

**NEW MEXICO ENVIRONMENTAL DEPARTMENT
Hazardous and Radioactive Materials Bureau**

MEMORANDUM

DATE: April 10, 1996
TO: Stephanie Kruse, RCRA Permits Program
thru: *CK* Ron Kern, Manager, RCRA Technical Compliance Program

FROM: Dale E. Conover, RCRA Technical Compliance Program
DEC

**RE: Technical Comments on Sandia National Laboratories (SNL/NM)
April 1995 RCRA Facility Investigation Workplan for Operable Unit
1332 Foothills Test Area**

I have reviewed the DOE Oversight Bureau's (DOE OB) comments on Sandia National Laboratory, New Mexico's (SNL/NM) RCRA Facility Investigation (RFI) Work Plan for Operable Unit 1332, Foothills Test Area. I have also compared the DOE OB comments with the SNL/NM's February 8, 1996 response to the EPA's Notice of Deficiency (NOD) comments on the OU 1332 RFI Work Plan. Any duplication between DOE OB and EPA comments, or any subsequent SNL/NM corrections have been taken into account.

Technical Compliance Program comments are enclosed.

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ATTACHMENT I

NEW MEXICO ENVIRONMENT DEPARTMENT (NMED)
TECHNICAL COMMENTS

SANDIA NATIONAL LABORATORIES (SNL/NM)
APRIL 1995 RCRA FACILITY INVESTIGATION WORK PLAN
FOR OPERABLE UNIT 1332, Foothills Test Area

ITEM

GENERAL COMMENTS

1. Non-hazardous materials, debris and remnants of structures exist at each of the sites. (See attached Table 1, which lists miscellaneous non-hazardous materials at 23 locations.) Please discuss the disposition of these materials in the work plan.
2. Field screening techniques should not be used exclusively in selecting sample locations for laboratory analysis. Although field screening may be used to guide an investigation, site characterization should be based on laboratory analytical data. Field screening should not be used to direct sampling for constituents that may not be co-located. Instead a representative set of samples will need to be collected and analyzed following Level III protocols. The samples should be analyzed for the specific Contaminants of Concern (COCs) identified at each site: metals, VOCs, SVOCs, and PCBs. Gross α , gross β , and gamma radiation should be analyzed in the laboratory using a low background proportional counter, and radionuclides evaluated by laboratory gamma spectrometry.

SPECIFIC COMMENTS

EXECUTIVE SUMMARY

3. Page i, Paragraph 3, "One of the SWMU ER sites (ER Site 28-Mine Shafts) is proposed for administrative no further

action (NFA). Five of the SWMUs (ER Sites 15, 19, 27, 66, and 67) are proposed for administrative NFA based on confirmatory sampling."

Please explain what is meant by the term "administrative" as used here in reference to No Further Action proposals. ER Site 28, Mine Shafts, is being proposed for NFA after a minimum of sampling (according to the NFA proposal, two samples were collected for gamma spectroscopy analysis). The other five sites are being proposed for administrative NFA, also after sampling. In none of these cases, is NFA being proposed for strictly "administrative" reasons. The term should be dropped, unless there is a justifiable reason for using it. Cross reference this section to Section 4.1.3.1 "SWMUs Proposed for NFA." It appears that the requirements for (and definition of) an administrative NFA is the three criteria listed in this section. This should be explicitly stated.

4. **Page iii, Paragraph 3, "Level I/II on-site field-screening or on-site laboratory analyses of samples will be conducted to assist in the selection of critical samples for laboratory analyses. An off-site analytical laboratory facility will provide Level III/IV data for use in baseline risk assessment."**

On-site field-screening or on-site laboratory analyzed samples should not be used solely to support critical future site RFI action decisions. Critical samples for Level III/IV data are required for supporting decisions as to the adequate level of characterization of the site, proposals for no further action (NFA), or the need for further investigation within the guidelines of the RFI. If analyses are performed by an on-site laboratory, a minimum of 20% of the total analyses performed must be confirmed by a fixed off-site laboratory following EPA Contract Lab Protocols in order to support these critical decisions.

Section 3.0

5. **Page 3-3, Table 3-1 Summary of Environmental Setting of OU 1332 ER Sites, and Page 3-11, 3.6.1, Ground-Water Hydrology, Paragraphs 1 and 2**

Columns need to be added to this table showing the following: (1) distance to nearest monitoring well or spring, (2) elevation (ft. above M.S.L.) of the water table or piezometric surface at the nearest monitoring well or spring, and (3) the date of the referenced water level

measurement. In addition, add rows to include wells listed on Page 3-11, Paragraph 2, Sentence 1, that provide information on the ground-water conditions at OU 1332. An additional table may be required to show all the well and spring data on water table elevations, screened intervals, dates of measurements, etc.

6. **Page 3-11, 3.6.1 Ground-Water Hydrology, Paragraph 2; "In 1994, the SWHCP will install wells..."**
It is not clear whether the referenced wells are on Target Road North and Target Road South. If so, they should be shown on Figure 3-3 and in Table 3-1. See comment five.

Section 4.0

7. **Pages 4-4 and 4-5, Section 4.1.3.1 SWMUs Proposed for NFA and Table 4-1.**
Site 28 is proposed for an administrative NFA. NMED, however, has concern about some potentially contaminated material in Mine Shaft 28-2. To support an NFA proposal, confirmatory samples and a surface radiation survey should be conducted in the areas inside the mine where this material occurs.

Section 5.0

8. **Page 5-2, 5.1.2 Voluntary Corrective Measures, Table 5-1**
No explanation is included for the 60% survey coverage for surface radiation at Site 87. Please include a short explanation in this section as to why less than two-thirds of this site was surveyed.
9. **Page 5-2, 5.1.3 Contingency Sampling**
Both here and in Chapter 4 the Work Plan should outline the decision logic and procedures that will be used to decide whether groundwater monitoring will be required at OU 1332 ER Sites (i.e., sites with low precipitation/infiltration or other physical features that would indicate the likelihood of groundwater contamination to be very low).
10. **Page 5-8, Figure 5-1d, "Arroyo Sediment Sample Locations"; Page 5-19, Figure 5-4, Decision Logic for Sampling Activities at ER Site 8 "Arroyo Channel Sediment"; Page 5-20, 5.2.6.2 Intrusive Sampling, Arroyo Channel Sediment.**
Sediment sample locations, within the main arroyo down

gradient of debris pile Y, should begin at the southern edge of the debris pile instead of 300 ft downstream of the pile. In addition, the local main arroyo flows past the debris area approximately 100 feet to the west. If COCs are mobilized from the pile, they would likely follow the smaller drainages that emanate directly from the debris pile before flowing into the main arroyo. For these reasons grab samples in addition to those taken in the main arroyo should be collected between the debris pile and the main arroyo. These additional grab samples should be collected from the sediment in the bottom of the smaller drainage features.

11. **Page 5-17, 5.2.5, Voluntary Corrective Measures and Page 5-22 Area of Open Burning.**

It is not clear if the VCM will include removal of material at the area of open burning (Features PP and RR), or if soil samples will be taken from beneath the burn piles to assess potential leaching of COCs into the soil. See General Comment 2. Laboratory analytical samples should be taken and not just field screening samples. Additionally, the features PP & RR are found on Figure 5-1d, not Figure 5-1b as stated in this section.

ER Site 58

12. **Page 5-27, Table 5-4 Site features at ER Site 58.**

It is not clear what will be done with those features not covered in the work plan. See General Comment 1 and attached Table 1 of this review.

Because of the limited background information about the nature and use of the borehole, Feature OO, SNL/NM should propose a plan to sample the bottom of the open borehole prior to its abandonment. The borehole should then be plugged appropriately so as to prevent its serving as a conduit for the flow of fluids.

13. **General Comment for Section 5.3 ER Site 58.**

The work plan should include a location map and description of building 9805, the former HE assembly building for ER Site 58 activities.

During a DOE OB staff site visit on December 20, 1995, the foundation of Building 9805 was found to contain an open floor drain. Material from the floor drain sump and/or

septic system should be sampled and analyzed for HE, barium, nitrate, and SVOCs.

Refer to Proposals for No Further Action, August 1995, ER Site 92, Page 2-3, Figure 2-1, "1/32-Scale-Model Pressure Vessel (on former foundation for Building 9805-assigned to ER Site 58), Page 24, Figure 2-2a, and Page 2-6, Paragraph 1.

14. **General Comment for Section 5.3 ER Site 58.** SNL/NM should provide information regarding the ownership and use of the above ground tank northeast of Features D and W (Figure 5-1b). This appears to be a new tank, possibly still in use.

Subgroup 1: Tests with Cased Explosives Detonated at Ground Level

15. **Page 5-33, Paragraph 6; Feature F former shot tank location.** When was the shot tank removed and by whom?
16. **Page 5-37, Paragraph 3; "The conclusion that SNL/NM does not need to sample for HE at sites... will be validated at ER Sites 58 and 66 in OU 1332."**
The work plan should outline an explosives residue sampling plan for Subgroup 1, if the hypothesis above is not confirmed by data collected at Site 58, Subgroup 2 and 3, and 66. In addition, Table 5-7 should incorporate this change.

Subgroup 2: Burn Test

17. **Page 5-49, Paragraph 2; "The missile trap structure observed in historical aerial photographs is no longer present." and Paragraph 4 "Waste Disposal and Cleanup Practices"** Please give an estimate as to when the missile trap was removed. This could be from the date of the last aerial photo in which the trap appears, versus the date of the next aerial photo in which it does not appear.
18. **Page 5-54, 5.3.5.4.1 Objectives and Technical Approach, "Judgmental samples..."**
In addition to random sampling, judgmental samples should be taken where staining, discoloration or elevated radioactivity (>1.3 x Background) is detected. These judgmental samples should be analyzed for constituents in

accordance with the same logic as followed for the random samples. If elevated radiological readings trigger a sample to be taken, then it should be analyzed not only for radioactive isotopes, but also metals, HE, VOCs, and SVOCs.

19. **Page 5-54, Burn Tests, Paragraph 2, Table 5-9; "Soil borings will be collected at the center of each burn pit..."**

Due to the size of Feature B, the investigation of this pit should include 4 soil borings with samples collected according to the work plan. Borehole samples at all burn test locations should be analyzed in the laboratory for gross α , gross β , and gamma radiation using a low background proportional counter; and radionuclides evaluated by laboratory gamma spectrometry.

20. **Page 5-59, Missile Trap (Feature I) Pallets; "One soil sample will be taken from under each pallet at a depth of 0 to 6 in."**

Samples should also be screened for radiological contamination and additional judgmental sampling should be conducted wherever elevated readings ($>1.3 \times$ Background) are found.

Subgroup 4: Tests with Uncased Explosives Detonated Above Ground Level

21. **Page 5-75, Paragraph 3; "The conclusion that SNL/NM does not need to sample for HE at sites...will be validated at ER Sites 58 and 66 in OU 1332."**

The work plan should outline an explosives residue sampling plan for Subgroup 4, if the hypothesis above is not confirmed by data collected at Site 58, Subgroup 2 and 3, and 66. In addition, Table 5-7 should incorporate this change.

Subgroup 5: HALO Bunker Tests

22. **Page 5-78, 5.3.8.3 Conceptual Model, Paragraph 2; "The conclusion that SNL/NM does not need to sample for HE at sites...will be validated at ER Sites 58 and 66 in OU 1332."**

The work plan should outline an explosives residue sampling plan for Subgroup 5, if the hypothesis above is not

confirmed by data collected at Site 58, Subgroup 2 and 3, and 66. In addition, Table 5-7 should incorporate this change.

SUBGROUP 6: Underground Conduit System

23. Page 5-85, Section 5.3.9.1 Description and History;

The underground conduit is described as starting at the control bunker. This is labeled as Feature W on Figure 5-1d, and should be identified with Figure 5-1b.

ER Site 82, Old Aerial Cable Site

24. Page 5-112, Paragraph 2; RUST Geotech, Inc. surface gamma radiation survey;

The fourth anomaly that was detected in January of 1994, thought to be due to finely dispersed radioactive contamination, is only referred to as being located in an arroyo. Please identify the location of this arroyo and show it on Figure 5-22. If the location of this anomalously high radioactivity can be accurately located, then it should be added to the list of sample locations (text and Table 5-21 on page 5-124). Three additional grab surface samples should be taken from 0-6 in. and analyzed for radiological and metal contaminants.

25. Page 5-124, Table 5-21 Summary of Nonintrusive and Intrusive Sampling at ER Site 82.

VOCs are a potential contaminant at some subsets of Site 82. Sample analysis at those locations should include VOCs. At the generator pad location three samples are to be taken. Table 5-21 should probably be changed to show that all three samples for the generator pad will be analyzed for VOCs.

It seems unnecessary that site background samples should be analyzed for TPH since this is not a naturally occurring COC.

QA samples for the generator pad and arroyo show three soil samples each with four samples being tested for VOCs. Is this correct or should the table show three VOC tests?

ER Site 87, Building 9990 (Firing Site)

26. **Page 5-133, 5.5.2 Previous Investigations, Paragraph 2; "RUST Geotech, Inc. conducted a 60-percent coverage surface gamma radiation survey at ER Site 87";**
Why wasn't a 100% gamma rad survey conducted at this site? The arroyo that drains the area should be surveyed.
27. **Page 5-135, 5.5.3 Conceptual Model, Paragraph 3; "The conclusion that SNL/NM does not need to sample for HE at sites...will be validated at ER Sites 58 and 66 in OU 1332."**
The work plan should outline an explosives residue sampling plan for Firing Site A, the area north of Building 9990, if the hypothesis above is not confirmed by data collected at Site 58, Subgroup 2 and 3, and 66. In addition, Table 5-7 should incorporate this change.
28. **Page 5-139 to 5-141, Section 5.5.5.2 Intrusive Sampling;**
Six additional surface-soil samples should be taken at random down the center of the small unnamed arroyo that drains the firing site and box canyon to the southwest. Shrapnel from firings could have been transported and covered by sediment during heavy, brief summer thunderstorms, and their associated brief, turbulent high flow volumes of water. Therefore, two samples should be taken at each sample point, at depths from 0 to 6 in. and 1.5 to 2.0 ft. (or just above bedrock) along the center line of the stream bed. Although sample points along the stream bed should be randomly selected, each sample point should be taken at the thickest deposit of sediment, or where sediment has accumulated behind a restriction to flow (such as a log or boulder) that would form a pool or natural sediment trap when water is flowing down the arroyo. Sample points should start where the arroyo grade allows sufficient sediment to accumulate for sampling. More sample points (4) should be selected closer to the explosives test point than further downstream (2). These additional samples should be analyzed for the same constituents as the other samples in Table 5-24, page 5-142. The "selectively random" selected sample locations should be added to Figure 5-32. An additional figure may be required to show the full extent of sampling in the arroyo.
29. **Page 5-139 and 5-141, Surface-Soil Samples, and Subsurface Sampling "...Figure 5-33..."** Soil sampling locations are located on Figure 5-32 and not on Figure 5-33.

Table 1
Site Features at ER Site 58

Feature Location	Description
A	Three data transmission cables sticking out of the ground between two I-beams
C	Pit lined with 18 in. concrete blocks bolted together with metal plates. Soil is mounded to the top of blocks exterior, interior filled with dirt and tumbleweeds built to protect instrumentation during the Greenhouse tests.
D	Underground bunker, opening to the west (building 9800).
K	Concrete pad with a structure constructed out of 18-in. concrete blocks bolted together with metal plates. In the center of the structure is a metal room containing control/breaker boxes and a work bench.
M	Small dirt mound.
N	Concrete pad with metal square brackets bolted perpendicularly to the pad. An opening is located in the center of the pad that may be a wiring/instrumentation box.
N2	Concrete pad like N above with the same metal mounting areas but with no metal brackets installed.
P	Two concrete blocks of the type used for the force-on-structure test.
V	Trailer shelter with a sod-covered roof and wooden walls on the south and east. The shelter is open to the north and west.
W	Concrete firing bunker with a viewing slit in the south wall and metal armor on top (building 9801).
DD	Concrete corrugated sheeting debris (possibly containing asbestos).
EE	Six square concrete blocks.
GG	Two degraded concrete chunks.
HH	circuit box and end of buried electrical cable.
II	Electrical terminal board

Table 1
Site Features at ER Site 58

Feature Location	Description
JJ	A stack of approximately ten telephone poles.
KK	firing cable strung down arroyo
LL	Large scrap of rusted metal plate.
MM	Electronic components.
NN	Degraded Battery.
OO	Open borehole.
QQ	Rusted Metal Sheet.
Bldg. 9805	Concrete foundation of former Building 9805 not shown on map.