

TA 21 21-011(k)  
outfall  
MARCH 12, 2003

**Summary of Waste Characterization Results for Contaminated Material Excavated from Solid Waste Management Unit (SWMU) 21-011(k) at Technical Area 21**

The organic constituent maximum concentrations listed below were detected in the March 2001 discrete waste characterization samples collected from soil, tuff, and sediment planned for excavation and removal from Solid Waste Management Unit (SWMU) 21-011(k) at Technical Area (TA) 21. The organic constituents, maximum concentrations, proposed Environmental Protection Agency (EPA) Region 6 Medium-Specific Screening Levels (MSSLs), New Mexico Environment Department (NMED) Soil Screening Levels (SSLs), and Land Disposal Restrictions (LDRs) were presented in the no longer contained in request (LANL ER2002-0749), and are shown in the following table in concentrations in micrograms per kilogram (ug/kg) to allow direct comparison with waste characterization analytical results.

Organic Constituent	Maximum Concentration (ug/kg)	MSSL (ug/kg)	SSL (ug/kg)	LDR Treatment Standards (ug/kg)
Acetone	13.0(J)	7,600,000	NA	160,000
Methylene chloride	72.0	25,000	2,700,000	30,000
Toluene	1,000(J)	520,000	180,000	10,000
Trichloroethylene	1,800(J)	7,600	18,000	6,000

NA = no SSL available for this constituent

(J) = estimated value between the method detection limit (MDL) and practical quantification limit (PQL)

Tables 1, 2, and 3 include all of the results for 15 waste characterization samples collected from the 1,500 cubic yards (CY) of low-level radiologically contaminated soil, tuff, and sediment excavated from SWMU 21-011(k) during implementation of the Voluntary Corrective Measure (VCM). The results are presented in the same format used in the no longer contained in request (LANL ER2002-0749), with acetone, methylene chloride, toluene, and trichloroethylene results presented for each waste characterization and quality control (QC) sample. Please note that the characterization results presented in Table 1 on page 3 were provided to the New Mexico Environment Department (NMED) in January 2003 and that the disposal of the excavated material represented by those samples was approved by NMED on January 22, 2003. The data in Table 1 is provided to facilitate the comparison with analytical results from February 2003.

Two additional volatile organic compounds (VOCs), (2-butanone and 4-isopropyltoluene) were detected in waste characterization samples collected in February 2003. The VOC 2-butanone was detected in one sample and 4-isopropyltoluene was detected in two samples. Both VOCs were detected at very low concentrations. Additionally, 2-butanone was previously detected in a single sample, at a concentration of 0.031 (J) milligrams/liter (mg/L – TCLP analyte), during the March 2001 pre-excavation characterization-sampling event. Three other VOCs (chloroform, dibromochloromethane, and bromodichloromethane) were detected in corresponding QC rinsate samples collected from sampling equipment rinsed with deionized water. These compounds were not previously detected in any samples from SWMU 21-011(k) and were likely present in the original deionized water source. These data are presented in Tables 2 and 3.

Attached to this correspondence are the Certificates of Analysis for each sampling event. All results are preliminary and have not undergone data validation.



The following table lists the EPA Region 6 MSSLs, NMED SSLs, and LDRs for all of the VOCs detected in the waste characterization and QC samples collected to date from the material excavated from SWMU 21-011(k).

<b>Organic Constituent</b>	<b>Maximum Concentration (ug/kg)</b>	<b>MSSL (ug/kg)</b>	<b>SSL (ug/kg)</b>	<b>LDR Treatment Standards (ug/kg)</b>
Acetone	26.3(B)	7,600,000	NA	160,000
Methylene chloride	72.0	25,000	2,700,000	30,000
Toluene	1000(J)	520,000	180,000	10,000
Trichloroethylene	1800(J)	7,600	18,000	6,000
Chloroform (detected in rinsate samples only)	0.528(J)	65,000	30	6,000
Dibromochloromethane (detected in rinsate samples only)	0.485(J)	2,900	NA	15,000
2-Butanone (MEK)	6.98	34,000,000	89,000	36,000
4-Isopropyltoluene	0.674(J)	NA	NA	NA
Bromodichloromethane (detected in rinsate samples only)	0.482(J)	2,900	2,200	15,000

NA = no MSSL of SSL, or no LDR value available for this constituent

ND = compound not detected

(B) = compound detected in Trip Blank

(J) = estimated value between the MDL and PQL

**Table 1 – VOCs detected in three Waste Characterization samples, representing 300 CY of excavated material from SWMU 21-011(k), samples collected on January 9, 2003**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50314 ug/kg</b>	<b>Rinsate ID MD21-03-50324 ug/L</b>	<b>Sample ID MD21-03-50315 ug/kg</b>	<b>Rinsate ID MD21-03-50325 ug/L</b>
Acetone	ND	5.12(B)	ND	5.95(B)
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	0.427(J)	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.376(J)	ND	0.465(J)
Dibromochloromethane	ND	ND	ND	0.312(J)
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND

**Table 1 - continued**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50316 ug/kg</b>	<b>Rinsate ID MD21-03-50326 ug/L</b>	<b>Trip Blank (sand): MD21- 03-50334 ug/kg</b>	<b>Field Blank (sand): MD21- 03-50335 ug/kg</b>
Acetone	ND	5.44(B)	3.88(J)	ND
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.426(J)	ND	ND
Dibromochloromethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND

ND = compound not detected

(J) = estimated value between the MDL and PQL

(B) = compound detected in the associated Trip Blank

**Table 2 – VOCs detected in six Waste Characterization samples, representing 600 CY of excavated material from SWMU 21-011(k), samples collected on February 3, 2003**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50317 ug/kg</b>	<b>Rinsate ID MD21-03-50327 ug/L</b>	<b>Sample ID MD21-03-50318 ug/kg</b>	<b>Rinsate ID MD21-03-50328 ug/L</b>
Acetone	ND	3.51(J)(B)	ND	4.69(J)(B)
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.389(J)	ND	ND
Dibromochloromethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND

**Table 2 - continued**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50319 ug/kg</b>	<b>Rinsate ID MD21-03-50329 ug/L</b>	<b>Sample ID MD21-03-50320 ug/kg</b>	<b>Rinsate ID MD21-03-50330 ug/L</b>
Acetone	ND	4.15(J)(B)	ND	3.94(J)(B)
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	0.395(J)	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.373(J)	ND	0.391(J)
Dibromochloromethane	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND

**Table 2 - continued**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50321 ug/kg</b>	<b>Rinsate ID MD21-03-50331 ug/L</b>	<b>Sample ID MD21-03-50322 ug/kg</b>	<b>Rinsate ID MD21-03-50332 ug/L</b>
Acetone	26.3(B)	3.55(J)(B)	ND	ND
Methylene chloride	ND	ND	ND	ND
Toluene	1.3	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.371(J)	ND	0.382(J)
Dibromochloromethane	ND	ND	ND	ND
2-Butanone	6.98*	ND	ND	ND
4-Isopropyltoluene	0.674(J)	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND

**Table 2 – continued**

<b>Organic Constituent</b>	<b>Trip Blank (sand): MD21-03-50336 ug/kg</b>
Acetone	<b>4.63(J)</b>
Methylene chloride	ND
Toluene	ND
Trichloroethylene	ND
Chloroform	ND
Dibromochloromethane	ND
2-Butanone	ND
4-Isopropyltoluene	ND
Bromodichloromethane	ND

(J) = estimated value between the MDL and PQL

(B) = compound detected in the associated Trip Blank

\* = compound detected in March 2001 pre-excavation characterization sampling event

**Table 3 – VOCs detected in six Waste Characterization samples, representing 600 CY of excavated material from SWMU 21-011(k), samples collected on February 6, 2003**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50323 ug/kg</b>	<b>Rinsate ID MD21-03-50333 ug/L</b>	<b>Sample ID MD21-03-50550 ug/kg</b>	<b>Rinsate ID MD21-03-50560 ug/L</b>
Acetone	ND	6.35(B)	ND	6.27(B)
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.528(J)	ND	0.492(J)
Dibromochloromethane	ND	0.480(J)	ND	0.517(J)
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	0.445(J)	ND	0.482(J)

**Table 3 - continued**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50551 ug/kg</b>	<b>Rinsate ID MD21-03-50561 ug/L</b>	<b>Sample ID MD21-03-50552 ug/kg</b>	<b>Rinsate ID MD21-03-50562 ug/L</b>
Acetone	ND	5.26(B)	ND	6.51(B)
Methylene chloride	ND	ND	ND	ND
Toluene	ND	ND	0.476(J)	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.478(J)	ND	0.501(J)
Dibromochloromethane	ND	0.485(J)	ND	0.438(J)
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	ND	ND
Bromodichloromethane	ND	0.410(J)	ND	0.456(J)

**Table 3 - continued**

<b>Organic Constituent</b>	<b>Sample ID MD21-03-50553 ug/kg</b>	<b>Rinsate ID MD21-03-50563 ug/L</b>	<b>Sample ID MD21-03-50554 ug/kg</b>	<b>Rinse ID MD21- 03-50564 ug/L</b>
Acetone	ND	5.81(B)	ND	6.82(B)
Methylene chloride	ND	ND	ND	ND
Toluene	0.433(J)	ND	0.615(J)	ND
Trichloroethylene	ND	ND	ND	ND
Chloroform	ND	0.511(J)	ND	0.501(J)
Dibromochloromethane	ND	0.477(J)	ND	0.495(J)
2-Butanone	ND	ND	ND	ND
4-Isopropyltoluene	ND	ND	0.353(J)	ND
Bromodichloromethane	ND	0.420(J)	ND	0.406(J)

**Table 3 – continued**

<b>Organic Constituent</b>	<b>Trip Blank (sand): MD21-03-50338 ug/kg</b>	<b>Field Blank: MD21-03-50337 ug/kg</b>
Acetone	ND	<b>4.07(J)</b>
Methylene chloride	ND	ND
Toluene	ND	ND
Trichloroethylene	ND	ND
Chloroform	ND	ND
Dibromochloromethane	ND	ND
2-Butanone	ND	ND
4-Isopropyltoluene	ND	ND
Bromodichloromethane	ND	ND

(J) = estimated value between the MDL and PQL

(B) = compound detected in the associated Field Blank