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Date: August 12, 2008
Refer To: ENV-RCRA-08-166
LAUR: 08-05229

Mr. Glenn Saums
Surface Water Quality Bureau (SWQB)
New Mexico Environment Department (NMED)
1190 S. St. Francis Drive, N2050
Santa Fe, NM 87502



Dear Mr. Saums:

SUBJECT: SUBMITTAL OF TA-3-26 DIESEL FUEL OIL CONTAMINATION TIER 1 EVALUATION REPORT

On April 3, 2003, Los Alamos National Laboratory (Laboratory) notified the New Mexico Environment Department (NMED) of the discovery of diesel contaminated soil near Technical Area 3 aboveground storage tank (AST) 26. The discovery of diesel contaminated soil was reported to NMED pursuant to 20.6.2.1203 NMAC of the New Mexico Water Quality Control Commission (NMWQCC) Regulations.

The Laboratory completed characterization work on the site based on NMED's recommendations. Additionally, the Laboratory has assessed the release site based on the Petroleum Storage Tank Bureau's (PSTB) risk-based decision making (RBDM) process for evaluating releases of petroleum products from storage tanks. The RBDM includes a methodology for evaluating the risk to on-site and off-site receptors at petroleum release sites. The "TA-3-26 Diesel Fuel Oil Tier 1 Evaluation" Report is enclosed for your review.

The results of the Tier 1 Evaluation for surface and subsurface soil exposure pathways for commercial and construction workers show no potential current or future risk by these pathways. The results of the groundwater evaluation indicate that concentrations of contaminants on-site are protective of groundwater and surface water. As a result, no additional corrective actions are recommended.

The Laboratory requests administrative closure of this release pursuant to 20.6.2.1203 NMAC of the New Mexico Water Quality Control Commission Regulations.



Please contact Mark Haagenstad at 665-2014 if additional information would be helpful.

Sincerely,



Anthony R. Grieggs
Group Leader
Water Quality & RCRA Group (ENV-RCRA)

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ENCLOSURE

TA-3-26
DIESEL FUEL OIL
TIER 1 EVALUATION

LA-UR-08-05229

August 2008

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List of Acronyms

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DAF _{sat}	saturated zone dilution-attenuation factor
DAF _{unsat}	unsaturated zone dilution-attenuation factor
DOE	US Department of Energy
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
LANL	Los Alamos National Laboratory
MTBE	methyl tert-butyl ether
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PSTB	Petroleum Storage Tank Bureau
RBDM	risk-based decision making
RBSL	risk-based screening level
SAP	sampling and analysis plan
SVOC	semivolatile organic compound
TA	Technical Area
TAL	target analyte list
TPH-DRO	total petroleum hydrocarbons-diesel range organics
VOC	volatile organic compound

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1.0 INTRODUCTION

On April 3, 2003, Los Alamos National Laboratory notified NMED of the discovery of diesel contaminated soil near Technical Area (TA) 3 fuel storage tank 26. The discovery of diesel contaminated soil was reported to NMED pursuant to 20.6.2.1203 NMAC of the New Mexico Water Quality Control Commission (NMWQCC) Regulations. The Laboratory completed characterization work on the site in May 2004 and September 2007 based on NMED guidance and recommendations.

The New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) has developed a risk-based decision making (RBDM) program for evaluating releases of petroleum products from storage tanks. The RBDM includes a methodology for evaluating the risk to on-site and off-site receptors at petroleum release sites. These receptors include residents, commercial (i.e., industrial) workers, and construction workers. Exposure pathways considered include ingestion of soil, outdoor inhalation of vapors and particulates, dermal contact with soil, leaching and potential ingestion of contaminated groundwater, and indoor inhalation of vapors. The RBDM process includes several tiers of evaluation. The first level (tier 1) is performed using generic exposure and transport parameters. If a site fails the tier 1 evaluation, additional evaluations may be performed using more site-specific data.

This report presents the results of a tier 1 evaluation of petroleum contamination at fuel storage tank TA-3-26 at LANL. The RBDM methodology is not strictly applicable to TA-3-26 because the release was not from a regulated petroleum storage tank (i.e., the capacity of TA-3-26 is above the 55,000 gal. threshold for regulation under the aboveground storage tank regulations). The RBDM is, however, specifically directed toward petroleum releases, which is the type of release at TA-3-26. For this reason, a tier 1 evaluation based on the PSTB methodology was conducted for information purposes and to verify that the release at TA-3-26 does not pose an unacceptable risk to human health or the environment.

2.0 INPUT DATA FOR EVALUATION

This section provides discussion of specific inputs to the tier 1 evaluation. Some of this information was previously presented in the TA-3-26 Diesel Fuel Oil Contamination Assessment and Characterization Report submitted by LANL to NMED in August 2007 (KSL 2007).

2.1 Nature and Extent of Release

The nature and extent of the petroleum release at TA-3-26 is described in the contamination assessment and characterization report (KSL 2007). The nature and extent of contamination has been determined through two phases of sampling and analysis, which advanced a total of 13 boreholes to depths ranging from 20 to 70 ft below ground surface (bgs). The first phase of sampling occurred in 2003 to characterize soil contamination identified during installation of a cathodic protection system. Samples were analyzed for total petroleum hydrocarbons–diesel range organics (TPH–DRO), with selected samples also analyzed for benzene, toluene, ethyl benzene, and xylenes (BTEX), methyl tert-butyl ether (MTBE), and polynuclear aromatic hydrocarbons (PAHs). Sample locations are shown in Figure 2.1-1. Samples and analyses are summarized in Table 2.1-1, along with results of field screening for TPH using PetroFLAG[®] hydrocarbon test kits. A second phase of sampling was requested by NMED to better define the extent of contamination identified in the first phase and to confirm the nature of contamination through an expanded analytical suite. These samples were collected in 2006 and all samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and target analyte list (TAL) metals, as described in the sampling and analysis plan (SAP) (KSL 2006). Samples and analyses are summarized in Table 2.1-2. Field screening of samples was not performed.

The results of the second phase of sampling confirm that the nature of contamination is consistent with a release of petroleum fuel. No VOCs or SVOCs were detected. Low concentrations of PCBs were detected in one sample (0.0218 mg/kg Aroclor-1242 and 0.0106 mg/kg Aroclor-1254).

The vertical and lateral extent of contamination has been fully defined through step-out sampling to an area to the north and west of the tank. The maximum extent of contamination, as bounded by non-detected sample results, is approximately 30 ft by 70 ft. The maximum depth of detected contamination is 20 ft. Based on these results, the contamination assessment and characterization report estimated the total volume of fuel release causing the contamination to be approximately 300 gal. (KSL 2007).

2.2 Contaminants of Concern

The RBDM methodology considers BTEX constituents, 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), MTBE, 13 PAHs, and lead. Results for BTEX, MTBE, and PAHs from the 2003 sampling are presented in Table 2.2-1. Two BTEX constituents and twelve PAH constituents were detected in at least one sample. MTBE was not detected in any samples. Samples were not analyzed for EDB, EDC, or lead. Results for BTEX, EDB, EDC, and PAHs from the 2006 sampling are presented in Table 2.2-2. EDB, EDC, BTEX, and PAHs were not detected in any samples. Samples were not analyzed for MTBE. Results for lead are presented in Table 2.2-3. Lead was detected in all but one sample and three results were above background values.

2.3 Representative Concentrations

Representative chemical concentrations were calculated as described in Section 4.8 of the NMED Guidelines for Corrective Action (<http://www.nmenv.state.nm.us/ust/docs/gui-chap4.doc>). In accordance with this guidance, results from soil borings peripheral to the source area should not be used. Boreholes CZ-1, CZ-2, P-2, P-11, and P-14 had at least one detection of a BTEX or PAH constituent and the data from these boreholes were used to calculate representative concentrations. Borehole locations are shown in Figure 2.1-1. Data from these boreholes were used to calculate the average concentrations of each contaminant of concern for three cases: all data, data from 0 to 15 ft bgs only, and data from the shallowest sample in each borehole. Because surface samples were not collected, the shallowest samples (5 or 10 ft depth), were used to represent surface contamination. The frequency of detection of contaminants of concern in these boreholes is presented in Table 2.3-1 and the average concentrations are presented in Table 2.3-2. As specified in the NMED guidance, the arithmetic average concentration was calculated in each case. Samples with non-detects were considered to be contaminated to half the applicable detection limit. The concentration of total naphthalenes for the samples collected in 2006 was calculated as the sum of naphthalene and 2-methylnaphthalene.

2.4 Land Use

The current land use at the location of TA-3-26 and surrounding area is commercial (industrial). All property within 1,000 ft of the site is owned by the US Department of Energy (DOE) and is part of LANL Technical Areas (TAs)-3 and 61. TA-3-26 is associated with the LANL TA-3 Power Plant (structure TA-3-22), which is located approximately 200 ft southwest of TA-3-26. The layout of the tank and nearby structures is shown in Figure 2.4-1. The site is located within TA-3, which is one of LANL's main laboratory and administrative areas. The nearest residential property is located in the Los Alamos town site, approximately 3000 ft north of the site, across Los Alamos Canyon.

Future land use is expected to remain commercial. The TA-3 Power Plant complex is an essential component of LANL's utility infrastructure and is expected to remain in operation for the foreseeable future. The DOE has no plans to transfer any property within 1000 ft of the site to nongovernmental ownership. Thus, future residential use of any property within 1000 ft of the site is extremely unlikely.

Short-term future land use could include construction. Upgrades to existing facilities and/or construction of new facilities in TAs-3 and 61 is likely to take place. These construction activities would likely involve excavation.

2.5 Potential Receptors

As discussed under land use, the site will be maintained under government ownership, so there are no residential receptors, either currently or in the future. Also, there are no off-site residential receptors within 1000 ft of the site. Commercial and construction workers within the limited extent of the contaminated area work outdoors. There are presently no routinely occupied buildings on the site of the release, and none are expected to be built in the future. The nearest structure to the release site is a fuel pump house (Structure TA-3-57), which is located approximately 80 ft southeast of the release. The pump house is not normally occupied and is only entered during fuel delivery, to realign feed valves, and for periodic maintenance and inspection. The nearest occupied building is Building TA-3-1437, a small office building, which is located approximately 250 ft southwest of the release site.

The extent of contamination is confined within the secondary containment berm for tank TA-3-26. Therefore, there is no potential for runoff of contaminated storm water from the site. The nearest surface water body is Sandia Canyon. The head of Sandia Canyon is located just to the east of the site. Wetlands are located in Sandia Canyon approximately 2000 ft east of the site. These wetlands are maintained by discharges from outfalls located at the head of Sandia Canyon.

2.6 Complete Pathways of Exposure

Complete pathways and routes of exposure were identified using the RBDM Computational Software (<http://www.nmenv.state.nm.us/ust/lustrem.html>). See Appendix 1, Form 2 for the site conceptual exposure model. Justification of pathways is summarized in Appendix 1, Form 3, and discussed below.

Indoor inhalation of air vapors is an incomplete pathway for child and adult residents. As described under land use, the site is not currently used for residential purposes and will not be used for residential purposes in the future. Thus, there are no on-site residents. Current and future exposure of off-site residents is an incomplete pathway based on the distance from the site to off-site residents (i.e., greater than 1,000 ft). Indoor vapor exposure is a complete pathway for current and future on-site commercial workers. Several occupied commercial buildings associated with the TA-3 Power Plant complex are present within several hundred feet of the release site. Indoor vapor exposure for off-site commercial workers is incomplete due to the current distance to off-site structures. Indoor air exposure for construction workers is not considered in the RBDM methodology.

Exposure to surficial soils is an incomplete pathway for child and adult residents. As described under land use, the site is not currently used for residential purposes and will not be used for residential purposes in the future. Thus, there are no on-site residents. Current and future exposure of off-site residents is an incomplete pathway based on the distance from the site to off-site residents. On-site commercial and construction workers may currently be exposed to surficial soils and this is expected to be the case in the future. Exposure to on-site commercial and construction workers, therefore, is a complete pathway for current and future conditions. Exposure of off-site commercial and construction workers is not a complete pathway, both currently and in the future, since contaminants have not migrated off site.

Indoor inhalation of vapors from subsurface soils is an incomplete pathway for residents and off-site commercial workers for the reasons given above for the indoor inhalation of air vapors pathway. The inhalation of vapors from subsurface soils is a complete pathway for on-site commercial workers because of the presence of occupied buildings within several hundred feet of the release site. This pathway is not considered by the RBDM methodology for construction workers.

Outdoor inhalation of vapors volatilized from subsurface soils is a complete pathway for on-site construction workers, under both current and future conditions. Outdoor inhalation of vapors volatilized from subsurface soils is considered to be an incomplete pathway for off-site construction workers given the distance from the release site to the LANL property boundary (i.e., greater than 1000 ft). This pathway is not considered by the RBDM methodology for residents or commercial workers.

Dermal contact and ingestion of subsurface soils is a complete pathway for on-site construction workers under both current and future conditions given the residual contamination present in on-site soils at depths up to 15 ft bgs. This pathway is incomplete for off-site construction workers, both now and in the future, because the lateral extent of subsurface contamination has been determined and does not extend off site. This pathway is not considered by the RBDM methodology for residents or commercial workers.

Indoor inhalation of vapors from groundwater is an incomplete pathway for residents and commercial workers because of the depth to groundwater (i.e., greater than 15 ft). This pathway is not considered by the RBDM methodology for construction workers.

Outdoor inhalation of vapors from groundwater is an incomplete pathway for construction workers because of the depth to groundwater (i.e., greater than 15 ft). This pathway is not considered by the RBDM methodology for residents and commercial workers.

Ingestion of groundwater by on-site residents and commercial workers is an incomplete pathway because there are no on-site supply wells, nor are any expected to be installed in the future. Ingestion of groundwater by off-site residents and commercial workers is a potentially complete pathway because there are off-site supply wells. The nearest supply well is well Otowi-4, which is located approximately 3 miles east of the site in Los Alamos Canyon. Monitoring results have shown no site-related contaminants in this well and migration of contaminants from the site to this well is unlikely due to the distance to the well and depth to groundwater. This pathway is included for completeness and to be protective. Ingestion of groundwater by construction workers is not considered by the RBDM methodology.

3.0 COMPARISON OF SOIL CONCENTRATIONS WITH RISK-BASED SCREENING LEVELS

The tier one report forms from the RBDM Computational Software (<http://www.nmenv.state.nm.us/ust/lustrem.html>) were used to compare representative soil concentrations with appropriate risk-based screening levels (RBSLs) for the complete pathways identified above. For ingestion, inhalation, and dermal contact of surficial soil by on-site commercial workers, all representative soil concentrations were below RBSLs (Appendix 1, Form 4, page 3). For inhalation of vapors from subsurface soils by on-site commercial workers, all representative soil concentrations were below RBSLs (Appendix 1, Form 4, page 3). For ingestion, inhalation, and dermal contact of subsurface soils by on-site construction workers, all representative soil concentrations were below RBSLs (Appendix 1, Form 4, page 5).

Direct comparison of groundwater concentrations with RBSLs was not possible because there are no applicable groundwater monitoring data. As a result, soil concentrations that are protective of groundwater were calculated for comparison to representative soil concentrations using the methodology in Section 4.5.1 of the NMED Guidelines for Corrective Action (<http://www.nmenv.state.nm.us/ust/docs/gui-chap4.doc>).

The unsaturated zone configuration for the site was based on a default overburden thickness of 5 ft, a contaminated zone thickness of 20 ft (based on the deepest detection of a contaminant of concern), a transport zone greater than 200 ft, and a default transition zone of 0.033 ft. From Table 4-12 of the guidance, the appropriate configuration identification is 24. Values of unsaturated zone dilution

attenuation factor (DAF_{unsat}) were obtained from Table 4-13 in the guidance. Based on a configuration identification of 24, the appropriate DAF_{unsat} values are 5.0 for EDB, 5.8 for EDC and 6.1 for MTBE. Other contaminants do not impact groundwater given this configuration.

A value for saturated zone dilution attenuation factor (DAF_{sat}) was obtained from Table 4-14 of the guidance. Based on a distance from the edge of the mixing zone of greater than 1000 ft, the maximum DAF_{sat} of 163 was selected.

Tier 1 soil concentrations protective of groundwater were obtained from Table 4.15 of the guidance. For an unsaturated zone configuration identification of 24, the resulting soil concentrations were 0.0003 mg/kg for EDB, 0.05 mg/kg for EDC, and 0.27 mg/kg for MTBE. These values were adjusted to account for dilution and attenuation in the saturated zone by multiplying by DAF_{sat} . The resulting screening values are 0.05 mg/kg for EDB, 8.2 mg/kg for EDC, and 44 mg/kg for MTBE. The representative soil concentrations for EDB, EDC and MTBE did not exceed the RBSLs (Appendix 1, Form 5, page 1).

4.0 SUMMARY

The results of the tier one evaluation for surface and subsurface soil exposure pathways for commercial and construction workers show no potential current or future risk by these pathways. As a result, no additional corrective actions are recommended. The results of the groundwater evaluation indicate that concentrations of contaminants on-site are protective of groundwater. Conclusions and recommendations are summarized in Appendix 1, Form 8.

5.0 REFERENCES

- KSL (KBR-Shaw-LATA), March 1, 2006. "Supplemental Sampling and Analysis Plan Defining Nature of Contamination Near Fuel Storage Tank TA-3-26, Revision 1," KBR-AENV/Eberline Services, Los Alamos, New Mexico.
- KSL (KBR-Shaw-LATA), August 30, 2007. "TA-3-26 Diesel Fuel Oil Contamination Assessment and Characterization, Revision 1," KBR-AENV/Eberline Services, Los Alamos, New Mexico.
- LANL (Los Alamos National Laboratory), September 22, 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico.

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FIGURES

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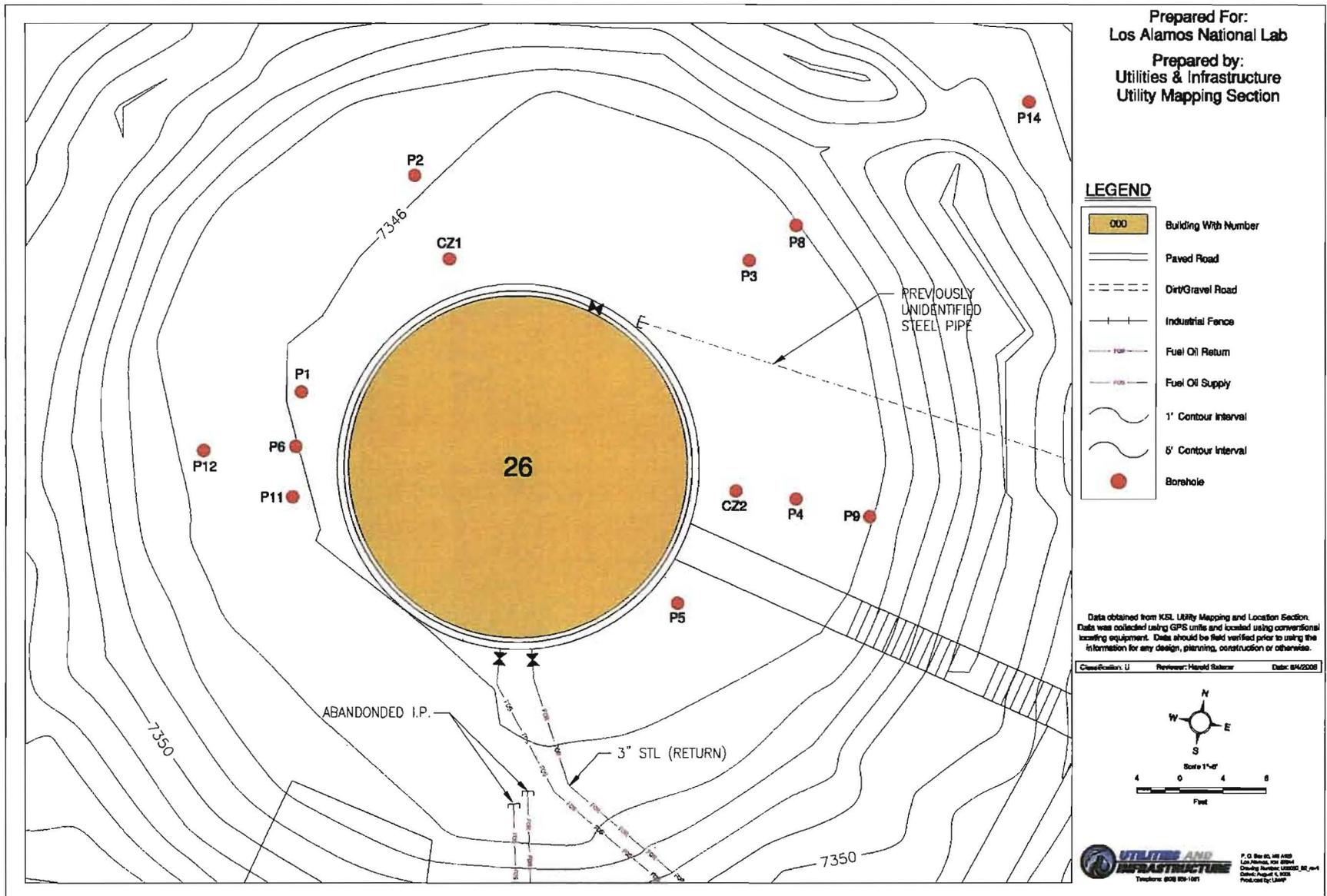


Figure 2.1-1. Borehole Locations.

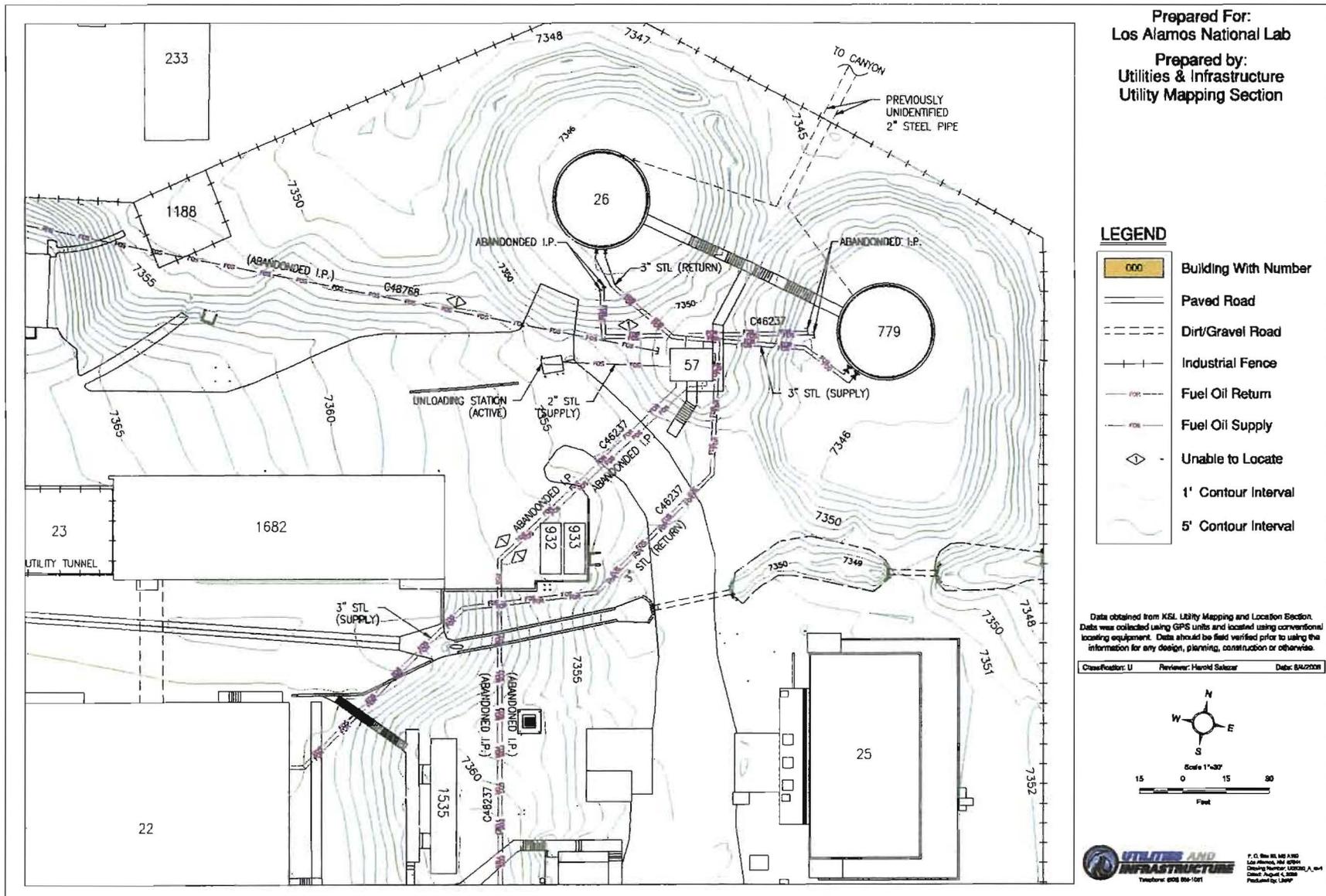


Figure 2.4-1. Layout of Tank TA-3-26 and Nearby Facilities.

TABLES

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Table 2.1-1. Summary of 2003 Samples, Analyses, and Field Screening Results.

Sample ID	Location ID	Depth, ft	Field Screening, ppm	TPH	BTEX/MTBE	PAH
O326CZ1-1	CZ 1	10	>10,000	X	X	X
O326CZ1-2	CZ 1	15	>10,000	X	X	X
O326CZ1-3 ^a	CZ 1	15	>10,000	X	X	X
O326CZ1-4	CZ 1	20	13	X	X	X
O326CZ1-5	CZ 1	25	22	X		
O326CZ1-6	CZ 1	30	28	X		
O326CZ1-7	CZ 1	35	16	X		
O326CZ1-8	CZ 1	40	46	X		
O326CZ1-9	CZ 1	45	52	X		
O326CZ1-10	CZ 1	50	70	X		
O326CZ1-11	CZ 1	55	44	X		
O326CZ1-12	CZ 1	60	44	X		
O326CZ1-13	CZ 1	70	80	X	X	X
O326CZ1-14 ^a	CZ 1	70	59	X	X	X
O326CZ2-1	CZ 2	10	139	X	X	X
O326CZ2-2	CZ 2	15	24	X	X	X
O326CZ2-3	CZ 2	20	38	X	X	X
O326CZ2-4	CZ 2	25	22	X		
O326CZ2-5	CZ 2	30	15	X		
O326CZ2-6	CZ 2	35	11	X		
O326CZ2-7	CZ 2	40	40	X		
O326CZ2-8	CZ 2	45	17	X		
O326CZ2-9	CZ 2	50	26	X		
O326CZ2-10	CZ 2	55	21	X		
O326CZ2-11	CZ 2	60	44	X		
O326CZ2-12	CZ 2	65	100	X		
O326PM1-1	P 1	5	35	X		
O326PM1-2	P 1	10	>10,000	X		
O326PM1-3	P 1	15	0	X		
O326PM1-4	P 1	20	14	X		
O326PM2-1	P 2	5	14	X	X	X
O326PM2-2	P 2	10	81	X	X	X
O326PM2-3 ^a	P 2	10	74	X	X	X
O326PM2-4	P 2	15	65	X	X	X
O326PM2-5	P 2	20	70	X		
O326PM2-6	P 2	25	52	X		
O326PM2-7	P 2	30	58	X	X	X
O326PM2-8 ^a	P 2	30	20	X	X	X
O326PM3-1	P 3	5	20	X		
O326PM3-2	P 3	10	1900	X		
O326PM3-3	P 3	15	45	X		
O326PM3-4	P 3	20	47	X		

Table 2.1-1. (continued)

Sample ID	Location ID	Depth, ft	Field Screening, ppm	TPH	BTEX/MTBE	PAH
0326PM4-1	P 4	5	34	X		
0326PM4-2	P 4	10	25	X		
0326PM4-3	P 4	15	21	X		
0326PM4-4	P 4	20	26	X		
0326PM5-1	P 5	5	32	X	X	X
0326PM5-2	P 5	10	54	X	X	X
0326PM5-3 ^a	P 5	10	53	X	X	X
0326PM5-4	P 5	15	28	X	X	X
0326PM5-5	P 5	20	21	X		
0326PM5-6	P 5	25	51	X	X	X
0326PM6-1	P 6	5	29	X		
0326PM6-2	P 6	10	1868	X		
0326PM6-3	P 6	15	20	X		
0326PM6-4	P 6	20	13	X		
0326PM8-1	P 8	5	85	X		
0326PM8-1	P 8	10	586	X		
0326PM8-1	P 8	15	33	X		
0326PM8-1	P 8	20	42	X		
0326PM9-1	P 9	5	21	X	X	X
0326PM9-2	P 9	8	174	X		
0326PM9-3	P 9	10	26	X	X	X
0326PM9-4	P 9	15	17	X	X	X
0326PM9-5	P 9	20	21	X		
0326PM9-6	P 9	25	19	X	X	X
0326PM11-1	P 11	10	75	X	X	X
0326PM11-2	P 11	15	59	X	X	X
0326PM11-3	P 11	20	22	X	X	X
0326PM11-4	P 11	25	58	X		
0326PM11-5	P 11	30	37	X	X	X
0326PM12-1	P 12	5	22	X		
0326PM12-2	P 12	10	10	X		
0326PM12-3	P 12	15	14	X		
0326PM12-4	P 12	20	23	X		
0326PM14-1	P 14	5	37	X	X	X
0326PM14-2	P 14	10	20	X	X	X
0326PM14-3	P 14	15	126	X	X	X
0326PM14-4	P 14	20	46	X		
0326PM14-5	P 14	25	29	X	X	X

Notes:

^a – Field duplicate sample.

Table 2.1-2. Summary of 2006 Samples and Analyses.

Sample ID	Location ID	Depth, ft	VOC	SVOC	PCBs	Metals
RE03-07-73738	CZ 1	10	X	X	X	X
RE03-07-73739	CZ 1	15	X	X	X	X
RE03-07-73745 ^a	CZ 1	15	X	X	X	X
RE03-07-73740	CZ 1	20	X	X	X	X
RE03-07-73726	CZ 2	5	X	X	X	X
RE03-07-73727	CZ 2	10	X	X	X	X
RE03-07-73728	CZ 2	15	X	X	X	X
RE03-07-73732	P 2	5	X	X	X	X
RE03-07-73733	P 2	10	X	X	X	X
RE03-07-73734	P 2	15	X	X	X	X
RE03-07-73729	P 8	5	X	X	X	X
RE03-07-73730	P 8	10	X	X	X	X
RE03-07-73731	P 8	15	X	X	X	X
RE03-07-73744 ^a	P 8	15	X	X	X	X
RE03-07-73735	P 12	5	X	X	X	X
RE03-07-73736	P 12	10	X	X	X	X
RE03-07-73737	P 12	15	X	X	X	X

Notes:

^a – Field duplicate sample.

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Table 2.2-1. Results of BTEX, MTBE, and PAH Analyses from 2003 Sampling

Sample ID	Location ID	Depth (ft)	Acenaphthene	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene
O326CZ1-1	CZ 1	10	164	— ^a	1.2 U ^b	—	—	—	—
O326CZ1-2	CZ 1	15	194	—	—	—	—	—	—
O326CZ1-3	CZ 1	15	18.5 U	—	1.1 U	—	2150 UJ ^c	—	0.926 U
O326CZ1-4	CZ 1	20	19.1 U	19.1 U	1.1 U	1.91 UJ	1.91 UJ	1.91 UJ	—
O326CZ1-13	CZ 1	70	17.9 U	17.9 U	1.1 U	1.79 UJ	1.79 UJ	1.79 UJ	—
O326CZ1-14	CZ 1	70	17.9 U	17.9 U	1.1 U	1.79 UJ	1.79 UJ	1.79 UJ	—
O326CZ2-1	CZ 2	10	18.8 U	18.8 U	1.1 U	17.7 J ^d	18.9 J	—	—
O326CZ2-2	CZ 2	15	18.2 U	18.2 U	1.1 U	—	1.82 UJ	1.82 UJ	0.912 UJ
O326CZ2-3	CZ 2	20	18.5 U	18.5 U	1.1 U	1.85 UJ	1.85 UJ	1.85 UJ	0.924 UJ
O326CZ2-12	CZ 2	65	17.1 U	17.1 U	1.0 U	—	—	—	0.856 UJ
O326PM11-1	P 11	10	19.1 U	19.1 U	1.1 U	19.2	19.3	—	—
O326PM11-2	P 11	15	—	—	1.1 U	—	—	—	—
O326PM11-3	P 11	20	18.4 U	18.4 U	1.1 U	1.84 U	1.84 U	1.84 U	0.923 U
O326PM11-5	P 11	30	17.7 U	17.7 U	1.1 U	1.77 U	1.77 U	1.77 U	0.884 U
O326PM14-1	P 14	5	19.3 U	19.3 U	1.1 U	1.93 U	1.93 U	1.93 U	0.965 U
O326PM14-2	P 14	10	19.0 U	19.0 U	1.1 U	1.9 U	1.9 U	1.9 U	0.948 U
O326PM14-3	P 14	15	17.6 U	17.6 U	1.0 U	1.76 U	1.76 U	1.76 U	—
O326PM14-5	P 14	25	19.7 U	19.7 U	1.2 U	1.97 U	1.97 U	1.97 U	0.986 U
O326PM2-1	P 2	5	19.4 U	19.4 U	1.2 U	1.94 UJ	1.94 UJ	1.94 UJ	0.968 U
O326PM2-2	P 2	10	18.4 U	18.4 U	1.1 U	1.84 UJ	1.84 UJ	1.84 UJ	0.922 U
O326PM2-3	P 2	10	18.1 U	18.1 U	1.1 U	1.81 UJ	—	0.649 J- ^e	—
O326PM2-4	P 2	15	18.1 U	18.1 U	1.1 U	1.81 UJ	1.81 UJ	1.81 UJ	—

Table 2.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Acenaphthene	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene
O326PM2-7	P 2	30	17.6 U	17.6 U	1.0 U	1.76 UJ	1.76 UJ	1.76 UJ	—
O326PM2-8	P 2	30	17.6 U	17.6 U	1.0 U	1.76 UJ	1.76 UJ	1.76 UJ	0.879 U
O326PM5-1	P 5	5	20.5 U	20.5 U	1.2 U	2.05 U	2.05 U	2.05 U	1.03 U
O326PM5-2	P 5	10	18.6 U	18.6 U	1.1 U	1.86 U	1.86 U	1.86 U	0.929 U
O326PM5-3	P 5	10	18.5 U	18.5 U	1.1 U	1.85 U	1.85 U	1.85 U	—
O326PM5-4	P 5	15	19.7 U	19.7 U	1.2 U	1.97 U	1.97 U	1.97 U	0.985 U
O326PM5-6	P 5	25	21.5 U	21.5 U	1.3 U	2.15 U	2.15 U	2.15 U	1.07 U
O326PM9-1	P 9	5	20.7 U	20.7 U	1.2 U	2.07 U	2.07 U	2.07 U	1.04 U
O326PM9-3	P 9	10	19.4 U	19.4 U	1.2 U	1.94 U	1.94 U	1.94 U	0.969 U
O326PM9-4	P 9	15	19.8 U	19.8 U	1.2 U	1.98 U	1.98 U	1.98 U	0.992 U
O326PM9-6	P 9	25	21.8 U	21.8 U	1.3 U	2.18 U	2.18 U	2.18 U	1.09 U

Table 2.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Chrysene	Dibenz(a,h)anthracene	Ethylbenzene	Fluoranthene	Fluorene	Methyl tert-butyl ether	Naphthalene
O326CZ1-1	CZ 1	10	1.93 UJ	1.93 U	1.2 UJ	—	244	1.2 U	6.11
O326CZ1-2	CZ 1	15	1.88 UJ	—	—	—	423	—	60.3
O326CZ1-3	CZ 1	15	1.85 UJ	85.7 J ^f	1.1 UJ	—	4280	1.1 U	325 J+
O326CZ1-4	CZ 1	20	1.91 UJ	1.91 U	1.1 UJ	0.588 J	19.1 U	1.1 U	19.1 U
O326CZ1-13	CZ 1	70	1.79 UJ	1.79 U	1.1 UJ	—	17.9 U	1.1 U	17.9 U
O326CZ1-14	CZ 1	70	1.79 UJ	1.79 U	1.1 UJ	—	17.9 U	1.1 U	17.9 U
O326CZ2-1	CZ 2	10	18.5 J	1.88 UJ	1.1 UJ	41.6 J	18.8 UJ	1.1 UJ	—
O326CZ2-2	CZ 2	15	1.82 UJ	1.82 UJ	1.1 UJ	—	18.2 UJ	1.1 UJ	18.2 UJ
O326CZ2-3	CZ 2	20	1.85 UJ	1.85 UJ	1.1 UJ	1.85 UJ	18.5 UJ	1.1 UJ	18.5 UJ
O326CZ2-12	CZ 2	65	1.71 UJ	1.71 UJ	1.0 UJ	—	17.1 UJ	1.0 UJ	17.1 UJ
O326PM11-1	P 11	10	16.5	1.91 U	1.1 U	29.5	19.1 U	1.1 U	19.1 U
O326PM11-2	P 11	15	1.85 U	1.85 U	1.1 U	—	—	1.1 U	18.5 U
O326PM11-3	P 11	20	1.84 U	1.84 U	1.1 U	1.84 U	18.4 U	1.1 U	18.4 U
O326PM11-5	P 11	30	1.77 U	1.77 U	1.1 U	1.77 U	17.7 U	1.1 U	17.7 U
O326PM14-1	P 14	5	1.93 U	1.93 U	1.1 U	1.93 U	19.3 U	1.1 U	19.3 U
O326PM14-2	P 14	10	1.9 U	1.9 U	1.1 U	1.90 U	19.0 U	1.1 U	19.0 U
O326PM14-3	P 14	15	1.76 U	1.76 U	1.0 U	1.76 U	17.6 U	1.0 U	17.6 U
O326PM14-5	P 14	25	1.97 U	1.97 U	1.2 U	1.97 U	19.7 U	1.2 U	19.7 U
O326PM2-1	P 2	5	1.94 UJ	1.94 U	1.2 UJ	—	19.4 U	1.2 U	—
O326PM2-2	P 2	10	1.84 UJ	1.84 U	1.1 UJ	—	18.4 U	1.1 U	18.4 U
O326PM2-3	P 2	10	0.818 J	1.81 U	1.1 UJ	1.0 J ^f	18.1 U	1.1 U	18.1 U

Table 2.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Chrysene	Dibenz(a,h)anthracene	Ethylbenzene	Fluoranthene	Fluorene	Methyl tert-butyl ether	Naphthalene
O326PM2-4	P 2	15	1.81 UJ	1.81 U	1.1 UJ	—	18.1 U	1.1 U	18.1 U
O326PM2-7	P 2	30	1.76 UJ	1.76 U	1.0 UJ	—	17.6 U	1.0 U	17.6 U
O326PM2-8	P 2	30	1.76 UJ	1.76 U	1.0 UJ	—	17.6 U	1.0 U	—
O326PM5-1	P 5	5	2.05 U	2.05 U	1.2 U	2.05 U	20.5 U	1.2 U	20.5 U
O326PM5-2	P 5	10	1.86 U	1.86 U	1.1 U	1.86 U	18.6 U	1.1 U	18.6 U
O326PM5-3	P 5	10	1.85 U	1.85 U	1.1 U	1.85 U	18.5 U	1.1 U	18.5 U
O326PM5-4	P 5	15	1.97 U	1.97 U	1.2 U	1.97 U	19.7 U	1.2 U	19.7 U
O326PM5-6	P 5	25	2.15 U	2.15 U	1.3 U	2.15 U	21.5 U	1.3 U	21.5 U
O326PM9-1	P 9	5	2.07 U	2.07 U	1.2 U	2.07 U	20.7 U	1.2 U	20.7 U
O326PM9-3	P 9	10	1.94 U	1.94 U	1.2 U	1.94 U	19.4 U	1.2 U	19.4 U
O326PM9-4	P 9	15	1.98 U	1.98 U	1.2 U	1.98 U	19.8 U	1.2 U	19.8 U
O326PM9-6	P 9	25	2.18 U	2.18 U	1.3 U	2.18 U	21.8 U	1.3 U	21.8 U

Table 2.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Phenanthrene	Pyrene	Toluene	Xylenes
O326CZ1-1	CZ 1	10	376	—	1.2 U	1.2 UJ
O326CZ1-2	CZ 1	15	552	—	—	—
O326CZ1-3	CZ 1	15	4420	—	1.1 U	0.75 J-
O326CZ1-4	CZ 1	20	19.1 U	1.91 UJ	1.1 U	1.1 UJ
O326CZ1-13	CZ 1	70	17.9 U	1.79 UJ	1.1 U	1.1 UJ
O326CZ1-14	CZ 1	70	17.9 U	1.79 UJ	1.1 U	1.1 UJ
O326CZ2-1	CZ 2	10	28.1 J	65.6 J	1.1 UJ	1.1 UJ
O326CZ2-2	CZ 2	15	18.2 UJ	1.82 UJ	1.1 UJ	1.1 UJ
O326CZ2-3	CZ 2	20	18.5 UJ	1.85 UJ	1.1 UJ	1.1 UJ
O326CZ2-12	CZ 2	65	—	6.3 J	1.0 UJ	1.0 UJ
O326PM11-1	P 11	10	15.5 J	32.5	1.1 U	NA ^g
O326PM11-2	P 11	15	55.3	21.2	1.1 U	NA
O326PM11-3	P 11	20	18.4 U	1.84 U	1.1 U	NA
O326PM11-5	P 11	30	17.7 U	1.77 U	1.1 U	NA
O326PM14-1	P 14	5	19.3 U	1.93 U	1.1 U	NA
O326PM14-2	P 14	10	19.0 U	1.90 U	1.1 U	NA
O326PM14-3	P 14	15	17.6 U	1.76 U	0.60 J	NA
O326PM14-5	P 14	25	19.7 U	1.97 U	1.2 U	NA
O326PM2-1	P 2	5	19.4 U	1.94 UJ	1.2 U	1.2 UJ
O326PM2-2	P 2	10	18.4 U	1.84 UJ	1.1 U	1.1 UJ
O326PM2-3	P 2	10	18.1 U	1.60 J-	1.1 U	1.1 UJ
O326PM2-4	P 2	15	18.1 U	1.81 UJ	1.1 U	1.1 UJ

Table 2.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Phenanthrene	Pyrene	Toluene	Xylenes
O326PM2-7	P 2	30	17.6 U	1.76 UJ	1.0 U	1.0 UJ
O326PM2-8	P 2	30	17.6 U	1.76 UJ	1.0 U	1.0 UJ
O326PM5-1	P 5	5	20.5 U	—	1.2 U	NA
O326PM5-2	P 5	10	18.6 U	1.86 U	1.1 U	NA
O326PM5-3	P 5	10	18.5 U	1.85 U	1.1 U	NA
O326PM5-4	P 5	15	19.7 U	1.97 U	1.2 U	NA
O326PM5-6	P 5	25	21.5 U	2.15 U	1.3 U	NA
O326PM9-1	P 9	5	20.7 U	2.07 U	1.2 U	NA
O326PM9-3	P 9	10	19.4 U	1.94 U	1.2 U	NA
O326PM9-4	P 9	15	19.8 U	1.98 U	1.2 U	NA
O326PM9-6	P 9	25	21.8 U	2.18 U	1.3 U	NA

Notes:

All concentrations in ug/kg.

^a— = Valid result not obtained.

^bU = The analyte was analyzed for but not detected. Reported value is the sample-specific estimated quantitation limit or detection limit.

^cUJ = The analyte was analyzed for but regarded as estimated nondetect. Reported value is the sample-specific estimated quantitation limit or detection limit.

^dJ = The reported value should be regarded as estimated detect.

^eJ- = The reported value should be regarded as estimated and biased low.

^fJ+ = The reported value should be regarded as estimated and biased high.

^gNA = Not analyzed.

Table 2.2-2. Results of BTEX, EDB, EDC, and PAH Analyses from 2006 Sampling

Sample ID	Location ID	Depth (ft)	Acenaphthene	Anthracene	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene
RE03-07-73738	CZ 1	10	39.7 U ^a	39.7 U	1.19 U	39.7 U	39.7 UJ ^b	39.7 UJ	39.7 UJ
RE03-07-73739	CZ 1	15	37.1 U	37.1 U	1.11 U	37.1 U	37.1 UJ	37.1 UJ	37.1 UJ
RE03-07-73740	CZ 1	20	37.4 U	37.4 U	1.12 U	37.4 U	37.4 UJ	37.4 UJ	37.4 UJ
RE03-07-73726	CZ 2	5	44.2 U	44.2 U	1.33 U	44.2 U	44.2 U	44.2 U	44.2 U
RE03-07-73727	CZ 2	10	39.6 U	39.6 U	1.19 U	39.6 U	39.6 UJ	39.6 UJ	39.6 UJ
RE03-07-73728	CZ 2	15	38.1 U	38.1 U	1.14 U	38.1 U	38.1 UJ	38.1 UJ	38.1 UJ
RE03-07-73732	P 2	5	43.9 U	43.9 U	1.32 U	43.9 U	43.9 UJ	43.9 UJ	43.9 UJ
RE03-07-73733	P 2	10	38.6 U	38.6 U	1.16 U	38.6 U	38.6 U	38.6 U	38.6 U
RE03-07-73734	P 2	15	37.1 U	37.1 U	1.11 U	37.1 U	37.1 U	37.1 U	37.1 U
RE03-07-73729	P 8	5	42.3 U	42.3 U	1.27 U	42.3 U	42.3 U	42.3 U	42.3 U
RE03-07-73730	P 8	10	37.7 U	37.7 U	1.13 U	37.7 U	37.7 U	37.7 U	37.7 U
RE03-07-73731	P 8	15	37.3 U	37.3 U	1.12 U	37.3 U	37.3 UJ	37.3 UJ	37.3 UJ
RE03-07-73735	P 12	5	42.9 U	42.9 U	1.29 U	42.9 U	42.9 U	42.9 U	42.9 U
RE03-07-73736	P 12	10	44.7 U	44.7 U	1.34 U	44.7 U	44.7 U	44.7 U	44.7 U
RE03-07-73737	P 12	15	37.0 U	37.0 U	1.11 U	37.0 U	37.0 UJ	37.0 UJ	37.0 UJ

Table 2.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Chrysene	Dibenz(a,h)anthracene	Dibromoethane[1,2-]	Dichloroethane[1,2-]	Ethylbenzene	Fluoranthene	Fluorene
RE03-07-73738	CZ 1	10	39.7 U	39.7 UJ	1.19 U	1.19 U	1.19 U	39.7 U	39.7 U
RE03-07-73739	CZ 1	15	37.1 U	37.1 UJ	1.11 U	1.11 U	1.11 U	37.1 U	37.1 U
RE03-07-73740	CZ 1	20	37.4 U	37.4 UJ	1.12 U	1.12 U	1.12 U	37.4 U	37.4 U
RE03-07-73726	CZ 2	5	44.2 U	44.2 U	1.33 U	1.33 U	1.33 U	44.2 U	44.2 U
RE03-07-73727	CZ 2	10	39.6 U	39.6 UJ	1.19 U	1.19 U	1.19 U	39.6 U	39.6 U
RE03-07-73728	CZ 2	15	38.1 U	38.1 UJ	1.14 U	1.14 U	1.14 U	38.1 U	38.1 U
RE03-07-73732	P 2	5	43.9 U	43.9 UJ	1.32 U	1.32 U	1.32 U	43.9 U	43.9 U
RE03-07-73733	P 2	10	38.6 U	38.6 U	1.16 U	1.16 U	1.16 U	38.6 U	38.6 U
RE03-07-73734	P 2	15	37.1 U	37.1 U	1.11 U	1.11 U	1.11 U	37.1 U	37.1 U
RE03-07-73729	P 8	5	42.3 U	42.3 U	1.27 U	1.27 U	1.27 U	42.3 U	42.3 U
RE03-07-73730	P 8	10	37.7 U	37.7 U	1.13 U	1.13 U	1.13 U	37.7 U	37.7 U
RE03-07-73731	P 8	15	37.3 U	37.3 UJ	1.12 U	1.12 U	1.12 U	37.3 U	37.3 U
RE03-07-73735	P 12	5	42.9 U	42.9 U	1.29 U	1.29 U	1.29 U	42.9 U	42.9 U
RE03-07-73736	P 12	10	44.7 U	44.7 U	1.34 U	1.34 U	1.34 U	44.7 U	44.7 U
RE03-07-73737	P 12	15	37.0 U	37.0 UJ	1.11 U	1.11 U	1.11 U	37.0 U	37.0 U

Table 2.2-2 (continued)

Sample ID	Location ID	Depth (ft)	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene	Toluene	Xylene[1,2-]	Xylene[1,3 + 1,4-]
RE03-07-73738	CZ 1	10	39.7 U	39.7 U	39.7 U	39.7 U	1.19 U	1.19 U	2.38 U
RE03-07-73739	CZ 1	15	37.1 U	37.1 U	37.1 U	37.1 U	1.11 U	1.11 U	2.23 U
RE03-07-73740	CZ 1	20	37.4 U	37.4 U	37.4 U	37.4 U	1.12 U	1.12 U	2.24 U
RE03-07-73726	CZ 2	5	44.2 U	44.2 U	44.2 U	44.2 U	1.06 U	1.33 U	2.65 U
RE03-07-73727	CZ 2	10	39.6 U	39.6 U	39.6 U	39.6 U	1.19 U	1.19 U	2.38 U
RE03-07-73728	CZ 2	15	38.1 U	38.1 U	38.1 U	38.1 U	1.14 U	1.14 U	2.28 U
RE03-07-73732	P 2	5	43.9 U	43.9 U	43.9 U	43.9 U	1.32 U	1.32 U	2.64 U
RE03-07-73733	P 2	10	38.6 U	38.6 U	38.6 U	38.6 U	1.16 U	1.16 U	2.32 U
RE03-07-73734	P 2	15	37.1 U	37.1 U	37.1 U	37.1 U	1.11 U	1.11 U	2.22 U
RE03-07-73729	P 8	5	42.3 U	42.3 U	42.3 U	42.3 U	0.48 U	1.27 U	2.54 U
RE03-07-73730	P 8	10	37.7 U	37.7 U	37.7 U	37.7 U	1.13 U	1.13 U	2.26 U
RE03-07-73731	P 8	15	37.3 U	37.3 U	37.3 U	37.3 U	1.12 U	1.12 U	2.24 U
RE03-07-73735	P 12	5	42.9 U	42.9 U	42.9 U	42.9 U	5.39 U	1.29 U	2.57 U
RE03-07-73736	P 12	10	44.7 U	44.7 U	44.7 U	44.7 U	1.34 U	1.34 U	2.68 U
RE03-07-73737	P 12	15	37.0 U	37.0 U	37.0 U	37.0 U	1.11 U	1.11 U	2.22 U

Note:

All concentrations in ug/kg.

^aU = The analyte was analyzed for but not detected. Reported value is the sample-specific estimated quantitation limit or detection limit.

^bUJ = The analyte was analyzed for but regarded as estimated nondetect. Reported value is the sample-specific estimated quantitation limit or detection limit.

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Table 2.2-3. Results of Lead Analysis from 2006 Sampling

Sample ID	Location ID	Media	Depth (ft)	Lead
Soil/Fill Background Value^a				22.3
Qbt 3^b Background Value^a				11.2
RE03-07-73726	CZ 2	Fill	5	9.83
RE03-07-73727	CZ 2	Qbt 3	10	28.9
RE03-07-73728	CZ 2	Qbt 3	15	234
RE03-07-73729	P 8	Fill	5	4.53
RE03-07-73730	P 8	Qbt 3	10	1.44 U ^c
RE03-07-73731	P 8	Qbt 3	15	4.04
RE03-07-73732	P 2	Fill	5	15.7
RE03-07-73733	P 2	Qbt 3	10	5.59
RE03-07-73734	P 2	Qbt 3	15	6.48
RE03-07-73735	P 12	Fill	5	49.3
RE03-07-73736	P 12	Qbt 3	10	1.94
RE03-07-73737	P 12	Qbt 3	15	1.77
RE03-07-73738	CZ 1	Qbt 3	10	6.96
RE03-07-73739	CZ 1	Qbt 3	15	9.71
RE03-07-73740	CZ 1	Qbt 3	20	8.27

Notes:

All concentrations in mg/kg.

^a BVs from LANL, 1998

^b Qbt 3 = Cooling unit 3 of Tshirege Member of Bandelier Tuff.

^c U = The analyte was analyzed for but not detected. Reported value is the sample specific estimated quantitation limit or detection limit.

Table 2.3-1. Frequency of Detection of Contaminants of Concern

Chemical	Number of Valid Results	Number of Detections	Maximum Detected Concentration (mg/kg)
Benzene	32	0	— ^a
Toluene	32	1	0.00060
Ethylbenzene	32	0	—
Xylenes (total)	24	1	0.00075
1,2-Dibromoethane	9	0	—
1,2-Dichloroethane	9	0	—
Methyl tert-butyl ether	23	0	—
Acenaphthene	32	2	0.194
Anthracene	29	0	—
Benz(a)anthracene	27	2	0.0192
Benzo(a)pyrene	28	2	0.0193
Benzo(b)fluoranthene	26	1	0.000649
Benzo(k)fluoranthene	26	0	—
Chrysene	33	3	0.0185
Dibenz(a,h)anthracene	33	1	0.0857
Fluoranthene	20	4	0.0416
Fluorene	32	3	4.28
Total Naphthalenes	32	3	0.325
Phenanthrene	32	6	4.42
Pyrene	31	5	0.0656
Lead	9	9	234

* — = Not detected.

Table 2.3-2. Average Concentrations of Contaminants of Concern

Chemical	Average Concentration (mg/kg)		
	All Samples	0-15 ft bgs	Shallowest Samples
Benzene	0.00056	0.00057	0.00060
Toluene	0.00056	0.00057	0.00058
Ethylbenzene	0.00056	0.00057	0.00060
Xylenes (Total)	0.0010	0.0012	0.0012
1,2-Dibromoethane (EDB)	0.00059	0.00059	0.00064
1,2-Dichloroethane (EDC)	0.00059	0.00059	0.00064
Methyl tert-butyl ether (MTBE)	0.00055	0.00055	0.00057
Acenaphthene	0.0228	0.0290	0.0333
Anthracene	0.0125	0.0143	0.0146
Benzo(a)anthracene	0.00879	0.0123	0.0147
Benzo(a)pyrene	0.0466	0.0683	0.0147
Benzo(b)fluoranthene	0.00743	0.0119	0.0137
Benzo(k)fluoranthene	0.00873	0.0120	0.0130
Chrysene	0.00706	0.00974	0.0127
Dibenz(a,h)anthracene	0.00881	0.0122	0.00859
Fluoranthene	0.0128	0.0168	0.0227
Fluorene	0.166	0.237	0.0433
Total Naphthalenes	0.0290	0.0368	0.0212
Phenanthrene	0.181	0.248	0.0629
Pyrene	0.0115	0.0163	0.0234
Lead	36	36	11

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APPENDIX A – TIER 1 REPORT FORMS

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Tier 1 Report Forms

**Risk-Based Decision
Making For Petroleum
Releases At
Underground Storage
Tank Sites
In New Mexico**

SITE NAME:	<i>TA-3 Power Plant Fuel Storage Tank</i>
SITE LOCATION:	<i>Los Alamos, NM</i>
SITE ID:	<i>TA-3-26</i>
FACILITY ID:	<i>Los Alamos National Laboratory</i>
SUBMITTAL DATE:	<i>August 4, 2008</i>
PREPARED BY:	<i>Los Alamos National Laboratory</i>
REVIEWED BY:	

TABLE OF CONTENTS (Page 1 of 3)

Check the box against the item, if the item is included.

Form No.	Description	TIER 1 REPORT FORMS
1.	Executive summary.	<input checked="" type="checkbox"/>
2.	Site conceptual exposure scenario.	<input checked="" type="checkbox"/>
3.	Justification for pathways complete and incomplete.	
	Residential (child and adult).	<input checked="" type="checkbox"/>
	Commercial worker.	<input checked="" type="checkbox"/>
	Construction worker.	<input checked="" type="checkbox"/>
4.	Comparison of Tier 1 RBSLs with representative site concentrations.	
	On-site receptors.	
	Resident (child and adult).	<input checked="" type="checkbox"/>
	Commercial worker.	<input checked="" type="checkbox"/>
	Construction worker.	<input checked="" type="checkbox"/>
	Off-site receptors.	
	Resident (child and adult).	<input checked="" type="checkbox"/>
	Commercial worker.	<input checked="" type="checkbox"/>
	Construction worker.	<input checked="" type="checkbox"/>
5.	Tier 1 groundwater protection - no petition for variance to WQCC standards required.	<input checked="" type="checkbox"/>
6.	Tier 1 groundwater protection - petition for variance to WQCC standards required.	<input type="checkbox"/>
7.	Tier 1 applicable target levels for various media.	<input checked="" type="checkbox"/>
8.	Tier 1 conclusions and recommendations.	<input checked="" type="checkbox"/>
9.	References and protocol.	<input type="checkbox"/>

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

EXECUTIVE SUMMARY

Facility name:	<i>Los Alamos National Laboratory</i>		
Facility address:	<i>Los Alamos, NM</i>		
Status of UST system:	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Inactive	
Ground surface condition:			
Estimated volume and type of product(s) released:	<i>300 gal. diesel fuel oil</i>		
Has any vapor impacts been identified?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> On-site	<input type="checkbox"/> Off-site
If yes (check all that apply):	<input type="checkbox"/> Utility corridor	<input type="checkbox"/> Subsurface structures	<input type="checkbox"/> Above surface structures
Is soil contaminated?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> On-site	<input type="checkbox"/> Off-site
Is there any contaminant-saturated soil?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> On-site	<input type="checkbox"/> Off-site
Is groundwater contaminated?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> On-site	<input type="checkbox"/> Off-site
Has the source of release been identified?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Has NAPL ever been detected?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Was NAPL removed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Was NAPL detected in the most recent sampling event?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Has surface water been contaminated by the release?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown <input type="checkbox"/> Suspected
Shallowest depth to groundwater (ft bgs.):	<i>Approximately 1000 ft</i>		
Average depth to groundwater (ft bgs.):	<i>Approximately 1000 ft</i>		
Has a drinking water supply well been contaminated by this release?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown <input type="checkbox"/> Suspected
If yes	<input type="checkbox"/> Drinking	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Other

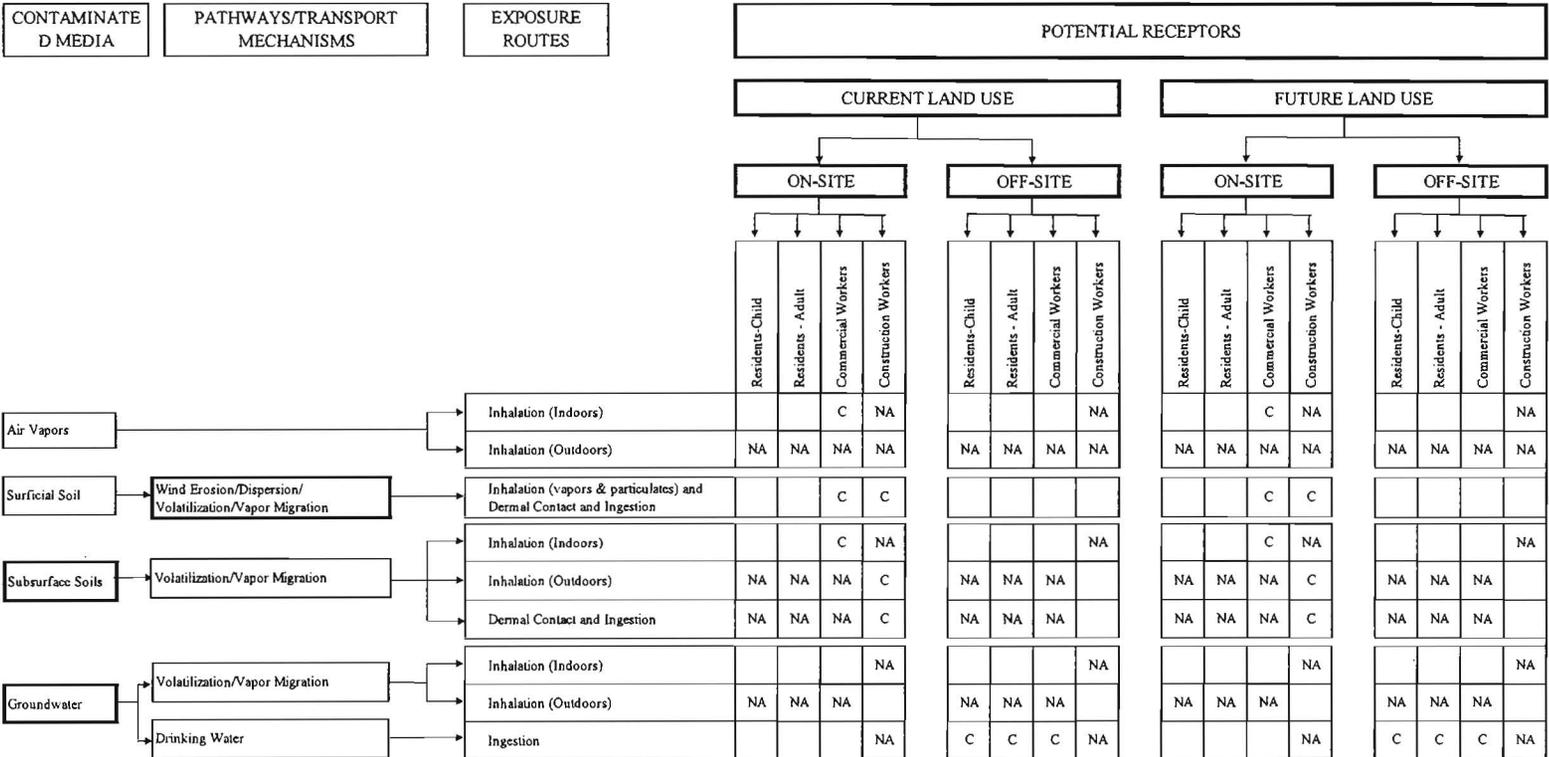
RECOMMENDATIONS

- No further action under tier 1
- Compliance monitoring
- Remediate to tier 1 RBSLs and WQCC standards to achieve no further action
- Perform interim remedial action and then re-evaluate
- Perform tier 2 evaluation
- Petition WQCC for approval of alternative groundwater standards

ADDITIONAL NOTES

[Redacted area]

NEW MEXICO RBDM		TIER 1 REPORT		FORM NO. 2 - SCES
SITE ID: TA-3-26		FACILITY ID: Los Alamos National Laboratory		
SUBMITTAL DATE: 04-Aug-08		PREPARED BY: Los Alamos National Laboratory		
SITE CONCEPTUAL EXPOSURE SCENARIO				



	YES	NO
Contaminant-saturated soil present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Nonaqueous phase liquid present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Utilities Threatened ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Surface Waters within a 500 foot radius?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ecological Receptors?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Leaching to groundwater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

C

 Indicates potentially completed pathways
 NA Not applicable as per the NMED policy

For construction worker, no distinction is made between the surficial and subsurface soils.

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
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SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory
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JUSTIFICATION OF PATHWAYS - ON-SITE RESIDENT (CHILD AND ADULT)

ROUTES OF EXPOSURE	CURRENT CONDITIONS		FUTURE CONDITIONS	
	C/ NC*	JUSTIFICATION	C/ NC*	JUSTIFICATION
SURFICIAL SOIL				
Ingestion, outdoor inhalation of vapors and particulate matter, and dermal contact	NC	<i>Current land use is not residential</i>	NC	<i>Future land use will be restricted and will not include residential.</i>
SUBSURFACE SOIL				
Indoor inhalation of vapors (only when depth to contamination is less than 15 ft bgs)	NC	<i>Current land use is not residential</i>	NC	<i>Future land use will be restricted and will not include residential.</i>
GROUNDWATER				
Indoor inhalation of vapors (only when depth to groundwater is less than 15 ft bgs)	NC	<i>Current land use is not residential. Depth to groundwater is greater than 15 ft.</i>	NC	<i>Future land use will be restricted and will not include residential. Depth to groundwater is greater than 15 ft.</i>
Ingestion (only when groundwater is used, from an impacted on-site well, for drinking)	NC	<i>Current land use is not residential. No on-site supply wells.</i>	NC	<i>Future land use will be restricted and will not include residential. No future on-site supply wells.</i>

JUSTIFICATION OF PATHWAYS - OFF-SITE RESIDENT (CHILD AND ADULT)
--

SURFICIAL SOIL				
Ingestion, Outdoor Inhalation of Vapors and Particulate Matter, and Dermal Contact	NC	<i>Off-site residents greater than 1,000 ft from site.</i>	NC	<i>Future off-site residents will be greater than 1,000 ft.</i>
SUBSURFACE SOIL				
Indoor inhalation of vapors (only when depth to contamination is less than 15 ft bgs)	NC	<i>Off-site residents greater than 1,000 ft from site.</i>	NC	<i>Future off-site residents will be greater than 1,000 ft.</i>
GROUNDWATER				
Indoor inhalation of vapors (only when depth to groundwater is less than 15 ft bgs)	NC	<i>Depth to groundwater is greater than 15 ft.</i>	NC	<i>Depth to groundwater is greater than 15 ft.</i>
Ingestion (only when groundwater is used, from an impacted off-site well, for drinking)	C	<i>Off-site well could potentially be impacted and will be evaluated for completeness.</i>	C	<i>Off-site well could potentially be impacted and will be evaluated for completeness.</i>

NOTE:

* C : Complete Pathway, NC : Not Complete

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory

JUSTIFICATION OF PATHWAYS - ON-SITE COMMERCIAL WORKER
--

ROUTES OF EXPOSURE	CURRENT CONDITIONS		FUTURE CONDITIONS	
	C/ NC*	JUSTIFICATION	C/ NC*	JUSTIFICATION
SURFICIAL SOIL				
Ingestion, outdoor inhalation of vapors and particulate matter, and dermal contact	C	<i>On site commercial worker could be exposed to surficial soil contamination.</i>	C	<i>On site commercial worker could be exposed to surficial soil contamination.</i>
SUBSURFACE SOIL				
Indoor inhalation of vapors (only when depth to contamination is less than 15 ft bgs)	C	<i>Occupied structures located within several hundred feet of release site.</i>	C	<i>Occupied structures located within several hundred feet of release site.</i>
GROUNDWATER				
Indoor inhalation of vapors (only when depth to groundwater is less than 15 ft bgs)	NC	<i>Depth to groundwater greater than 15 ft.</i>	NC	<i>Depth to groundwater greater than 15 ft.</i>
Ingestion (only when groundwater is used, from an impacted on-site well, for drinking)	NC	<i>No on-site supply wells.</i>	NC	<i>No future on-site supply wells.</i>

JUSTIFICATION OF PATHWAYS - OFF-SITE COMMERCIAL WORKER

SURFICIAL SOIL				
Ingestion, Outdoor Inhalation of Vapors and Particulate Matter, and Dermal Contact	NC	<i>Cotamination does not extend off site.</i>	NC	<i>Cotamination will not migrate off site.</i>
SUBSURFACE SOIL				
Indoor inhalation of vapors (only when depth to contamination is less than 15 ft bgs)	NC	<i>Subsurface contamination does not extend off site.</i>	NC	<i>Subsurface contamination will not extend off site.</i>
GROUNDWATER				
Indoor inhalation of vapors (only when depth to groundwater is less than 15 ft bgs)	NC	<i>Depth to groundwater greater than 15 ft.</i>	NC	<i>Depth to groundwater greater than 15 ft.</i>
Ingestion (only when groundwater is used, from an impacted off-site well, for drinking)	C	<i>Off-site well could be impacted and will be evaluated for completeness.</i>	C	<i>Off-site well could be impacted and will be evaluated for completeness.</i>

NOTE:

* C : Complete Pathway, NC : Not Complete

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
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SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory
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JUSTIFICATION OF PATHWAYS - ON-SITE CONSTRUCTION WORKER
--

ROUTES OF EXPOSURE	CURRENT CONDITIONS		FUTURE CONDITIONS	
	C/ NC*	JUSTIFICATION	C/ NC*	JUSTIFICATION
SOIL WITHIN THE TYPICAL CONSTRUCTION DEPTH				
Ingestion, outdoor inhalation of vapors and particulate matter, and dermal contact	C	<i>Construction worker could be exposed to surficial soil contamination.</i>	C	<i>Construction worker could be exposed to surficial soil contamination.</i>
GROUNDWATER				
Outdoor inhalation of vapors	NC	<i>Depth to groundwater greater than 15 ft.</i>	NC	<i>Depth to groundwater greater than 15 ft.</i>

JUSTIFICATION OF PATHWAYS - OFF-SITE CONSTRUCTION WORKER

SOIL WITHIN THE TYPICAL CONSTRUCTION DEPTH				
Ingestion, Outdoor Inhalation of Vapors and Particulate Matter, and Dermal Contact	NC	<i>Subsurface contamination does not extend off site.</i>	NC	<i>Subsurface contamination will not extend off site.</i>
GROUNDWATER				
Outdoor inhalation of vapors	NC	<i>Depth to groundwater greater than 15 ft.</i>	NC	<i>Depth to groundwater greater than 15 ft.</i>

NOTE:

* C : Complete Pathway, NC : Not Complete

No distinction is made between surficial soil and subsurface soil for a construction worker within the zone of construction since subsurface soil may be brought to the surface during construction/excavation activities.

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLS WITH REPRESENTATIVE CONCENTRATIONS - ON-SITE RESIDENT (CHILD AND ADULT)

CONTAMINANTS OF CONCERN	SURFICIAL SOIL			SUB-SURFACE SOIL			GROUNDWATER					
	Ingestion, inhalation, and dermal contact		NC	Indoor inhalation of vapors		NC	Indoor inhalation of vapors		NC	Ingestion		NC
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds	Concentration at the tap [µg/L]	MCL [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS												
Benzene												
Toluene												
Ethylbenzene												
Xylenes (Total)												
Ethylene Dibromide (EDB)												
1,2-Dichloroethane (EDC)												
MTBE												
POLYCYCLIC AROMATIC HYDROCARBONS												
Acenaphthene												
Anthracene												
Benzo(a)anthracene												
Benzo(a)pyrene												
Benzo(b)fluoranthene												
Benzo(k)fluoranthene												
Chrysene												
Dibenz(a-h)anthracene												
Fluoranthene												
Fluorene												
Total Naphthalenes												
Phenanthrene												
Pyrene												
METALS												
Lead												

NOTE:

Enter the representative concentration and indicate.

Representative concentration is

Soil

Groundwater

N/A: Not applicable

>RES: Calculated RBSLs exceeded residual soil saturation level.

>SOL: Calculated RBSLs exceeded pure component water solubility.

This comparative evaluation is performed automatically after the user has completed Report Form No.3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26 FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08 PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLs WITH REPRESENTATIVE CONCENTRATIONS - OFF-SITE RESIDENT (CHILD AND ADULT)

CONTAMINANTS OF CONCERN	SURFICIAL SOIL			SUB-SURFACE SOIL			GROUNDWATER					
	Ingestion, inhalation, and dermal contact		NC	Indoor inhalation of vapors		NC	Indoor inhalation of vapors		NC	Ingestion		C
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds	Concentration at the tap [µg/L]	MCL [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS												
Benzene												
Toluene												
Ethylbenzene												
Xylenes (Total)												
Ethylene Dibromide (EDB)												
1,2-Dichloroethane (EDC)												
MTBE												
POLYCYCLIC AROMATIC HYDROCARBONS												
Acenaphthene												
Anthracene												
Benzo(a)anthracene												
Benzo(a)pyrene												
Benzo(b)fluoranthene												
Benzo(k)fluoranthene												
Chrysene												
Dibenz(a-h)anthracene												
Fluoranthene												
Fluorene												
Total Naphthalenes												
Phenanthrene												
Pyrene												
METALS												
Lead												

NOTE:

Enter the representative concentration and indicate.

Representative concentration is:

Soil

Groundwater

N/A: Not applicable

>RES: Calculated RBSLs exceeded residual soil saturation level.

>SOL: Calculated RBSLs exceeded pure component water solubility.

This comparative evaluation is performed automatically after the user has completed Report Form No.3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLs WITH REPRESENTATIVE CONCENTRATIONS - ON-SITE COMMERCIAL WORKER

CONTAMINANTS OF CONCERN	SURFICIAL SOIL			SUB-SURFACE SOIL			GROUNDWATER					
	Ingestion, Inhalation, and Dermal Contact		C	Indoor inhalation of vapors		C	Indoor inhalation of vapors		NC	Ingestion		NC
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds	Concentration at the tap [µg/L]	MCL [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS												
Benzene	0.00	7.33E+01	NE	0.00057	1.28E-01	NE						
Toluene	0.00	1.48E+04 >RES	NE	0.00057	2.05E+01	NE						
Ethylbenzene	0.00	7.77E+03 >RES	NE	0.00057	4.02E+02 >RES	NE						
Xylenes (Total)	0.00	8.62E+04 >RES	NE	0.0012	2.82E+01	NE						
Ethylene Dibromide (EDB)	0.00	2.59E-02	NE	0.00059	3.49E-02	NE						
1,2-Dichloroethane (EDC)	0.00	2.34E+01	NE	0.00059	9.12E-02	NE						
MTBE	0.00	3.93E+02	NE	0.00055	1.17E+02	NE						
POLYCYCLIC AROMATIC HYDROCARBONS												
Acenaphthene	0.03	2.77E+04 >RES	NE	0.029	2.81E+04 >RES	NE						
Anthracene	0.01	1.57E+05 >RES	NE	0.0143	2.08E+06 >RES	NE						
Benzo(a)anthracene	0.01	2.18E+01 >RES	NE	0.0123	6.00E+04 >RES	NE						
Benzo(a)pyrene	0.01	2.19E+00 >RES	NE	0.0683	7.33E+06 >RES	NE						
Benzo(b)fluoranthene	0.0137	2.17E+01 >RES	NE	0.0119	1.40E+04 >RES	NE						
Benzo(k)fluoranthene	0.013	2.19E+01 >RES	NE	0.012	1.87E+06 >RES	NE						
Chrysene	0.0127	2.15E+03 >RES	NE	0.00974	4.84E+05 >RES	NE						
Dibenz(a-h)anthracene	0.00859	2.21E+00 >RES	NE	0.0122	2.72E+07 >RES	NE						
Fluoranthene	0.0227	2.21E+04 >RES	NE	0.0168	2.51E+06 >RES	NE						
Fluorene	0.0433	1.96E+04 >RES	NE	0.237	8.31E+04 >RES	NE						
Total Naphthalenes	0.0212	1.85E+04 >RES	NE	0.0368	3.76E+02 >RES	NE						
Phenanthrene	0.0629	1.45E+04 >RES	NE	0.248	5.04E+04 >RES	NE						
Pyrene	0.0234	1.67E+04 >RES	NE	0.0163	4.24E+06 >RES	NE						
METALS												
Lead	11	1.00E+03 N/A	NE	36	N/A 0	NE						

NOTE:
 Enter the representative concentration and indicate. Representative concentration is:
 N/A: Not applicable Soil: Surficial soil is average of shallowest samples in each borehole. Subsurface is average of 0-15 ft samples.
 >RES: Calculated RBSLs exceeded residual soil saturation level. Groundwater:
 >SOL: Calculated RBSLs exceeded pure component water solubility.
 This comparative evaluation is performed automatically after the user has completed Report Form No.3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26 FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08 PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLs WITH REPRESENTATIVE CONCENTRATIONS - OFF-SITE COMMERCIAL WORKER

CONTAMINANTS OF CONCERN	SURFICIAL SOIL			SUB-SURFACE SOIL			GROUNDWATER					
	Ingestion, inhalation, and dermal contact		NC	Indoor inhalation of vapors		NC	Indoor inhalation of vapors		NC	Ingestion		C
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds	Concentration at the tap [µg/L]	MCL [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS												
Benzene												
Toluene												
Ethylbenzene												
Xylenes (Total)												
Ethylene Dibromide (EDB)												
1,2-Dichloroethane (EDC)												
MTBE												
POLYCYCLIC AROMATIC HYDROCARBONS												
Acenaphthene												
Anthracene												
Benzo(a)anthracene												
Benzo(a)pyrene												
Benzo(b)fluoranthene												
Benzo(k)fluoranthene												
Chrysene												
Dibenz(a-h)anthracene												
Fluoranthene												
Fluorene												
Total Naphthalenes												
Phenanthrene												
Pyrene												
METALS												
Lead												

NOTE:

Enter the representative concentration and indicate.

Representative concentration is:

Soil

Groundwater

N/A: Not applicable

>RES: Calculated RBSLs exceeded residual soil saturation level.

>SOL: Calculated RBSLs exceeded pure component water solubility

This comparative evaluation is performed automatically after the user has completed Report Form No.3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26 FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08 PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLs WITH REPRESENTATIVE CONCENTRATIONS - ON-SITE CONSTRUCTION WORKER

CONTAMINANTS OF CONCERN	SOIL WITHIN THE TYPICAL CONSTRUCTION ZONE			GROUNDWATER		
	Ingestion, inhalation, and dermal contact		C	Outdoor inhalation of vapors		NC
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS						
Benzene	0.00057	1.67E+02	NE			
Toluene	0.00057	6.31E+03 >RES	NE			
Ethylbenzene	0.00057	5.98E+03 >RES	NE			
Xylenes (Total)	0.0012	8.00E+03 >RES	NE			
Ethylene Dibromide (EDB)	0.00059	6.19E-01	NE			
1,2-Dichloroethane (EDC)	0.00059	1.30E+02	NE			
MTBE	0.00055	3.77E+02	NE			
POLYCYCLIC AROMATIC HYDROCARBONS						
Acenaphthene	0.029	1.16E+04 >RES	NE			
Anthracene	0.0143	9.96E+04 >RES	NE			
Benzo(a)anthracene	0.0123	4.19E+02 >RES	NE			
Benzo(a)pyrene	0.0683	4.28E+01 >RES	NE			
Benzo(b)fluoranthene	0.0119	4.10E+02 >RES	NE			
Benzo(k)fluoranthene	0.012	4.27E+02 >RES	NE			
Chrysene	0.00974	3.99E+04 >RES	NE			
Dibenz(a-h)anthracene	0.0122	4.32E+01 >RES	NE			
Fluoranthene	0.0168	1.60E+04 >RES	NE			
Fluorene	0.237	1.10E+04 >RES	NE			
Total Naphthalenes	0.0368	3.23E+03 >RES	NE			
Phenanthrene	0.248	7.90E+03 >RES	NE			
Pyrene	0.0163	1.24E+04 >RES	NE			
METALS						
Lead	36	1.00E+03 N/A	NE			

NOTE:
 Enter the representative concentration and indicate *Soil* Representative concentration in *Groundwater* Concentration is average of samples from 0-15 ft.
 N/A: Not applicable
 >RES: Calculated RBSLs exceeded residual soil saturation level.
 >SOL: Calculated RBSLs exceeded pure component water solubility.
 This comparative evaluation is performed automatically after the user has completed Report Form No. 3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

COMPARISON OF TIER 1 RBSLs WITH REPRESENTATIVE CONCENTRATIONS - OFF-SITE CONSTRUCTION WORKER

CONTAMINANTS OF CONCERN	SOIL WITHIN THE TYPICAL CONSTRUCTION ZONE			GROUNDWATER		
	Ingestion, inhalation, and dermal contact		NC	Outdoor inhalation of vapors		NC
	Representative concentration [mg/kg]	RBSLs [mg/kg]	E/Exceeds or NE/Not Exceeds	Representative concentration [µg/L]	RBSLs [µg/L]	E/Exceeds or NE/Not Exceeds
ORGANICS						
Benzene						
Toluene						
Ethylbenzene						
Xylenes (Total)						
Ethylene Dibromide (EDB)						
1,2-Dichloroethane (EDC)						
MTBE						
POLYCYCLIC AROMATIC HYDROCARBONS						
Acenaphthene						
Anthracene						
Benzo(a)anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(k)fluoranthene						
Chrysene						
Dibenz(a-h)anthracene						
Fluoranthene						
Fluorene						
Total Naphthalenes						
Phenanthrene						
Pyrene						
METALS						
Lead						

NOTE:

Enter the representative concentration and indicate.

Representative concentration is:

Soil

Groundwater

N/A: Not applicable

>RES: Calculated RBSLs exceeded residual soil saturation level.

>SOL: Calculated RBSLs exceeded pure component water solubility.

This comparative evaluation is performed automatically after the user has completed Report Form No.3 and entered the representative concentration on this form for complete pathways.

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory

TIER 1 GROUNDWATER PROTECTION - NO PETITION FOR VARIANCE TO WQCC STANDARDS REQUIRED

CONTAMINANTS OF CONCERN	COMPARISON FOR SOURCE SOIL			COMPARISON FOR GROUNDWATER											
	Source rep. conc.* [mg/kg]	RBSLs** [mg/kg]	E/Exceeds or NE/Not Exceeds	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	WQCC std. or RBSL [µg/L]	E/Exceeds or NE/Not Exceeds
				Recent # 8 qtr max. [µg/L]											
ORGANICS															
Benzene															
Toluene															
Ethylbenzene															
Xylenes (Total)															
Ethylene Dibromide (EDB)	0.00059	5.00E-02	NE												
1,2-Dichloroethane (EDC)	0.00059	8.20E+00	NE												
MTBE	0.00055	4.40E+01	NE												
POLYCYCLIC AROMATIC HYDROCARBONS															
Acenaphthene															
Anthracene															
Benzo(a)anthracene															
Benzo(a)pyrene															
Benzo(b)fluoranthene															
Benzo(k)fluoranthene															
Chrysene															
Dibenz(a-h)anthracene															
Fluoranthene															
Fluorene															
Total Naphthalenes															
Phenanthrene															
Pyrene															
METALS															
Lead															

NOTE:

- * Source representative concentration is *Average of all samples from boreholes with detections*
- ** Back-calculated from WQCC groundwater standards for distance to POE=0 (from Table 4-15 of the Guidance Document)
- # The representative concentrations in each monitoring well should be the maximum for the most recent 8 consecutive quarters, unless otherwise approved.
- N/A: Not applicable

This comparative evaluation is performed automatically after the user has input representative concentrations and target levels for soil and representative concentrations for groundwater.

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

TIER 1 GROUNDWATER PROTECTION - NO PETITION FOR VARIANCE TO WQCC STANDARDS REQUIRED

CONTAMINANTS OF CONCERN	COMPARISON FOR GROUNDWATER														WQCC std. or RBSL [µg/L]	E/Exceeds or NE/Not Exceeds
	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23			
	Recent [#] 8 qtr max. [µg/L]															
ORGANICS																
Benzene																
Toluene																
Ethylbenzene																
Xylenes (Total)																
Ethylene Dibromide (EDB)																
1,2-Dichloroethane (EDC)																
MTBE																
POLYCYCLIC AROMATIC HYDROCARBONS																
Acenaphthene																
Anthracene																
Benzo(a)anthracene																
Benzo(a)pyrene																
Benzo(b)fluoranthene																
Benzo(k)fluoranthene																
Chrysene																
Dibenz(a-h)anthracene																
Fluoranthene																
Fluorene																
Total Naphthalenes																
Phenanthrene																
Pyrene																
METALS																
Lead																

NOTE:

N/A: Not applicable

The representative concentrations in each monitoring well should be the maximum for the most recent 8 consecutive quarters, unless otherwise approved.

This comparative evaluation is performed automatically after the user has input the representative concentrations.

NEW MEXICO RBDM				TIER 1 REPORT						FORM NO. 7		
SITE ID: TA-3-26				FACILITY ID: Los Alamos National Laboratory								
SUBMITTAL DATE: 04-Aug-08				PREPARED BY: Los Alamos National Laboratory								
TIER 1 APPLICABLE TARGET LEVELS FOR VARIOUS MEDIA												
NOTE: The RBSLs listed in this table, for each route of exposure, are the lowest of the RBSLs for all the receptors for that particular route of exposure. The applicable target levels for each medium would be the lowest of the RBSLs listed in this table.												
CONTAMINANTS OF CONCERN	SURFICIAL SOIL		SUBSURFACE SOIL		GROUNDWATER				GROUNDWATER PROTECTION			
	Ingestion, inhalation, and dermal contact		Indoor inhalation		Indoor inhalation		Outdoor inhalation		Ingestion	Resource protection	Soil concentrations protective of groundwater - no petition required	Soil concentrations protective of groundwater - petition required
	[mg/kg]		[mg/kg]		[µg/L]		[µg/L]		[µg/L]	[µg/L]	[mg/kg]	[mg/kg]
	ON-SITE	OFF-SITE	ON-SITE	OFF-SITE	ON-SITE	OFF-SITE	ON-SITE	OFF-SITE				
ORGANICS												
Benzene	7.33E+01		1.28E-01									9.25E-03
Toluene	6.31E+03		2.05E+01									2.80E+00
Ethylbenzene	5.98E+03		4.02E+02									1.61E+01
Xylenes (Total)	8.00E+03		2.82E+01									4.67E+01
Ethylene Dibromide (EDB)	2.59E-02		3.49E-02								5.00E-02	3.18E-05
1,2-Dichloroethane (EDC)	2.34E+01		9.12E-02								8.20E+00	4.21E-03
MTBE	3.77E+02		1.17E+02								4.40E+01	3.93E-02
POLYCYCLIC AROMATIC HYDROCARBONS												
Acenaphthene	1.16E+04		1.16E+04									1.87E+02
Anthracene	9.96E+04		9.96E+04									1.77E+01
Benzo(a)anthracene	2.18E+01		4.19E+02									7.26E+00
Benzo(a)pyrene	2.19E+00		4.28E+01									1.35E+00
Benzo(b)fluoranthene	2.17E+01		4.10E+02									2.50E+01
Benzo(k)fluoranthene	2.19E+01		4.27E+02									1.71E+01
Chrysene	2.15E+03		3.99E+04									1.11E+01
Dibenz(a-h)anthracene	2.21E+00		4.32E+01									3.63E+00
Fluoranthene	1.60E+04		1.60E+04									1.76E+02
Fluorene	1.10E+04		1.10E+04									1.96E+02
Total Naphthalenes	3.23E+03		3.76E+02									6.79E-01
Phenanthrene	7.90E+03		7.90E+03									2.70E+02
Pyrene	1.24E+04		1.24E+04									1.30E+03
METALS												
Lead	1.00E+03		1.00E+03									1.59E+01

N/A: Not applicable

NEW MEXICO RBDM

TIER 1 REPORT

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

ADDITIONAL NOTES

Surface water is located within 500 ft of site, but contaminated area is within secondary containment berm so there is no runoff from site to surface water.

SITE ID: TA-3-26	FACILITY ID: Los Alamos National Laboratory
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SUBMITTAL DATE: 04-Aug-08	PREPARED BY: Los Alamos National Laboratory
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TIER 1 CONCLUSIONS AND RECOMMENDATIONS

1.	<i>Has the site been adequately investigated and characterized?</i>	<i>Characterization has defined vertical and horizontal extent of contamination. No additional characterization is needed.</i>
2.	<i>Has NAPL been removed?</i>	<i>No NAPL has been detected at the site.</i>
3.	<i>Is the groundwater plume stable or shrinking, based on the concentration trend plots?</i>	<i>Sampling to define vertical extent shows that contaminants have not migrated to groundwater.</i>
4.	<i>Are on-site soil and groundwater concentrations protective of current and reasonable future on-site receptors?</i>	<i>Representative concentrations of contaminants do not exceed risk-based screening levels.</i>
5.	<i>Are off-site soil and groundwater concentrations protective of current and reasonable future off-site receptors?</i>	<i>Soil contamination has not migrated off site. Contaminants have not migrated to groundwater.</i>
6.	<i>Are soil concentrations protective of groundwater?</i>	<i>Representative concentrations of contaminants do not exceed risk-based screening levels.</i>
7.	<i>Are groundwater concentrations below the applicable standards?</i>	<i>Contaminants have not migrated to groundwater.</i>

SITE ID: TA-3-26

FACILITY ID: Los Alamos National Laboratory

SUBMITTAL DATE: 04-Aug-08

PREPARED BY: Los Alamos National Laboratory

TIER 1 CONCLUSIONS AND RECOMMENDATIONS

8.	<i>Is a waiver petition for alternative groundwater protection standards recommended?</i>
	<i>Not applicable.</i>
9.	<i>Is compliance monitoring of groundwater recommended?</i>
	<i>Not applicable.</i>
10.	<i>Is an interim remediation and tier 1 re-evaluation recommended?</i>
	<i>Remediation not necessary.</i>
11.	<i>Is remediation to tier 1 target levels recommended?</i>
	<i>Remediation not necessary.</i>
12.	<i>Is site recommended for NFA status?</i>
	<i>Site is recommended for NFA status.</i>
13.	<i>Is a Tier 2 evaluation recommended? If yes, list the receptors, routes of exposure, and the COCs to be evaluated.</i>
	<i>Tier 2 evaluation not necessary.</i>
14.	<i>Other relevant information</i>
	<i>Not applicable.</i>