusive, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

Proposed Text Changes:

On the basis of these factors, we defined the horizontal boundary of the sampling area as a 100-ft-radius circle around the estimated location of the pit (see Figure 5-8). A circle of this size should encompass the area that would contain the highest concentrations of PCOCs, allowing for uncertainty in the location of the pit and for the possibility that some of the soil surrounding the pit was removed when the pit was excavated. We defined the vertical boundaries, on the basis of the source of contamination, as the surface to 3 ft below the surface (see Section 5.2.3.4.2). We judge that at least 10% of the soils within these horizontal and vertical boundaries would contain PCOCs from firing activities. To meet the design criterion for this PRS (a 90% probability of detecting contamination over 10% of the sampled area), 22 samples will be collected (see Table 4-5); these will be taken from two depths at each of 11 locations: 0 to 6 in., using the spade and scoop method (LANL-ER-SOP-06.09); and 2.5 to 3 ft, using a hand auger (LANL-ER-SOP-06.10).

To the extent possible, sampling locations will be biased by the results of the radiation field survey. In the event that the survey yields below background or inconclusive results, sampling locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

COMMENT 10. ***In Section 5.2.1.1.1. PRS 20-002(a)*** *, LANL discusses the failure of the shot containment tank called a "Dumbo" (PRS 20-002(b)). LANL should provide more information about the failure of the tank, and does that mean that material might have been scattered out of the "Dumbo". What type of explosives were used in the tank? How is the sampling plan addressing this failure?*

Discussion:

The NOD refers to Section 5.2.1.1 but pertains to details of the Dumbo [PRS 20-002(b)] discussed in section 5.2.1.1.2. The incident, also mentioned in section 2.2.1 (page 2-3 paragraph 4), occurred when the first and only implosion shot, fired inside the Dumbo, badly jammed the door, "making it exceedingly difficult to open and recover the initiator for study" (DOE 1986, 8657).

There is no indication the Dumbo ruptured or that materials escaped, but only that it was unusable for experiments due to mechanical difficulties with the door. Since the purpose of the Dumbo was to contain the shot, there should be no explosive materials nor remnants of initiators in the surrounding soil, particularly since a 12-ft x 16-ft concrete firing pad sat beneath the Dumbo. There seems to be no obvious way that shot materials could have reached the soil from this one-time test.

Proposed Text Changes

PRS 20-002(a), located south of East Jemez Road at the far west end of TA-20, is a steel-lined pit (Structure TA-20-6) that was used to contain initiator test shots, facilitating recovery of the initiators. It was used following ~~failure~~ **abandonment** of the shot containment tank called a "Dumbo" (PRS 20-002[b]) (LANL 1984, 22-0015).

The Dumbo was used only once because of the difficulty of opening the tank after the shot was imploded (DOE1987, 0264). **No evidence has been found in archival research to indicate the single test using the Dumbo could have or did result in escape of the shot materials to the soil around the concrete firing pad**.

COMMENT 11. ***5.2.4.2.2 PRS 20-002(b) - Dumbos, p.5-31*** *- The Dumbo was used to test explosives, therefore, LANL should not request no further action based on a lack of radiation readings above background. LANL should submit a percentage of the samples collected closest to the location of the Dumbo for laboratory analysis of HE.*

Discussion:

Because radioactive constituents were known to have been used during the single explosive shot fired in the Dumbo and because the exact location of the Dumbo and platform is not known (location is estimated to be within 50'), LANL has proposed a grid-based radiation survey. This survey will encompass 200 square feet with radiation levels monitored every 10 feet. Sampling will then be biased toward those locations which have above background readings. If contamination is present, it is expected to have resulted from handling of test shot debris and the subsequent removal of the Dumbo and platform. As such, any contamination present may not be localized and LANL believes this sampling approach would provide the best characterization of the site. If the radiation survey indicates that all readings are below background, sampling locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey. All samples collected will be analyzed for HE as presented in Table 5-6.

Proposed Text Changes:

None

COMMENT 12. ***5.2.4.2.3 PRS 20-002(c) - Firing Pad Bordered on Three Sides by Earth Berm, p. 5-32-*** *How will LANL determine sampling locations?*

Discussion:

Sampling locations will be, to the extent possible, biased by the results of the radiation survey. Should the survey results fall below background values, or are inconclusive, locations will be determined by sampling from randomly selected points along the same grid pattern used for the radiation survey.

Proposed Text Changes:

We estimate that if soils were removed along with the berm, at least 10% of the soils remaining within these horizontal and vertical boundaries would potentially be contaminated; and if soil was not removed, but was buried, at least 25% would potentially be contaminated. To cover both of these possibilities, we will use the more conservative sampling design criterion: a 90% probability of detecting contamination over 10% of the sampled area. This criterion requires collection of at least 22 samples (see Table 4-5). We will collect samples from three depths at each of eight locations: 0 to 6 in., using the spade and scoop method (LANL-ER-SOP-06.09); 2.5 to 3 ft (3 ft is the estimated maximum depth of soil cover, based on the dimensions of the berm and the area of the site), by hand auger (LANL-ER-SOP-06.10); and 4.5 to 5 ft, by hand auger. **To the extent possible, sampling locations will be biased by the results of the radiation field survey. In the event that the survey yields below background, or inconclusive results, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.**

COMMENT 13. ***5.2.4.2.4 PRS 20-002(d) - Firing Site, p. 5-32-*** *How will LANL determine sampling locations?*

Discussion:

Sampling locations will be, to the extent possible, biased by the results of the radiation survey. Should the survey results fall below background values, or are inconclusive, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

Proposed Text Changes:

requires collection of at least 22 samples (see Table 4-5). We will collect samples from three depths at each of eight locations: 0 to 6 in., using the spade and scoop method (LANL-ER-SOP-06.09); 2.5 to 3 ft, by hand auger (LANL-ER-SOP-06.10); and 4.5 to 5 ft, by hand auger. **To the extent possible, sampling locations will be biased by the results of the radiation field survey. In the event that the survey yields below background, or inconclusive results, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.**

COMMENT 14. ***5.2.4.2.5 PRS 20-003(b)*** **- 20 mm-gun Site, p. 5-34 -**

a. LANL needs to indicate on Figure 5-10 the approximate location of the gun and the direction of the canyon wall into which the gun shot. In addition, drainage paths from the impact area to the main stream channel should be indicated, as well as sampling locations. LANL needs to demonstrate a route from the cliff face to the sampling area.

b, LANL should do a reconnaissance of the cliff face and area under the impact zone to determine if there is any visible waste.

Discussion:

ENG-C-1788 and at least three other drawings (ENG-C-1790, R138, and R 1156) have site maps which show that the "20-mm hutment", TA-20-44, is oriented approximately north-northwest. Drawings ENG-C-1788 and -1789 indicate building TA-20-44 partly encloses a massive, horizontal, 18-ft x 6-ft concrete "pier", similarly oriented. This pier is presumably the mounting for the 20-mm gun A second, T-shaped concrete structure fifteen feet away along this alignment likely represents a target-mounting pier. Neutron timing studies were conducted at this facility.

The only cliff in the vicinity of the structures (except high above them) is about 75 ft west of TA-20-44, far to the left of the probable direction of fire (based on the concrete structures' alignment). The structures point, rather, along a slope of boulders on the east side of the small canyon. It is unlikely the gun would have been dismounted and turned to the side to fire at the cliff (see amended Figure 5-10).

No obvious impact marks appear on the cliff west of TA-20-44, though a metal plate target would probably have prevented any visible trace of impact on the rock. The numerous natural voids that pockmark the tuff layer in this area, however, would mask any impacts that might have occurred. Reconnaissance conducted November 23, 1994 at the base of the cliff failed to find any manmade debris.

We now believe the nature of the terrain at the 20-mm gun location, and its alignment away from the cliff, make this location unlikely to be the one an employee remembered as "22-mm smooth-bore Navy guns being fired into the cliffs..." (DOE 1987, 0264). This document also says another employee remembered "the smooth-bore guns that were used for *equation-of-state* studies were fired into the cliffs against a steel plate."

The existence of a 3-inch gun site farther west in Sandia Canyon, TA-20-16, PRS 20-003(c), more closely matches the description. It fired into a dirt-filled bin, TA-20-10, at the foot of a cliff (LANL drawing ENG-C1778), and equation-of-state experiments were done with it rather than with 20-mm guns, which were used in timing experiments (DOE 1987, 0264, page TA20-1).

Section 5.2.1.2.2 describes TA-20-16. The next-to-the-last paragraph of section 2.2.1 states "In a 1985 interview, a former Laboratory staff member mentioned that firing activities at the TA-20-16 gun site may have caused some of the cliff face to fall away, possibly burying some contamination in the debris...". Therefore we conclude that PRS 20-003(c), not (b), is the location of possible buried impact debris from gun-firing operations.

Proposed Text Changes:

5.2.1.2.1 PRS 20-003(b) - 20-mm-Gun Firing Site

Approximately 450 ft to the south of these two buildings was a magazine, Structure TA-20-45. The layout of these structures, shown in an engineering drawing (LASL 1951, 22-0058), indicates that guns were fired into a side canyon branching from the north wall of Sandia Canyon. ~~According to one report (DOE 1987, 0264), the guns were fired at steel plates set against the cliffs.~~

5.2.2.1.5 PRS 20-003(b)

All structures associated with this PRS were removed in 1948, before construction of East Jemez Road. The area around the 20-mm-gun building (Structure TA-20-13) was investigated in 1985 under the Los Alamos Characterization Program. Preliminary results of phoswich radiation surveys of soils near Structure TA-20-13 revealed no readings higher than background and soil

samples yielded no uranium concentrations higher than the reported normal background range (Scholl 1989, 0485). ~~It should be noted, however, that sampling was done only around the 20-mm gun building and not in the projectile impact area near the canyon wall.~~

5.2.3.4.1 Horizontal Boundaries

PRS 20-003(b). There may be contamination around the projectile impact zone. However, historical data are inadequate for accurately locating the impact zone. Because the drainage channel is assumed to be the area most likely to have received contamination from this zone (~~any contamination present in the cliff wall impact zone should have been transported by runoff to the channel)~~, and because the canyon bottom is a more likely place for potential receptor exposure than the walls, the channel and the canyon bottom areas will be used to draw the boundaries of the Phase I RFI for this PRS.

5.2.4.2.5 PRS 20-003(b) - 20-mm-Gun Site

~~In the case of this PRS, the guidance of DQO Step 4 would be very difficult to follow, because the area most likely to have received contamination is the cliff face against which steel plates were set as targets for the gun tests. On the other hand,~~ Much of the contamination from this impact area would have migrated via the drainage channel to downstream locations. For this reason, we have established the boundaries of the sampling area to encompass the drainage channel for the canyon (Figure 5-10).

COMMENT 15. 5.2.4.3.6 PRS 20-003(c) - Navy Gun Firing Site, p. 5-34 - *How will LANL determine sampling locations?*

Discussion:

Sampling locations will be, to the extent possible, biased by the results of the radiation survey. Should the survey results fall below background values, or are inconclusive, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

Proposed Text Changes:

For this reason, we have selected as the sampling design criterion for this PRS a 90% probability of detecting contamination if at least 25% of the sampled area is contaminated. This criterion requires collection of at least 11 samples (see Table 4-5). Samples will be collected from two depths at each of six locations (not to include the canyon wall): 0 to 6 in., using the spade and scoop method (LANL-ER-SOP-06.09); and 2.5 to 3 ft, using a hand auger (LANL-ER-SOP-06.10).

As described in Section 5.2.4.2, the radiation survey will be used, to the extent possible, to bias sample locations. In the event that the survey yields below background, or inconclusive results, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

COMMENT 16. 5.2.4.2.7 PRS 72-001 - Active Firing Range, p. 5-36 - *How will sampling locations be determined within the study area. What type of field screening methods will be used to determine sampling locations (e.g. XRF)? Drainage paths should be indicated on Figure 5-11.*

Discussion:

Sample locations will be determined based on a geomorphic survey of the area (reference LANL-ER-SOP03.08, Geomorphic Characterization). No field screening method will be used to bias the sampling locations as the only potential contaminant of concern is lead. The study area is relatively flat in topography and lacks obvious drainage paths. Run-on to the site is sheet flow from the west and runoff is to the east.

Proposed Text Changes:

None

COMMENT 17. 5.3.4.2 Sampling and Analysis, p. 5-52 -

a. Text indicates that radioactive potential contaminants of concern (PCOC) are not expected at most PRSs and that all samples will be field screened. In addition, samples sent for offsite analysis will be analyzed for hazardous and radioactive. If samples which are field screened indicate that radioactivity is not a concern, and yet the samples are to go for laboratory analysis, why is LANL going to conduct laboratory analysis for radioactivity?

b. It is recommended that samples be taken where there is any visible staining on the asphalt surrounding or directly under the waste accumulation areas.

Discussion:

a. All samples will be field screened for radioactivity. Because radioactivity may be present at levels which are below the detection limits of field screening instruments, all samples will be screened by an onsite mobile laboratory. These screenings are necessary to better characterize site conditions and also to completely characterize the waste generated during the investigative activities. Only gross alpha, beta and gamma will be analyzed at the mobile laboratory. Radioactive analysis at offsite laboratories will only entail gamma spectroscopy to determine radioactive constituents if any were previously detected.

b. Agree

Proposed Text Changes:

Sampling of surface and subsurface soils and sediments at Aggregate C PRSs will be biased toward locations expected to have the highest concentrations of PCOCs. At waste accumulation areas, visible evidence of releases (e.g., soil staining **or staining of the asphalt surrounding or directly under waste accumulation areas**) will be used to bias sampling locations; at the boneyard, the radiation survey results will be used (to the extent possible) to bias sampling.

COMMENT 18. 5.3.4.2.3 PRS 53-001(a), p 5-56 - *samples should be collected in the areas closest to the unit if not within the boundaries of the unit. Figure 5-19 indicates sampling occurring too far away from the unit.*

Discussion:

Agreed.

Proposed Text Changes:

The sampling area for this small, graveled site will be the surface soils beneath the gravel cover **within the boundary of the building or directly adjacent to the building**. Releases may have occurred from leaks or spills from the drums, and, given the small area of this site, any such releases are likely to have affected a relatively large percentage of the area (more than 50%). The sampling design criterion for this PRS, therefore, is a 90% probability of detecting contamination if at least 50% of the sampled area is contaminated. This criterion requires collection of four samples (see Table 4-5); these will be taken from the 0- to 6-in. depth interval (after the gravel has been removed), using the spade and scoop method (LANL-ER-SOP-06.09).

Preliminary sampling locations are shown in **amended** Figure 5-19.

COMMENT 19. 5.3.4.2.5 PRS 53-005 Waste Oil Pit, p. 5-56 - *Text indicates that the solvent wastes (TCE and freon), oil and greases, and acidic wastes were removed in 1986. This pit was not lined and there are no data from the cleanup. Therefore, LANL shall core at least 10 feet below the depth of the pit and collect samples at 5 feet and 10 feet and analyze for VOCs, SVOCs and metals.*

Discussion:

Agreed. We will trench to locate the pit and obtain samples. In addition, we will drill to 10 feet below the pit and collect samples at 5 and 10 feet depths for analysis of VOCs, SVOCs and metals.

Proposed Text Changes:

Infiltration of wastes into the pit walls and bottom is expected to have resulted in a relatively homogeneous distribution of any contaminants and in potential contamination of a large fraction of the sampling area (greater than 50%). The sampling design criterion for this PRS, therefore, is a 90% probability of detecting contamination if at least 50% of the sampled area is contaminated. This criterion requires collection of four samples (see Table 4-5) and will be enhanced by biasing of sampling locations (using observations and the results of field screening for volatile organics). ~~Two trenches will be excavated through the former pit to identify the backfill/native tuff interface, and backfill will be removed to expose the tuff at each sampling location.~~ **A trench will be excavated through the former pit to verify location and identify the backfill/native tuff interface. The backfill will be removed to expose the tuff for sampling. A borehole will be drilled inside the pit boundary, adjacent to the trench, to a depth of 10 feet below the depth of the pit and samples will be collected at the 5 and 10 feet depths (see amended Figure 5-21).** Samples will be collected using a split spoon (LANL-ER-SOP-06.24) or the spade and scoop method (LANL-ER-SOP-06.09), depending on the conditions of the tuff.

COMMENT 20. 5.3.4.2.5 PRS 53-008 - Boneyard, p 5-60 - *How will sampling locations be determined if there are no radiation readings above background? How will the radiation survey be conducted?*

Discussion:

Sampling locations will be, to the extent possible, biased by the results of the radiation survey. Should the survey results fall below background values, or are inconclusive, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.

Proposed Text Changes:

For this PRS, the soil within the 4-acre storage yard, (where any contamination from releases is most likely to reside), will constitute the sampling zone. Given the large extent of the area, we expect that the distribution of contamination in these soils will be less homogeneous than for other PRSs in this aggregate and, consequently, that a smaller fraction of the sampling area will be contaminated. On the basis of our observations and available data, we estimate the potentially contaminated fraction to be at least 20%. For this reason, we have selected a sampling design criterion with a 90% probability of detecting contamination if at least 20% of the sampled area is contaminated. This criterion requires collection of eleven samples (see Table 4-5); the sampling locations will be biased, to the extent possible, using the results of the radiation survey. **In the event that the survey yields below background, or inconclusive results, locations will be determined by sampling from randomly-selected points along the same grid pattern used for the radiation survey.** The soil samples will be collected from the top 6 in. of soil, using the spade and scoop method (LANL-ER-SOP-06.09).

COMMENT 21. 5.5.4.2 Sampling and Analysis, p. 5-70 - *Laboratory analysis for SWMU 20-005 should include SVOCs.*

Discussion: Agreed. Additionally, although the text indicates VOC analysis, this was not reflected in Table 5-13. We have modified the table to reflect sampling analysis for both VOCs and SVOCs.

Proposed Text Changes:

Although radiological PCOCs are not expected at the PRSs in this aggregate, all samples will be field-screened for radioactivity and analyzed for radioactivity in an onsite mobile laboratory. Samples will also be field-screened for HE and VOCs. Samples sent to an offsite analytical laboratory will be analyzed for all PCOCs **including SVOCs**. Quality control samples will be collected as specified in the QAPP (Annex II). Table 5-13 summarizes the sampling and analyses planned.

(see revised Table 5-13, attached)

COMMENT 22. 5.6.4.2 Sampling and Analysis, p. 5-84 -

a. LANL shall ensure that at least one sample is collected as close to the outfall as possible even if this means collection of a sample into the tuff.

b. It is recommended that LANL delineate the drainage channel and the sediment catchments and then clearly present them on Figure 5-31 along with concise sampling locations.

Discussion:

Agreed. We will bias one sample location to be as close to the outfall as possible and locate the remaining sample locations based on a geomorphic survey of the study area (reference LANL-ER-SOP-03.08, Geomorphic Characterization).

Proposed Text Changes:

The study area for this PRS consists of the drainage channel from the outfall to the canyon rim. The sediment catchments within this area, where contaminated sediments (if present) are expected to have accumulated, will be sampled. **The sample locations will be biased based on the geomorphic survey with one location taken as close to the outfall as possible (see amended Figure 5-31).** Samples will be collected at three or four sediment catchments, using a hand auger (LANL-ER-SOP-06.10). Because the vertical

distribution of contamination is not known, samples will be collected at two or three depths at each location (depending on the thickness of the sediments). If three sampling depths are possible, these will be the top 12 in., a 12-in. interval at the mid-depth of the sediment profile, and a 12-in. interval immediately above the sediment/bedrock interface (or to a maximum depth of 5 ft). If only two sampling depths are possible, these will be the top 12 in. and the 12 in. just above the soil/bedrock interface. At least seven samples will be collected to meet the design criterion specified for this PRS (see Table 4-5). If the sediments are less than 12 in. deep, samples will be collected from the entire sediment profile (and, if necessary to obtain the required seven samples, from additional catchments).

COMMENT 23. 6.1.2 PRS 53-007(a) - Neutralization Tank, p. 6-2 - *EPA cannot determine from the description of this unit if the neutralization tank may be visibly inspected or if it is under the basement. LANL should also indicate how they can determine if there have been any leaks from this entire system.*

Discussion:

A visual inspection has been made of the subject tank and system. The neutralization tank can be visually inspected: it is mounted in the basement, above ground. In regard to the entire system: every unit except the sump can be visually inspected. The sump is below the basement floor and is covered by metal plates (which actually form part of the basement floor). The metal plates have holes in them through which the liquid in the sump can be seen. The sides and floor of the sump are concrete set into the ground, therefore visual inspection is not possible. Because of the type of construction, it may be assumed that some leakage has occurred from the sump.

Proposed Text Changes:

The neutralization tank and the sump are located in the basement of D Wing of Building TA-53-1. **The neutralization tank is mounted on the basement floor and can be visually inspected; the sump is located under the basement floor and cannot be visually inspected. Because of the type of construction (concrete), it may be assumed that some leakage has occurred from the sump.** As detailed in the wastewater stream characterization report for this building (Santa Fe Engineering 1993, 22-0107), eight cup drains, nine sink drains, an emergency eye wash/shower drain, and a floor sink (all located in the radiochemistry laboratories in D Wing) discharge to the neutralization tank. **The wastes are potentially radioactive.**

A second tank, mounted on the wall above the floor-mounted neutralization tank, contains caustic for neutralization of wastes. Once neutralized, the wastes drain to ~~an~~ **the** underground **sump** ~~holding tank~~. From there, they are pumped to an outdoor transfer pad, south of D Wing, and then into tanker trucks for transport to treatment or disposal facilities. (~~A sump~~ **An apron** on the pad collects any spills during transfer.) According to the wastewater stream characterization report, this ~~sump~~ **apron** drains back into the **sump** ~~holding tank~~; it can be plugged to prevent storm water from entering the waste system.

The area was inspected during preparation of the RFI work plan. It appears that the sump described in the SWMU Report is actually the ~~underground holding tank~~ **sump** located in the basement of D Wing, which means that ~~this tank~~ **it** was counted twice in the SWMU Report—once in combination with the neutralization tank as PRS 53-007(a) and once separately as PRS 53-006(f). For this reason, we have designated the neutralization tank only as PRS 53-007(a) and ~~the holding tank (or sump)~~ **sump** as 53-006(f).

COMMENT 24. *LANL may request a Class 3 permit modification for the following unit: 53-007(b)*

LANL does not need to add the following sites to the HSWA portion of the RCRA permit:

20-003(d)
53-001(f,h,i,j,l,m,n,o)
53-003
53-011(a,b,c,d,e)
C-53-001 through C-53-019
72-002
72-003(a,b)
C-20-001
53-001(d,k)

Proposed Text Changes:

No response requested.

COMMENT 25. *The following sites may be deferred until closure: 53-022(a) and 53-002(b).*

Proposed Text Changes:

No response requested.

COMMENT 26. PRS 53-006 (b,c,d,e), p. 6-12 -

a. Are there any hazardous constituents released to SWMUs 53-006 (b and c)?

b.LANL shall provide information related to the integrity of these units. How can LANL determine if any leakage has occurred? EPA will evaluate this information prior to making a decision regarding deferral of these units.

Discussion:

The underground storage tanks (53-006(b) and 53-006(c)) are used to store radioactive contaminated wastewater prior to being pumped to the south surface impoundment (ref. Section 6.2.1.1). There is no evidence that they ever did receive any hazardous waste. LANL will provide integrity information for the tanks in Phase II. LANL will develop nonintrusive and nondestructive test methods in Phase I, such as pressure testing. Deferred Action pertains only to use of intrusive methods, not evaluation of leakage.

Proposed Text Changes:

None

COMMENT 27. PRS 53-012(a-d,f,g,h), pp. 6-22 through 6-24 - *EPA's review of the "worst case" information presented in Chapter 5, Section 5.6.2.1 indicates that the cooling tower outfalls may be of concern. No dates of operation are presented in the writeups for these outfalls, and LANL does not indicate if the additives have changed with time. Chromium has been found to accumulate at similar outfalls at other sites. EPA recommends that several of these outfalls be sampled for metals. A sample should be collected within the top foot of soil or tuff as close to the outfall as possible.*

NPDES permits only regulate the actual discharge of water from the outfall. They do not regulate the accumulation of material in the sediment or require corrective action for sediment accumulation.

Because the NPDES permits do not cover these additional items, RCRA may still address remediation of the sediment at any outfall.

Discussion:

The cooling towers were scheduled to come on line in March of 1991 and additives containing chromium were not used. The chemical additions proposed for the cooling towers at startup were: Phoenix 292, Phoenix 315, Phoenix 307 and Phoenix 311 (Miller, 1970). A field reconnaissance of the cooling towers concrete sump showed no green staining that is generally associated with additives containing chromium. There is also, no evidence that acid tanks were at the site. Therefore LANL will not sample for metals at the outfalls.

Proposed Text Changes:

None.

COMMENT 28. PRSs C-20-002 and C-20-003, p 6-28 - *Since these were wooden structures and therefore probably had wooden floors it is very likely that the soil beneath the structures may be contaminated with high explosives (HE). EPA suggests that at a minimum the areas where the structures were located be tested using the HE spot test kit in order to determine if there is any gross contamination.*

Discussion:

As stated in Section 6.3.11.2, both of these wooden structures were demolished by burning. If the structures did indeed have a wooden floor , any surface soil HE contamination present would have been subjected to the same intense heat as was the HE contamination within the structures. We believe any HE contamination that may have been present underneath the flooring of these structures would have been incinerated at the time of the structure burning.

Proposed Text Changes:

6.3.11.2 Justification for NFA

NFA is proposed for these PRSs because there is no evidence of a release. Historical records confirm that the structures were contaminated with HE, but not with radioactive or toxic materials (LASL 1959, 22-0096). All contamination in the structures, then, would have been destroyed when they were burned (the potential for gross contamination of the structures is remote given the extensive cleanup activities that took place in Sandia Canyon in 1948). Historical records do not confirm the SWMU Report information that the soils were contaminated. Given the nature of operations at these structures (they were storage facilities only), the potential for soil contamination appears very remote. **We believe any HE contamination that may have**

been present underneath the flooring of these structures would have been incinerated at the time of the structure burning.

COMMENT 29. PRS 53-001(c), p. 6-29 - *What does LANL mean by the EM-8 tracking system confirmed the site had been removed? Does this mean removed from the tracking system or cleaned up? Does the location of the staining outside TA-53-16 coincide with the location of the storage area? Can LANL confirm this through aerial photos or other means?*

Discussion:

The site was removed from the EM-8 tracking system, thus the site is no longer used as a satellite waste storage area. LANL cannot determine from the aerial photos if the staining outside TA-53-16 is associated with PRS 53-001(c).

Proposed Text Changes:

When the site was inspected in conjunction with work plan preparation, the satellite area could not be located. The EM-8 tracking system (LANL 1993, 22-0050) confirmed that it had been removed, **thus the site is no longer used as a satellite waste storage area.**

Staining was noted outside TA-53-16 during the inspection, on the asphalt in front of and to the right of the door on the south-southeast corner of the building; it extended about a foot beyond the fence on the southeast corner. It could not be determined whether this staining was associated with PRS 53-001(c).

COMMENT 30. 6.4.1.2 Justification for DA, p. 6-30 - *LANL's reasons for requesting deferred action for these sites are not reasonable. LANL should evaluate if there were any major spills from these areas. If there were no major spills, and if the sites cannot be located or are now covered by buildings then LANL should request NFA.*

Discussion:

Agreed. Archival document review has not suggested any major spills from this site nor is the precise location of this satellite waste storage area apparent. As stated in Section 6.4.1.2, a 1989 photograph of the area shows some staining on the asphalt underneath a flammable materials cabinet; however, neither the storage area nor any visible evidence of a spill could be located. Consistent with EPA's recommendation LANL proposes NFA for this PRS.

Proposed Text Changes:

6.4.1 PRS 53-001(c), ~~(d),~~ and (k) - Waste Accumulation Areas

6.3.12 PRS 53-001(d)

~~6.4.1.1.3~~ 6.3.12.1 PRS 53-001(d) - Waste Accumulation Area at Building TA-53-14

The SWMU Report identified this PRS as a waste storage area located outside the southwest side of Building TA-53-14 (a general laboratory facility) and listed materials stored there as solvent-contaminated rags, acetone, ethanol, trichloroethane, and freon.

This area is shown in a 1989 photograph (LANL 1989, 22-0088), identified by a satellite-accumulation-area sign. Two drums bearing hazardous waste labels are visible next to a

flammable-materials storage cabinet; some staining can be seen on the asphalt surface below the cabinet, and may be present beneath the drums as well.

When the site was inspected in conjunction with work plan preparation, the satellite area could not be located. It apparently had been removed. No staining on the asphalt was noted. An addition to the TA-53-14 building, at the southwest corner, may cover the former location of this PRS.

Two indoor hazardous-waste satellite accumulation areas were noted inside the facility. One contained rags, wipes, Q-tips, and cloths contaminated with halogenated solvent; the second contained rags and wipes soaked with solvent (acetone, methanol, trichloroethylene). We assume that similar wastes had been stored at PRS 53-001(d).

6.3.12.2 Justification for NFA

This PRS is recommended for NFA because there is no evidence of a major release of hazardous constituents. Further, the exact location of this site is questionable and it is suspected to reside underneath a building addition.

COMMENT 31. PRS 53-006(a) and 53-006(f), p 6-31 - *LANL needs to provide additional information on these units. LANL shall provide figures indicating the relation of these units with the buildings with which they are associated. Also, LANL needs to provide a list of hazardous constituents which may have been stored in the tanks. Can an inspection or integrity test for the units be conducted?*

Discussion:

The unit designated as 530006(f) is discussed in Comment 23 and will not be discussed here except to indicate that some changes have been made in the text commented upon here (section 6.4.2.1.2). Regarding the other unit, 53-006(a), consultations with site personnel indicate that the tank has never been used; therefore no "list of hazardous constituents" is provided. Evaluation of the integrity of the tank is addressed in the final paragraph of the "Justification for DA, Section 6.4.2.2". Refer to Figure 1-4, p. 1-9 of the work plan for the relationship of both 53-006(f) and 53-006(a) to the buildings they serve.

Proposed Text Changes:

6.4.2.1.1 PRS 53-006(a) - Underground Tank TA-53-59

This PRS is identified in the SWMU Report (LANL 1990, 0145) as an inactive UST, 28 in. in diameter by 65 ft tall. It was reportedly used from 1974 until the 1980s to store spent ion-exchange resin used to treat water from LAMPF.

Additional information comes from an engineering drawing (LASL 1951, 22-0095) that shows the tank as a vertical, cylindrical structure (the dimensions are as given in the SWMU Report). The drawing suggests that this tank was designed for water treatment rather than for storage of spent resin (the inlet pipe is shown discharging at the bottom of the tank, indicating that water would flow upwards through the resin before being expelled via the outlet pipe at the top). Because the drawing was not marked "as constructed," however, it is not known whether the tank was actually constructed in this manner. **Consultation with personnel at the site confirms that the tank has never been used. See Figure 1-4 for relationship of this tank to the building it serves.**

6.4.2.1.2 PRS 53-006(f) - Underground Tank at TA-53-1

The SWMU Report describes this PRS as an active, 3,000-gal. UST located in Building TA-53-1. Installed in 1972, the tank **(actually a sump)** is used to store radioactive wastewater before it is removed by EM-7 for treatment or disposal.

As described in Section 6.1.2, this tank appears to be the same structure that was also called a sump, part of PRS 53-007(a), in the SWMU Report. When the basement of D wing at TA-53-1 was inspected, one ~~tank~~ **sump** was identified that matched the descriptions of both PRSs, 53-006(f) and 53-007(a). The wastes discharged to this ~~tank~~ **sump** consisted of neutralized wastes from sinks and other drains in radiochemistry laboratories (see Section 6.1.2.1). The CEARP Report notes that both these tanks were included in the UST notification submitted to NMED on May 5, 1986. **For a description/discussion of this sump, see Section 6.1.2.1. Also, see Figure 1-4, which shows the relationship of this sump to the building it serves.**

COMMENT 32. PRS 53-009, p. 6-32 - *LANL needs to provide the dates that these tanks were used, and information from any inspection reports of the tanks.*

Discussion:

The tanks have been in-place for less than 5 years and are used to contain excess mineral (scintillation) oil used in experiments. We were unable to identify inspection reports that dealt with these tanks.

Proposed Text Changes:

None.