Los Alamos National Laboratory

Waste Management Program
Environmental Science and Waste Technology Division
P.O. Box 1663, Mail Stop J591
Los Alamos, New Mexico 87545
(505) 665-8293 / FAX: (505) 665-6727

Date: December 8, 2000
Refer to: E/WM:00-038

Rec'd LANL FFCO/2002

HAND-DELIVERED

Dr. Robert (Stu) Dinwiddie
RCRA Advisor
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: REQUEST FOR DELETION OF ITEMS UNDER SECTION V.B, *"OTHER MATTERS COVERED IN THIS ORDER,"* FEDERAL FACILITY COMPLIANCE ORDER (FFCO), LOS ALAMOS NATIONAL LABORATORY (LANL).

Dear Dr. Dinwiddie,

This letter requests the deletion from the Site Treatment Plan (STP) of waste that was found to be radioactive without a hazardous component. It is intended that the information provided meets the requirements under Section V.B, *"Other Matters Covered in the Order,"* of the Federal Facility Compliance Order. Upon approval by the New Mexico Environment Department (NMED), such waste would no longer be subject to the terms of the FFCO. The waste is currently reported in the LANL STP under Section 3.2, MWIR Waste ID LA-W928, *"Dewatered Treatment Sludge."*

The waste was generated in 1989 at the LANL Radioactive Liquid Waste Treatment facility and was included in the original 1995 STP inventory. This waste now consists of forty-one 55-gallon drums of sludge with a total reported STP volume of 8.54 cubic meters. The waste is currently stored in Dome 49 at Technical Area (TA)-54. The sludge resulted from the treatment of radioactive liquid wastewater. The product of the treatment process was dewatered and dried by filtration. The filters were scraped and the filter cake (sludge) was removed and containerized for transportation to TA-54.

2033

The waste was characterized as RCRA Code F001 as a conservative waste management approach based on influent data showing the potential for trace organic solvents. Previously 1,227 drums of sludge waste from this waste stream were requested for removal from the STP under FFCO Section V.B in a January 12, 1996 letter. Approval for deletion of this waste was granted by NMED in a December 4, 1996 letter.

DOE and LANL retained one batch of drums from the waste stream in the STP based on the assumption that the combined maximum concentrations of organic compounds in the influent may have exceeded the regulatory exclusion level of 25 ppm. The influent data for this batch has been reexamined, and the combined average concentration calculated. The combined average concentration of organic compounds in the influent for this batch is less than 10 ppm.

The waste stream was also sampled for organic compounds. The samples were analyzed at commercial laboratories for volatile organic compounds and semi-volatile organic compounds using SW-846 methods. The analytical data verifies that the trace organics in the waste steam do not exceed regulatory limits.

Enclosed is a detailed list of each item requested for deletion from the STP, a table of the influent data and average calculations, a table describing the analytical results from sampling of the waste, and the detailed analytical results from the sampling of the sludges. Attached for your reference are copies of the January 12, 1996 and December 4, 1996 letters. Also enclosed is a Certification Statement prepared in accordance with the requirements of Section XX, *"Documents, Information, and Reporting,"* of the FFCO. Please feel free to contact me at (505) 665-0714 if you have any questions.

Sincerely,

Beverly Martin

Beverly Martin
STP Project Manager
Environmental Science and Waste Technology Division
Los Alamos National Laboratory

Enclosures: a/s

Cy (w/encl.):
Mr. James Bearzi, Bureau Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

Bcc (w/o encl.):

H. Haynes, DOE Counsel, LAAO
J. Orban, DOE, WMD, AL
J. Vozella, DOE, LAAO
J. Nunz, DOE, LAAO
K. Hargis, E-WMOSR, MS J591
B. Martin, E-WMOSR, MS J591
E. Louderbough, LC-GL, MS A187
S. Moreno, LC-GL, MS A187
R. Hahn, FWO-SWO, MS J595
R. Murphy, FWO-SWO, MS J595
M. Gonzales, FWO-SWO, MS J595
A. Jackson, ESH-19, MS K490
E-WMOSR Files

CERTIFICATION

LOS ALAMOS NATIONAL LABORATORY (LANL)
FEDERAL FACILITY COMPLIANCE ORDER (FFCO)
SECTION V.B
OCTOBER 4, 1995

I certify that I am the project manager responsible for overseeing the implementation of the Site Treatment Plan for the Los Alamos National Laboratory. To the best of my knowledge and belief, the information in this document is true, accurate, and complete.

Beverly Martin

Beverly Martin
STP Project Manager
Environmental Science and Waste Technology Division
Los Alamos National Laboratory
Operator

12/7/00
Date Signed

James G. Nunz
Signed
Waste Management Program Manager
Los Alamos Area Office
U.S. Department of Energy
Albuquerque Operations
Owner/Operator

Date

Constituent	Appendix B table	Sample Number / Date Sampled (µg/L = *ppb*) 89.10029 12/15/88	89.10030 12/15/88	89.10032 12/19/88	89.10033 12/22/88	89.10034 12/22/88	Based on data from 12/15 to 12/22: Average (ppm) [1 ppm limit]	Average (ppm) [25 ppm limit]	Total Average (ppm) [1 ppm limit]	Total Average (ppm) [25 ppm limit]	Maximum (ppm) [25 ppm limit]
carbon tetrachloride	B-8	0.9		3.7	1.5	0.7	0.00136				
tetrachloroethylene	B-4	137.9	93.8	72	70	67.4	0.08822				
trichloroethylene	B-5	5.1	0.4	52	36.8	39.2	0.0267		0.11628		
Methylene chloride	B-6	1727.6	1414.3	1411.4	1215.6	1228.7		1.39952			1.7276
1,1,1-trichloroethane	B-7	274.3	53.8	4223	2887.5	2885.9		2.0649			4.223
chlorobenzene	B-10	3.1		2.6	1.2	1		0.00158			0.0031
o-dichlorobenzene	B-11	0.5						0.0001			0.0005
toluene	B-14	382.4	146.7	1000	785.3	823.2		0.62752			1
methyl ethyl ketone	B-15	20.8	0.6	154.8	116.7	136.1		0.0858			0.1548
carbon disulfide	B-16	4287.2	3345.3	7374.6	5982.9	6293.5		5.4567			7.3746
spent chlorofluorocarbon solvents (trichlorofluoromethane)	B-12	381.3	62.9	59.4	44.2	43		0.11816			0.3813
spent chlorofluorocarbon solvents (trichlorotrifluoroethane)	B-9							0		9.75428	0
Sum for 1 ppm limit (ppm)		0.1439	0.0942	0.1277	0.1083	0.1073			*sum of maximums =*		*14.8649*
Sum for 25 ppm limit (ppm)		7.0772	5.0236	14.2258	11.0334	11.4114					
Other Constituents											
1,1,2-trichloroethane	B-13	71.2	71.1								
benzene	B-17	6.6	3.1	9.1	6.5	6.3					

Your copy.
—Paul D.

Department of Energy
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

JAN 1 2 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Benito Garcia, Bureau Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street, Bldg. A
P.O. Box 26110
Santa Fe, New Mexico 87505

Dear Mr. Garcia:

Subject: Re-characterization of Wastewater Treatment Sludge in Storage at Technical Area (TA) 54 - Request for Removal from Federal Facility Compliance Order (FFCO)

The purpose of this letter is to present the Department of Energy's (DOE) and the University of California's (UC), DOE's management and operating contractor for the Los Alamos National Laboratory (LANL), position that 1,228 out of a total of 1,288 drums of sludge currently being stored at LANL as Low-Level Mixed Waste (LLMW) should be deleted as allowed by the FFCO Section IX.C. Deletion of waste is requested based on recharacterization of these waste sludges and the determination that they are not mixed wastes. They were generated by the treatment of wastewaters at LANL's TA-50, Building 1.

These sludges currently are included in the FFCO, Exhibit A, Mixed Waste Site Treatment Plan (STP), Compliance Plan Volume (CPV) and the Background Volume in the treatability group "dewatered treatment sludge." DOE and UC believe that the referenced 1,228 drums of sludge are actually nonhazardous radioactive waste, and henceforth should be managed as such. We believe these 1,228 drums need no longer be considered "covered waste" in the STP, although the remaining 60 drums continue to be managed as "covered wastes" in the STP.

It is required in FFCO, Section V.B, Other Matters Covered in This Order (October 4, 1995), that DOE and UC notify the New Mexico Environment Department (NMED) by letter when they determine that a "waste," as defined in the FFCO, Section V.A, Covered Waste, is actually radioactive waste without a hazardous waste component. All information required to determine deletion from a mixed waste stream must be supplied to NMED as required by FFCO, Section IX.C, Deletion of Waste.

A detailed study and reevaluation of the extensive information and analytical data collected regarding the referenced sludges was recently completed. This reevaluation supports our conclusion. The data, studies, and reviews supporting our conclusion are summarized briefly in Table 1. As specified in Section V.B of the FFCO, the following portions of this letter

contain information required under Section IX.C, *"Deletion of Waste,"* of the FFCO, specifically, *"...a description of the applicable waste code, waste form and volumes; if applicable, characterization methodology used along with supporting information; and other relevant information regarding deleted waste..."*

1.0 Waste Description (applicable waste code, waste form, and volumes)
These wastes currently are included in the STP under Section 3.3 in the STP and the Background Volume as the treatability group "dewatered treatment sludge," MWIR waste ID LA-W928. This group consists of 1,288 55-gallon drums of sludge generated by the treatment of wastewaters at TA 50-1. The total volume of this material, as given in Section 3.3 of the STP, is 268.17 cubic meters. This constitutes approximately 44 percent of the total legacy LLMW inventory currently listed in LANL's STP. In this letter, we are requesting the removal of 1,228 of the 1,288 drums from the STP "covered waste" category.

Attachment A to this letter provides a listing of all 1,288 drums included in the STP, as currently contained in LANL's chemical and mixed waste database. The sixty (60) drums not proposed for removal from the STP are clearly identified. Over time, the description of the waste stream in the LANL database has varied, even though the waste itself did not change significantly, as will be documented below. Detailed records to support each container's entries in the database are contained in LANL's files. These sludge drums were generated at TA 50-1 at a rate of some 240-300 drums per year, were placed into LLMW storage at TA-54, Area G, Dome 49 beginning in 1988 and ending in 1993, and were managed in accordance with the U. S. Environmental Protection Agency's (EPA) Hazardous Waste Management Rules pursuant to the Resource Conservation and Recovery Act (RCRA), and the New Mexico Hazardous Waste Management Regulations pursuant to the New Mexico Hazardous Waste Act.

1.1 Background

In 1962, the TA 50-1 Radioactive Liquid Waste Treatment Plant (RLWTP) was constructed to treat radioactively-contaminated wastewater from nuclear research activities and other operations conducted at LANL. The RLWTP employs a conventional process that uses lime and ferric sulfate to chemically precipitate metals dissolved in LANL wastewaters. The resulting liquid effluent has been significantly reduced in total dissolved solids, including both radioactive and nonradioactive metals, compared to the influent entering the headworks of the RLWTP. The effluent is discharged to Mortandad Canyon in compliance with LANL's National Pollutant Discharge Elimination System (NPDES) permit.

A byproduct of the wastewater treatment process is the generation of dewatered vacuum filter sludges, which consist of concentrated radioactive and nonradioactive metals in a lime/ferric sulfate matrix. The RLWTP sludges are accumulated during two to six week intervals, and are placed into Department of Transportation-approved, polyethylene-lined 55-gallon drums and capped with several inches of Portland cement to absorb any liquids that might dewater from the sludge.

From 1963 to 1971, LANL disposed of the sludges generated in this wastewater treatment process at TA 54, Area "G" as a radioactive waste, which at the time predated, and thus was not regulated under RCRA. In 1971, as directed by the Atomic Energy Commission, LANL began placing

drummed sludges in retrievable storage in earth-covered, above-ground storage units (primarily Pads 1, 2, and 4) at TA-54, Area G. From 1971 to 1982, all sludge from TA 50-1 was classified as Transuranic (TRU) waste. During 1983, LANL constructed a pre-treatment unit at TA-50, Building 1, Room 60 to remove transuranium, alpha-emitting radioisotopes from TRU-concentrated wastewater before it entered the main TA 50-1 treatment plant. The pretreatment process reduced the rate of TRU waste generation from TA 50-1 by a factor of 10. In 1983, the pre-treatment unit at TA 50-1 began generating small quantities of pre-treatment sludge to be managed as TRU waste. The main plant process at TA 50-1 continued to generate quantities of treatment sludge, which then could be managed as Low-Level Radioactive Waste (LLW) (except for occasional batches of TRU waste sludges generated until about February, 1989). LANL disposed of LLW treatment sludge at TA-54, Area G from 1982 through mid-1986.

As a result of the July 3, 1986, Federal Register (FR) announcement of the Environmental Protection Agency's (EPAs) decision to regulate the hazardous waste component of hazardous waste containing source, by-product, or special nuclear material (i.e., mixed waste), LANL began managing its TA 50-1 LLW sludge as LLMW. This decision was based on a conservative application of regulatory concerns by LANL, given its awareness of the analytical laboratories and manufacturing-type operations at LANL. These processes are associated with over 1,500 drain points within approximately 25 buildings which discharge liquids to the RLWTP. A number of internal studies and reviews documented LANL's knowledge of the processes which generate the RLWTP influent. They are referenced in Table 1.

2.0 Potential Basis for Hazardous Waste Classification

Sludge is defined in the New Mexico Hazardous Waste Management Regulations (HWMR) at 20 NMAC 4.1.101, which incorporates 40 CFR 260.10 of RCRA, as "*any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant ...exclusive of the treated effluent from a wastewater treatment plant.*" The sludges in question are generated from the treatment of LANL wastewaters influent to the TA 50-1 headworks. As stated in 20 NMAC 4.1.201 at 40 CFR 261.4(a)(2), such sludges are not excluded from the definition of solid waste; nor are such sludges excluded under 20 NMAC 4.1.201 at 40 CFR 261.4(b), although certain wastewater treatment sludges from a few specific sources or industries (not applicable to LANL) are excluded (see, for example, 20 NMAC 4.1.201 at40 CFR 261.4(b)(6)(ii)). Therefore, the sludges meet the definition of solid waste.

Although under 20 NMAC 4.1.201 at 40 CFR 261.4(a)(2), industrial wastewater discharges subject to regulation under the Clean Water Act are excluded from the New Mexico Hazardous Waste Act (NMHWA) and RCRA, neither the wastewaters themselves while being collected, stored or treated, nor the sludges generated from industrial wastewater treatment, are excluded by this particular provision. In order for the sludges to meet the definition of hazardous waste, however, they would have to meet one of the following criteria: (1) be listed under one of the specific waste listings in 20 NMAC 4.1.201 at 40 CFR 261.3(b)(1); (2) be a mixture of a solid waste and one or more listed hazardous wastes in 20 NMAC 4.1.201 at 40 CFR 261.3(b)(2); (3) be generated from (i.e., "derived from") the treatment of a listed hazardous waste in 20 NMAC 4.1.201 at 40 CFR 261.3(c)(2)(i); or (4) exhibit one of the hazardous waste characteristics in 20 NMAC 4.1.201 at

40 CFR 261.3(b)(3). Furthermore, one would have to determine that none of the exclusions in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2) or 40 CFR 261.4(b) applied to the waste stream.

Since it was known that trace quantities of organic solvents may have entered the TA 50-1 influent over time, LANL conservatively began managing its TA 50-1 LLW sludge as LLMW. This was done despite the fact that analytical results indicated that only trace levels (below regulatory limits) or undetectable levels of solvents that may or may not meet the Subpart D listings may have entered the influent during the entire time period covering generation of the referenced sludges, as will be discussed below. At this time, 1,288 drums of this material are stored in TA-54 as LLMW.

3.0 Characterization Methodology

RLWTP influent and effluent have been regularly sampled at several locations in the treatment process throughout its operating history. Autosamplers are used to obtain composite samples of influent daily while the plant is operating, and weekly and monthly grab samples of both influent and effluent wastewaters are collected to satisfy internal and NPDES permit requirements. Over time, the frequency of analysis and the types and numbers of parameters monitored have steadily increased.

LANL has examined data from volatile organic and toxic metals analyses of TA 50-1 influent sampled during the period of generation of the 1,288 drums of sludge (from June 1988 to November 1993). Data collected since 1988 on toxic organic constituents in RLWTP influent, summarized in Tables B-1 and B-2 of Attachment B, show that over time, approximately fourteen different organic solvents have been detected at trace levels. The plant operator could not know in all instances the specific source of the solvents in RLWTP influent or metals in sludges.

Recently, LANL conducted a thorough reevaluation of the available data, together with a review of the numerous earlier studies by LANL and its subcontractors regarding various aspects of RLWTP operations and/or the sludges in particular. All of this information now suggests that 1,228 of the 1,288 drums of sludge meet the terms of an exclusion from regulation as hazardous (mixed) waste.

Supporting information reviewed is summarized in Table 1. The attachments to this letter provide examples of the extensive information base assembled and examined as part of LANL's recent reassessment.

4.0 Basis for Re-Characterization as Nonhazardous Waste

Under 20 NMAC 4.1.201 at 40 CFR 261.4(a)(2), industrial wastewater discharges subject to regulation under the Clean Water Act are excluded from the New Mexico Hazardous Waste Act (NMHWA) and RCRA. However, neither the wastewaters themselves while being collected, stored or treated, nor the sludges generated from industrial wastewater treatment, are excluded by this particular provision. Nonetheless, LANL's available data, and previous LANL studies

addressing these issues, support the conclusion that most of the TA 50-1 treatment sludges should not be classified as LLMW at this time. DOE and UC believe that at this time 1,228 of the 1,288 drums of sludge meet the terms of a deletion from regulation as mixed waste. To reach this determination, UC reviewed each of the four criteria discussed in Section 2.0 of this letter in turn.

4.1 Listed Waste

Although a number of the waste listings in 20 NMAC 4.1.201 at 40 CFR 261 Subpart D pertain specifically to wastewater treatment sludges, the studies (summarized in Table 1) conducted to characterize the waste streams influent to the RLWTP did not support their applicability to the TA 50-1 sludges, with the possible exception of the potential F006 listing. LANL conducted an extensive regulatory review to address the possibility that these drums may contain F006 waste, because of an on-site electroplating operation whose discharges had, mixed with other liquids, at times entered the headworks of the RLWTP during the period in question. This potential applicability of F006 had been identified by NMED, during the 1993 Multimedia Inspection, for 308 drums of this sludge waste stream. These 308 drums were generated by the same process at TA 50-1, from the same influent wastewaters that yielded the 1,288 drums discussed herein. The subsequent Administrative Order, NMHWA 94-09, questioned whether the 308 drums were adequately characterized for metals and whether the F006 waste code was potentially applicable.

The final resolution reached by NMED, DOE, and UC on the 308 drums recognized, based on DOE/UC submittals, that the sludges had been characterized adequately for metals, none of which exceeded Toxicity Characteristic Leaching Procedure (TCLP) levels; and that the F006 code was not applicable to the sludge. UC submits that the same resolution is applicable here, based on the fact that all of the sludge contained in the 1,288 drums and the 308 drums originated from the same processes and source. UC has verified through internal investigations that no change in treatment plant operations, process excursion, or characterization of the treatment plant influent is associated with the sludges in either group of drums.

4.2 Mixture Rule

The second criterion described in Section 2.0 above is whether the TA 50-1 sludges could be hazardous by virtue of being a mixture of a solid waste and one or more listed hazardous wastes (20 NMAC 4.1.201 at 40 CFR 261.3(b)(2)). However, this criterion does not apply to the 1228 drums of sludge DOE/UC is seeking to have deleted from the requirements of the FFCO. EPA has recognized that at some facilities, small quantities of spent solvents listed in 40 CFR 261.31, discarded commercial chemical products, manufacturing chemical intermediates listed in 40 CFR 261.33, and discarded laboratory wastes are discharged into relatively larger volumes of process wastewaters in amounts not warranting application of the mixture rule, because the amounts of listed hazardous wastes found in such a mixture are often too minute to pose a significant threat to human health and the environment (46 FR 56582-56588, November 17, 1981). Therefore, a number of exemptions to the mixture rule have been established, as codified in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv).

DOE and UC believe 1,228 of the 1,288 drums meet the two bases for an exemption provided in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) and (B), respectively. First, it must be noted

that the TA 50-1 influent wastewaters themselves do not meet the waste listings given in 20 NMAC 4.1.201 at 40 CFR 261 Subpart D, so they are not listed hazardous wastes. To qualify for the exemption, it must be shown that the wastewaters are not hazardous waste mixtures and therefore the sludges generated from their treatment cannot be hazardous waste mixtures.

The regulation allows the facility to demonstrate that the combined concentrations of spent solvent in the wastewater mixture do not exceed 1 or 25 parts per million (ppm), respectively, depending on the type of solvent. The exemption in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) applies to wastewater mixtures containing *"...[O]ne or more of the following solvents listed in § 261.31 - carbon tetrachloride, tetrachloroethylene, trichloroethylene - Provided, That the maximum total weekly usage of these solvents...divided by the average weekly flow of wastewater into the headworks of the facility's waste water treatment or pretreatment system, does not exceed 1 part per million..."* The exemption in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(B) applies to wastewater mixtures containing *"...[O]ne or more of the following spent solvents listed in § 261.31 - methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents - provided that the maximum total weekly usage of these solvents...divided by the average weekly flow of wastewater into the headworks of the facility's waste water treatment or pretreatment system does not exceed 25 parts per million..."*

This exclusion demonstration could be made by performing a materials balance for solvent use at the facility, subtracting solvent use that can be shown not to be discharged into wastewater, and dividing the difference by the weekly volume at the headworks. Note that in 46 FR 56585, EPA clarified that this method was allowed because the more difficult technique of actually measuring the concentrations of these solvents at the headworks would be too onerous a burden for most waste generators. However, direct sampling of the headworks influent is not prohibited by the regulation and is more accurate. Composite samples of RLWTP influent are now drawn daily while the plant is operating, and weekly and monthly grab samples of effluent wastewaters are collected in accordance with internal and NPDES permit requirements.

UC undertook a detailed re-examination of TA 50-1 influent data from volatile organic analyses for the period of generation of the 1,288 drums of sludge (from June 1988 to November 1993). Data collected since 1988 on toxic organic constituents in RLWTP influent is summarized in Tables B-1 and B-2.

Table B-1 summarizes influent data in Tables B-4 through B-17, collected from December 1988 through May 1992. For each of the fourteen organic compounds that were detected in one or more samples during this period, individual sample values, and mean, minimum, and maximum values for each sample population are given in Tables B-4 through B-17. Values are reported in micrograms per liter.

Table B-2 shows the mean, minimum, and maximum values detected in the population of influent samples obtained from May 1992 through May 1994. Analytical results for this latter

period are reported by individual sample in Table B-3 for the highest detectable concentration of each toxic organic compound detected during each sampling event. Values are reported in milligrams per liter.

These two data sets, as reported in several individual UC studies, cover the period during which the 1,288 sludge drums were generated, and characterize the toxic organic constituent composition of the influent wastewaters whose treatment resulted in generation of the sludges. For the majority of sample events, volatile organic compounds were not detected at all. In some samples, one or more of the fourteen compounds was detected as shown in Table B-1, but at extremely low levels such that their combined concentrations in each given sampling period generally did not exceed regulatory exclusion levels of 1 ppm and/or 25 ppm as provided in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) and (B), respectively. For example, combined concentrations of 1,2-dichloroethane, methylene chloride, nitrobenzene, and toluene were found to be below regulatory exclusion levels in all samples, as reported in the Attachment B tables. In all instances, the combined mean values of compounds specified in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) and (B), averaged over the period of generation of the 1,288 drums, did not exceed the regulatory exclusion levels of 1 ppm and/or 25 ppm.

As discussed in Section 1.1 of this letter, RLWTP sludges are generated in discrete batches. Influent sample events can be tied to specific batches of sludge in most cases. As indicated in Tables B-4 through B-17, the combined maximum concentrations of some of the 20 NMAC 4.1.201, 40 CFR 261.3(a)(2)(iv)(B) compounds exceeded the regulatory exclusion level of 25 ppm in the samples collected on December 15, 19, and 22, 1988. Also, two compounds not listed in the 20 NMAC 4.1.201, 40 CFR 261.3(a)(2)(iv)(A) or (B) exclusions, namely benzene and 1,1,2-trichloroethane, were detected at extremely low (less than 0.1 ppm) levels in these same samples. The December 15, 19, and 22, 1988 influent analyses correspond to one specific batch of 60 drums of resultant sludge. Because of this discrepancy (albeit a small one) between the influent sampling results for the 60 drums and the terms of the exclusions, DOE/UC are not seeking to apply the exclusions to this batch of 60 sludge drums at this time.

Finally, acetone was detected in a number of samples, as summarized in Table B-2 and reported for individual samples in column A in Table B-3. However, acetone should not be a constituent of concern for application of the 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) and (B) mixture rule exclusions. It did not cause TA 50-1 influent or sludge to exhibit the characteristic of ignitability (the basis for the F003 listing). Moreover, its presence does not impact the exclusion of the 1,228 sludge drums from NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iii). Therefore, the presence of acetone in some influent samples does not cause the sludge to be a characteristic waste or a mixture of a solid waste and a characteristic wastewater.

4.3 "Derived From" Rule

The third criterion described in Section 2.0 above is whether the TA 50-1 sludges could be listed hazardous waste by being derived from the treatment of a listed hazardous waste (20 NMAC 4.1.201 at 40 CFR 261.3(c)(2)(i)). However, while this criterion potentially could apply to the sludge, it does not apply to 1,228 of the 1,288 drums, owing to application of the exemption in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(A) and (B), as discussed in Section 4.2 of this letter.

While the influent wastewaters are solid wastes, DOE and UC demonstrated in Section 4.2 of this letter that they are not listed hazardous wastes, and that based on the exclusion, 1,228 of the 1,288 drums of treatment sludges are not mixtures of listed hazardous wastes. DOE and LANL believe that all but the 60 drums discussed above meet the exclusion, and therefore were not derived from treatment of a hazardous waste mixture. Hence, 1,228 of the 1,288 drums of treatment sludges cannot be listed wastes based on the "derived from" rule.

4.4 Characteristic Waste

The fourth criterion described in Section 2.0 above is whether the TA 50-1 sludges could exhibit one of the hazardous waste characteristics (20 NMAC 4.1.201 at 40 CFR 261.3(b)(3)). Analytical results of the Extraction Procedure Toxicity Characteristic test are reported by individual sample in Tables C-1 through C-8 by analyte. Table C-9 shows the mean, minimum, and maximum values detected in the population of samples in Table C-10. Table C-10 reports, by individual sample, the highest detectable concentration of constituents found in each sampling event during the period in question. The Toxicity Characteristic Leaching Procedure was the applicable test method during most of the time period covered by Tables C-9 and C-10. No constituents tested were found to exceed regulatory levels.

Analysis of influent wastewaters during this period showed that no toxicity characteristic metals were found to exceed regulatory concentrations in TA 50-1 influent. The concentrations remained significantly below the regulatory concentrations for each constituent.

As mentioned in Section 4.2, while acetone was detected in a number of samples, it did not cause TA 50-1 influent or sludge to exhibit the ignitability characteristic. Therefore, its presence in the influent does not cause the sludge to be a characteristic waste or a mixture of a solid waste and a characteristic wastewater.

5.0 Controls Preventing Influent Contamination

UC had developed and implemented administrative controls in the early 1980s, well before the generation of the sludges in question, to prohibit uncontrolled disposal of substances that may contain hazardous wastes into drain systems flowing into the RLWTP. These included written instructions such as LANL-wide Administrative Requirements (ARs), as shown in Attachment D, as well as group-specific Standard Operating Procedures (SOPs) instituted by most of the user groups generating RLWTP influent. Additionally, signs were placed at all sinks, drains, and other "point source" locations leading into the wastewater system prohibiting unapproved disposal of chemicals down sinks or drains. Mandatory training programs for all LANL employees, consultants and contractors covering the ARs and advising them on the proper handling of chemical wastes throughout the Laboratory have also been in place for a number of years. Many of these were documented in the studies listed in Table 1.

6.0 Conclusion and Recommendations

DOE/UC's extensive reviews of available data, and of previous studies addressing these issues, support the conclusion that 1,228 of the 1,288 drums of TA-50 treatment sludge should no

longer be classified as LLMW. Trace levels of constituents found occasionally in influent and sludge samples may have been due to laboratory contamination, which could not be comprehensively documented, or to the inevitable occasional discharges meeting the definition of *de minimus* losses in 20 NMAC 4.1.201 at 40 CFR 261.3(a)(2)(iv)(D) and elsewhere.

It is our understanding that upon approval of this request by NMED, the referenced 1,228 drums of sludge shall no longer be subject to the terms of the HWMR or the FFCO. LANL will then consider the referenced 1,228 55-gallon containers in the treatability group "*dewatered treatment sludge*," MWIR waste ID LA-W928, deleted from the STP and from LANL's LLMW inventory. The remaining 60 drums will continue to be managed in this treatability group in accordance with the requirements of the STP under Section 3.3 in the Compliance Plan Volume (CPV, FFCO Exhibit A).

On approval of this request by NMED, we will proceed as expeditiously as possible with the re-labeling and on-site disposal of the referenced 1,228 55-gallon containers as LLW. The remaining 60 drums will continue to be managed in accordance with the requirements of the HWMR.

LANL's records and documents described in this letter are available to NMED's staff upon request. We would be happy to discuss the information contained in this letter with you at your earliest possible opportunity. Please contact me at (505) 665-5042, or Micheline Devaurs at (505) 667-1519.

Sincerely,

H. L. "Jody" Plum
Office of Environment and Projects
Los Alamos Area Office

LAAMEP:2JP-023

Micheline Devaurs
Project Manager
EM Division
Los Alamos National Laboratory

Enclosures

cc w/enclosures:
J. Seubert
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo St., Bldg. A
P. O. Box 26110
Santa Fe, New Mexico 87505

bcc w/enclosures:
H. Haynes, Office of Counsel, LAAO
J. Plum, AAMEP, LAAO

bcc w/o enclosures:
J. Mack, AAMEP, LAAO
J. Nunz, AAMEP, LAAO
J. Rochelle, LC-GEN, LANL, MS-A183
D. Erickson, ESH-DO, LANL, MS-K491
A. Gancarz, CST-DO, LANL, MS-J515
M. Devaurs, ER/WM, LANL, MS-J552
J. White, ESH-19, LANL, MS-K490
P. Schumann, ESH-19, LANL, MS-K498

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous & Radioactive Materials Bureau
2044 Galisteo
P.O. Box 26110
Santa Fe, New Mexico 87502
(505) 827-1557
Fax (505) 827-1544

GARY E. JOHNSON
GOVERNOR

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

December 4, 1996

H. L. Plum
STP Project Manager
Office of Environments and Projects
Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, NM 87544

Kenneth Hargis
STP Project Manager
Los Alamos National Laboratory
Los Alamos, NM 87445

RE: Hazardous and Radioactive Materials Bureau Approval of Reclassification of TA-50-1 Waste Water Treatment Sludge

Dear Mr. Plum and Mr. Hargis:

The subject of Revision 2 to Federal Facilities Compliance Order [FFCO] October 4, 1995, Exhibit A, Site Treatment Plan Compliance Plan Volume (STP/CPV), initiated by New Mexico Environment Department (NMED), was reclassification of TA-50-1 Waste Water Treatment Sludge from a mixed waste to a low-level radioactive waste, and updating the associated item numbers and volumes with the reduction of the mixed waste. The purpose of the revision was to allow for the thirty day (30) public comment period required by the revision process. The thirty day comment period has ended and no public comments were received by the Hazardous and Radioactive Materials Bureau (HRMB). Revision 2 to the STP/CPV has been approved by HRMB and will be forwarded to Department of Energy (DOE) and University of California at Los Alamos National Laboratory (UC/LANL).

The revision was one of the steps in the process for the reclassification of the drums of sludge, listed in the STP/CPV under **Section 3.3** Mixed Waste Requiring Further Characterization or for Which Technology Assessment Has Not Been Done as *dewatered treatment sludge (MWIR waste ID [identification]: LA-W928)*. Previous steps included the proper submittals by DOE and UC/LANL provided under **Section V.B.** Other Matters Covered in this Order (of the FFCO) in addition to other valuable information, (see October 7, 1996 letter from Janice Archuleta [NMED/HRMB] to H.L. Plum [DOE, Los Alamos Area Office] and Micheline Devaurs, [UC/LANL].

In addition to the above, prior to allowing the reclassification of the sludges, the Respondents were to provide NMED/HRMB with information specifically addressing the net volumes of waste to be reclassified, final disposition of the waste, and a unique identification system and listing of **all** of the drums. This information was provided in the November 7, 1996 letter from H.L. Plum to Janice Archuleta. In this letter the corrected number, 1227 drums or items, with a volume of 255.46 m^3 were identified for reclassification.

Per the provision under **V.B.** of the FFCO, NMED/HRMB hereby approves of the request for the 1227 items in **Section 3.3** of the FFCO identified as *dewatered treatment sludge* to be reclassified as low-level radioactive waste and no longer covered by the FFCO.

If there are any questions concerning this or other FFCO matters, please call me at (505) 827-1558.

Sincerely,

Janice Archuleta

ja

cc: Benito Garcia, Chief, Hazardous and Radioactive Materials Bureau
Stu Dinwiddie, Program Manager, RCRA Permits Management
Susan McMichael, OGC

Compound Name	EPA Number	Regulatory Level (mg/L)	Total Population			Drums Disposed at Pit 37			SWRI Analytical µg/g(ppm)
			Mean	Minimum	Maximum	Mean	Minimum	Maximum	
Acetone	F001	0.28	0.1825	0.0000	16.6000	0.1762	0.0000	16.6000	0.3068
Benzene	F005	0.50	0.0001	0.0000	0.0280	0.0000	0.0000	0.0000	0.0000
Carbon Disulfide	F005	1.00	0.0045	0.0000	0.3900	0.0028	0.0000	0.2400	0.0000
Carbon Tetrachloride	F001	0.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chlorobenzene	D021	100.00	0.0002	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000
Chloroform	D022	6.00	0.0018	0.0000	0.0880	0.0024	0.0000	0.0880	0.0000
1,4-Dichlorobenzene	D027	7.50	0.0001	0.0000	0.0510	0.0000	0.0000	0.0000	0.0000
1,2-Dichloroethane	D028	0.50	0.0632	0.0000	0.1460	0.0440	0.0000	0.1280	0.0000
1,1-Dichloroethylene	D029	0.70	0.0001	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000
2,4-Dinitrotoluene	D030	0.13	0.0003	0.0000	0.0960	0.0000	0.0000	0.0000	0.0000
Hexachlorobenzene	D032	0.13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hexachlorobutadiene	D033	0.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hexachloroethane	D034	3.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Methylene Chloride	F002	25.00	0.0142	0.0000	1.9000	0.0025	0.0000	0.0590	0.0024
Methyl Ethyl Ketone	F005	25.00	0.0019	0.0000	0.3400	0.0023	0.0000	0.3400	0.1330
Nitrobenzene	F004	2.00	0.0447	0.0000	0.1810	0.0284	0.0000	0.1810	0.0000
Pentachlorophenol	D037	100.00	0.0001	0.0000	0.0670	0.0000	0.0000	0.0000	0.0000
Pyridine	F005	5.00	0.0000	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000
Tetrachloroethane	-	-	0.0001	0.0000	0.0500	0.0000	0.0000	0.0000	0.0059
Tetrachloroethylene	F002	0.50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Toluene	F005	25.00	0.0603	0.0000	0.1100	0.0419	0.0000	0.1090	0.0061
Trichlorotrifluoroethane	F001	25.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1,1,1-Trichloroethane	F002	25.00	0.0005	0.0000	0.0950	0.0004	0.0000	0.0000	0.0000
Trichloroethylene	F002	0.50	0.0005	0.0000	0.0950	0.0004	0.0000	0.0190	0.0000
2,4,6-Trichlorophenol	D041	2.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vinyl Chloride	D043	0.20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Values for total population and Drums disposed at pit 37 are for the *influent* into the waste water treatment plant at TA-50. The values reported as SWRI Analytical are for sludge samples which are the subject of this letter.

LA-W928 Waste in Storage

10/17/2000

Item#	Conid#	Description	Vol(m3)	STP Vol (m3)	Wgt(Kg)	IRCV Date	PHY State	EPA Code	STP Code	STP Version	
1026611	89449700	TA-50 TREATMENT SLUDGE TAG #260	0.2082	0.2082	178.3	10-Feb-89	S	F001	LA-W928	REVISION 0	
1027117	89447800	TA-50 TREATMENT SLUDGE TAG # 248	0.2082	0.2082	188.2	3-Feb-89	S	F001	LA-W928	REVISION 0	
1027177	89449100	TA-50 TREATMENT SLUDGE TAG# 221	0.2082	0.2082	157.9	10-Feb-89	S	F001	LA-W928	REVISION 0	
1027642	89446900	TA-50 TREATMENT SLUDGE TAG #271	0.2082	0.2082	182.8	3-Feb-89	S	F001	LA-W928	REVISION 0	
1027974	89450000	TA-50 TREATMENT SLUDGE TAG # 261	0.2082	0.2082	179.2	10-Feb-89	S	F001	LA-W928	REVISION 0	
1028241	89447400	TA-50 TREATMENT SLUDGE TAG # 272	0.2082	0.2082	173.7	3-Feb-89	S	F001	LA-W928	REVISION 0	
1028431	89450400	TA-50 TREATMENT SLUDGE TAG # 218	0.2082	0.2082	166.5	10-Feb-89	S	F001	LA-W928	REVISION 0	
1028570	89222200	TA-50 TREATMENT SLUDGE TAG #268	0.2082	0.2082	174.2	3-Sep-89	S	F001	LA-W928	REVISION 0	
1029010	89448000	TA-50 TREATMENT SLUDGE TAG # 265	0.2082	0.2082	180.5	3-Feb-89	S	F001	LA-W928	REVISION 0	
1029387	89448300	TA-50 TREATMENT SLUDGE TAG #247	0.2082	0.2082	181.4	3-Feb-89	S	F001	LA-W928	REVISION 0	
1029514	89447000	TA-50 TREATMENT SLUDGE TAG # 217	0.2082	0.2082	164.7	3-Feb-89	S	F001	LA-W928	REVISION 0	
1029804	89449200	TA-50 TREATMENT SLUDGE TAG#256	0.2082	0.2082	185.1	10-Feb-89	S	F001	LA-W928	REVISION 0	
1030054	89449600	TA-50 TREATMENT SLUDGE TAG #257	0.2082	0.2082	155.6	10-Feb-89	S	F001	LA-W928	REVISION 0	
1030102	89448900	TA-50 TREATMENT SLUDGE TAG# 251	0.2082	0.2082	178.3	10-Feb-89	S	F001	LA-W928	REVISION 0	
1030189	89450500	TA-50 TREATMENT SLUDGE TAG # 220	0.2082	0.2082	160.1	10-Feb-89	S	F001	LA-W928	REVISION 0	
1030375	89448100	TA-50 TREATMENT SLUDGE TAG # 273	0.2082	0.2082	180.1	3-Feb-89	S	F001	LA-W928	REVISION 0	
1030798	89446800	TA-50 TREATMENT SLUDGE TAG # 254	0.2082	0.2082	146.5	3-Feb-89	S	F001	LA-W928	REVISION 0	
1031116	89463700	TA-50 TREATMENT SLUDGE TAG #234	0.2082	0.2082	152.0	28-Feb-89	S	F001	LA-W928	REVISION 0	
1031209	89448600	TA-50 TREATMENT SLUDGE TAG #222	0.2082	0.2082	271.3	10-Feb-89	S	F001	LA-W928	REVISION 0	
1031232	89448700	TA-50 TREATMENT SLUDGE TAG # 244	0.2082	0.2082	152.9	10-Feb-89	S	F001	LA-W928	REVISION 0	
1031667	89447900	TA-50 TREATMENT SLUDGE TAG # 250	0.2082	0.2082	177.4	3-Feb-89	S	F001	LA-W928	REVISION 0	
1032017	89465000	TA-50 TREATMENT SLUDGE TAG #237	0.2082	0.2082	378.0	28-Feb-89	S	F001	LA-W928	REVISION 0	
1032491	89463400	TA-50 TREATMENT SLUDGE TAG #216	0.2082	0.2082	218.6	28-Feb-89	S	F001	LA-W928	REVISION 0	
1032529	89463200	TA-50 TREATMENT SLUDGE TAG #235	0.2082	0.2082	160.1	28-Feb-89	S	F001	LA-W928	REVISION 0	
1036160	89447700	TA-50 TREATMENT SLUDGE TAG # 264	0.2082	0.2082	163.3	3-Feb-89	S	F001	LA-W928	REVISION 0	
1036182	89463900	TA-50 TREATMENT SLUDGE TAG #236	0.2082	0.2082	185.5	28-Feb-89	S	F001	LA-W928	REVISION 0	
1036499	89464600	TA-50 TREATMENT SLUDGE TAG #246	0.2082	0.2082	191.9	28-Feb-89	S	F001	LA-W928	REVISION 0	
1037043	89463600	TA-50 TREATMENT SLUDGE TAG #233	0.2082	0.2082	180.1	28-Feb-89	S	F001	LA-W928	REVISION 0	
1037204	89448800	TA-50 TREATMENT SLUDGE TAG # 255	0.2082	0.2082	177.8	10-Feb-89	S	F001	LA-W928	REVISION 0	
1037566	89464100	TA-50 TREATMENT SLUDGE TAG #232	0.2082	0.2082	172.8	28-Feb-89	S	F001	LA-W928	REVISION 0	
1037733	89464300	TA-50 TREATMENT SLUDGE TAG #227	0.2082	0.2082	166.9	28-Feb-89	S	F001	LA-W928	REVISION 0	
1038013	89463800	TA-50 TREATMENT SLUDGE TAG #229	0.2082	0.2082	166.5	28-Feb-89	S	F001	LA-W928	REVISION 0	
1038024	89464400	TA-50 TREATMENT SLUDGE TAG #245	0.2082	0.2082	167.4	28-Feb-89	S	F001	LA-W928	REVISION 0	
1038084	89448200	TA-50 TREATMENT SLUDGE TAG # 274	0.2082	0.2082	165.1	3-Feb-89	S	F001	LA-W928	REVISION 0	
1038554	89449000	TA-50 TREATMENT SLUDGE TAG # 224	0.2082	0.2082	166.0	10-Feb-89	S	F001	LA-W928	REVISION 0	
1038975	89450200	TA-50 TREATMENT SLUDGE TAG # 219	0.2082	0.2082	199.6	10-Feb-89	S	F001	LA-W928	REVISION 0	
1039901	89447300	TA-50 TREATMENT SLUDGE TAG # 258	0.2082	0.2082	166.0	3-Feb-89	S	F001	LA-W928	REVISION 0	

LA-W928 Waste in Storage

10/17/2000

Item#	Conid#	Description	Vol(m3)	STP Vol (m3)	Wgt(Kg)	IRCV Date	PHY State	EPA Code	STP Code	STP Version	
1040087	89449400	TA-50 TREATMENT SLUDGE TAG #266	0.2082	0.2082	186.9	10-Feb-89	S	F001	LA-W928	REVISION 0	
1040727	89464800	TA-50 TREATMENT SLUDGE TAG #238	0.2082	0.2082	171.5	28-Feb-89	S	F001	LA-W928	REVISION 0	
1041026	89450100	TA-50 TREATMENT SLUDGE TAG # 259	0.2082	0.2082	163.7	10-Feb-89	S	F001	LA-W928	REVISION 0	
1041067	89449300	TA-50 TREATMENT SLUDGE TAG#253	0.2082	0.2082	142.9	10-Feb-89	S	F001	LA-W928	REVISION 0	
Total:			**8.5362**	**8.5362**	**7377.3**						

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES WATER ANALYSIS Data Reporting Form

Sample ID: 89463400A
LIM ID: 110323
Lab Filename: E0813801
Instrument: FINN-E
Sample Dilution: 1

Purge Volume: 5

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 13 1998 4:13PM
Date Sample Received: Aug 10 1998 3:00PM

CAS No.	Compound	ng/mL
74-87-3	CHLOROMETHANE	10 U
74-83-9	BROMOMETHANE	10 U
75-01-4	VINYL CHLORIDE	10 U
75-00-3	CHLOROETHANE	10 U
75-09-2	*METHYLENE CHLORIDE*	*14*
67-64-1	*ACETONE*	*480 E*
75-15-0	CARBON DISULFIDE	10 U
75-35-4	1,1-DICHLOROETHENE	10 U
75-35-3	1,1-DICHLOROETHANE	10 U
	1,2-DICHLOROETHENE (TOTAL)	10 U
67-66-3	CHLOROFORM	10 U
107-06-2	1,2-DICHLOROETHANE	10 U
78-93-3	*2-BUTANONE*	*56*
71-55-6	*1,1,1-TRICHLOROETHANE*	*5.3 J*
56-23-5	CARBON TETRACHLORIDE	10 U
75-27-4	BROMODICHLOROMETHANE	10 U
78-87-5	1,2-DICHLOROPROPANE	10 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	10 U
79-01-6	TRICHLOROETHENE	10 U
124-48-1	DIBROMOCHLOROMETHANE	10 U
79-00-5	1,1,2-TRICHLOROETHANE	10 U
71-43-2	*BENZENE*	*14*
10061-02-6	TRANS-1,3-DICHLOROPROPENE	10 U
75-25-2	BROMOFORM	10 U
108-10-1	*4-METHYL-2-PENTANONE*	*22*
591-78-6	2-HEXANONE	10 U
127-18-4	TETRACHLOROETHENE	10 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	10 U
108-88-3	TOLUENE	10 U
108-90-7	CHLOROBENZENE	10 U
100-41-4	ETHYLBENZENE	10 U
100-42-5	STYRENE	10 U
1330-20-7	XYLENE (TOTAL)	10 U
108-38-3	M-XYLENE	10 U
	O/P-XYLENE	10 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES WATER ANALYSIS Data Reporting Form

Sample ID: 89463400B
LIM ID: 110324
Lab Filename: E0813802
Instrument: FINN-E
Sample Dilution: 1

Purge Volume: 5

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 13 1998 5:14PM
Date Sample Received: Aug 10 1998 3:00PM

CAS No.	Compound	ng/mL
74-87-3	CHLOROMETHANE	10 U
74-83-9	BROMOMETHANE	10 U
75-01-4	VINYL CHLORIDE	10 U
75-00-3	CHLOROETHANE	10 U
75-09-2	***METHYLENE CHLORIDE***	***13***
67-64-1	***ACETONE***	***400 E***
75-15-0	CARBON DISULFIDE	10 U
75-35-4	1,1-DICHLOROETHENE	10 U
75-35-3	1,1-DICHLOROETHANE	10 U
	1,2-DICHLOROETHENE (TOTAL)	10 U
67-66-3	CHLOROFORM	10 U
107-06-2	1,2-DICHLOROETHANE	10 U
78-93-3	***2-BUTANONE***	***43***
71-55-6	1,1,1-TRICHLOROETHANE	10 U
56-23-5	CARBON TETRACHLORIDE	10 U
75-27-4	BROMODICHLOROMETHANE	10 U
78-87-5	1,2-DICHLOROPROPANE	10 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	10 U
79-01-6	TRICHLOROETHENE	10 U
124-48-1	DIBROMOCHLOROMETHANE	10 U
79-00-5	1,1,2-TRICHLOROETHANE	10 U
71-43-2	***BENZENE***	***9.1 J***
10061-02-6	TRANS-1,3-DICHLOROPROPENE	10 U
75-25-2	BROMOFORM	10 U
108-10-1	***4-METHYL-2-PENTANONE***	***17***
591-78-6	2-HEXANONE	10 U
127-18-4	TETRACHLOROETHENE	10 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	10 U
108-88-3	TOLUENE	10 U
108-90-7	CHLOROBENZENE	10 U
100-41-4	ETHYLBENZENE	10 U
100-42-5	STYRENE	10 U
1330-20-7	XYLENE (TOTAL)	10 U
108-38-3	M-XYLENE	10 U
	O/P-XYLENE	10 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89463400C
LIM ID: 110325
Lab Filename: E0817801
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 3:25PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg	
74-87-3	CHLOROMETHANE	25	U
74-83-9	BROMOMETHANE	25	U
75-01-4	VINYL CHLORIDE	25	U
75-00-3	CHLOROETHANE	25	U
75-09-2	*METHYLENE CHLORIDE*	*8.4*	*J*
67-64-1	*ACETONE*	*180*	*B*
75-15-0	CARBON DISULFIDE	25	U
75-35-4	1,1-DICHLOROETHENE	25	U
75-35-3	1,1-DICHLOROETHANE	25	U
	1,2-DICHLOROETHENE (TOTAL)	25	U
67-66-3	CHLOROFORM	25	U
107-06-2	1,2-DICHLOROETHANE	25	U
78-93-3	2-BUTANONE	25	U
71-55-6	1,1,1-TRICHLOROETHANE	25	U
56-23-5	CARBON TETRACHLORIDE	25	U
75-27-4	BROMODICHLOROMETHANE	25	U
78-87-5	1,2-DICHLOROPROPANE	25	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25	U
79-01-6	TRICHLOROETHENE	25	U
124-48-1	DIBROMOCHLOROMETHANE	25	U
79-00-5	1,1,2-TRICHLOROETHANE	25	U
71-43-2	BENZENE	25	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25	U
75-25-2	BROMOFORM	25	U
108-10-1	4-METHYL-2-PENTANONE	25	U
591-78-6	2-HEXANONE	25	U
127-18-4	*TETRACHLOROETHENE*	*6.9*	*J*
79-34-5	1,1,2,2-TETRACHLOROETHANE	25	U
108-88-3	TOLUENE	25	U
108-90-7	CHLOROBENZENE	25	U
100-41-4	ETHYLBENZENE	25	U
100-42-5	STYRENE	25	U
1330-20-7	XYLENE (TOTAL)	25	U
108-38-3	M-XYLENE	25	U
	O/P-XYLENE	25	U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89450400
LIM ID: 110326
Lab Filename: E0817802
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 4:00PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	***ACETONE***	***280***
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	***2-BUTANONE***	***95***
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	TOLUENE	25 U
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89479200
LIM ID: 110327
Lab Filename: E0817803
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 4:35PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	*ACETONE*	*180*
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	2-BUTANONE	25 U
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	TOLUENE	25 U
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89448300
LIM ID: 110328
Lab Filename: E0817804
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 5:09PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	*ACETONE*	*120*
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	2-BUTANONE	25 U
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	TOLUENE	25 U
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89464400
LIM ID: 110329
Lab Filename: E0817805
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 5:44PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	***ACETONE***	***680 E***
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	***2-BUTANONE***	***41***
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	***TOLUENE***	***7.0 J***
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89222200
LIM ID: 110330
Lab Filename: E0817806
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 6:19PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg	
74-87-3	CHLOROMETHANE	25	U
74-83-9	BROMOMETHANE	25	U
75-01-4	VINYL CHLORIDE	25	U
75-00-3	CHLOROETHANE	25	U
75-09-2	METHYLENE CHLORIDE	25	U
67-64-1	*ACETONE*	*450*	
75-15-0	CARBON DISULFIDE	25	U
75-35-4	1,1-DICHLOROETHENE	25	U
75-35-3	1,1-DICHLOROETHANE	25	U
	1,2-DICHLOROETHENE (TOTAL)	25	U
67-66-3	CHLOROFORM	25	U
107-06-2	1,2-DICHLOROETHANE	25	U
78-93-3	*2-BUTANONE*	*130*	
71-55-6	1,1,1-TRICHLOROETHANE	25	U
56-23-5	CARBON TETRACHLORIDE	25	U
75-27-4	BROMODICHLOROMETHANE	25	U
78-87-5	1,2-DICHLOROPROPANE	25	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25	U
79-01-6	TRICHLOROETHENE	25	U
124-48-1	DIBROMOCHLOROMETHANE	25	U
79-00-5	1,1,2-TRICHLOROETHANE	25	U
71-43-2	BENZENE	25	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25	U
75-25-2	BROMOFORM	25	U
108-10-1	4-METHYL-2-PENTANONE	25	U
591-78-6	2-HEXANONE	25	U
127-18-4	TETRACHLOROETHENE	25	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25	U
108-88-3	TOLUENE	25	U
108-90-7	CHLOROBENZENE	25	U
100-41-4	ETHYLBENZENE	25	U
100-42-5	STYRENE	25	U
1330-20-7	XYLENE (TOTAL)	25	U
108-38-3	M-XYLENE	25	U
	O/P-XYLENE	25	U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89449400
LIM ID: 110331
Lab Filename: E0817807
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 6:54PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg	
74-87-3	CHLOROMETHANE	25	U
74-83-9	BROMOMETHANE	25	U
75-01-4	VINYL CHLORIDE	25	U
75-00-3	CHLOROETHANE	25	U
75-09-2	METHYLENE CHLORIDE	25	U
67-64-1	*ACETONE*	*380*	
75-15-0	CARBON DISULFIDE	25	U
75-35-4	1,1-DICHLOROETHENE	25	U
75-35-3	1,1-DICHLOROETHANE	25	U
	1,2-DICHLOROETHENE (TOTAL)	25	U
67-66-3	CHLOROFORM	25	U
107-06-2	1,2-DICHLOROETHANE	25	U
78-93-3	*2-BUTANONE*	*160*	
71-55-6	1,1,1-TRICHLOROETHANE	25	U
56-23-5	CARBON TETRACHLORIDE	25	U
75-27-4	BROMODICHLOROMETHANE	25	U
78-87-5	1,2-DICHLOROPROPANE	25	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25	U
79-01-6	TRICHLOROETHENE	25	U
124-48-1	DIBROMOCHLOROMETHANE	25	U
79-00-5	1,1,2-TRICHLOROETHANE	25	U
71-43-2	BENZENE	25	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25	U
75-25-2	BROMOFORM	25	U
108-10-1	4-METHYL-2-PENTANONE	25	U
591-78-6	2-HEXANONE	25	U
127-18-4	TETRACHLOROETHENE	25	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25	U
108-88-3	*TOLUENE*	*5.1*	*J*
108-90-7	CHLOROBENZENE	25	U
100-41-4	ETHYLBENZENE	25	U
100-42-5	STYRENE	25	U
1330-20-7	XYLENE (TOTAL)	25	U
108-38-3	M-XYLENE	25	U
	O/P-XYLENE	25	U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89447400
LIM ID: 110332
Lab Filename: E0817808
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 17 1998 7:29PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	***ACETONE***	***440***
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	***2-BUTANONE***	***240***
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	TOLUENE	25 U
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES SOIL ANALYSIS Data Reporting Form

Sample ID: 89449300
LIM ID: 110333
Lab Filename: E0818801
Instrument: FINN-E
Sample Dilution: 2.5

Purge Weight (g): 2

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 18 1998 3:50PM
Date Sample Received: Aug 10 1998 3:00PM
Dry Weight: 100

CAS No.	Compound	ug/kg
74-87-3	CHLOROMETHANE	25 U
74-83-9	BROMOMETHANE	25 U
75-01-4	VINYL CHLORIDE	25 U
75-00-3	CHLOROETHANE	25 U
75-09-2	METHYLENE CHLORIDE	25 U
67-64-1	*ACETONE*	*42*
75-15-0	CARBON DISULFIDE	25 U
75-35-4	1,1-DICHLOROETHENE	25 U
75-35-3	1,1-DICHLOROETHANE	25 U
	1,2-DICHLOROETHENE (TOTAL)	25 U
67-66-3	CHLOROFORM	25 U
107-06-2	1,2-DICHLOROETHANE	25 U
78-93-3	2-BUTANONE	25 U
71-55-6	1,1,1-TRICHLOROETHANE	25 U
56-23-5	CARBON TETRACHLORIDE	25 U
75-27-4	BROMODICHLOROMETHANE	25 U
78-87-5	1,2-DICHLOROPROPANE	25 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	25 U
79-01-6	TRICHLOROETHENE	25 U
124-48-1	DIBROMOCHLOROMETHANE	25 U
79-00-5	1,1,2-TRICHLOROETHANE	25 U
71-43-2	BENZENE	25 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	25 U
75-25-2	BROMOFORM	25 U
108-10-1	4-METHYL-2-PENTANONE	25 U
591-78-6	2-HEXANONE	25 U
127-18-4	TETRACHLOROETHENE	25 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	25 U
108-88-3	TOLUENE	25 U
108-90-7	CHLOROBENZENE	25 U
100-41-4	ETHYLBENZENE	25 U
100-42-5	STYRENE	25 U
1330-20-7	XYLENE (TOTAL)	25 U
108-38-3	M-XYLENE	25 U
	O/P-XYLENE	25 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).

SOUTHWEST RESEARCH INSTITUTE

8240 VOLATILES WATER ANALYSIS Data Reporting Form

Sample ID: TRIP BLANK
LIM ID: 110354
Lab Filename: E0820801
Instrument: FINN-E
Sample Dilution: 1

Purge Volume: 5

Client: LOS ALAMOS NATIONAL LABORATO
Project Number: 01-1201-190
Case Number: LOS ALAMOS
SDG: 110323
Date Analyzed: Aug 20 1998 12:39PM
Date Sample Received: Aug 10 1998 3:00PM

CAS No.	Compound	ng/mL
74-87-3	CHLOROMETHANE	10 U
74-83-9	BROMOMETHANE	10 U
75-01-4	VINYL CHLORIDE	10 U
75-00-3	CHLOROETHANE	10 U
75-09-2	METHYLENE CHLORIDE	10 U
67-64-1	ACETONE	10 U
75-15-0	CARBON DISULFIDE	10 U
75-35-4	1,1-DICHLOROETHENE	10 U
75-35-3	1,1-DICHLOROETHANE	10 U
	1,2-DICHLOROETHENE (TOTAL)	10 U
67-66-3	CHLOROFORM	10 U
107-06-2	1,2-DICHLOROETHANE	10 U
78-93-3	2-BUTANONE	10 U
71-55-6	1,1,1-TRICHLOROETHANE	10 U
56-23-5	CARBON TETRACHLORIDE	10 U
75-27-4	BROMODICHLOROMETHANE	10 U
78-87-5	1,2-DICHLOROPROPANE	10 U
10061-01-5	CIS-1,3-DICHLOROPROPENE	10 U
79-01-6	TRICHLOROETHENE	10 U
124-48-1	DIBROMOCHLOROMETHANE	10 U
79-00-5	1,1,2-TRICHLOROETHANE	10 U
71-43-2	BENZENE	10 U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	10 U
75-25-2	BROMOFORM	10 U
108-10-1	4-METHYL-2-PENTANONE	10 U
591-78-6	2-HEXANONE	10 U
127-18-4	TETRACHLOROETHENE	10 U
79-34-5	1,1,2,2-TETRACHLOROETHANE	10 U
108-88-3	TOLUENE	10 U
108-90-7	CHLOROBENZENE	10 U
100-41-4	ETHYLBENZENE	10 U
100-42-5	STYRENE	10 U
1330-20-7	XYLENE (TOTAL)	10 U
108-38-3	M-XYLENE	10 U
	O/P-XYLENE	10 U

DATA REPORTING QUALIFIERS

- B This flag is used when the analyte is found in the blank as well as the sample.
- E This flag indicates compounds whose concentrations exceed the calibration range.
- J Indicates an estimated value.
- U Indicates compound was analyzed for, but not detected. Report the minimum detection limit for the sample with U (e.g. 10U) based on necessary concentration dilution action (This is not necessarily the instrument dectection limit).