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

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

NOV 1997

Date: November 14, 1997
Refer to: EM/ER:97-483

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

SUBJECT: RESPONSE TO REQUEST FOR SUPPLEMENTAL INFORMATION FOR RFI REPORT FOR PRS 0-039 (FORMER OU 1071)

Dear Dr. Dinwiddie:

Enclosed is the Los Alamos National Laboratory's Response to the New Mexico Environment Department Hazardous and Radioactive Bureau's Request for Supplemental Information for Resource Conservation and Recovery Act Facility Investigation Report for Potential Release Site 0-039 in Technical Area 0.

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

Sincerely,

Julie A. Canepa, Program Manager
LANL/ER Project

Sincerely,

for Joseph A. Mose

Theodore J. Taylor, Program Manager
DOE/LAAO

JC/TT/ss

Enclosures (1) Response to Request for Supplemental Information for RFI Report for PRS 0-039 in TA-0 (former OU 1071)

6959

Cy (w/enc.):
D. Griswold, AL-ERD, MS A906
J. Harry, EES-5, MS M992
B. Koch, LAAO, MS A316
G. McMath, EM/ER, MS E525
D. Neleigh, EPA, R.6, 6PD-N
C. Rodriguez, CIO/ER, MS M769
T. Taylor, LAAO, MS A316
J. White, ESH-19, MS K490
S. Dinwiddie, NMED-HRMB
M. Leavitt, NMED-GWQB
J. Parker, NMED-HRMB
G. Saums, NMED-SWQB
S. Yanicak, NMED-AIP, MS J993
EM/ER File (CT# C336), MS M992
RPF, MS M707

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

RESPONSE TO
REQUEST FOR SUPPLEMENTAL INFORMATION
RCRA FACILITY INVESTIGATION REPORT
SWMU 0-039
LOS ALAMOS NATIONAL LABORATORY
NM0890010515

INTRODUCTION

To facilitate review of this response, the New Mexico Environmental Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories as presented in the letter. The Los Alamos National Laboratory's (LANL's) responses follow each NMED comment.

SPECIFIC COMMENTS

NMED Comment

1. Page 41, Section 51.6, Table 5.1.6 1: *Please explain why results of the listed chemicals, except TPH, for Sample 0100-95-0023 are all printed as <25. Explain if 25 is the detection limit for this sample. LANL shall explain the reason the detection limit of this sample is so much higher. Also, Indicate the units on the table for clarification.*

LANL Response

The units for Table 5.1.6.1 are mg/kg. Sample 0100-95-0023 was analyzed in the ChemVan, and for this sample there was a dilution of 2500 because of the high TPH levels in the sample. Therefore the borehole B2 sample had detection limits of 25 mg/kg for the VOCs. Subsequent analyses on samples with high TPH levels were done with less dilution, so as to achieve lower EQLs/RPLs for the other organic compounds present. Table 5.1.6.1 shows that the next deeper sample in borehole B2 had detection limits of 0.01 mg/kg for VOCs.

There were six typos in Table 5.1.6-1 that have the following corrections. The EQLs for samples 0100-95-0224 and 0100-95-0226 for p-isopropyltoluene and tertbutylbenzene are <0.05, and for sample 0100-95-0383 for both trimethylbenzenes are <0.5.

NMED Comment

2. Page 43, Section 5.1.6, 1st Paragraph: *The Report stated 20 samples had EQLs that were higher than their respective SALs. LANL shall list these results along with their respective SALs regardless whether these chemicals are expected to be* ***present*** *in the site.*

LANL Response

Table 1 summarizes the detection limits for the RadVan VOC data. There were 173 soil samples, excluding duplicates, so the number of samples where the detection limit (DL) was less than the SAL is the difference between 173 and the number of samples where DL>SAL (from the rightmost column). If NMED would like a copy of the electronic files giving the DLs for all samples and all VOC compounds, LANL will provide it upon request.

TABLE 1

VOLATILE ORGANIC COMPOUNDS (mg/kg or ppm)	1997 SAL	MINIMUM DETECTION LIMIT (mg/kg or ppm)	MAXIMUM DETECTION LIMIT (mg/kg or ppm)	IS MAXIMUM DETECTION LIMIT > SAL?	NUMBER OF SAMPLES WHERE DETECTION LIMIT > SAL
1,1-Dichloropropene	N/A	0.01	50	NO SAL	N/A
1,2-Dibromomethane	N/A	0.01	50	NO SAL	N/A
1,3-Dichloropropane	N/A	0.01	50	NO SAL	N/A
2,2-Dichloropropane	N/A	0.01	50	NO SAL	N/A
2-Hexanone	N/A	0.1	500	NO SAL	N/A
4-Chlorotoluene	N/A	0.01	50	NO SAL	N/A
Bromobenzene	N/A	0.01	50	NO SAL	N/A
Bromochloromethane	N/A	0.01	50	NO SAL	N/A
Iodomethane	N/A	0.01	50	NO SAL	N/A
n-Butylbenzene	N/A	0.01	50	NO SAL	N/A
n-Propylbenzene	N/A	0.01	50	NO SAL	N/A
p-Isopropyltoluene	N/A	0.01	50	NO SAL	N/A
sec-Butylbenzene	N/A	0.01	50	NO SAL	N/A
1,1,1,2-Tetrachloroethane	2.4	0.01	50	yes	11
1,1,2,2-Tetrachloroethane	0.45	0.01	50	yes	16
1,1,2-Trichloroethane	0.65	0.01	50	yes	11
1,1-Dichloroethene	0.037	0.01	50	yes	22
1,2,3-Trichloropropane	0.0014	0.01	50	yes	173
1,2-Dichloroethane	0.25	0.01	50	yes	16
1,2-Dichloropropane	0.31	0.01	50	yes	16
1,4-Dichlorobenzene	3.6	0.01	50	yes	10
Benzene	0.63	0.01	50	yes	11
Bromodichloromethane	0.63	0.01	50	yes	11
Bromomethane	6.8	0.02	100	yes	10
c-1,2-Dichloroethene	31	0.01	50	yes	1
c-1,3-Dichloropropene	0.25	0.01	50	yes	16
Carbon Disulfide	7.5	0.01	50	yes	3
Carbon Tetrachloride	0.23	0.01	50	yes	16
Chlorodibromomethane	5.3	0.01	50	yes	3
Chloroform	0.25	0.01	50	yes	16
Chloromethane	1.2	0.02	100	yes	11
DBCP	0.32	0.02	100	yes	16
Dichlorodifluoromethane	94	0.02	100	yes	1
Isopropylbenzene	19	0.01	50	yes	2
Methylene Chloride	7.8	0.01	50	yes	3
t-1,3 Dichloropropene	0.25	0.01	50	yes	16
Tetrachloroethene	5.4	0.01	50	yes	3
Trichloroethene	3.2	0.01	50	yes	10
Vinyl Chloride	0.016	0.02	100	yes	173
1,1,1-Trichloroethane	1200	0.01	50		0
1,1-Dichloroethane	500	0.01	50		0
1,2,4-Trimethylbenzene	1840	0.01	50		0

TABLE 1 (CONTINUED)

VOLATILE ORGANIC COMPOUNDS (mg/kg or ppm)	1997 SAL	MINIMUM DETECTION LIMIT (mg/kg or ppm)	MAXIMUM DETECTION LIMIT (mg/kg or ppm)	IS MAXIMUM DETECTION LIMIT > SAL?	NUMBER OF SAMPLES WHERE DETECTION LIMIT > SAL
1,2-Dichlorobenzene	1100	0.01	50		0
1,3,5-Trimethylbenzene	1840	0.01	50		0
1,3-Dichlorobenzene	500	0.01	50		0
2-Butanone	7100	0.1	500		0
2-Chlorotoluene	160	0.01	50		0
4-Methyl-2-Pentanone	770	0.1	500		0
Acetone	2100	0.1	500		0
Bromoform	56	0.01	50		0
Chlorobenzene	65	0.01	50		0
Chloroethane	1100	0.02	100		0
Dibromomethane	650	0.01	50		0
Ethylbenzene	1500	0.01	50		0
M+P Xylene	4700	0.01	50		0
O-Xylene	6500	0.01	50		0
Styrene	3400	0.01	50		0
t-1,2-Dichloroethene	78	0.01	50		0
tert-Butylbenzene	130	0.01	50		0
Toluene	790	0.01	50		0
Trichlorofluoromethane	380	0.01	50		0

NMED Comment

3. Page 45, Section 5.1.7.2: *It states, "The reasonable maximum exposure use for this area would be for workers to walk through this area several times a day. Because the site is a local Community Center, children shall also be included in the possible exposure group, LANL shall also evaluate a residential exposure scenario.*

LANL Response

The Community Center has been extensively remodeled over the last two years, and that work is not yet finished. It is apparent that the developer and the County of Los Alamos intend that the zoning of commercial, and not residential, will continue for many years, probably decades. The alleyway has been repaved with concrete, so there is no exposure to children by one of the more expected pathways (ingestion). Also, the paving greatly limits inhalation exposures, and the County park north of and adjacent to the Community Center, and free from contamination sources, is the common location of childrens' play in the vicinity of PRS 0-039. LANL believes that the calculated exposure is the only reasonable scenario.

Nonetheless, a residential risk calculation is conducted for a child to provide a comparison benchmark. The residential risk is estimated using US EPA Region 9 Preliminary Remediation Goal (PRG) algorithms assuming site-specific volatilization factors derived for the risk assessment. PRGs are based on default assumptions for residential land use assuming the following exposure pathways:

- Incidental ingestion of soil;
- Inhalation of volatilized COPCs from soil; and
- Dermal absorption from contact with soil.

PRGs assume exposure to COPCs by a child for six years. The risk ratio estimates are shown below in Table 2 for noncarcinogenic effects. The values are presented for a reasonable maximum exposure (RME) concentration estimated by the 95% UCL of the mean stoddard solvent concentration (2800 mg/kg) in a 20 ft x 20 ft x 3 ft deep hot spot assuming 58% methylcyclohexane, 40% decalin, and 1% of each trimethylbenzene isomer. The residential exposure risk assessment resulted in a hazard index of 1.2 for noncarcinogenic effects, assuming that the concrete repaving were removed. Given the highly unlikely and conservative assumptions used in this calculation, this hazard index (slightly greater than one) is not associated with adverse health effects in this setting.

TABLE 2

RESIDENTIAL RISK ESTIMATES FOR NONCARCINOGENIC EFFECTS

COPC	UCL Concentration (mg/kg)	Risk-Based PRG (mg/kg)[1]	Hazard Quotient (UCL/PRG)
Methycyclohexane	1624	8850	0.18
1,2,4-Trimethylbenzene	28.0	1840	0.015
1,3,5-Trimethylbenzene	28.0	1840	0.015
Decalin	1120	1170	0.96
Hazard Index			1.2

[1] The PRG for the trimethylbenzene isomers were determined using Region IX spreadsheets and Region III toxicity values (RfD of 0.05 mg/kg-day). All PRGs are based on site-specific volatilization factors.

NMED Comment

*4. **Page 47:** ED is indicated as 25 year for a worker and AT as 25 years x 365 days/year; but in Table 5.17.2.2-2, ED is indicated as 30 years and AT-nc(d) was printed as 10950, which is the product of 30 x 365. Explain as to which number is correct (25 or 30) and provide the corrected calculations.*

LANL Response

LANL would like to correct errors on pp. 47 and 48 with respect to units and assumed values. The errors are typographical in nature, and do not affect the risk calculation. The equation on p. 47 should read,

Intake (mg/kg-**d**) = (CS x IR x ET x EF x ED) / (BW x AT x VF).

Table 5.1.7.2.2-2 should read 25 years for exposure duration, ED (yr), and 9125 days for the non-carcinogenic averaging time, AT-nc (d). In the calculation for chronic non-carcinogenic exposures, the years cancel out, and so there is no change in the calculation, i.e., exposure time divided by averaging time (both use the same number of years) equals 1/365.

NMED Comment

*5. **Page 50, first Paragraph:** It states, "It is also noted that the air concentrations estimated for the site using the EPA's Volatilization Factor Model (VFM) would fall below all of these ambient air guidelines and regulations." LANL shall list air concentration of Stoddard solvent™ estimated by this model and the concentrations listed in EPA's guidelines and regulations.*

LANL Response

Table 3 compares acceptable air concentrations of Stoddard solvent and naphthalene for states with standards for both the mixture and the compound. Also included in the table are the site specific concentrations using the volatilization factor model.

TABLE 3

STATE	ACCEPTABLE AMBIENT AIR CONCENTRATION (mg/m^3)	
	Stoddard Solvent	Naphthalene
Connecticut (8 hours)	7.00	1.00
Florida (8 hours)	5.25	0.50
Nevada (8 hours)	12.5	1.19
North Dakota (8 hours)	5.25	0.50
Virginia (24 hours)	8.80	0.80
VFM Estimated Concentration (CS/VF)	0.23	0.03

NMED Comment

*6. **Pages D-2 and D-3:** The PCE sample values had the superscript "c" attached, and "c" was noted in the bottom of Page D-3, as **"A duplicate of this sample reported a detected value of 0.027 mg/kg PCE."** LANL shall explain how the duplicate of each sample results in a value of 0.027 mg/kg PCE.*

LANL Response

LANL made a typographical error in Table D-1 footnotes. The superscripts c and e should be switched in the table, i.e., Sample 0100-95-0245 with value 2.2 mg/kg had a duplicate reported at 2.1 mg/kg, and all sample values flagged with superscript c had values that were beyond the range of instrument calibration, and so may be underestimated.

NMED Comment

*7. **Page-D-1 0:** The weakness of this argument is that the transport model used to estimate the depth of the PCE plume, **necessarily,** makes lots of assumptions (e.g., steady state flow and isotropic flow parameters) and uses a number of default values. Small change in these parameter can change the calculated depth of the PCE plume, and thus the result is not very dependable. For instance on Page D-11 changes in q_r, L, and U_b can alter the relative hydraulic conductivity values from the Brooks-Corey equation, and in turn the steady state water flux. The movement of PCE per year could be different, thus the plume depth of PCE.*

Thus, the argument of LANL not having liability based on the discrepancy between calculated and observed plume depth is questionable. LANL shall resume the responsibility of cleaning the site.

LANL Response

LANL made a good faith attempt at assigning values to the parameters in the modeling of the PCE migration. More appropriate values would have to be determined by in situ or laboratory measurements of site materials. Given the uncertainty in modeling results, LANL believes that additional modeling is not warranted for the PCE plume.

The determination of the responsible party for the PCE release could not be made on the available evidence. For example, the modeling result was indicative of a release a decade or two prior to the fieldwork, but the moment of release would need to be known within a few months in order to establish the responsible party. LANL determined that the PCE was not from AEC/DOE related dry cleaning operations, but determining which party was responsible is not a goal of the ER Project.

The RFI Report presented evidence that the Stoddard solvent detected in the area could be explained by releases from the tank and plumbing system used by the AEC/DOE related dry cleaner operations, and there appears not to have been any dumping of containers of Stoddard solvent. On the other hand, the PCE concentrations are consistent with a surface spill, and not a release from the tank and plumbing system. Furthermore, the history section (5.1.1) states that the only PCE used by the dry cleaners were small quantities which were present in the dip tank that was used for waterproofing garments. Given that the mixture was only homogeneous when heated, if this material had been dumped at the site of the PCE plume, the waxy consitituents would have separated from the PCE at the soil temperatures and would have been very evident in the soil at the surface.

Therefore, LANL maintains that it has determined that the PCE plume is not a release from the AEC/DOE related dry cleaning operations, and DOE or LANL should not be the responsible parties for cleaning the site.