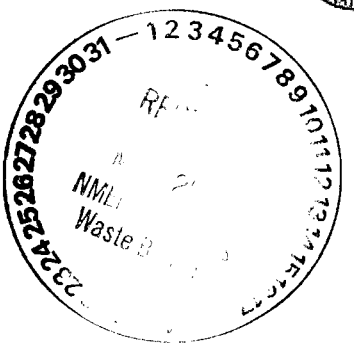
SNL05

National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400

MAY 2 2005



CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Road East, Building 1
Santa Fe, NM 87505

Dear Mr. Bearzi:

On behalf of the Department of Energy (DOE) and Sandia Corporation, DOE is submitting the enclosed responses to NMED's Request for Supplemental Information, Environmental Restoration Project Supplemental and No Further Action for Various Solid Waste Management Units (SWMUs 1, 78, 196 and 46) dated October 2004 Sandia National Laboratories, New Mexico, EPA ID No. NM589011518, HWB-SNL-99-006, 99-021, and 99-013, dated March 2, 2005.

If you have any questions, please contact John Gould at (505) 845-6089.

Sincerely,

Patty Wagner

Patty Wagner
Manager

Enclosure

cc w/enclosure:
W. Moats, NMED-HWB (via Certified Mail)
L. King, EPA, Region 6 (Via Certified Mail)
M. Gardipe, NNSA/SC/ERD
J. Volkerding, NMED-OB
D. Pepe, NMED-OB

cc w/o enclosure:
J. Estrada, NNSA/SSO, MS 0184
F. Nimick, SNL, MS 1089
R. E. Fate, SNL, MS 1089
M. J. Davis, SNL, MS 1089
D. Stockham, SNL, MS 1087
B. Langkopf, SNL, MS 1087
J. Copland, SNL, MS 1087
J. Pavletich, SNL, MS 1087
S. Griffith, SNL, MS 1087
A. Blumberg, SNL, MS 0141

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Responses to NMED Request for Supplemental Information Environmental Restoration Project Supplemental and No Further Action Information for Various Solid Waste Management Units (SWMUs 1, 78, 196, and 46) dated October 2004**

Document authors: Stacy Griffith, John Copland, and Joe Pavletich, Dept. 6146

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Signature: _____ 4/28/05

Peter B. Davies
Director
Geoscience & Environment Center
Division 6100
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185
Operator

Date

and

Signature: _____ 4-29-05

Patty Wagner
Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner and Co-Operator

Date

Sandia National Laboratories
Albuquerque, New Mexico
May 2005

Environmental Restoration Project Responses to NMED Request for Supplemental Information Environmental Restoration Project Supplemental and No Further Action Information for Various Solid Waste Management Units (SWMUs 1, 78, 196 and 46) Dated October 2004

INTRODUCTION

This document responds to a March 2, 2005 Request for Supplemental Information (RSI) letter from William P. Moats of the State of New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) to the U.S. Department of Energy and Sandia National Laboratories/New Mexico (SNL/NM). A response to this RSI was due within sixty (60) days of receipt of the letter by SNL/NM, or by May 4, 2005.

In this document, the NMED comments (in bold font) are restated in the same order in which they were provided in the RSI. Following each comment, the word "Response" introduces the U.S. Department of Energy/SNL/NM reply (in normal font style).

1. **SWMU 78: Gas Cylinder Disposal Pit:**
   Please provide a copy of Appendix F, the data validation reports for the 2003 confirmation sampling. The appendix was not included in NMED's copy of the subject report.

Response: Enclosed in Annex A are the data validation reports for the 2003 confirmation sampling that was labeled Attachment F in the original document.

2. **SWMU 196: Building 6597 Cistern:**
   Please state whether the cistern has been backfilled. If it has not been backfilled, explain why this is the case.

Response: The Building 6597 Cistern has not been backfilled. The site has been adequately characterized to demonstrate that it poses no significant risk to human health or the environment in its present state. The cistern is located within an industrial area in Technical Area 5 and is fenced to prevent inadvertent or unauthorized access.

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

3. **SWMU 46: Old Acid Waste Line Outfall:**
   Table 11 in Attachment G (Risk Assessment) provides the risk assessment values (hazard index and cancer risk) that were calculated using the maximum concentrations of contaminants at the site. However, the report states that the site meets residential risk standards based on risk assessment values that were calculated using the 95% Upper Confidence Limit (UCL) of the mean concentrations of contaminants. Please provide a table which shows the risk assessment values calculated using the UCLs. It does not appear that the site currently meets residential risk goals based on the UCLs.

Response: Enclosed in Annex B is a revised Table 11 that includes the risk assessment values calculated using UCLs. The total incremental excess cancer risk is 4E-6 which is below NMED guidance of 1E-5. The total hazard index is 1.61 which exceeds NMED guidance of 1. However, because the hazard indices do not provide additive affects for any specific health condition, the hazard index for each constituent of concern (COC) is compared to the NMED guidance of 1. All COCs with the exception of cadmium are below the NMED guidance of 1; cadmium has a hazard index of 1.03 that slightly exceeds the NMED guidance of 1.

4. **SWMU 1: Radioactive Waste Landfill:**

   a. **NMED understands that a factor was entered into the RESRAD equations to account for the placement of cover material at the site. NMED notes that the "clean fill" placed at this site contains both radiological and nonradiological contaminants. Please provide the values of the various parameters assumed for this cover soil, including the thickness of the fill and the chemical and radiological constituents in the fill. Any deviations from the typical assumptions used in risk assessments (e.g., exposure routes, parameter values) should be described in the text of the document. Please state how the placement of fill affects the results of the risk assessments and describe any other variances that were made during the calculations of the human health and ecological risk assessments.**

Response: Five feet of "clean fill" was assumed for the SWMU 1 radiological risk assessment based on the current onsite conditions at SWMU 1. Originally the "clean fill" was assumed to have no radiological contamination; therefore no radiological risk was completed for direct contact exposure with the clean backfill. There was no "clean fill" considered in the nonradiological calculations; the risk assessment for human health nonradiological contaminants used the "standard" assumptions and exposure parameters (i.e., the maximum chemical concentration were used in the risk evaluation). The ecological risk assessment process also was not affected by the assumption of the clean fill (i.e., the radiological and nonradiological contaminants within the 0 to 5 feet bgs horizon were evaluated at maximum concentrations and activities). The only deviation from the typical risk assessment process was the assumption of 5 feet of clean fill with no radiological contamination for the human health radiological risk assessment. Within the

human health radiological risk assessment calculations, the clean fill provides shielding from the soil that is below 5 feet. No other deviations from the typical risk assessment process occurred. All the receptors, exposure routes and parameter values remain consistent with the SNL risk assessment process.

To determine the human health radiological risk associated with direct contact with the clean fill, the maximum activities for the radiological COCs within the 0 to 5 feet bgs horizon were used; the results are included here. With the exception of the tritium activity which is discussed below, the maximum activities for the 0 to 5 feet bgs horizon are those that were reported in Annex A, Table A-5. The maximum activities are as follows:

Table 1
Summary of Maximum Radionuclide Activities Used in Direct Contact Exposure Calculations for 0-5 ft bgs Fill for SWMU 1

Radionuclide	Activity (pCi/g)	Sample ID	Table (SNL/NM October 2004)
Am-241	ND (<0.352)	TA2-1-GRAB4-5FT-2-S	Annex B, Table B-9
Cs-137	0.203	TA2-1-OVER-SLPE-030-S	Annex B, Table B-13
H-3	4.49	TA2-1-GRAB4-10FT-3-S	Annex B, Table B-11
Pu-238	0.184	TA2-1-OVER-SLPE-031-S	Annex B, Table B-14
Pu-239/240	2.55	TA2-1-OVER-SLPE-006-S	Annex B, Table B-14
Th-232	1.24*	TA2-1-OVER-SLPE-014-S	Annex B, Table B-13
U-235	0.351	TA2-1-OVER-SLPE-045-S	Annex B, Table B-13
U-238	25	TA2-1-OVER-SLPE-045-S	Annex B, Table B-13

*This value was below background and was screened out of risk calculations.

The incremental TEDE and corresponding estimated cancer risk associated with the activities of these radiological COCs are much less than EPA guidance values; the estimated TEDE is 8.3E-1 mrem/yr for the industrial land use scenario. This value is much less than the EPA numerical guidance of 15 mrem/yr. The corresponding incremental estimated cancer risk value is 6.8E-6 for the industrial land use scenario. Furthermore, the incremental TEDE for the residential land use scenario that results from a complete loss of institutional control is only 2.2 mrem/yr, with an associated risk of 2.0E-5. The guideline for this scenario is 75 mrem/yr. Therefore, SWMU 1 is eligible for unrestricted radiological release within the 0 to 5 feet bgs horizon.

b. **Please clarify what was the maximum value of tritium detected in the soil that was placed from 0 to 5 feet below ground surface. Table 4-2 gives a maximum value of 4.49 pCi/g, while Table A-6 in the Risk Assessment lists the maximum value as 0.2205 pCi/g. Please also provide the sample identification number for this maximum tritium value and state where it is listed in the analytical data included in the subject report. State which value was used for calculating the ecological risk for SWMU 1.**

Response: The value of 4.49 pCi/g is shown in Table B-11 of Appendix B. It corresponds to sample TA2-1-GRAB4-10FT-3-S; this sample was from the over-excavation soil that was used as backfill in Lifts 8 through 14 (approximately 11 to 3 ft bgs). The tritium value of 0.2205 pCi/g (or 4,410 pCi/L) corresponds to sample TA2-2-BLDG-901-004-S in Table B-15 of Appendix B; this sample was from soil placed in the excavation as Lifts 14 through 16 (approximately 4 ft to 1 ft bgs). The value of 0.2205 was erroneously used in the risk assessment for the 0 - 5 ft bgs backfill layer (SNL/NM October 2005); the intent was to use the value of 4.49 pCi/g. The human health and ecological risk assessment has been re-calculated using the tritium value of 4.49 pCi/g, which was listed in Table 4-2 (SNL/NM October 2005). Because these tritium activites contribute such meager amounts to the overall total doses and risks, the final results are numerically equivalent; therefore, no revision to the SWMU 1 risk assessment conclusion was necessary.

A revised version of Table B-11 is included in this RSI in Annex C. The tritium results from LCS (Liquid Scintillation Counting) for samples TA2-1-GRAB5-15FT-3-S through TA2-1-GRAB9-5FT-3-S that were originally listed as "NR" ("not reported") are now included.

Annex A
Attachment F from the October 2004 document entitled "Sandia National Laboratories Environmental Restoration Project Supplemental and No Further Action Information for Various SWMUs"

ATTACHMENT F
SWMU 78
Data Validation Reports
2003 Confirmatory Soil Sampling

Site: SWMU 78

Data Type: Organic & Inorganic

Sample ID	VOC (8260B) All Target Analytes	SVOCs:	534-52-1 (4,6-dinitro-2-methylphenol)	Metals:	7440-38-2 (As)	7782-49-2 (Se)	7440-22-4 (Ag)	7440-29-1 (Th)	7440-39-3 (Ba)	7439-97-6 (Hg)	7439-92-1 (Pb)				
TA3/5-78-C12-4.5-6.5-S 062288-002					J		UJ,B3	J	J	J,A2					
TA3/5-78-C12-4.5-6.5-DUP 062302-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C12-9.5-11.5-S 062289-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C13-9.5-11.5-S 062290-002					J		UJ,B3	J	J	J,A2					
TA3/5-78-C13-14.5-16.5-S 062291-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C14-4.5-6.5-S 062292-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C14-9.5-11.5-S 062293-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C14-14.5-16.5-S 062294-002					J		UJ,B3	J	J	J,A2					
TA3/5-78-C15-4.5-6.5-S 062295-002					J		UJ,B3	J	J	J,A2					
TA3/5-78-C15-14.5-16.5-S 062296-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-C15-19.5-21.5-S 062297-002					J	J,B	UJ,B3	J	J	J,A2					
TA3/5-78-EB-052803 062303-001	P2														
TA3/5-78-EB-052803 062303-003			UJ												
TA3/5-78-EB-052803 062303-004					UJ,B3					UJ,B3	UJ,B3				
TA3/5-78-TB-052803 062305-001	P2														

Validated By: Ms. Marcia Hilchey

Date: 07/24/03

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 24, 2003

TO: File

FROM: Marcia Hilchey

SUBJECT: Inorganic Data Review and Validation - SNL
SWMU 78, ARCOC #606455
GEL SDG #81228/81229, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA6010B ICP-AES Metals, EPA6020 ICP-MS Total Thorium, EPA7470/1A CVAA Mercury. Problems were identified with the data package that result in the qualification of data.

1. ICP-AES and ICP-MS Analyses: In the ICB and/or CCB for the soil samples, silver (Ag) was reported at a negative value, with absolute value >DL. All associated sample results were non-detect (ND) and, thus, will be qualified "UJ,B3."

   In the method blank (MB) for the soil samples, selenium (Se) was detected >DL, <RL. All associated detects <5X the MB value will be qualified "J,B." Non-detects will not be qualified.

   In the ICB and/or CCB for the aqueous analysis (EB), lead and arsenic (As) were reported at negative values, with absolute values >DL. The associates sample results were ND and will be qualified "UJ,B3."

   The replicate RPDs exceeded acceptance criteria for thorium (Th) and arsenic (As) in soils. All associated sample results were detects and will be qualified "J."

   Serial dilution RPD exceeded acceptance criteria for barium (Ba) in soils. All associated sample results were detects and will be qualified "J."

2. CVAA Analyses: Matrix spike recovery exceeded acceptance criteria for soil samples. All associated mercury (Hg) results were detects and will be qualified "J,A2."

   Replicate RPD exceeded acceptance criteria for soil samples. All associated results were already qualified "J,A2"; no further qualifications will be applied.

   In the CCB for the aqueous analysis (EB), Hg was reported at a negative value, with absolute value >DL. The associates sample result was ND and will be qualified "UJ,B3."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

All Analyses: The initial and continuing calibrations met all QC acceptance criteria.

Blanks

ICP Analyses: No target analytes were detected in the blanks except as noted above in the Summary section and as follows. In the ICB and/or CCB for the soil samples, Se and Th were detected, and Se was detected in the method blank. In the EB, Ba and chromium (Cr) were detected. All associated sample results that were ND or >5X the blank values will not be qualified.

In the ICB and/or CCB for the soil samples, Ag and As were reported at negative concentrations with absolute values > the DL but < the RL. All associated sample results that were >5X the DL will not be qualified.

CVAA Analysis: No target analytes were detected in the blanks, except as noted in the Summary section.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

ICP-AES Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. Although MSD RPD was reported, precision was assessed based on replicate results (see Replicate Analysis section below). No MS/MSD analyses were performed for the EB. An LCSD was analyzed as a measure of precision. No sample data will be qualified as a result.

ICP-MS/CVAA Analyses: The MS/MSD analyses for the soil samples met all QC acceptance criteria. The MS analyses for the EB met all QC acceptance criteria. No MSD analyses were performed. The replicate analyses were used as measures of laboratory precision. It should be noted that the MS analyses for the EB were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

Laboratory Control Sample (LCS/LCSD) Analyses

ICP-AES Analysis: The LCS/LCSD analyses for the EB, as well as the LCS analysis for the soil samples, met all QC acceptance criteria. No LCSD analysis was performed for the soil samples. No sample data will be qualified as a result.

ICP-MS and CVAA Analysis: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Replicate Analysis

ICP-AES Analysis: No replicate analysis was performed for the EB. An LCSD was analyzed as a measure of precision. The replicate analysis for the soil samples met all QC acceptance criteria, except as noted in the Summary section.

ICP-MS/CVAA Analyses: The replicate analyses met all QC acceptance criteria, except as noted in the Summary section. It should be noted that replicate analyses for the EB were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

ICP Analyses: The ICS met all QC acceptance criteria.

ICP Serial Dilution

ICP Analyses: The serial dilution analyses met all QC acceptance criteria, except as noted in the Summary section. It should be noted that the serial dilution for the ICP-AES analysis for the EB was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

Detection Limits/Dilutions

ICP Analyses: All detection limits were properly reported. All soil samples were diluted the standard 2X. Soil samples 81228-015 and -018 were diluted 5X for Ba due to high concentrations of calcium, which is known to cause matrix interference. No other samples were diluted.

CVAA Analysis: All detection limits were properly reported. No samples were diluted.

Other QC

All Analyses: EBs were submitted. No field blanks or field duplicates were submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 24, 2003

TO: File

FROM: Marcia Hilchey

SUBJECT: Organic Data Review and Validation - SNL
SWMU 78, ARCOC #606455
GEL SDG #81228/81229, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA8260A/B VOCs and EPA8270C SVOCs. Problems were identified with the data package that result in the qualification of data.

1. SVOC Analysis: For the equipment blank (EB), the initial calibration correlation coefficient (R^2 value) of 4,6-dinitro-2-methylphenol was less than (<) 0.99 but greater than (>) 0.90, and the continuing calibration verification (CCV) percent difference (%D) was >20% but <40%. The 4,6-dinitro-2-methylphenol sample result was non-detect (ND) and, thus, will be qualified "UJ," based on professional judgment.

2. VOC Analysis: For the EB and trip blank (TB), no MSD, LCSD, Replicate, or other measure of precision was analyzed. Thus, all results for these samples will be qualified "P2."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

VOC Analysis: The initial and continuing calibrations met all QC acceptance criteria except as follows. For the aqueous and soil analyses, several CCV %Ds (see VOC DV worksheet) were >20% but <40%. However, all associated sample results were ND and, thus, will not be qualified.

SVOC Analysis: The initial and continuing calibrations met QC acceptance criteria except as noted above in the Summary section and the following. For the EB, the initial calibration R^2 value of di-n-octylphthalate was <0.99 but >0.90, and the CCV %Ds of several other compounds (see SVOC DV worksheet) were >20% but <40%. For the soil samples, the initial calibration R^2 value of 2,4-dinitrotoluene was <0.99 but >0.90, and the CCV %Ds of several other compounds (see SVOC DV worksheet) were >20% but <40%. However, all associated sample results were ND and, thus, will not be qualified.

Blanks

All Analyses: No target analytes were detected in the blanks.

Surrogates

All Analyses: All surrogate percent recoveries (%Rs) met QC acceptance criteria.

Internal Standards (ISs)

All Analyses: The IS areas and retention times (RTs) met all QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

VOC Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. No MS/MSD or any other measure of precision was performed for the EB and TB, as noted above in the Summary section.

SVOC Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. For the EB, the case narrative stated that MS %Rs of o-nitroaniline; p-nitroaniline; 2-methyl-4,6-dinitrophenol, and 3,3'-dichlorobenzidine failed to meet the QC acceptance limits. However, the MSD %Rs and relative percent differences (RPDs) met QC acceptance criteria. Thus, no sample data will be qualified, based on professional judgment. Also, it should be noted that the MS/MSD analyses for the EB were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

Laboratory Control Sample (LCS/LCSD) Analyses

All Analyses: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Detection Limits/Dilutions

All Analyses: All detection limits were properly reported. No samples were diluted.

Other QC

VOC Analysis: An EB and TB were submitted. No field blank (FB) was submitted on the ARCOC.

SVOC Analysis: An EB was also submitted. No FB was submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: Swmu 78 Project/Task #: 2219.02.02.06 # of Samples: 26 Matrix: soil/sg

AR/COC #: 606455 Laboratory Sample IDs: 81228 -001 →

Laboratory: CEL 81229 -001 → -003

SDG #: 81228 / 81229

QC Element	Analysis									
	Organics				Inorganics (ICP-MS)				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN n/a		
1. Holding Times/Preservation	✓	✓			✓	✓	✓			
2. Calibrations	✓	UJ			✓	✓	✓			
3. Method Blanks	P2	✓			J,B	J,B3	✓	UJ/B3		
4. MS/MSD	✓	✓	n/a		✓	✓	J,A2		n/a	
5. Laboratory Control Samples	✓	✓			✓	✓	✓			
6. Replicates					✓	J	J			
7. Surrogates	✓	✓								
8. Internal Standards	✓	✓								
9. TCL Compound Identification	✓	✓								
10. ICP Interference Check Sample					✓					
11. ICP Serial Dilution					J					
12. Carrier/Chemical Tracer Recoveries										
13. Other QC										

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: _____ Date: 7/29/03

Inorganic Metals

Site/Project: SWMU 78 AR/COC #: 606455 Laboratory Sample IDs: -012 -7 -022

Laboratory: GEL Laboratory Report #: 81228

Methods: 6010B, 6020, 7471A 254538, 254547, 255008 ma/

# of Samples: 11 Matrix: SOIL Batch #s: 254537, 254546, 255007 ps

CAS #/ Analyte	QC Element																			
	TAL	ICV	ug/L CCV	mg/l ICB	µg/l CCB	mg/kg Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	Lab Dup. RPD	Field Dup. RPD	ICS AB	Serial Dilution	Field Dup. RPD	Equip. Blanks	Field Blanks	5x6k (5xOL)	
7429-90-5 Al																				
7440-39-3 Ba	✓	✓	✓	✓	✓	✓	✓			n/a	n/a	24	✓	✓	13.4		.551		2.76	
7440-41-7 Be	✓	✓	✓	✓	✓		✓			✓		1	n/a	✓	✓		✓			
7440-43-9 Cd	✓	✓	✓	✓	✓		✓			✓		1	n/a	✓	n/a		✓			
7440-70-2 Ca																				
7440-47-3 Cr	✓	✓	✓	✓	✓		✓			✓		1	✓	✓	✓		.657		3.29	
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag	✓	✓	✓	✓	-1.26	✓	✓			✓		1	n/a	✓	n/a		✓		(.451)	
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
Th	✓	✓	✓	.005	.009	✓	✓			✓	n/a	86	59	✓	✓		✓		.045	
7439-92-1 Pb	✓	✓	✓	✓	✓	✓	✓			✓		1	✓	✓	✓					
7782-49-2 Se	✓	✓	✓	1.69	✓	.421	✓			✓		1	n/a	✓	n/a				8.45	21.05
7440-38-2 As	✓	✓	✓	-2.7	-2.44	✓	✓			✓		1	39	✓	13.9	n/a			(1.03)	
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓			n/a		1	>PQL	n/a	n/a		✓			
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ICP = ICP-AES dil 2x all soils

Ba dilutions due to Ca interference

Reviewed By: _____ Date: 7/24/25

6/16 ICP AS Ba Be Cd Cr Pb Se Ag CCV 6 12,13,14 CCV 7 15→22 CCV 8

6/17 ICP Ba only CCV1 15,18 CCV2

6/16 ICPMS Th CCV1 12,13,14 CCV2 16→22 CCV 4

6/17 CCV3 12 CCV4 13→21 CCV5 22

Inorganic Metals

Site/Project: Summit 78 AR/COC #: 606455 Laboratory Sample IDs: -004

Laboratory: CEL Laboratory Report #: 81229

Methods: 6010B, 6020, 7470A 254527 255496 254811

# of Samples: 1 Matrix: aq. Batch #s: 254528, 255499, 254812,

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	ICB	CCB	Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al																				
7440-39-3 Ba	✓	✓				✓	✓			n/a				✓	n/a					
7440-41-7 Be	✓	✓				✓	✓													
7440-43-9 Cd	✓	✓				✓	✓													
7440-70-2 Ca																				
7440-47-3 Cr	✓	✓				✓	✓			n/a				✓	n/a					
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag	✓	✓				✓	✓			n/a				✓	n/a					
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
Th	✓	✓				✓	✓	n/a	n/a	✓			✓	✓	n/a					
7439-92-1 Pb	✓	✓	✓	-2.62	-2.13	✓	✓			n/a										
7782-49-2 Se	✓	✓				✓	✓													
7440-38-2 As	✓	✓	✓	✓	-2.47	✓	✓													
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-.0564	✓	✓	n/a	n/a	✓			✓	n/a	n/a					
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ICP 6/2 CCV2 4 CCV3
MS 6/14 CCV6 4 CCV7
CVAA 6/4 CCV3 4 CCV4

Reviewed By: _____ Date: 7/24/03

Semivolatile Organics (SW 846 Method 8270)

Site/Project: Summa 78 AR/COC #: 606455 Laboratory Sample IDs: -003

Laboratory: CEL Laboratory Report #: 81229

Methods: 8270C

# of Samples: 1 Matrix: Gw. Batch #s: 254413 / 254414

IS	BNA	CAS #	NAME	TCL	MDL R²	Intercept	Calib. RF >.05	Calib. RSD/ R² <20% / 0.99	CCV %D 20%	Method Blanks	LCS	LCSD n/a	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks n/a	Field Blanks
2	BN	120-82-1	1,2,4-Trichlorobenzene	✓	0.20	n/a	✓	✓	✓	✓	✓			✓					
1	BN	95-50-1	1,2-Dichlorobenzene		0.40						✓								
1	BN	541-73-1	1,3-Dichlorobenzene		0.60														
1	BN	106-46-7	1,4-Dichlorobenzene		0.50						✓			✓					
3	A	95-95-4	2,4,5-Trichlorophenol		0.20						✓			✓					
3	A	88-06-2	2,4,6-Trichlorophenol		0.20						✓			✓					
2	A	120-83-2	2,4-Dichlorophenol		0.20														
2	A	105-67-9	2,4-Dimethylphenol		0.20														
3	A	51-28-5	2,4-dinitrophenol		0.01	✓													
3	BN	121-14-2	2,4-Dinitrotoluene		0.20	✓					✓			✓					
3	BN	606-20-2	2,6-Dinitrotoluene		0.20	✓													
3	BN	91-58-7	2-Chloronaphthalene		0.80	n/a													
1	A	95-57-8	2-Chlorophenol		0.80														
2	BN	91-57-6	2-Methylnaphthalene		0.40														
1	A	95-48-7	2-Methylphenol (o-cresol)		0.70														
3	BN	88-74-4	2-Nitroaniline		0.01														
2	A	88-75-5	2-Nitrophenol		0.10														
5	BN	91-94-1	3,3'-Dichlorobenzidine		0.01														
3	BN	99-09-2	3-Nitroaniline		0.01														
4	A	534-52-1	4,6-Dinitro-2-methylphenol		0.01	✓		.983	37.0										
4	BN	101-55-3	4-Bromophenyl-phenylether		0.10	n/a		✓	51.8										
3	BN	7005-72-3	4-Chlorophenyl-phenylether		0.40				✓										
2	A	59-50-7	4-Chloro-3-methylphenol		0.20						✓			✓					
2	BN	106-47-8	4-Chloroaniline		0.01														
1	A	106-44-5	4-Methylphenol (p-cresol)	✓	0.60	✓	✓	✓	✓	✓									

Notes: Shaded rows are RCRA compounds.

Comments: Otherwise SOC: MS/MSD all ND

Several non-monitored MS %R's out - no quals

Reviewed By: [signature] Date: 7/24/03

Semivolatile Organics

Site/Project: _____ AR/COC #: 606955 Batch #s: _____

Laboratory: _____ Laboratory Report #: _____ # of Samples: _____ Matrix: soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD n/a	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks n/a	Field Blanks
							>.05	<20% / 0.99	20%										
3	BN	100-01-6	4-Nitroaniline	✓	0.01	n/a	✓	✓	✓	✓									
3	A	100-02-7	4-Nitrophenol		0.01						✓			✓					
3	BN	83-32-9	Acenaphthene		0.90						✓			✓					
3	BN	208-96-8	Acenaphthylene		0.90														
4	BN	120-12-7	Anthracene		0.70														
5	BN	56-55-3	Benzo(a)anthracene		0.80														
6	BN	50-32-8	Benzo(a)pyrene		0.70														
6	BN	205-99-2	Benzo(b)fluoranthene		0.70														
6	BN	191-24-2	Benzo(g,h,i)perylene		0.50	✓			22.6										
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	n/a			✓										
2	BN	111-91-1	bis(2-Chloroethoxy)methane		0.30														
1	BN	111-44-4	bis(2-Chloroethyl)ether		0.70														
1	BN	108-60-1	bis(2-chloroisopropyl)ether		0.01														
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01				29.3										
5	BN	85-68-7	Butylbenzylphthalate		0.01				✓										
4	BN	86-74-8	Carbazole		0.01														
5	BN	218-01-9	Chrysene		0.70	✓													
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	✓			23.0										
3	BN	132-64-9	Dibenzofuran		0.80	n/a			✓										
3	BN	84-66-2	Diethylphthalate		0.01														
3	BN	131-11-3	Dimethylphthalate		0.01														
4	BN	84-74-2	Di-n-butylphthalate		0.01														
6	BN	117-84-0	Di-n-octylphthalate		0.01	✓		.984											
4	BN	206-44-0	Fluoranthene		0.60	n/a		✓											
3	BN	86-73-7	Fluorene		0.90														
4	BN	118-74-1	Hexachlorobenzene		0.10						✓			✓					
2	BN	87-68-3	Hexachlorobutadiene		0.01														
3	BN	77-47-4	Hexachlorocyclopentadiene		0.01														
1	BN	67-72-1	Hexachloroethane		0.30														

Comments:

Semivolatile Organics

Site/Project: _____ AR/COC #: 606455 Batch #s: _____

Laboratory: _____ Laboratory Report #: _____ # of Samples: _____ Matrix: SG

BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCS D / n/a	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks / n/a	Field Blanks
						>.05	<20% / 0.99	20%										
BN	193-39-5	Indeno(1,2,3-cd)pyrene	✓	0.50	✓	✓	✓	✓	✓									
BN	78-59-1	Isophorone		0.40	n/a													
BN	91-20-3	Naphthalene		0.70														
BN	98-95-3	Nitrobenzene		0.20						✓			✓					
BN	86-30-6	N-Nitrosodiphenylamine (1)		0.01														
BN	621-64-7	N-Nitroso-di-propylamine		0.50						✓			✓					
A	87-86-5	Pentachlorophenol		0.05	✓					✓			✓					
BN	85-01-8	Phenanthrene		0.70	n/a													
A	108-95-2	Phenol		0.80						✓			✓					
BN	129-00-0	Pyrene		0.60						✓			✓					

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
			not					
				criteria				

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: p-Terphenyl-d14 (BN)
SMC 4: Phenol-d6 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
SMC 7: 2-2-Chlorophenol-d4 (A)
SMC 8: 1,2-Dichlorobenzene-d4 (BN)

Comments:

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	IS 6-area	IS 6-RT
						not						
							criteria					

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Semivolatile Organics (SW 846 Method 8270)

Site/Project: SWMU 78   AR/COC #: 606455   Laboratory Sample IDs: -012 → 022

Laboratory: GEL   Laboratory Report #: 81228

Methods: 8270C

# of Samples: 11   Matrix: Soil   Batch #s: 254408/ 254409

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20%/0.99	CCV %D 20%	Method Blanks	LCS	LCSD (n/a)	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD (n/a)	Equip. Blanks	Field Blanks (n/a)	
2	BN	120-82-1	1,2,4-Trichlorobenzene	✓	0.20	n/a	✓	✓	✓	✓	✓			✓				✓		
1	BN	95-50-1	1,2-Dichlorobenzene	✓	0.40															
1	BN	541-73-1	1,3-Dichlorobenzene	✓	0.60															
1	BN	106-46-7	1,4-Dichlorobenzene	✓	0.50						✓			✓						
3	A	95-95-4	2,4,5-Trichlorophenol	✓	0.20						✓			✓						
3	A	88-06-2	2,4,6-Trichlorophenol	✓	0.20						✓			✓						
2	A	120-83-2	2,4-Dichlorophenol	✓	0.20															
2	A	105-67-9	2,4-Dimethylphenol	✓	0.20															
3	A	51-28-5	2,4-dinitrophenol	✓	0.01	✓			20.1											
3	BN	121-14-2	2,4-Dinitrotoluene	✓	0.20	✓		0.98	✓		✓			✓						
3	BN	606-20-2	2,6-Dinitrotoluene	✓	0.20	n/a		✓												
3	BN	91-58-7	2-Chloronaphthalene	✓	0.80															
1	A	95-57-8	2-Chlorophenol	✓	0.80						✓			✓						
2	BN	91-57-6	2-Methylnaphthalene	✓	0.40															
1	A	95-48-7	2-Methylphenol (o-cresol)	✓	0.70															
3	BN	88-74-4	2-Nitroaniline	✓	0.01															
2	A	88-75-5	2-Nitrophenol	✓	0.10	✓														
5	BN	91-94-1	3,3'-Dichlorobenzidine	✓	0.01	✓														
3	BN	99-09-2	3-Nitroaniline	✓	0.01	✓														
4	A	534-52-1	4,6-Dinitro-2-methylphenol		0.01	✓														
4	BN	101-55-3	4-Bromophenyl-phenylether	✓	0.10	n/a														
3	BN	7005-72-3	4-Chlorophenyl-phenylether	✓	0.40															
2	A	59-50-7	4-Chloro-3-methylphenol	✓	0.20						✓			✓						
2	BN	106-47-8	4-Chloroaniline	✓	0.01															
1	A	106-44-5	4-Methylphenol (p-cresol)	✓	0.60															

Notes: Shaded rows are RCRA compounds.

Comments: CCVs: BNA 8:58
ANB2 9:20

~~J bis(2chl)ph...~~ MH

Reviewed By: [signature]   Date: 7/24/03

Semivolatile Organics

Site/Project: _____ AR/COC #: 606455 Batch #s: _____

Laboratory: _____ Laboratory Report #: _____ # of Samples: _____ Matrix: soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks
							>.05	<20% / 0.99	20%			n/a					n/a		n/a
3	BN	100-01-6	4-Nitroaniline	✓	0.01	✓	✓	✓	✓	✓								✓	
3	A	100-02-7	4-Nitrophenol	✓	0.01	✓					✓			✓					
3	BN	83-32-9	Acenaphthene	✓	0.90	n/a					✓			✓					
3	BN	208-96-8	Acenaphthylene	✓	0.90														
4	BN	120-12-7	Anthracene	✓	0.70														
5	BN	56-55-3	Benzo(a)anthracene	✓	0.80														
6	BN	50-32-8	Benzo(a)pyrene	✓	0.70	✓													
6	BN	205-99-2	Benzo(b)fluoranthene	✓	0.70	✓													
6	BN	191-24-2	Benzo(g,h,i)perylene	✓	0.50	✓													
6	BN	207-08-9	Benzo(k)fluoranthene	✓	0.70	✓													
2	BN	111-91-1	bis(2-Chloroethoxy)methane	✓	0.30	n/a													
1	BN	111-44-4	bis(2-Chloroethyl)ether	✓	0.70														
1	BN	108-60-1	bis(2-chloroisopropyl)ether	✓	0.01														
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate	✓	0.01	✓													
5	BN	85-68-7	Butylbenzylphthalate	✓	0.01	n/a													
4	BN	86-74-8	Carbazole	✓	0.01														
5	BN	218-01-9	Chrysene	✓	0.70														
6	BN	53-70-3	Dibenz(a,h)anthracene	✓	0.40	✓													
3	BN	132-64-9	Dibenzofuran	✓	0.80	n/a													
3	BN	84-66-2	Diethylphthalate	✓	0.01														
3	BN	131-11-3	Dimethylphthalate	✓	0.01														
4	BN	84-74-2	Di-n-butylphthalate	✓	0.01														
6	BN	117-84-0	Di-n-octylphthalate	✓	0.01	✓													
4	BN	206-44-0	Fluoranthene	✓	0.60	n/a													
3	BN	86-73-7	Fluorene	✓	0.90														
4	BN	118-74-1	Hexachlorobenzene	✓	0.10						✓			✓					
2	BN	87-68-3	Hexachlorobutadiene	✓	0.01						✓			✓					
3	BN	77-47-4	Hexachlorocyclopentadiene	✓	0.01	✓													
1	BN	67-72-1	Hexachloroethane	✓	0.30	n/a					✓			✓				✓	

Comments:

Semivolatile Organics

Site/Project: _____ AR/COC #: 606755 Batch #s: _____

Laboratory: _____ Laboratory Report #: _____ # of Samples: _____ Matrix: soil

3	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCS D / LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%											
	BN	193-39-5	Indeno(1,2,3-cd)pyrene	✓	0.50	✓	✓	✓	✓	✓							✓			
	BN	78-59-1	Isophorone	✓	0.40	n/a														
	BN	91-20-3	Naphthalene	✓	0.70															
	BN	98-95-3	Nitrobenzene	✓	0.20						✓		✓							
	BN	86-30-6	N-Nitrosodiphenylamine (1)	✓	0.01															
	BN	621-64-7	N-Nitroso-di-propylamine	✓	0.50						✓		✓							
	A	87-86-5	Pentachlorophenol	✓	0.05	✓					✓		✓							
	BN	85-01-8	Phenanthrene	✓	0.70	n/a														
	A	108-95-2	Phenol	✓	0.80						✓		✓							
	BN	129-00-0	Pyrene	✓	0.60				-21.6		✓		✓							

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
			not spiked					

SMC 1: Nitrobenzene-d5 (BN) SMC 2: 2-Fluorobiphenyl (BN) SMC 3: p-Terphenyl-d14 (BN)
SMC 4: Phenol-d6 (A) SMC 5: 2-Fluorophenol (A) SMC 6: 2,4,6-Tribromophenol (A)
SMC 7: 2-2-Chlorophenol-d4 (A) SMC 8: 1,2-Dichlorobenzene-d4 (BN)

Comments:

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
						not spiked						

IS 1: 1,4-Dichlorobenzene-d4 (BN) IS 2: Naphthalene-d8 (BN) IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN) IS 5: Chrysene-d12 (BN) IS 6: Perylene-d12 (BN)

Volatile Organics (SW 846 Method 8260) -

Site/Project: SWMU 78 AR/COC #: 606455 # of Samples: 11 Matrix: Soil

Laboratory: GEL SDG #: 81228 Laboratory Sample IDs: -001 → 011

Methods: 8260A / 5030A Batch #s: 255092 / 255093

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Trip Blanks		
						>.05	<20% / 0.99	20%												
1	71-55-6	1,1,1-trichloroethane		0.10	n/a	✓	✓	✓		✗							✓	✓		
2	79-34-5	1,1,2,2-tetrachloroethane		0.30																
2	79-00-5	1,1,2-trichloroethane		0.10																
1	75-34-3	1,1-dichloroethane		0.10																
1	75-35-4	1,1-dichloroethene		0.20						✓			✓							
1	107-06-2	1,2-dichloroethane		0.10																
1	540-59-0	1,2-dichloroethene(total)		0.01																
1	78-87-5	1,2-dichloropropane		0.01																
1	78-93-3	2-butanone (MEK) (10xblk)		0.01																
1	110-75-8	2-chloroethyl vinyl ether																		
2	591-78-6	2-hexanone (MBK)		0.01																
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10																
1	67-64-1	acetone(10xblk)		0.01																
1	71-43-2	benzene		0.50						✓			✓							
1	75-27-4	bromodichloromethane		0.20																
3	75-25-2	bromoform		0.10																
1	74-83-9	bromomethane		0.10																
1	75-15-0	carbon disulfide		0.10																
1	56-23-5	carbon tetrachloride		0.10																
2	108-90-7	chlorobenzene		0.50						✓			✓							
1	75-00-3	chloroethane		0.01																
1	67-66-3	chloroform		0.20			chloroethane 54.4 - 37.0 - 32.3													
1	74-87-3	chloromethane		0.10																
1	10061-01-5	cis-1,3-dichloropropene		0.20				✓												
2	124-48-1	dibromochloromethane		0.10																
2	100-41-4	ethylbenzene		0.10																
1	75-09-2	methylene chloride (10xblk)		0.01																
2	100-42-5	styrene		0.30																
2	127-18-4	tetrachloroethene		0.20																
2	108-88-3	toluene(10xblk)		0.40						✓			✓							
2	10061-02-6	trans-1,3-dichloropropene		0.10																
1	79-01-6	trichloroethene		0.30						✓			✓							
1	75-01-4	vinyl chloride		0.10																
2	1330-20-7	xylenes(total)		0.30																

Comments:

CCV 6/4 19:52 Samples 1 → 6 MB + LCS 1

CCV 6/5 9:45 or 10:54 8 → 11

CCV 6/5 17:35 sample 7

Notes: Shaded rows are RCRA compounds.

Reviewed By: Date: 7/23/03

Volatile Organics

Site/Project: _____ AR/COC #: 606455 Batch #s: _____

Laboratory: _____ SDG #: _____ # of Samples: _____ Matrix: soils

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
		het criteria				nt criteria			

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Volatile Organics (SW 846 Method 8260)

Site/Project: SWMU 78 AR/COC #: 606455 # of Samples: 5 2 mat Matrix: SO

Laboratory: CEC SDG #: 81229 Laboratory Sample IDs: -001, -002

Methods: 8260B Batch #s:

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20%/ 0.99	CCV %D 20%	Method Blks	LCS	LCSD	LCS RPD	MS	MSD	2/6 MS RPD	Field Dup. RPD	Equip. Blanks	Trip Blanks		
1	71-55-6	1,1,1-trichloroethane		0.10	n/a	✓	✓	✓	✓											
2	79-34-5	1,1,2,2-tetrachloroethane		0.30																
2	79-00-5	1,1,2-trichloroethane		0.10																
1	75-34-3	1,1-dichloroethane		0.10																
1	75-35-4	1,1-dichloroethene		0.20						✓										
1	107-06-2	1,2-dichloroethane		0.10																
1	540-59-0	1,2-dichloroethene(total)		0.01																
1	78-87-5	1,2-dichloropropane		0.01																
1	78-93-3	2-butanone (MEK) (10xblk)		0.01																
1	110-75-8	2-chloroethyl vinyl ether																		
2	591-78-6	2-hexanone (MBK)		0.01																
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10																
1	67-64-1	acetone(10xblk)		0.01																
1	71-43-2	benzene		0.50						✓										
1	75-27-4	bromodichloromethane		0.20																
3	75-25-2	bromoform		0.10																
1	74-83-9	bromomethane		0.10																
1	75-15-0	carbon disulfide		0.10				↓												
1	56-23-5	carbon tetrachloride		0.10				23.0												
2	108-90-7	chlorobenzene		0.50				✓		✓										
1	75-00-3	chloroethane		0.01				↓												
1	67-66-3	chloroform		0.20																
1	74-87-3	chloromethane		0.10				-27.4												
1	10061-01-5	cis-1,3-dichloropropene		0.20				✓												
2	124-48-1	dibromochloromethane		0.10																
2	100-41-4	ethylbenzene		0.10																
1	75-09-2	methylene chloride (10xblk)		0.01																
2	100-42-5	styrene		0.30																
2	127-18-4	tetrachloroethene		0.20																
2	108-88-3	toluene(10xblk)		0.40						✓										
2	10061-02-6	trans-1,3-dichloropropene		0.10																
1	79-01-6	trichloroethene		0.30						✓										
1	75-01-4	vinyl chloride		0.10																
2	1330-20-7	xylenes(total)		0.30	↓	↓	↓	↓	↓											

Comments: no measure of precision

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Volatile Organics

Site/Project: _____ AR/COC #: 606755 Batch #s: _____

Laboratory: _____ SDG #: _____ # of Samples: _____ Matrix: SG

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
		not criteria					not criteria		

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

SWMU 78 RECORDS CENTER CODE: _____

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: ~~SWMU 87 CRA Sampling~~ PROJECT/TASK: 7219_02.02.06

SNL TASK LEADER: Langkopf ORG/MS/CF0#: 6133/1087/CF041-03

SMO PROJECT LEAD: Palencia SAMPLE SHIP DATE: 5/29/2003

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
606455	GEL	81228		6/27/2003	X			

DATA PACKAGE TAT:		RUSH	X	NORMAL
CORRECTIONS REQUESTED BY/DATE:	W. Palencia			7/3/03
PROBLEM #/DATE CORRECTION RECEIVED:		6606		7/8/03
CVR COMPLETED BY/DATE:	W. Palencia			7/3/03
FINAL TRANSMITTED TO/DATE:	Griffith			7/03/03
SENT TO VALIDATION BY/DATE:	J. Conn			7/09/03
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:	MH			7/24/03
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE	J. Conn			7/9/03
CD RECEIVED BY/DATE				
TO ERDMS OR RECORDS CENTER BY/DATE:				

COMMENTS:

Contract Verification Review (CVR)

Project Leader LANGKOPF | Project Name SWMU 87 CRA SAMPLING | Case No. 7219_02.02.06

AR/COC No. 606455 | Analytical Lab GEL | SDG No. 81228

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	X				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	X		
c) Matrix spike recovery data reported and met		X	MERCURY FAILED RECOVERY LIMITS FOR MATRIX SPIKE
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples		X	RPDs FOR THORIUM, MERCURY & ARSENIC FAILED ACCEPTANCE LIMITS
b) Matrix spike duplicate RPD data reported and met for all organic samples	X		
3.5 Blank data a) Method or reagent blank data reported and met for all samples		X	SELENIUM DETECTED IN METALS BLANK
b) Sampling blank (e.g., field, trip, and equipment) data reported and met	X		
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	X		
b) Initial calibration provided	X		
c) Continuing calibration provided	X		
d) Internal standard performance data provided	X		
e) Instrument run logs provided	X		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	X		
d) ICP serial dilution provided	X		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions
ALL	SVOCs	EXTRACTION LOG MISSING

Were deficiencies unresolved? (Yes) No

Based on the review, this data package is complete. Yes (No)

If no, provide: nonconformance report or correction request number 6606 and date correction request was submitted:- 7-3-2003

Reviewed by: W. Palencia Date: 7-3-2003 Closed by: W. Palencia Date: 7/8/03

5673/4

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. | SMO Use | AR/COC 606455

Dept. No./Mail Stop:	6133/MS1087	Date Samples Shipped:	5/27/03	Project/Task No.:	7219 .02.02.06
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	22973	SMO Authorization:	
Project Name:	SWMU 78	Lab Contact:	Edie Kent/ (843) 769-7385	Contract #:	PO21671
Record Center Code:		Lab Destination:	GEL		See Bottle order
Logbook Ref. No.:		SMO Contact/Phone:	Doug Perry/ 845-0867		
Service Order No.	CFO41-03	Send Report to SMO:			
Location	Tech Area				
Building	Room				

☐ Waste Characterization -Send preliminary/copy report to:

☐ Released by COC No.: _____

☐ Validation Required

Bill To: Sandia National Labs (Accounts Payable)
P.O. Box 5800 MS 0154
Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
062288-001	TA3/5-78-C12-4.5-6.5-S	6	78	052803/0920	S	AC	125 ml	None	G	SA	VOCs 8260	
062288-002	TA3/5-78-C12-4.5-6.5-S	6	78	052803/0920	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062302-001	TA3/5-78-C12-4.5-6.5-DUP	6	78	052803/0920	S	AC	125 ml	None	G	SA	VOCs 8260	
062302-002	TA3/5-78-C12-4.5-6.5-DUP	6	78	052803/0920	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062289-001	TA3/5-78-C12-9.5-11.5-S	11	78	052803/0930	S	AC	125 ml	None	G	SA	VOCs 8260	
062289-002	TA3/5-78-C12-9.5-11.5-S	11	78	052803/0930	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062290-001	TA3/5-78-C13-9.5-11.5-S	11	78	052803/1013	S	AC	125 ml	None	G	SA	VOCs 8260	
062290-002	TA3/5-78-C13-9.5-11.5-S	11	78	052803/1013	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062291-001	TA3/5-78-C13-14.5-16.5-S	16	78	052803/1030	S	AC	125 ml	None	G	SA	VOCs 8260	
062291-002	TA3/5-78-C13-14.5-16.5-S	16	78	052803/1030	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	

RMMA ☐ Yes ☑ No Ref. No.

Sample Disposal ☐ Return to Client ☑ Disposal by lab

Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day ☐ Negotiated TAT

Return Samples By:

Sample Tracking — Smo Use
Date Entered(mm/dd/yy): 06/04/03
Entered by: JBC
QC Inits: JCB

Special Instructions/QC Requirements
EDD ☑ Yes ☐ No
Level D Package ☑ Yes ☐ No
*Send report to:
Stacey Griffith
*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

Sample Team Members	Name	Signature	Init	Company/Organization/Phone/Cellular
	W. Gibson			6135/284-5232/Weston Solutions
	G. Quintana			6135/284-3309/Shaw
	S. Griffith			6133/284-2588/Gram

1.Relinquished by		Org.	Date	Time	4.Relinquished by	Org.	Date / Time
2. Received by		Org.	Date	Time	4. Received by	Org.	Date / Time
3.Relinquished by		Org. 6133	Date 5/29/03	Time 1015	5.Relinquished by	Org.	Date / Time
3. Received by		Org.	Date	Time	5. Received by	Org.	Date / Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date / Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date / Time

OFF-SITE LABORATORY

AR/COC- 606455

Project Name: SWMU 78 | Project/Task Manger: Brenda Langkopf | Project/Task No.: 7219.02.02.06

Location: Tech Area

Building: Room

Reference LOV (available at SMO)

Sample No-Fraction	ER Sample ID or Sample Location detail	Beginning Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
062292-001	TA3/5-78-C14-4.5-6.5-S	6	78	052803/1043	S	AC	125 ml	None	G	SA	VOCs 8260	
062292-002	TA3/5-78-C14-4.5-6.5-S	6	78	052803/1043	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062293-001	TA3/5-78-C14-9.5-11.5-S	11	78	052803/1050	S	AC	125 ml	None	G	SA	VOCs 8260	
062293-002	TA3/5-78-C14-9.5-11.5-S	11	78	052803/1050	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062294-001	TA3/5-78-C14-14.5-16.5-S	16	78	052803/1103	S	AC	125 ml	None	G	SA	VOCs 8260	
062294-002	TA3/5-78-C14-14.5-16.5-S	16	78	052803/1103	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062295-001	TA3/5-78-C15-4.5-6.5-S	6	78	052803/0835	S	AC	125 ml	None	G	SA	VOCs 8260	
062295-002	TA3/5-78-C15-4.5-6.5-S	6	78	052803/0835	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062296-001	TA3/5-78-C15-14.5-16.5-S	16	78	052803/0848	S	AC	125 ml	None	G	SA	VOCs 8260	
062296-002	TA3/5-78-C15-14.5-16.5-S	16	78	052803/0848	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062297-001	A3/5-78-C15-19.5-21.5-	21	78	052803/0905	S	AC	125 ml	None	G	SA	VOCs 8260	
062297-002	A3/5-78-C15-19.5-21.5-	21	78	052803/0905	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062303-001	TA3/5-78-EB-052803	0	78	052803/1120	L	G	3x40 ml	HCL	C	EB	VOCs 8260	
062303-003	TA3/5-78-EB-052803	0	78	052803/1120	L	AG	1 liter	None	C	EB	SVOCs (8270)	
062303-004	TA3/5-78-EB-052803	0	78	052803/1120	L	P	500ml	HNO3	C	EB	RCRA Metals, Be, total Thorium	
062305-001	TA3/5-78-TB-052803	0	78	052803/1120	L	G	3x40 ml	HCL	C	TB	VOCs 8260	

Abnormal Conditions on Receipt

LAB USE

Recipient Initials_____

SA-2063-NSF (04/2003)

RADIOLOGICAL SURVEY FORM

Survey Number: S67646

Page: 1 of 8

Location: ENVIRONMENTAL REMEDIATION SITE 74	Requester/Org.: Griffith Stacey/6133	Date: 05/28/03	Time: 1330
Purpose: Movement	Request #: n/a	RWP#: 1726	

Instrument and Probe Type and Serial Number		Surveyor(s) Printed Name(s)	Surveyor(s) Signature/Date
BICRON MICRO REM/ B496B	N/A	Ashford, Kiara	5-29-03
N/A	N/A	N/A	
N/A	N/A	N/A	

#	Item Description/Location	BETA-GAMMA ACTIVITY Counting Data Attached: ☒ YES ☐ NO % Eff.: (e) N/A Radionuclide: N/A				ALPHA ACTIVITY Counting Data Attached: ☒ YES ☐ NO % Eff.: (e) N/A Radionuclide: N/A				RADIATION SURVEY Background: ≤0.1 mrem/hr Radiation Type: Gamma	
		cpm	Bkg. cpm	dpm (a, b) 100cm2	T/R/F (c)	cpm	Bkg. cpm	dpm (a, b) 100cm2	T/R/F (c)	mrem/hr	distance from source (d)
1	062293-001				N/A					< 0.1	OC
2	062293-002									< 0.1	OC
3	062294-001									< 0.1	OC
4	062294-002									< 0.1	OC
5	062295-001									< 0.1	OC
6	062295-002									< 0.1	OC
7	062296-001									< 0.1	OC
8	062296-002									< 0.1	OC
9	062297-001									< 0.1	OC
10	062297-002									< 0.1	OC
11	062302-001									< 0.1	OC
12	062302-002									< 0.1	OC
13-15	062303-001									< 0.1	OC
16	062303-003									< 0.1	OC
17	062303-004									< 0.1	OC

Remarks: Movement survey of above listed items.

Reviewed by: [signature] Date: 5-29-03

Sample Findings Summary

Site: SWMU Site 78 **AR/COC:** 606454 **Data Type:** Organic & Inorganic

Sample ID	VOCs:	79-01-6 (trichloroethene)	SVOCs:	EPA8270C (All SVOCs, except...)	117-81-7 (bis(2-ethylhexyl)phthalate)	N22 (m,p-cresols)	91-20-3 (naphthalene)	95-48-7 (o-cresol)	129-00-0 (pyrene)	120-83-2 (2,4-dichlorophenol)	95-95-4 (2,4,5-trichlorophenol)	59-50-7 (4-chloro-3-methylphenol)	Metals:	7440-38-2 (As)	7440-39-3 (Ba)	7439-92-1 (Pb)	7782-49-2 (Se)	7440-29-1 (Th)	7439-97-6 (Hg)
	Method/CAS Number (Analysis/Analyte)																		
062279-001 TA3/5-78-C05-4.5-6.5-S		UJ																	
062280-001 TA3/5-78-C05-14.5-16.5-S		UJ																	
062281-001 TA3/5-78-C06-4.5-6.5-S		UJ																	
062306-001 TA3/5-78-C06-4.5-6.5-DUP		UJ																	
062282-001 TA3/5-78-C06-9.5-11.5-S		UJ																	
062283-001 TA3/5-78-C06-14.5-16.5-S		UJ																	
062284-001 TA3/5-78-C08-4.5-6.5-S		UJ																	
062285-001 TA3/5-78-C08-9.5-11.5-S		UJ																	
062286-001 TA3/5-78-C11-4.5-6.5-S		UJ																	
062287-001 TA3/5-78-C11-9.5-11.5-S		UJ																	
062307-001 TA3/5-78-EB-060203		UJ																	
062308-001 TA3/5-78-TB-060203		UJ																	
062279-002 TA3/5-78-C05-4.5-6.5-S					333U,B	UJ,P1		UJ,P1	J,P1	UJ	UJ,P1	UJ,P1				J	J,B3	J,A2	
062280-002 TA3/5-78-C05-14.5-16.5-S					333U,B				J,P1	UJ								J,A2	
062281-002 TA3/5-78-C06-4.5-6.5-S					333U,B				UJ,P1	UJ								J,A2	
062306-002 TA3/5-78-C06-4.5-6.5-DUP					333U,B				UJ,P1	UJ								J,A2	
062282-002 TA3/5-78-C06-9.5-11.5-S					333U,B				UJ,P1	UJ				J,B,B3				J,A2	
062283-002 TA3/5-78-C06-14.5-16.5-S					333U,B				UJ,P1	UJ								J,A2	
062284-002 TA3/5-78-C08-4.5-6.5-S					333U,B				J,P1	UJ				J,B			J,B3	J,A2	
062285-002 TA3/5-78-C08-9.5-11.5-S					333U,B				J,P1	UJ								J,A2	
062286-002 TA3/5-78-C11-4.5-6.5-S					333U,B				J,P1	UJ							J,B3	J,A2	
062287-002 TA3/5-78-C11-9.5-11.5-S					333U,B				UJ,P1	UJ								J,A2	
062307-003 TA3/5-78-EB-060203				P2	P2	P2	UJ,P2	P2	P2	P2	P2	P2							
062307-004 TA3/5-78-EB-060203															J,B3				UJ,B3

Validated By: Mr. Kenneth Salaz **Date:** 07/29/03

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 29, 2003

TO: File

FROM: Kenneth Salaz

SUBJECT: Inorganic Data Review and Validation - SNL
SWMU Site 78, ARCOC #606454,
GEL SDG #81620/81621, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA6010B ICP-AES Metals, EPA6020 ICP-MS Metals, and EPA7470/1A CVAA. Problems were identified with the data package that result in the qualification of data.

1. ICP Analyses: In the continuing calibration blank (CCB) for the equipment blank (EB), barium (Ba) was detected. The associated sample result was a detect less than (<) 5X the blank concentration and, thus, will be qualified "J,B3." In the initial calibration blank (ICB) and/or CCB for the soil samples, arsenic (As) and selenium (Se) were detected, and As was detected in the method blank. The As result of sample 81620-015 was detect <5X the blank concentrations and, thus, will be qualified "J,B,B3." The As result of sample -017 and the Se results of samples -011, -017, and -019 were detects <5X the blank concentration and, thus, will be qualified "J,B" and "J,B3," respectively.

   CVAA Analyses: In the CCB for the EB, mercury (Hg) was detected at a negative concentration. The absolute value was greater than (>) the detection limit (DL) but < the reporting limit (RL). The associated sample result was non-detect (ND) and, thus, will be qualified "UJ,B3."

2. ICP Analyses: The MS/MSD percent recoveries (%Rs) for thorium (Th) were <0%, and the replicate relative percent difference was > the QC acceptance limits. All associated sample results were detects and, thus, will be qualified "J,A2."

3. ICP Analyses: The serial dilution relative percent difference (RPD) of lead (Pb) was >10%. The associated result of sample 81620-011 was a detect >50X the RL and, thus, will be qualified "J."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

All Analyses: The initial and continuing calibrations met all QC acceptance criteria.

Blanks

ICP Analyses: No target analytes were detected in the blanks except as noted above in the Summary section and the following. In the ICB and/or CCB for the EB, As, Be, and Cd were detected, and Ba was detected in the EB. However, all associated sample results were either >5X the blank concentrations or ND and, thus, will not be qualified.

CVAA Analyses: No other target analytes were detected in the blanks.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

ICP Analyses: The MS/MSD for the ICP-MS analysis of the soil samples did not meet QC criteria as noted above in the Summary section. For the ICP-AES analysis of the EB, no MS analysis was performed; and LCSD was analyzed as a measure of precision. No sample data will be qualified as a result. The MSs for the other analyses met all QC acceptance criteria. No MSD analyses were performed. The replicate analyses were used as measures of laboratory precision. It should be noted that the MS for the ICP-MS analysis of the EB was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

CVAA Analyses: The MS/MSD analyses for the soil samples met all QC acceptance criteria. The MS analysis for the EB also met all QC criteria. It should be noted that this analysis was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

Laboratory Control Sample (LCS/LCSD) Analyses

ICP Analyses: The LCS/LCSD for the ICP-AES analysis of the EB met all QC acceptance criteria. All other LCS analyses also met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

CVAA Analyses: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Replicate Analysis

ICP Analyses: For the ICP-MS analysis of the soil samples and the ICP-AES analysis of the EB, no replicate analyses were performed. An MSD and an LCSD, respectively, were analyzed as measures of precision. The replicates for the other analyses met all QC acceptance criteria.

CVAA Analyses: The replicate analyses met all QC acceptance criteria.

ICP Interference Check Sample (ICS)

ICP Analyses: The ICSs met all QC acceptance criteria. It should be noted that no ICS-AB was analyzed at the end of the ICP-MS run sequences.

CVAA Analyses: No ICS was required for this method.

ICP Serial Dilution

ICP Analyses: The serial dilution analyses met all QC acceptance criteria. It should be noted that the serial dilution for the ICP-MS analysis was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

CVAA Analyses: No serial dilution was required for this method.

Detection Limits/Dilutions

All Analyses: All detection limits were properly reported. No samples were diluted.

Other QC

All Analyses: Field duplicates and EBs were submitted. However, there are no "required" review criteria for field duplicate analyses comparability. No field blanks (FBs) were submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 29, 2003

TO: File

FROM: Kenneth Salaz

SUBJECT: Organic Data Review and Validation - SNL
SWMU Site 78, ARCOC #606454,
GEL SDG #81620/81621, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA8260A/B VOCs and EPA8270C SVOCs. Problems were identified with the data package that result in the qualification of data.

1. VOC Analyses: For the aqueous and soil samples, the initial calibration response factors (RFs) of trichloroethene were less than (<) the required minimum but greater than (>) 0.01. All associated sample results were non-detect (ND) and, thus, will be qualified "UJ."

   SVOC Analyses: For the equipment blank (EB) and soil samples, the initial calibration RFs of naphthalene and 2,4-dichlorophenol, respectively, were < the required minimums but >0.01. All associated sample results were ND and, thus, will be qualified "UJ."

2. SVOC Analyses: In the method blank for the soil samples, bis(2-ethylhexyl)phthalate was detected. All associated sample results were detects, <10X the blank concentration, and < the reporting limit (RL). Thus, these sample results will be qualified "U,B" at the RL (333 ug/kg).

3. SVOC Analyses: For the EB, the MS/MSD were performed on a non-SNL sample from another SDG, and no other measure of precision was provided. Thus, all results for this sample will be qualified "P2." For the soil samples, the MSD relative percent differences (RPDs) of o-cresol, m,p-cresols, 4-chloro-3-methylphenol, 2,4,5-trichlorophenol, and pyrene were > QC acceptance limits. The pyrene results of samples 81620-011, 012, -017, -018, and -019 were detects and, thus, will be qualified "J,P1." All other associated sample results were ND and, thus, will be qualified "UJ,P1."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

VOC Analyses: The initial and continuing calibrations met QC acceptance criteria except as noted above in the Summary section and the following. For the EB and trip blank (TB), the continuing calibration verification (CCV) percent difference (%D) of chloromethane was >20% but <40%. However, all associated sample results were ND and, thus, will not be qualified.

SVOC Analyses: The initial and continuing calibrations met QC acceptance criteria except as noted above in the Summary section and the following. The initial calibration R^2 values of 2,4-dinitrophenol for the EB and soil samples, as well as those of indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene for the EB, were <0.99 but >0.90. However, all associated sample results were ND and, thus, will not be qualified.

Blanks

VOC Analyses: In the EB, dibromochloromethane was detected. However, all associated sample results were ND and, thus, will not be qualified. No other target analytes were detected in the blanks.

SVOC Analyses: In the EB, bis(2-ethylhexyl)phthalate and m,p-cresols were detected. However, all associated sample results were either ND or >10X the blank concentration and, thus, will not be qualified. No other target analytes were detected in the blanks.

Surrogates

All Analyses: All surrogate %Rs met QC acceptance criteria.

Internal Standards (ISs)

All Analyses: The IS areas and retention times (RTs) met all QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

VOC Analyses: The MS/MSD analyses met all QC acceptance criteria. It should be noted that the MS/MSD analyses for the EB and TB were performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

SVOC Analyses: The MS/MSD analyses for the soil samples met all QC acceptance criteria. As noted above in the Summary section, the MS/MSD analyses for the EB did not meet QC criteria.

Laboratory Control Sample (LCS/LCSD) Analyses

All Analyses: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Confirmation Analyses

All Analyses: No confirmation analyses were required for these methods.

Detection Limits/Dilutions

All Analyses: All detection limits were properly reported. No samples were diluted.

Other QC

VOC Analysis: A field duplicate, TB, and EB were submitted. However, there are no "required" review criteria for field duplicate analyses comparability. No field blank (FB) was submitted on the ARCOC.

SVOC Analysis: A field duplicate and EB were submitted. No FB was submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SWMU Site 78 Project/Task #: 7219.02.02.06 # of Samples: 24 Matrix: 20 soil / 4 aqueous

AR/COC #: 606454 Laboratory Sample IDs: 81620-001 to 020

Laboratory: GEL 81621-001 to 004

SDG #: 81620 / 81621

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation	✓	✓	NA	NA	✓	NA	✓	NA	NA	NA
2. Calibrations	UJ	UJ			✓		UJ, B3			
3. Method Blanks	✓	3334, B			J, A, A3		✓			
4. MS/MSD	✓	~~J01; U5, P1~~ P2			J, A2		✓			
5. Laboratory Control Samples	✓	✓			✓		✓			
6. Replicates					J		✓			
7. Surrogates	✓	✓								
8. Internal Standards	✓	✓								
9. TCL Compound Identification	✓	✓								
10. ICP Interference Check Sample					✓					
11. ICP Serial Dilution					J					
12. Carrier/Chemical Tracer Recoveries										
13. Other QC	✓	✓	↓	↓	✓	↓	✓	↓	↓	↓

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: _____ Date: 7/24/03

Volatile Organics (SW 846 Method 8260)

Site/Project: SWMU Site 78 AR/COC #: 606454 # of Samples: 2 Matrix: aqueous

Laboratory: GEL SDG #: 81621 Laboratory Sample IDs: 81621-001 (EB) & -002 (TB)

Methods: EPA8260B Batch #s: 256420

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blks	LCS	LCSD	LCS RPD	① MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Trip Blanks		
						>.05	<20% / 0.99	20%												
1	71-55-6	1,1,1-trichloroethane	✓	0.10	NA	✓	✓	✓	✓							NA	NA	NA		
2	79-34-5	1,1,2,2-tetrachloroethane		0.30		✓	✓													
2	79-00-5	1,1,2-trichloroethane		0.10		✓	✓													
1	75-34-3	1,1-dichloroethane		0.10		✓	✓													
1	75-35-4	1,1-dichloroethene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
1	107-06-2	1,2-dichloroethane		0.10		✓	✓													
1	540-59-0	1,2-dichloroethene(total)		0.01		✓	✓													
1	78-87-5	1,2-dichloropropane		0.01		✓	✓													
1	78-93-3	2-butanone (MEK) (10xblk)	✓	0.01		✓	✓	✓	✓											
~~1~~	~~110-75-8~~	~~2-chloroethyl vinyl ether~~																		
2	591-78-6	2-hexanone (MBK)	✓	0.01		✓	✓	✓	✓											
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10		✓	✓													
1	67-64-1	acetone(10xblk)		0.01		✓	✓													
1	71-43-2	benzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	75-27-4	bromodichloromethane		0.20		✓	✓													
3	75-25-2	bromoform		0.10		✓	✓													
1	74-83-9	bromomethane		0.10		✓	✓													
1	75-15-0	carbon disulfide		0.10		✓	✓													
1	56-23-5	carbon tetrachloride		0.10		✓	✓													
2	108-90-7	chlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	75-00-3	chloroethane		0.01		✓	✓													
1	67-66-3	chloroform		0.20		✓	✓	✓												
1	74-87-3	chloromethane		0.10		✓	✓	-26.3												
1	10061-01-5	cis-1,3-dichloropropene		0.20		✓	✓	✓												
2	124-48-1	dibromochloromethane		0.10		✓	✓													
2	100-41-4	ethylbenzene		0.10		✓	✓													
1	75-09-2	methylene chloride (10xblk)		0.01		✓	✓													
2	100-42-5	styrene		0.30		✓	✓													
2	127-18-4	tetrachloroethene		0.20		✓	✓													
2	108-88-3	toluene(10xblk)		0.40		✓	✓			✓	NA	NA	✓	✓	✓					
2	10061-02-6	trans-1,3-dichloropropene		0.10		✓	✓													
1	79-01-6	trichloroethene		0.30		0.26	✓			✓	NA	NA	✓	✓	✓					
1	75-01-4	vinyl chloride		0.10		✓	✓													
2	1330-20-7	xylenes(total)		0.30		✓	✓													
	108-05-4	vinyl acetate	✓		✓	✓	✓	✓	✓							✓	✓	✓		

(#-# rows)

Comments: ① MS/MSD performed on an SWL sample of similar matrix from another SDG.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Volatile Organics

Site/Project: SWMU 5,78 AR/COC #: 606454 Batch #s: 256420

Laboratory: OEL SDG #: 81621 # of Samples: 2 Matrix: aqueous

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
All									
Passed									

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Volatile Organics (SW 846 Method 8260)

Site/Project: SWMU 57 & 78 AR/COC #: 606454 # of Samples: 10 Matrix: soil

Laboratory: CEL SDG #: X1620 Laboratory Sample IDs: X1620-001 & -010

Methods: EPA8260A Batch #s: ~~X1620~~ 256094

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20% / 0.99	CCV %D 20%	Method Blks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	① Field Dup. RPD	Equip. Blanks (ug/L)	Trip Blanks		
1	71-55-6	1,1,1-trichloroethane	✓	0.10	NA	✓	✓	✓	✓							NA	✓	✓		
2	79-34-5	1,1,2,2-tetrachloroethane		0.30		✓	✓													
2	79-00-5	1,1,2-trichloroethane		0.10		✓	✓													
1	75-34-3	1,1-dichloroethane		0.10		✓	✓													
1	75-35-4	1,1-dichloroethene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
1	107-06-2	1,2-dichloroethane		0.10		✓	✓													
1	540-59-0	1,2-dichloroethene(total)		0.01		✓	✓													
1	78-87-5	1,2-dichloropropane		0.01		✓	✓													
1	78-93-3	2-butanone (MEK) (10xblk)	✓	0.01		✓	✓	✓	✓								✓	✓		
~~1~~	~~110-75-8~~	~~2-chloroethyl vinyl ether~~																		
2	591-78-6	2-hexanone (MBK)	✓	0.01		✓	✓	✓	✓								✓	✓		
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10	✓	✓	✓													
1	67-64-1	acetone(10xblk)		0.01	✓	✓	✓													
1	71-43-2	benzene		0.50	NA	✓	✓			✓	NA	NA	✓	✓	✓					
1	75-27-4	bromodichloromethane		0.20		✓	✓													
3	75-25-2	bromoform		0.10		✓	✓													
1	74-83-9	bromomethane		0.10		✓	✓													
1	75-15-0	carbon disulfide		0.10		✓	✓													
1	56-23-5	carbon tetrachloride		0.10		✓	✓													
2	108-90-7	chlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	75-00-3	chloroethane		0.01		✓	✓													
1	67-66-3	chloroform		0.20	✓	✓	✓													
1	74-87-3	chloromethane		0.10	✓	✓	✓													
1	10061-01-5	cis-1,3-dichloropropene		0.20	NA	✓	✓													
2	124-48-1	dibromochloromethane		0.10		✓	✓										--	0.454		
2	100-41-4	ethylbenzene		0.10	✓	✓	✓											✓		
1	75-09-2	methylene chloride (10xblk)		0.01	✓	✓	✓													
2	100-42-5	styrene		0.30	NA	✓	✓													
2	127-18-4	tetrachloroethene		0.20		✓	✓													
2	108-88-3	toluene(10xblk)		0.40		✓	✓			✓	NA	NA	✓	✓	✓					
2	10061-02-6	trans-1,3-dichloropropene		0.10		✓	✓													
1	79-01-6	trichloroethene		0.30		0.28	✓			✓	NA	NA	✓	✓	✓					
1	75-01-4	vinyl chloride		0.10		✓	✓			✓										
2	1330-20-7	xylenes(total)		0.30		✓	✓													
	108-05-4	vinyl acetate	✓		✓	✓	✓	✓	✓							✓	✓	✓		

Comments:

① Field dup. submitted. No QC criteria.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Volatile Organics

Site/Project: Simms Site 78 AR/COC #: 606454 Batch #s: ~~256094~~ 256094

Laboratory: GEL SDG #: 81620 # of Samples: 10 Matrix: soil

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
All Passed									

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Volatile Organics (SW 846 Method 8260)

Site/Project: SWMU 5 & 78 AR/COC #: 606454 # of Samples: 10 Matrix: soil

Laboratory: CEL SDG #: K1620 Laboratory Sample IDs: K1620-001 & -010

Methods: EPA8260A Batch #s: ~~K1620~~ 256094

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	① Field Dup. RPD	Equip. Blanks (ug/L)	Trip Blanks		
						>.05	<20% / 0.99	20%												
1	71-55-6	1,1,1-trichloroethane	✓	0.10	NA	✓	✓	✓	✓							NA	✓	✓		
2	79-34-5	1,1,2,2-tetrachloroethane		0.30		✓	✓													
2	79-00-5	1,1,2-trichloroethane		0.10		✓	✓													
1	75-34-3	1,1-dichloroethane		0.10		✓	✓													
1	75-35-4	1,1-dichloroethene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
1	107-06-2	1,2-dichloroethane		0.10		✓	✓													
1	540-59-0	1,2-dichloroethene(total)		0.01		✓	✓													
1	78-87-5	1,2-dichloropropane		0.01		✓	✓													
1	78-93-3	2-butanone (MEK) (10xblk)	✓	0.01		✓	✓	✓	✓								✓	✓		
1	~~110-75-8~~	~~2-chloroethyl vinyl ether~~																		
2	591-78-6	2-hexanone (MBK)	✓	0.01		✓	✓	✓	✓								✓	✓		
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10	↓	✓	✓													
1	67-64-1	acetone(10xblk)		0.01	✓	✓	✓													
1	71-43-2	benzene		0.50	NA	✓	✓			✓	NA	NA	✓	✓	✓					
1	75-27-4	bromodichloromethane		0.20		✓	✓													
3	75-25-2	bromoform		0.10		✓	✓													
1	74-83-9	bromomethane		0.10		✓	✓													
1	75-15-0	carbon disulfide		0.10		✓	✓													
1	56-23-5	carbon tetrachloride		0.10		✓	✓													
2	108-90-7	chlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	75-00-3	chloroethane		0.01		✓	✓													
1	67-66-3	chloroform		0.20	↓	✓	✓													
1	74-87-3	chloromethane		0.10	✓	✓	✓													
1	10061-01-5	cis-1,3-dichloropropene		0.20	NA	✓	✓													
2	124-48-1	dibromochloromethane		0.10		✓	✓													
2	100-41-4	ethylbenzene		0.10	↓	✓	✓										0.454			
1	75-09-2	methylene chloride (10xblk)		0.01	✓	✓	✓										✓			
2	100-42-5	styrene		0.30	NA	✓	✓													
2	127-18-4	tetrachloroethene		0.20		✓	✓													
2	108-88-3	toluene(10xblk)		0.40		✓	✓			✓	NA	NA	✓	✓	✓					
2	10061-02-6	trans-1,3-dichloropropene		0.10		✓	✓													
1	79-01-6	trichloroethene		0.30		0.28	✓			✓	NA	NA	✓	✓	✓					
1	75-01-4	vinyl chloride		0.10		✓	✓			✓	NA									
2	1330-20-7	xylenes(total)		0.30		✓	✓													
	108-05-4	vinyl acetate	✓		↓	✓	✓	✓	✓							✓	✓	✓		

Comments:

① Field dup. submitted. No QC criteria.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Volatile Organics

Site/Project: Simms Site 78 AR/COC #: 606454 Batch #s: 256094

Laboratory: GEL SDG #: 51620 # of Samples: 10 Matrix: soil

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
All Passed									

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Semivolatile Organics (SW 846 Method 8270)

Site/Project: SWMU Sik 76 AR/COC #: 606454 Laboratory Sample IDs: 81621-003 (EB)

Laboratory: GEL SDG #: 81621

Methods: EPA8270C

# of Samples: 1 Matrix: aqueous Batch #s: 255833

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS (1)	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
1	A	108-95-2	Phenol	✓	0.80	NA	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	NA	NA	NA		
1	BN	111-44-4	bis(2-Chloroethyl)ether		0.70		✓	✓													
1	A	95-57-8	2-Chlorophenol		0.80		✓	✓			✓	NA	NA	NA	NA	NA					
1	BN	541-73-1	1,3-Dichlorobenzene		0.60		✓	✓													
1	BN	106-46-7	1,4-Dichlorobenzene		0.50		✓	✓			✓	NA	NA	NA	NA	NA					
1	BN	95-50-1	1,2-Dichlorobenzene		0.40		✓	✓													
1	A	95-48-7	o-cresol		0.70		✓	✓			✓	NA	NA	NA	NA	NA					
1	BN	108-60-1	bis(2-chloroisopropyl)ether		0.01		✓	✓													
1	A	N22	m,p-cresols		0.60		✓	✓			✓	NA	NA	NA	NA	NA					
1	BN	621-64-7	N-Nitroso-di-n-propylamine		0.50		✓	✓			✓	↓	↓	↓	↓	↓					
1	BN	67-72-1	Hexachloroethane		0.30		✓	✓			✓										
2	BN	98-95-3	Nitrobenzene		0.20		✓	✓			✓	↓	↓	↓	↓	↓					
2	BN	78-59-1	Isophorone		0.40		✓	✓													
2	A	88-75-5	2-Nitrophenol		0.10		✓	✓													
2	A	105-67-9	2,4-Dimethylphenol		0.20		✓	✓													
2	BN	111-91-1	bis(2-Chloroethoxy)methane		0.30		✓	✓													
2	A	120-83-2	2,4-Dichlorophenol		0.20		✓	✓													
2	BN	120-82-1	1,2,4-Trichlorobenzene		0.20	↓	✓	✓			✓	NA	NA	NA	NA	NA					
2	BN	91-20-3	Naphthalene		0.70	✓	0.68	✓													
2	BN	106-47-8	4-Chloroaniline		0.01	NA	✓	✓													
2	BN	87-68-3	Hexachlorobutadiene		0.01	↓	✓	✓			✓	NA	NA	NA	NA	NA					
2	A	59-50-7	4-Chloro-3-methylphenol		0.20		✓	✓			✓	NA	NA	NA	NA	NA					
2	BN	91-57-6	2-Methylnaphthalene		0.40	↓	✓	✓													
3	BN	77-47-4	Hexachlorocyclopentadiene		0.01	✓	✓	✓													
3	A	88-06-2	2,4,6-Trichlorophenol		0.20	NA	✓	✓			✓	NA	NA	NA	NA	NA					
3	A	95-95-4	2,4,5-Trichlorophenol	✓	0.20	"	✓	✓	↓	↓	✓	NA	NA	NA	NA	NA	↓	↓	↓		

Comments:
(1) MS/MSD performed on a non-SWL sample of similar matrix from same SDG. No other measure of precision.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Semivolatile Organics

Site/Project: SWMU Site 78 AR/COC #: 606454 Batch #s: 255833

Laboratory: GEL SDG #: 81621 # of Samples: 1 Matrix: aqueous

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
3	BN	91-58-7	2-Chloronaphthalene	✓	0.80	NA	✓	✓	✓	✓							NA	NA	NA		
3	BN	88-74-4	2-Nitroaniline (o-)		0.01		✓	✓													
3	BN	131-11-3	Dimethylphthalate		0.01		✓	✓													
3	BN	208-96-8	Acenaphthylene		0.90		✓	✓													
3	BN	606-20-2	2,6-Dinitrotoluene		0.20		✓	✓													
3	BN	99-09-2	3-Nitroaniline (m-)		0.01		✓	✓													
3	BN	83-32-9	Acenaphthene		0.90	↓	✓	✓			✓	NA	NA	NA	NA	NA					
3	A	51-28-5	2,4-Dinitrophenol		0.01	✓	✓	0.98	↓												
3	A	100-02-7	4-Nitrophenol		0.01	NA	✓	✓	-29.8		✓	NA	NA	NA	NA	NA					
3	BN	132-64-9	Dibenzofuran		0.80		✓	✓	✓												
3	BN	121-14-2	2,4-Dinitrotoluene		0.20		✓	✓			✓	NA	NA	NA	NA	NA					
3	BN	84-66-2	Diethylphthalate		0.01		✓	✓													
3	BN	7005-72-3	4-Chlorophenyl-phenylether		0.40		✓	✓													
3	BN	86-73-7	Fluorene		0.90		✓	✓	↓												
3	BN	100-01-6	4-Nitroaniline (p-)		0.01	↓	✓	✓	-20.8												
4	A	534-52-1	4,6-Dinitro-2-methylphenol		0.01	✓	✓	✓	✓												
4	BN	122-39-4	Diphenylamine		0.01	NA	✓	✓													
4	BN	101-55-3	4-Bromophenyl-phenylether		0.10		✓	✓													
4	BN	118-74-1	Hexachlorobenzene		0.10		✓	✓			✓	NA	NA	NA	NA	NA					
4	A	87-86-5	Pentachlorophenol		0.05		✓	✓			✓	NA	NA	NA	NA	NA					
4	BN	85-01-8	Phenanthrene		0.70		✓	✓													
4	BN	120-12-7	Anthracene		0.70		✓	✓													
4	BN	86-74-8	Carbazole		0.01		✓	✓													
4	BN	84-74-2	Di-n-butylphthalate		0.01		✓	✓													
4	BN	206-44-0	Fluoranthene		0.60		✓	✓	↓												
5	BN	129-00-0	Pyrene		0.60		✓	✓	34.0		✓	NA	NA	NA	NA	NA					
5	BN	85-68-7	Butylbenzylphthalate		0.01		✓	✓	28.5												
5	BN	91-94-1	3,3'-Dichlorobenzidine		0.01		✓	✓	✓												
5	BN	56-55-3	Benzo(a)anthracene	↓	0.80	↓	✓	✓	✓	↓							↓	↓	↓		

Comments:

Semivolatile Organics

Site/Project: Summit Site 78 AR/COC #: 606454 Batch #s: 255833

Laboratory: GEL SDG #: 81621 # of Samples: 1 Matrix: aqueous

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
5	BN	218-01-9	Chrysene	✓	0.70	NA	✓	✓	✓	✓							NA	NA	NA		
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01	↓	✓	✓	↓	↓							↓	↓	↓		
6	BN	117-84-0	Di-n-octylphthalate		0.01	↓	✓	✓	↓	↓							↓	↓	↓		
6	BN	205-99-2	Benzo(b)fluoranthene		0.70	↓	✓	✓	↓	↓							↓	↓	↓		
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	↓	✓	✓	25.6	↓							↓	↓	↓		
6	BN	50-32-8	Benzo(a)pyrene		0.70	↓	✓	✓	✓	↓							↓	↓	↓		
6	BN	193-39-5	Indeno(1,2,3-cd)pyrene		0.50	✓	✓	0.98	↓	↓							↓	↓	↓		
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	~~✓~~	✓	0.98	↓	↓							↓	↓	↓		
6	BN	191-24-2	Benzo(g,h,i)perylene	↓	0.50	NA	✓	✓	↓	↓							↓	↓	↓		

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
All Passed								

Comments:

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: Terphenyl-d14 (BN)
SMC 4: Phenol-d5 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
~~SMC 7: 2-2-Chlorophenol-d4~~ (A)
~~SMC 8: 1,2-Dichlorobenzene-d4 (BN)~~

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
All Passed												

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Semivolatile Organics (SW 846 Method 8270)

Site/Project: SWMU Sit 78 AR/COC #: 606454 Laboratory Sample IDs: 81620-011 to 020

Laboratory: CEC SDG #: 81620

Methods: EPA 8270C

# of Samples: 10 Matrix: Soil Batch #s: 255836

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks (µg/L)	Field Blanks		
							>.05	<20% / 0.99	20%												
1	A	108-95-2	Phenol	✓	0.80	NA	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	NA	✓	NA		
1	BN	111-44-4	bis(2-Chloroethyl)ether		0.70		✓	✓													
1	A	95-57-8	2-Chlorophenol		0.80		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	541-73-1	1,3-Dichlorobenzene		0.60		✓	✓													
1	BN	106-46-7	1,4-Dichlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	95-50-1	1,2-Dichlorobenzene		0.40		✓	✓													
1	A	95-48-7	o-cresol		0.70		✓	✓			✓	NA	NA	✓	✓	31					
1	BN	108-60-1	bis(2-chloroisopropyl)ether		0.01		✓	✓										↓			
1	A	N22	m,p-cresols		0.60		✓	✓			✓	NA	NA	✓	✓	34		1.05			
1	BN	621-64-7	N-Nitroso-di-n-propylamine		0.50		✓	✓			✓	↓	↓	↓	↓	✓		✓			
1	BN	67-72-1	Hexachloroethane		0.30		✓	✓			✓					↓					
2	BN	98-95-3	Nitrobenzene		0.20		✓	✓			✓	↓	↓	↓	↓						
2	BN	78-59-1	Isophorone		0.40	↓	✓	✓													
2	A	88-75-5	2-Nitrophenol		0.10	✓	✓	✓													
2	A	105-67-9	2,4-Dimethylphenol		0.20	NA	✓	✓													
2	BN	111-91-1	bis(2-Chloroethoxy)methane		0.30		✓	✓													
2	A	120-83-2	2,4-Dichlorophenol		0.20		0.19	✓													
2	BN	120-82-1	1,2,4-Trichlorobenzene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
2	BN	91-20-3	Naphthalene		0.70		✓	✓													
2	BN	106-47-8	4-Chloroaniline		0.01		✓	✓													
2	BN	87-68-3	Hexachlorobutadiene		0.01		✓	✓			✓	NA	NA	✓	✓	✓					
2	A	59-50-7	4-Chloro-3-methylphenol		0.20		✓	✓			✓	NA	NA	✓	✓	35					
2	BN	91-57-6	2-Methylnaphthalene		0.40	↓	✓	✓													
3	BN	77-47-4	Hexachlorocyclopentadiene		0.01	✓	✓	✓													
3	A	88-06-2	2,4,6-Trichlorophenol		0.20	NA	✓	✓			✓	NA	NA	✓	✓	✓					
3	A	95-95-4	2,4,5-Trichlorophenol	✓	0.20	NA	✓	✓	↓	↓	✓	NA	NA	✓	✓	33	↓	↓	↓		

Comments:

① Field dup. submitted. No QC criteria.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/23/03

Semivolatile Organics

Site/Project: SWMU Sdc 78 AR/COC #: 606454 Batch #s: 255836

Laboratory: GEL SDG #: 81620 # of Samples: 10 Matrix: soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
3	BN	91-58-7	2-Chloronaphthalene	✓	0.80	NA	✓	✓	✓	✓							NA	✓	NA		
3	BN	88-74-4	2-Nitroaniline (o-)		0.01	↓	✓	✓	↓	↓							↓	↓	↓		
3	BN	131-11-3	Dimethylphthalate		0.01		✓	✓													
3	BN	208-96-8	Acenaphthylene		0.90		✓	✓													
3	BN	606-20-2	2,6-Dinitrotoluene		0.20	↓	✓	✓													
3	BN	99-09-2	3-Nitroaniline (m-)		0.01	✓	✓	✓													
3	BN	83-32-9	Acenaphthene		0.90	NA	✓	✓			✓	NA	NA	✓	✓	✓					
3	A	51-28-5	2,4-Dinitrophenol		0.01	✓	✓	0.98													
3	A	100-02-7	4-Nitrophenol		0.01	✓	✓	✓			✓	NA	NA	✓	✓	✓					
3	BN	132-64-9	Dibenzofuran		0.80	NA	✓	✓													
3	BN	121-14-2	2,4-Dinitrotoluene		0.20	✓	✓	✓			✓	NA	NA	✓	✓	✓					
3	BN	84-66-2	Diethylphthalate		0.01	NA	✓	✓													
3	BN	7005-72-3	4-Chlorophenyl-phenylether		0.40		✓	✓													
3	BN	86-73-7	Fluorene		0.90		✓	✓													
3	BN	100-01-6	4-Nitroaniline (p-)		0.01	✓	✓	✓													
4	A	534-52-1	4,6-Dinitro-2-methylphenol		0.01	✓	✓	✓													
4	BN	122-39-4	Diphenylamine		0.01	NA	✓	✓													
4	BN	101-55-3	4-Bromophenyl-phenylether		0.10	↓	✓	✓													
4	BN	118-74-1	Hexachlorobenzene		0.10	↓	✓	✓			✓	NA	NA	✓	✓	✓					
4	A	87-86-5	Pentachlorophenol		0.05	✓	✓	✓			✓	NA	NA	✓	✓	✓					
4	BN	85-01-8	Phenanthrene		0.70	NA	✓	✓													
4	BN	120-12-7	Anthracene		0.70	↓	✓	✓													
4	BN	86-74-8	Carbazole		0.01	↓	✓	✓													
4	BN	84-74-2	Di-n-butylphthalate		0.01	↓	✓	✓													
4	BN	206-44-0	Fluoranthene		0.60	↓	✓	✓													
5	BN	129-00-0	Pyrene		0.60	↓	✓	✓			✓	NA	NA	✓	✓	71					
5	BN	85-68-7	Butylbenzylphthalate		0.01	↓	✓	✓													
5	BN	91-94-1	3,3'-Dichlorobenzidine		0.01	✓	✓	✓													
5	BN	56-55-3	Benzo(a)anthracene	↓	0.80	NA	✓	✓	↓	↓							↓	↓	↓		

Comments:

Semivolatile Organics

Site/Project: SWMU 5,k 78 AR/COC #: 606454 Batch #s: 255836

Laboratory: GEL SDG #: 81620 # of Samples: 10 Matrix: Soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%	(µg/kg)								(µg/L)			
5	BN	218-01-9	Chrysene	✓	0.70	NA	✓	✓	✓	✓							NA	✓	NA		
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01	✓	✓	✓		42.3								2.01			
6	BN	117-84-0	Di-n-octylphthalate		0.01	✓	✓	✓		✓								✓			
6	BN	205-99-2	Benzo(b)fluoranthene		0.70	✓	✓	✓													
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	✓	✓	✓													
6	BN	50-32-8	Benzo(a)pyrene		0.70	✓	✓	✓													
6	BN	193-39-5	Indeno(1,2,3-cd)pyrene		0.50	✓	✓	✓													
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	✓	✓	✓													
6	BN	191-24-2	Benzo(g,h,i)perylene	↓	0.50	✓	✓	✓	↓	↓							↓	✓	✓		

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
All Passed								

Comments:

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: Terphenyl-d14 (BN)
SMC 4: Phenol-d5 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
~~SMC 7: 2-2-Chlorophenol-d4 (A)~~
~~SMC 8: 1,2-Dichlorobenzene-d4 (BN)~~

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
All Passed												

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Inorganic Metals

Site/Project: SWMU Site 78 AR/COC #: 606454 Laboratory Sample IDs: 51621-004 (EB)

Laboratory: GEL SDG #: 51621

Methods: EPA6010B (ICP-AES), EPA6020 (ICP-MS), EPA7470A (CVAA)

# of Samples: 1 Matrix: aqueous Batch #s: 258749, 257733, 256165

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	(µg/L) ICB	(µg/L) CCB	Method Blanks	LCS	④ LCSD	LCSD RPD	① MS	MSD	MSD RPD	Rep. RPD	③ ICS AB	Serial Dilution	Field Dup. RPD	Equip. Blanks	Field Blanks		
7429-90-5 Al														✓		NA	NA	NA		
7440-39-3 Ba	✓	✓	✓	✓	0.264	✓	✓	✓	✓	NA	NA	NA	NA	✓	NA					
7440-41-7 Be	✓	↓	↓	↓	0.256	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
7440-43-9 Cd	✓	↓	↓	↓	0.426	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
7440-70-2 Ca																				
7440-47-3 Cr	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	✓	NA					
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K																				
7440-22-4 Ag	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	✓	NA					
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7440-38-1 As	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	NA	NA	NA	✓	NA					
7439-92-1 Pb	✓	↓	↓	↓	↓	↓	↓	✓	✓	NA	↓	↓	↓	↓	↓					
7782-49-2 Se	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
7440-38-2 As	✓	↓	↓	3.09	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
7440-36-0 Sb																				
7440-28-0 Tl																				
7439-97-6 Hg	✓	✓	✓	✓	-0.088	✓	✓	NA	NA	✓	NA	NA	NA	NA	NA	↓	↓	↓		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ① for ICP-AES, No MS or Rep. analyzed. LCSD analyzed for precision.

② MS, Rep., & Serial Dil. for ICP-MS & CVAA performed on SNL samples of similar matrix from other SDGs.

③ No ICS-AB analyzed @ end of ICP-MS run sequence.

Reviewed By: [signature] Date: 7/24/03

Inorganic Metals

Site/Project: SWMU Site 78 AR/COC #: 666454 Laboratory Sample IDs: 81620-0011 to -020

Laboratory: GEL SDG #: 81620

Methods: EPA6010B(ICP-AES), EPA6020(ICP-MS), EPA7471(ACCVAA)

# of Samples: 10 Matrix: soil Batch #s: 256661, 256687, 256173

CAS #/ Analyte	QC Element																		
	TAL	ICV	CCV	(µg/L) ICB	(µg/L) CCB	(mg/kg) Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	(1) ICS AB	Serial Dilution	(2) Field Dup. RPD	(mg/L) Equip. Blanks	Field Blanks	
7429-90-5 Al																NA		NA	
7440-39-3 Ba	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	✓	✓	✓		0.000604		
7440-41-7 Be	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	NA	↓	NA		✓		
7440-43-9 Cd	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	NA	↓	NA		✓		
7440-70-2 Ca																			
7440-47-3 Cr	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	✓	✓	NA		✓		
7440-48-4 Co																			
7440-50-8 Cu																			
7439-89-6 Fe																			
7439-95-4 Mg																			
7439-96-5 Mn																			
7440-02-0 Ni																			
7440-09-7 K																			
7440-22-4 Ag	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	NA	✓	NA		✓		
7440-23-5 Na																			
7440-62-2 V																			
7440-66-6 Zn																			
7440-29-1 Th	✓	✓	✓	✓	✓	✓	✓	NA	NA	-87	-99	✓	38	✓	✓		✓		
7439-92-1 Pb	↓	↓	↓	✓	↓	↓	↓	↓	↓	✓	✓		✓		109		↓		
7782-49-2 Se	↓	↓	↓	2.15	↓	↓	↓	↓	↓	↓	↓	NA	NA	↓	NA		↓		
7440-38-2 As	↓	↓	↓	3.09	3.26	0.369	↓	↓	↓	↓	↓		✓	↓	NA		↓		
7440-36-0 Sb																			
7440-28-0 Tl																			
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	✓	✓	NA	NA	↓	✓	↓	
Cyanide CN																			

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass {g} / sample vol. {ml}) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: (1) No ICS-AB analyzed @ end of ICP-MS run sequence.

(2) Field dup. submitted. No QC criteria.

Reviewed By: [signature] Date: 7/24/03

RECORDS CENTER CODE: _____

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: SWMU Site 78 PROJECT/TASK: 7219_02.02.06

SNL TASK LEADER: Langkopf ORG/MS/CF0#: 6133/1087/CF041-03

SMO PROJECT LEAD: Palencia SAMPLE SHIP DATE: 6/4/2003

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
606454	GEL	81620		7/3/2003	X			

DATA PACKAGE TAT:		RUSH		NORMAL
CORRECTIONS REQUESTED BY/DATE:				
PROBLEM #/DATE CORRECTION RECEIVED:				
CVR COMPLETED BY/DATE:	W. Palencia		7/16/03	
FINAL TRANSMITTED TO/DATE:	Griffith		7/16/03	
SENT TO VALIDATION BY/DATE:	J. Conn		07/21/03	
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:				
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE	J. Conn		07/21/03	
CD RECEIVED BY/DATE				
TO ERDMS OR RECORDS CENTER BY/DATE:				

COMMENTS: _____

CONTRACT LABORATORY

ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A — SMO Use — **AR/COC** 606454

Dept. No./Mail Stop:	6133/MS1087	Date Samples Shipped:	6-4-03	Project/Task No.: 7219 .02.02.06	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	23132	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	SWMU 78	Lab Contact:	Edie Kent/ (843) 769-7385	Contract #:	
Record Center Code:		Lab Destination:	GEL	See Attached Bottle Order	☐ Released by COC No.:
Logbook Ref. No.:		SMO Contact/Phone:	Doug Perry/ 845-0867		☐ Validation Required
Service Order No.	CFO41-03	Send Report to SMO:			Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room				Albuquerque, NM 87185-0154

Reference LOV(available at SMO)

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
062279-001	TA3/5-78-C05-4.5-6.5-S	6	78	060203/0831	S	AC	125 ml	None	G	SA	VOCs 8260	
062279-002	TA3/5-78-C05-4.5-6.5-S	6	78	060203/0831	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062280-001	TA3/5-78-C05-14.5-16.5-S	16	78	060203/0847	S	AC	125 ml	None	G	SA	VOCs 8260	
062280-002	TA3/5-78-C05-14.5-16.5-S	16	78	060203/0847	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062281-001	TA3/5-78-C06-4.5-6.5-S	6	78	060203/0805	S	AC	125 ml	None	G	SA	VOCs 8260	
062281-002	TA3/5-78-C06-4.5-6.5-S	6	78	060203/0805	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062306-001	TA3/5-78-C06-4.5-6.5-DUP	6	78	060203/0805	S	AC	125 ml	None	G	DU SA	VOCs 8260	
062306-002	TA3/5-78-C06-4.5-6.5-DUP	6	78	060203/0805	S	AG	250 ml	None	G	DU SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062282-001	TA3/5-78-C06-9.5-11.5-S	11	78	060203/0815	S	AC	125 ml	None	G	SA	VOCs 8260	
062282-002	TA3/5-78-C06-9.5-11.5-S	11	78	060203/0815	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	

RMMA ☐ Yes ☑ No Ref. No.	Sample Tracking — Smo Use	Special Instructions/QC Requirements	Abnormal Conditions on Receipt
Sample Disposal ☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy): 06/10/03	EDD ☑ Yes ☐ No	
Turnaround Time ☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by: TAC	Level D Package ☑ Yes ☐ No	
Return Samples By: ☐ Negotiated TAT	QC Inits: LC	*Send report to: Stacey Griffith	

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	W. Gibson		WG	6135/284-5232/Weston Solutions
	G. Quintana			6135/284-3309/Shaw
	S. Griffith		SG	6133/284-2588/Gram

*Please list as separate report.

Lab Use

1.Relinquished by		Org. 6135	Date 6/4/03	Time 0855	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6177	Date 6/4/03	Time 0855	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6177	Date 6/4/03	Time 1000	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date	Time	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 606454

Project Name:	SWMU 78	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	7219.02.02.06
Location	Tech Area				
Building	Room	**Reference LOV (available at SMO)**			

Sample No-Fraction	ER Sample ID or Sample Location detail	Beginning Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
062283-001	TA3/5-78-C06-14.5-16.5-S	16	78	060203/0819	S	AC	125 ml	None	G	SA	VOCs 8260	
062283-002	TA3/5-78-C06-14.5-16.5-S	16	78	060203/0819	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062284-001	TA3/5-78-C08-4.5-6.5-S	6	78	060203/0900	S	AC	125 ml	None	G	SA	VOCs 8260	
062284-002	TA3/5-78-C08-4.5-6.5-S	6	78	060203/0900	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062285-001	TA3/5-78-C08-9.5-11.5-S	11	78	060203/0908	S	AC	125 ml	None	G	SA	VOCs 8260	
062285-002	TA3/5-78-C08-9.5-11.5-S	11	78	060203/0908	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062286-001	TA3/5-78-C11-4.5-6.5-S	6	78	060203/0920	S	AC	125 ml	None	G	SA	VOCs 8260	
062286-002	TA3/5-78-C11-4.5-6.5-S	6	78	060203/0920	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062287-001	TA3/5-78-C11-9.5-11.5-S	11	78	060203/0939	S	AC	125 ml	None	G	SA	VOCs 8260	
062287-002	TA3/5-78-C11-9.5-11.5-S	11	78	060203/0939	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	
062307-001	TA3/5-78-EB-060203	0	78	060203/1000	L	G	3x40 ml	HCL	C	EB	VOCs 8260	
062307-003	TA3/5-78-EB-060203	0	78	060203/1000	L	AG	1 Liter	None	C	EB	SVOCs (8270)	
062307-004	TA3/5-78-EB-060203	0	78	060203/1000	L	P	500 ml	HNO3	C	EB	RCRA Metals, Be, total Thorium	
062308-005	TA3/5-78-TB-060203	0	78	060203/1000	L	G	3x40 ml	HCL	C	TB	VOCs 8260	

Abnormal Conditions on Receipt **LAB USE**

Recipient Initials_____

Contract Verification Review (CVR)

Project Leader LANGKOPF Project Name SWMU SITE 78 Case No. 7219_02.02.06

AR/COC No. 606454 Analytical Lab GEL SDG No. 81620

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	X				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples	X		
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	X		
c) Matrix spike recovery data reported and met		X	THORIUM FAILED RECOVERY LIMITS FOR MS/MSD
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples		X	RPDs FOR THORIUM AND CHROMIUM OUTSIDE ACCEPTANCE LIMITS
b) Matrix spike duplicate RPD data reported and met for all organic samples		X	SEVERAL RPDs FAILED ACCEPTANCE LIMITS FOR SVOC MS/MSD
3.5 Blank data a) Method or reagent blank data reported and met for all samples		X	BIS(2-ETHYLHEXYL)PHTHALATE DETECTED IN SVOC BLANK ARSENIC DETECTED IN BLANK
b) Sampling blank (e.g., field, trip, and equipment) data reported and met		X	DIBROMOCHLOROMETHANE DETECTED IN EQUIPMENT BLANK BIS(2-ETHYLHEXYL)PHTHALATE & M,P-CRESOLS DETECTED IN EQUIPMENT BLANK BARIUM DETECTED IN EQUIPMENT BLANK
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	X		
b) Initial calibration provided	X		
c) Continuing calibration provided	X		
d) Internal standard performance data provided	X		
e) Instrument run logs provided	X		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	X		
d) ICP serial dilution provided	X		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:-_____

Reviewed by: W. Palencia Date: 7-16-2003 Closed by:_____Date:_____

Site: SWMU 78 CRA Sampling **AR/COC:** 606451/606452 **Data Type:** Organic Inorganic

Sample ID	Method/CAS Number (Analysis/Analyte)																	
	VOCs:	EPA8260A (All VOCs, except...)	67-64-1 (acetone)	SVOCs:	83-32-9 (acenaphthene)	205-99-2 (benzo(b)fluoranthene)	77-47-4 (hexachlorocyclopentadiene)	129-00-0 (pyrene)	120-83-25 (2,4-dichlorophenol)	51-28-5 (2,4-dinitrophenol)	534-52-1 (4,6-dinitro-2-methylphenol)	Metals:	7440-38-2 (As)	7439-92-1 (Pb)	7782-49-2 (Se)	7440-22-4 (Ag)	7440-29-1 (Th)	
062272-001 TA3/5-78-C07-4.5-6.5-S			5.7U,B,B2															
062273-001 TA3/5-78-C07-9.5-11.5-S			5U,B,B2															
062274-001 TA3/5-78-C07-14.5-16.5-S			5.96U,B,B2															
062275-001 TA3/5-78-C09-4.5-6.5-S			5U,B,B2															
062276-001 TA3/5-78-C09-9.5-11.5-S			7.44U,B,B2															
062300-001 TA3/5-78-C09-14.5-16.5-S			5.32U,B,B2															
062277-001 TA3/5-78-C10-4.5-6.5-S			5.42U,B,B2															
062301-001 TA3/5-78-C10-4.5-6.5-DUP			5U,B,B2															
062278-001 TA3/5-78-C10-9.5-11.5-S			5.32U,B,B2															
062264-001 TA3/5-78-C01-4.5-6.5-S			5.56U,B,B2															
062265-001 TA3/5-78-C01-9.5-11.5-S			5U,B,B2															
062266-001 TA3/5-78-C02-4.5-6.5-S			5U,B,B2															
062268-001 TA3/5-78-C03-4.5-6.5-S			5.23U,B,B2															
062270-001 TA3/5-78-C04-4.5-6.5-S			5U,B,B2															
062298-001 TA3/5-78-C04-4.5-6.5-DUP			6.39U,B,B2															
062271-001 TA3/5-78-C04-14.5-16.5-S			5.27U,B,B2															
062299-001 TA3/5-78-EB-052703		P2	P2															
062304-001 TA3/5-78-TB-052703		P2	P2															
062272-002 TA3/5-78-C07-4.5-6.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062273-002 TA3/5-78-C07-9.5-11.5-S					UJ		UJ		UJ	UJ					UJ,B3	J,B3	J,A	
062274-002 TA3/5-78-C07-14.5-16.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062275-002 TA3/5-78-C09-4.5-6.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062276-002 TA3/5-78-C09-9.5-11.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062300-002 TA3/5-78-C09-14.5-16.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062277-002 TA3/5-78-C10-4.5-6.5-S								J	UJ						UJ,B3	UJ,B3	J,A	
062301-002 TA3/5-78-C10-4.5-6.5-DUP								J	UJ						UJ,B3	UJ,B3	J,A	
062278-002 TA3/5-78-C10-9.5-11.5-S					UJ				UJ						UJ,B3	UJ,B3	J,A	
062264-002 TA3/5-78-C01-4.5-6.5-S					UJ	J	UJ		UJ	UJ					UJ,B3	J,B3	J,A	
062265-002 TA3/5-78-C01-9.5-11.5-S								J	UJ						UJ,B3	UJ,B3	J,A	
062266-002 TA3/5-78-C02-4.5-6.5-S					UJ				UJ						UJ,B3	UJ,B3	J,A	
062267-002 TA3/5-78-C02-9.5-11.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062268-002 TA3/5-78-C03-4.5-6.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062269-002 TA3/5-78-C03-14.5-16.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062270-002 TA3/5-78-C04-4.5-6.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062298-002 TA3/5-78-C04-4.5-6.5-DUP					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062271-002 TA3/5-78-C04-14.5-16.5-S					UJ		UJ		UJ	UJ					UJ,B3	UJ,B3	J,A	
062299-003 TA3/5-78-EB-052703											UJ							
062299-004 TA3/5-78-EB-052703													UJ,B3	UJ,B3				

Validated By: Mr. Kenneth Salaz **Date:** 07/09/03

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 9, 2003

TO: File

FROM: Kenneth Salaz

SUBJECT: Organic Data Review and Validation - SNL
SWMU 87 CRA Sampling, ARCOC #606451/606452,
GEL SDG #81192/81194, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA8260A/B VOCs and EPA8270C SVOCs. Problems were identified with the data package that result in the qualification of data.

1. SVOC Analysis: For the equipment blank (EB), the initial calibration correlation coefficient (R^2 value) of 4,6-dinitro-2-methylphenol was less than (<) 0.99 but greater than (>) 0.90, and the continuing calibration verification (CCV) percent differences (%Ds) was >40% but <60%. The 4,6-dinitro-2-methylphenol sample result was non-detect (ND) and, thus, will be qualified "UJ," based on professional judgment.

   For the soil samples, the initial calibration response factors (RFs) of 2,4-dichlorophenol for all samples and acenaphthene for all samples except 81192-025, -026, and -029 were < the required minimums but >0.01. Also, the CCV %Ds of 2,4-dinitrophenol and hexachlorocyclopentadiene for all samples except -025, -026, -027, -029, and -030 were >40% but <60%. All associated sample results were ND and, thus, will be qualified "UJ." The CCV %D of pyrene for samples -025, -026, and -029 and that of benzo(b)fluoranthene for all samples except -025, -026, and -029 were >20% but <40%. The associated pyrene sample results and the benzo(b)fluoranthene result of sample -028 were detects and, thus, will be qualified "J."

2. VOC Analysis: In the method blank and EB, acetone was detected. The associated results of all samples except 81194-013 and -015 were detects <10X the blank concentration. The associated results of samples -002, -004, -008, -011, -012, and -016 were < the reporting limit (RL), and, thus, will be qualified "5U,B,B2." All other associated sample results were > the RL and, thus, will be qualified "U,B,B2" at their respective concentrations.

3. VOC Analysis: For the EB and trip blank (TB), no MSD, LCSD, Replicate, or other measure of precision was analyzed. Thus, all results for these samples will be qualified "P2."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

VOC Analysis: The initial and continuing calibrations met all QC acceptance criteria.

SVOC Analysis: The initial and continuing calibrations met QC acceptance criteria except as noted above in the Summary section and the following. For the EB, the initial calibration R^2 value of di-n-octylphthalate was <0.99 but >0.90, and the CCV %Ds of several other compounds (see SVOC DV worksheet) were >20% but <40%. For the soil samples, the initial calibration R^2 value of 2,4-dinitrophenol for samples 81192-025, -026, and -029 was <0.99 but >0.90, and the CCV %Ds of several other compounds (see SVOC DV worksheet) were >20% but <40%. However, all associated sample results were ND and, thus, will not be qualified.

Blanks

VOC Analysis: No target analytes were detected in the blanks except as noted above in the summary section and the following. In the EB, dibromochloromethane was detected. However, all associated sample results were ND and, thus, will not be qualified.

SVOC Analysis: No target analytes were detected in the blanks.

Surrogates

All Analyses: All surrogate percent recoveries (%Rs) met QC acceptance criteria.

Internal Standards (ISs)

All Analyses: The IS areas and retention times (RTs) met all QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

VOC Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. No MS/MSD or any other measure of precision was performed for the EB and TB, as noted above in the Summary section.

SVOC Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. For the EB, the MS %Rs of o-nitroaniline, p-nitroaniline, and 3,3'-dichlorobenzidine were < the QC acceptance limits. However, the MSD %Rs and relative percent differences (RPDs) met QC acceptance criteria. Thus, no sample data will be qualified, based on professional judgment. Also, it should be noted that the MS/MSD analyses for the EB and soil sample batch #254409 were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

Laboratory Control Sample (LCS/LCSD) Analyses

All Analyses: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Confirmation Analyses

All Analyses: No confirmation analyses were required for these methods.

Detection Limits/Dilutions

VOC Analysis: All detection limits were properly reported. Soil sample 81192-028 was diluted 4X for bis(2-ethylhexyl)phthalate due to an over-range detect. No other samples were diluted.

SVOC Analysis: All detection limits were properly reported. No samples were diluted.

Other QC

VOC Analysis: A field duplicate was submitted. However, there are no "required" review criteria for field duplicate analyses comparability. An EB and TB were also submitted. No field blank (FB) was submitted on the ARCOC.

SVOC Analysis: A field duplicate was submitted. However, there are no "required" review criteria for field duplicate analyses comparability. An EB was also submitted. No FB was submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Analytical Quality Associates, Inc.
616 Maxine NE
Albuquerque, NM 87123
Phone: 505-299-5201
Fax: 505-299-6744
Email: minteer@aol.com

MEMORANDUM

DATE: July 9, 2003

TO: File

FROM: Kenneth Salaz

SUBJECT: Inorganic Data Review and Validation - SNL
SWMU 87 CRA Sampling, ARCOC #606451/606452,
GEL SDG #81192/81194, Case No. 7219.02.02.06

See the attached Data Validation Worksheets for supporting documentation on the data review and validation. Data are evaluated using SNL/NM ER Project AOP 00-03.

Summary

All samples were prepared and analyzed with approved procedures using methods EPA6010B ICP-AES Metals, EPA6020 ICP-MS thorium, EPA7470/1A CVAA. Problems were identified with the data package that result in the qualification of data.

1. ICP Analyses: In the initial calibration blank (ICB) and/or continuing calibration blank (CCB) for the equipment blank (EB), arsenic (As) and lead (Pb) were detected at negative concentrations. In the ICB and/or CCB for the soil samples, selenium (Se) and silver (Ag) were also detected. The absolute values were greater than (>) the detection limits (DLs) but less than (<) the reporting limits (RLs). The Ag results of samples 81192-020 and -028 were detects <5X the DL and, thus, will be qualified "J,B3." All other associated sample results were non-detect (ND) and, thus, will be qualified "UJ,B3."

2. ICP Analyses: The LCS percent recovery (%R) of thorium (Th) for the soil samples was >125%. All associated sample results were detects and, thus, will be qualified "J,A."

Data are acceptable. QC measures appear to be adequate. The following sections discuss the data review and validation.

Holding Times/Preservation

All Analyses: All samples were analyzed within the method specified holding times and properly preserved.

Calibration

All Analyses: The initial and continuing calibrations met all QC acceptance criteria.

Blanks

ICP Analyses: No target analytes were detected in the blanks except as noted above in the summary section and the following. In the ICB and/or CCB for the soil samples, chromium (Cr) and Th were detected, and Pb was detected in the method blank. In the EB, barium (Ba) and Cr were detected. In the ICB for the soil samples, Cr was detected at a negative concentration. The absolute value was > the DL but < the RL. However, all associated sample results were either >5X the DL or >5X the blank concentrations and, thus, will not be qualified.

CVAA Analysis: No target analytes were detected in the blanks.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

ICP-AES Analysis: The MS/MSD analyses for the soil samples met all QC acceptance criteria. No MS/MSD analyses were performed for the EB. An LCSD was analyzed as a measure of precision. No sample data will be qualified as a result.

ICP-MS/CVAA Analyses: The MS/MSD analyses for the soil samples met all QC acceptance criteria. The MS analyses for the EB met all QC acceptance criteria. No MSD analyses were performed. The replicate analyses were used as measures of laboratory precision. It should be noted that the MS analyses for the EB were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

Laboratory Control Sample (LCS/LCSD) Analyses

ICP-AES Analysis: The LCS/LCSD analyses for the EB, as well as the LCS analysis for the soil samples, met all QC acceptance criteria. No LCSD analysis was performed for the soil samples. No sample data will be qualified as a result.

ICP-MS Analysis: The LCS analysis for the EB met all QC acceptance criteria. The LCS analysis for the soil samples did not meet QC criteria as noted above in the summary section. No LCSD analyses were performed. No sample data will be qualified as a result.

CVAA Analysis: The LCS analyses met all QC acceptance criteria. No LCSD analyses were performed. No sample data will be qualified as a result.

Replicate Analysis

ICP-AES Analysis: No replicate analysis was performed for the EB. An LCSD was analyzed as a measure of precision. The replicate analysis for the soil samples met all QC acceptance criteria.

ICP-MS/CVAA Analyses: The replicate analyses met all QC acceptance criteria. It should be noted that this replicate analyses for the EB were performed on SNL samples of similar matrix from other SDGs. No sample data will be qualified as a result.

ICP Interference Check Sample (ICS)

ICP Analyses: The ICS met all QC acceptance criteria.

ICP Serial Dilution

ICP Analyses: The serial dilution analyses met all QC acceptance criteria. It should be noted that the serial dilution for the ICP-AES analysis was performed on an SNL sample of similar matrix from another SDG. No sample data will be qualified as a result.

CVAA Analysis: No serial dilution was required for these methods.

Detection Limits/Dilutions

ICP Analyses: All detection limits were properly reported. All soil samples were diluted the standard 2X. Soil samples 81192-020, -031, -032, and -035 were diluted 5X for Ba due to high concentrations of target analyte. No other samples were diluted.

CVAA Analysis: All detection limits were properly reported. No samples were diluted.

Other QC

All Analyses: Field duplicates were submitted. However, there are no "required" review criteria for field duplicate analyses comparability. EBs were also submitted. No field blanks (FBs) were submitted on the ARCOC.

No other specific issues were identified which affect data quality.

Data Validation Summary

Site/Project: SWMU 87 CRA Sampling Project/Task #: 7219.02.02.06 # of Samples: 40 Matrix: 36 soil / 4 aqueous

AR/COC #: 606451/606452 Laboratory Sample IDs: 81192-001 to -036

Laboratory: GEL 81194-001 to -004

SDG #: 81192/81194

QC Element	Analysis									
	Organics				Inorganics				RAD	Other
	VOC	SVOC	Pesticide/ PCB	HPLC (HE)	ICP/AES /MS	GFAA/ AA	CVAA (Hg)	CN		
1. Holding Times/Preservation	✓	✓	NA	NA	✓	NA	✓	NA	NA	NA
2. Calibrations	✓	J; UJ			✓		✓			
3. Method Blanks	U, B	✓			J, B3 UJ, B3		✓			
4. MS/MSD	P2	✓			✓		✓			
5. Laboratory Control Samples	✓	✓			J, A		✓			
6. Replicates					✓		NA			
7. Surrogates	✓	✓								
8. Internal Standards	✓	✓								
9. TCL Compound Identification	✓	✓								
10. ICP Interference Check Sample					✓					
11. ICP Serial Dilution					✓					
12. Carrier/Chemical Tracer Recoveries										
13. Other QC	U, B2	✓	✓	✓	✓	✓	✓	✓	✓	✓

J = Estimated
U = Not Detected
UJ = Not Detected, Estimated
R = Unusable

Check (√) = Acceptable
Shaded Cells = Not Applicable (also "NA")
NP = Not Provided
Other: _____

Reviewed By: [signature] Date: 7/9/03

Volatile Organics (SW 846 Method 8260)

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 # of Samples: 18 Matrix: Soil

Laboratory: GEL SDG #: 81192 Laboratory Sample IDs: 81192-001 to -018

Methods: EPA8260A Batch #s: 255014

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20%/ 0.99	CCV %D 20%	Method Blks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	(D) Field Dup. RPD	Equip. Blanks (µg/L)	Trip Blanks (µg/L)		
1	71-55-6	1,1,1-trichloroethane	✓	0.10	NA	✓	✓	✓	✓							NA	✓	✓		
2	79-34-5	1,1,2,2-tetrachloroethane		0.30																
2	79-00-5	1,1,2-trichloroethane		0.10																
1	75-34-3	**1,1-dichloroethane**		0.10																
1	75-35-4	**1,1-dichloroethene**		0.20						✓	NA	NA	✓	✓	✓					
1	107-06-2	**1,2-dichloroethane**		0.10																
1	540-59-0	**1,2-dichloroethene(total)**		0.01																
1	78-87-5	**1,2-dichloropropane**		0.01																
1	78-93-3	2-butanone (MEK) (10xblk)	✓	0.01		✓	✓	✓	✓								✓	✓		
1	110-75-8	~~2-chloroethyl vinyl ether~~																		
2	591-78-6	2-hexanone (MBK)	✓	0.01		✓	✓	✓	✓								✓	✓		
2	108-10-1	4-methyl-2-pentanone (MIBK)		0.10	✓				✓								✓			
1	67-64-1	**acetone(10xblk)**		0.01	✓				4.59								7.37			
1	71-43-2	**benzene**		0.50	NA				✓	✓	NA	NA	✓	✓	✓		✓			
1	75-27-4	bromodichloromethane		0.20	NA															
3	75-25-2	bromoform		0.10	✓															
1	74-83-9	bromomethane		0.10	NA															
1	75-15-0	carbon disulfide		0.10																
1	56-23-5	**carbon tetrachloride**		0.10																
2	108-90-7	**chlorobenzene**		0.50						✓	NA	NA	✓	✓	✓					
1	75-00-3	chloroethane		0.01																
1	67-66-3	**chloroform**		0.20																
1	74-87-3	chloromethane		0.10																
1	10061-01-5	cis-1,3-dichloropropene		0.20													✓			
2	124-48-1	dibromochloromethane		0.10													0.47			
2	100-41-4	ethylbenzene		0.10													✓			
1	75-09-2	methylene chloride (10xblk)		0.01																
2	100-42-5	styrene		0.30																
2	127-18-4	**tetrachloroethene**		0.20																
2	108-88-3	toluene(10xblk)		0.40						✓	NA	NA	✓	✓	✓					
2	10061-02-6	trans-1,3-dichloropropene		0.10																
1	79-01-6	**trichloroethene**		0.30						✓	NA	NA	✓	✓	✓					
1	75-01-4	**vinyl chloride**		0.10																
2	1330-20-7	xylenes(total)		0.30		✓														
	108-05-4	vinyl acetate	✓		✓	✓	✓	✓	✓							✓	✓	✓		

Comments: (D field dup. submitted. No QC criteria.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/8/03

Volatile Organics

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 Batch #s: 255014

Laboratory: GEL SDG #: 81192 # of Samples: 18 Matrix: soil

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
All									
Passed									

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Volatile Organics (SW 846 Method 8260)

Site/Project: Summa 87 CRA Sampling AR/COC #: 606451/606452 # of Samples: 2 Matrix: aqueous

Laboratory: GEL SDG #: 81194 Laboratory Sample IDs: 81194-001 (LB) & -002 (TB)

Methods: EPA 8260B Batch #s: 255264

IS	CAS #	Name	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20% / 0.99	CCV %D 20%	Method Blks	LCS	① LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Trip Blanks		
1	71-55-6	1,1,1-trichloroethane	✓	0.10	NA	✓	✓	✓	✓											
2	79-34-5	1,1,2,2-tetrachloroethane	✓	0.30		✓	✓													
2	79-00-5	1,1,2-trichloroethane	✓	0.10		✓	✓													
1	75-34-3	1,1-dichloroethane	✓	0.10		✓	✓													
1	75-35-4	1,1-dichloroethene	✓	0.20		✓	✓			✓										
1	107-06-2	1,2-dichloroethane	✓	0.10		✓	✓													
1	540-59-0	1,2-dichloroethene(total)	✓	0.01		✓	✓													
1	78-87-5	1,2-dichloropropane	✓	0.01		✓	✓													
1	78-93-3	2-butanone (MEK) (10xblk)	✓	0.01		✓	✓	✓	✓											
1	~~110-75-8~~	~~2-chloroethyl vinyl ether~~																		
2	591-78-6	2-hexanone (MBK)	✓	0.01		✓	✓	✓	✓											
2	108-10-1	4-methyl-2-pentanone (MIBK)	✓	0.10	✓	✓	✓													
1	67-64-1	acetone(10xblk)	✓	0.01	✓	✓	✓													
1	71-43-2	benzene	✓	0.50	NA	✓	✓			✓										
1	75-27-4	bromodichloromethane	✓	0.20	"	✓	✓													
3	75-25-2	bromoform	✓	0.10	✓	✓	✓													
1	74-83-9	bromomethane	✓	0.10	NA	✓	✓													
1	75-15-0	carbon disulfide	✓	0.10		✓	✓													
1	56-23-5	carbon tetrachloride	✓	0.10		✓	✓													
2	108-90-7	chlorobenzene	✓	0.50		✓	✓			✓										
1	75-00-3	chloroethane	✓	0.01		✓	✓													
1	67-66-3	chloroform	✓	0.20		✓	✓													
1	74-87-3	chloromethane	✓	0.10		✓	✓													
1	10061-01-5	cis-1,3-dichloropropene	✓	0.20		✓	✓													
2	124-48-1	dibromochloromethane	✓	0.10		✓	✓													
2	100-41-4	ethylbenzene	✓	0.10		✓	✓													
1	75-09-2	methylene chloride (10xblk)	✓	0.01		✓	✓													
2	100-42-5	styrene	✓	0.30		✓	✓													
2	127-18-4	tetrachloroethene	✓	0.20		✓	✓													
2	108-88-3	toluene(10xblk)	✓	0.40		✓	✓			✓										
2	10061-02-6	trans-1,3-dichloropropene	✓	0.10		✓	✓													
1	79-01-6	trichloroethene	✓	0.30		✓	✓			✓										
1	75-01-4	vinyl chloride	✓	0.10		✓	✓													
2	1330-20-7	xylenes(total)	✓	0.30		✓	✓													
	108-05-4	vinyl acetate	✓		✓	✓	✓	✓	✓											

Comments:

① No LCSD, MSD, or other measure of precision analyzed.

Notes: Shaded rows are RCRA compounds.

Reviewed By: [signature] Date: 7/8/03

Volatile Organics

Site/Project: Swmu 87 CRA Sampling AR/COC #: 606451/606452 Batch #s: 255264

Laboratory: GEL SDG #: 81194 # of Samples: 2 Matrix: aqueous

Surrogate Recovery and Internal Standard Outliers (SW 846 Method 8260)

Sample	SMC 1	SMC 2	SMC 3	IS 1 area	IS 1 RT	IS 2 area	IS 2 RT	IS 3 area	IS 3 RT
All Passed									

SMC 1: Bromofluorobenzene
SMC 2: Dibromofluoromethane
SMC 3: Toluene-d8

IS 1: Fluorobenzene
IS 2: Chlorobenzene-d5
IS 3: 1,4-Dichlorobenzene-d4

Comments:

Semivolatile Organics (SW 846 Method 8270)

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451 / 606452 Laboratory Sample IDs: 81192-019 to -036

Laboratory: GEL SDG #: 81192

Methods: EPA8270C

# of Samples: 18 Matrix: Soil Batch #s: 254403 / 254409 (-025, -026, -029)

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	① MS	MSD	MS RPD	④ Field Dup. RPD	Equip. Blanks	Field Blanks	② CCV %D	CCV %D
							>.05	<20% / 0.99	20%												
1	A	108-95-2	Phenol	✓	0.80	NA	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	NA	✓	NA	✓	✓
1	BN	111-44-4	bis(2-Chloroethyl)ether		0.70		✓	✓													
1	A	95-57-8	2-Chlorophenol		0.80		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	541-73-1	1,3-Dichlorobenzene		0.60		✓	✓													
1	BN	106-46-7	1,4-Dichlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	95-50-1	1,2-Dichlorobenzene		0.40		✓	✓													
1	A	95-48-7	o-cresol		0.70		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	108-60-1	bis(2-chloroisopropyl)ether		0.01		✓	✓													
1	A	N22	m,p-cresols		0.60		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	621-64-7	N-Nitroso-di-n-propylamine		0.50		✓	✓			✓	↓	↓	↓	↓	↓				↓	
1	BN	67-72-1	Hexachloroethane		0.30		✓	✓			✓									24.0	
2	BN	98-95-3	Nitrobenzene		0.20		✓	✓			✓	↓	↓	↓	↓	↓				✓	
2	BN	78-59-1	Isophorone		0.40		✓	✓												↓	
2	A	88-75-5	2-Nitrophenol		0.10		✓	✓													
2	A	105-67-9	2,4-Dimethylphenol		0.20		✓	✓													
2	BN	111-91-1	bis(2-Chloroethoxy)methane		0.30		✓	✓													
2	A	120-83-2	2,4-Dichlorophenol		0.20		0.19	✓													
2	BN	120-82-1	1,2,4-Trichlorobenzene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
2	BN	91-20-3	Naphthalene		0.70		✓	✓													
2	BN	106-47-8	4-Chloroaniline		0.01		✓	✓													
2	BN	87-68-3	Hexachlorobutadiene		0.01		✓	✓			✓	NA	NA	✓	✓	✓					
2	A	59-50-7	4-Chloro-3-methylphenol		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
2	BN	91-57-6	2-Methylnaphthalene		0.40	↓	✓	✓	↓											↓	
3	BN	77-47-4	Hexachlorocyclopentadiene		0.01	✓	✓	✓	48.8											37.3	
3	A	88-06-2	2,4,6-Trichlorophenol		0.20	NA	✓	✓	✓		✓	NA	NA	✓	✓	✓				✓	
3	A	95-95-4	2,4,5-Trichlorophenol	✓	0.20	"	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Shaded rows are RCRA compounds.

Comments:

① MS/MSD for batch #254409 performed on an SWL sample of similar matrix from another SDG.

② 2nd CCV %D applies to samples -027 & -030. 3rd to samples -025, -026, -029 only.

③ Sample -028 dil. 4X for bis(2-ethylhexyl) phthalate due to over-range hit. Reviewed By: _____ Date: 7/9/03

④ Field dup. submitted. No QC criteria.

Semivolatile Organics

Site/Project: Summ 87 CRA Sampling AR/COC #: 606451 / 606452 Batch #s: 254403 / 254409

Laboratory: CFL SDG #: 81192 # of Samples: 15 Matrix: Soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks	cav %D	ccv %D
							>.05	<20% / 0.99	20%												
5	BN	218-01-9	Chrysene	✓	0.70	NA	✓	✓	✓	✓							NA	✓	NA	✓	✓
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01	"	✓	✓	↓											↓	
6	BN	117-84-0	Di-n-octylphthalate		0.01	✓	✓	✓													
6	BN	205-99-2	Benzo(b)fluoranthene		0.70	NA	✓	✓	27.3											27.8	
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	↓	✓	✓	21.2											24.1	
6	BN	50-32-8	Benzo(a)pyrene		0.70	↓	✓	✓	✓											✓	
6	BN	193-39-5	Indeno(1,2,3-cd)pyrene		0.50	✓	✓	✓	-24.0											↓	
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	✓	✓	✓	-24.6												
6	BN	191-24-2	Benzo(g,h,i)perylene	✓	0.50	✓	✓	✓	-27.9	↓							↓	↓	↓	↓	↓

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
All Passed								

Comments:

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: Terphenyl-d14 (BN)
SMC 4: Phenol-d5 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
~~SMC 7: 2-2-Chlorophenol-d4 (A)~~
~~SMC 8: 1,2-Dichlorobenzene-d4 (BN)~~

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
All Passed												

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Semivolatile Organics

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451 / 606452 Batch #s: 254403 / 254409

Laboratory: CEL SDG #: 81192 # of Samples: 15 Matrix: soil

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks	ccv %D	ccv %D
							>.05	<20% / 0.99	20%												
5	BN	218-01-9	Chrysene	✓	0.70	NA	✓	✓	✓	✓							NA	✓	NA	✓	✓
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01	"	✓	✓	↓	↓							↓	↓	↓	↓	↓
6	BN	117-84-0	Di-n-octylphthalate		0.01	✓	✓	✓	↓											↓	
6	BN	205-99-2	Benzo(b)fluoranthene		0.70	NA	✓	✓	27.3											27.8	
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	↓	✓	✓	21.2											24.1	
6	BN	50-32-8	Benzo(a)pyrene		0.70	↓	✓	✓	✓											✓	
6	BN	193-39-5	Indeno(1,2,3-cd)pyrene		0.50	✓	✓	✓	-24.0											↓	
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	✓	✓	✓	-24.6												
6	BN	191-24-2	Benzo(g,h,i)perylene	✓	0.50	✓	✓	✓	-27.9	↓							↓	↓	↓	↓	↓

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
All Passed								

Comments:

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: Terphenyl-d14 (BN)
SMC 4: Phenol-d5 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
~~SMC 7: 2-2-Chlorophenol-d4 (A)~~
~~SMC 8: 1,2-Dichlorobenzene-d4 (BN)~~

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
All Passed												

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Semivolatile Organics (SW 846 Method 8270)

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 Laboratory Sample IDs: 84194-003 (EB)

Laboratory: GEL SDG #: 84194

Methods: EPA 8270C

# of Samples: 1 Matrix: Aqueous Batch #s: 254414

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	① MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
1	A	108-95-2	Phenol	✓	0.80	NA	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	NA	NA	NA		
1	BN	111-44-4	bis(2-Chloroethyl)ether		0.70		✓	✓													
1	A	95-57-8	2-Chlorophenol		0.80		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	541-73-1	1,3-Dichlorobenzene		0.60		✓	✓													
1	BN	106-46-7	1,4-Dichlorobenzene		0.50		✓	✓			✓	NA	NA	✓	✓	✓					
1	BN	95-50-1	1,2-Dichlorobenzene		0.40		✓	✓													
1	A	95-48-7	o-cresol		0.70		✓	✓	✓		✓	NA	NA	✓	✓	✓					
1	BN	108-60-1	bis(2-chloroisopropyl)ether		0.01		✓	✓	24.9												
1	A	N22	m,p-cresols		0.60		✓	✓	✓		✓	NA	NA	✓	✓	✓					
1	BN	621-64-7	N-Nitroso-di-n-propylamine		0.50		✓	✓			✓	↓	↓	↓	↓	↓					
1	BN	67-72-1	Hexachloroethane		0.30		✓	✓			✓										
2	BN	98-95-3	Nitrobenzene		0.20		✓	✓			✓	↓	↓	↓	↓	↓					
2	BN	78-59-1	Isophorone		0.40		✓	✓													
2	A	88-75-5	2-Nitrophenol		0.10		✓	✓													
2	A	105-67-9	2,4-Dimethylphenol		0.20		✓	✓													
2	BN	111-91-1	bis(2-Chloroethoxy)methane		0.30		✓	✓													
2	A	120-83-2	2,4-Dichlorophenol		0.20		✓	✓													
2	BN	120-82-1	1,2,4-Trichlorobenzene		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
2	BN	91-20-3	Naphthalene		0.70		✓	✓													
2	BN	106-47-8	4-Chloroaniline		0.01		✓	✓													
2	BN	87-68-3	Hexachlorobutadiene		0.01		✓	✓			✓	NA	NA	✓	✓	✓					
2	A	59-50-7	4-Chloro-3-methylphenol		0.20		✓	✓			✓	"	"	✓	✓	✓					
2	BN	91-57-6	2-Methylnaphthalene		0.40		✓	✓													
3	BN	77-47-4	Hexachlorocyclopentadiene		0.01		✓	✓													
3	A	88-06-2	2,4,6-Trichlorophenol		0.20		✓	✓			✓	NA	NA	✓	✓	✓					
3	A	95-95-4	2,4,5-Trichlorophenol	✓	0.20	✓	✓	✓	✓	✓	✓	"	"	✓	✓	✓	✓	✓	✓		

Notes: Shaded rows are RCRA compounds.

Comments:

① MS/MSD performed on an SNL sample of similar matrix from another SDG.

Reviewed By: _____ Date: 7/9/03

Semivolatile Organics

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 Batch #s: 254414

Laboratory: GEL SDG #: 81194 # of Samples: 1 Matrix: Aqueous

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF	Calib. RSD/ R^2	CCV %D	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
							>.05	<20% / 0.99	20%												
3	BN	91-58-7	2-Chloronaphthalene	✓	0.80	NA	✓	✓	✓	✓							NA	NA	NA		
3	BN	88-74-4	2-Nitroaniline (o-)		0.01	↓	✓	✓	↓	↓	✓	NA	NA	20.1	✓	✓	↓	↓	↓		
3	BN	131-11-3	Dimethylphthalate		0.01	↓	✓	✓													
3	BN	208-96-8	Acenaphthylene		0.90	↓	✓	✓													
3	BN	606-20-2	2,6-Dinitrotoluene		0.20	✓	✓	✓													
3	BN	99-09-2	3-Nitroaniline (m-)		0.01	NA	✓	✓													
3	BN	83-32-9	Acenaphthene		0.90	"	✓	✓	↓		✓	NA	NA	✓	✓	✓					
3	A	51-28-5	2,4-Dinitrophenol		0.01	✓	✓	✓	31.0												
3	A	100-02-7	4-Nitrophenol		0.01	NA	✓	✓	27.1		✓	NA	NA	✓	✓	✓					
3	BN	132-64-9	Dibenzofuran		0.80	"	✓	✓	✓												
3	BN	121-14-2	2,4-Dinitrotoluene		0.20	✓	✓	✓	22.6		✓	NA	NA	✓	✓	✓					
3	BN	84-66-2	Diethylphthalate		0.01	NA	✓	✓	✓												
3	BN	7005-72-3	4-Chlorophenyl-phenylether		0.40	↓	✓	✓	↓												
3	BN	86-73-7	Fluorene		0.90	↓	✓	✓	↓												
3	BN	100-01-6	4-Nitroaniline (p-)		0.01	↓	✓	✓	-25.8		✓	NA	NA	13.1	✓	✓					
4	A	534-52-1	4,6-Dinitro-2-methylphenol		0.01	✓	✓	0.98	48.6												
4	BN	122-39-4	Diphenylamine		0.01	NA	✓	✓	✓												
4	BN	101-55-3	4-Bromophenyl-phenylether		0.10	↓	✓	✓	21.4												
4	BN	118-74-1	Hexachlorobenzene		0.10	↓	✓	✓	✓		✓	NA	NA	✓	✓	✓					
4	A	87-86-5	Pentachlorophenol		0.05	✓	✓	✓	↓		✓	"	"	✓	✓	✓					
4	BN	85-01-8	Phenanthrene		0.70	NA	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	BN	120-12-7	Anthracene		0.70	↓	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	BN	86-74-8	Carbazole		0.01	↓	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	BN	84-74-2	Di-n-butylphthalate		0.01	↓	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
4	BN	206-44-0	Fluoranthene		0.60	↓	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
5	BN	129-00-0	Pyrene		0.60	↓	✓	✓	↓	↓	✓	NA	NA	✓	✓	✓	↓	↓	↓		
5	BN	85-68-7	Butylbenzylphthalate		0.01	↓	✓	✓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
5	BN	91-94-1	3,3'-Dichlorobenzidine		0.01	↓	✓	✓	↓	↓	✓	NA	NA	0	✓	✓	↓	↓	↓		
5	BN	56-55-3	Benzo(a)anthracene	✓	0.80	↓	✓	✓	✓	✓	↓	↓	↓	↓	↓	↓	✓	✓	✓		

Comments:

Semivolatile Organics

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 Batch #s: 254414

Laboratory: GEL SDG #: 81194 # of Samples: 1 Matrix: aqueous

IS	BNA	CAS #	NAME	TCL	Min. RF	Intercept	Calib. RF >.05	Calib. RSD/ R^2 <20%/ 0.99	CCV %D 20%	Method Blanks	LCS	LCSD	LCS RPD	MS	MSD	MS RPD	Field Dup. RPD	Equip. Blanks	Field Blanks		
5	BN	218-01-9	Chrysene	✓	0.70	NA	✓	✓	✓	✓							NA	NA	NA		
5	BN	117-81-7	bis(2-Ethylhexyl)phthalate		0.01	4	✓	✓	39.9												
6	BN	117-84-0	Di-n-octylphthalate		0.01	✓	✓	0.98	✓												
6	BN	205-99-2	Benzo(b)fluoranthene		0.70	NA	✓	✓													
6	BN	207-08-9	Benzo(k)fluoranthene		0.70	↓	✓	✓													
6	BN	50-32-8	Benzo(a)pyrene		0.70	↓	✓	✓													
6	BN	193-39-5	Indeno(1,2,3-cd)pyrene		0.50	✓	✓	✓													
6	BN	53-70-3	Dibenz(a,h)anthracene		0.40	AP NA	✓	✓													
6	BN	191-24-2	Benzo(g,h,i)perylene	✓	0.50	✓	✓	✓	✓	✓							✓	✓	✓		

Surrogate Recovery Outliers

Sample	SMC 1	SMC 2	SMC 3	SMC 4	SMC 5	SMC 6	SMC 7	SMC 8
All Passed								

Comments:

SMC 1: Nitrobenzene-d5 (BN)
SMC 2: 2-Fluorobiphenyl (BN)
SMC 3: Terphenyl-d14 (BN)
SMC 4: Phenol-d5 (A)
SMC 5: 2-Fluorophenol (A)
SMC 6: 2,4,6-Tribromophenol (A)
~~SMC 7: 2-2-Chlorophenol-d4 (A)~~
~~SMC 8: 1,2-Dichlorobenzene-d4 (BN)~~

Internal Standard Outliers

Sample	IS 1-area	IS 1-RT	IS 2-area	IS 2-RT	IS 3-area	IS 3-RT	IS 4-area	IS 4-RT	IS 5-area	IS 5-RT	Is 6-area	IS 6-RT
All Passed												

IS 1: 1,4-Dichlorobenzene-d4 (BN)
IS 2: Naphthalene-d8 (BN)
IS 3: Acenaphthene-d10 (BN)
IS 4: Phenathrene-d10 (BN)
IS 5: Chrysene-d12 (BN)
IS 6: Perylene-d12 (BN)

Inorganic Metals

Site/Project: Summit 87 CRA Sampling AR/COC #: 606451 / 606452 Laboratory Sample IDs: 81192-019 to -036

Laboratory: GEL SDG #: 81192

Methods: EPA6010C(ICP-AES), EPA6020(ICP-MS), EPA747(ACCVAA)

# of Samples: 18 Matrix: soil Batch #s: 254530, 254545, 255044

CAS #/ Analyte	QC Element																			
	TAL	ICV	CCV	(µg/L) ICB	(µg/L) CCB	(mg/Kg) Method Blanks	LCS	LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	(2) ICS AB	Serial Dilution	(3) Field Dup. RPD	(µg/L) Equip. Blanks	Field Blanks		
7429-90-5 Al																NA		NA		
7440-39-3 Ba	✓	✓	✓	✓	✓	✓	✓	NA	NA	NA	NA	NA	✓	✓	✓		0.992			
7440-41-7 Be	↓	↓	↓	↓	↓	↓	↓	↓	↓	✓	✓	✓	NA	↓	NA		✓			
7440-43-9 Cd	↓	↓	↓	↓	↓	↓	↓	↓	↓	✓	✓	✓	NA	↓	NA		✓			
7440-70-2 Ca																				
7440-47-3 Cr	✓	✓	✓	-2.89	1.72	✓	✓	NA	NA	✓	✓	✓	✓	✓	NA		1.05			
7440-48-4 Co																				
7440-50-8 Cu																				
7439-89-6 Fe																				
7439-95-4 Mg																				
7439-96-5 Mn																				
7440-02-0 Ni																				
7440-09-7 K														✓						
7440-22-4 Ag	✓	✓	✓	-3.73	✓	✓	✓	NA	NA	✓	✓	✓	NA	✓	NA		✓			
7440-23-5 Na																				
7440-62-2 V																				
7440-66-6 Zn																				
7439-92-1 Pb	✓	✓	✓	✓	✓	0.359	✓	NA	NA	✓	✓	✓	NA	✓	NA		✓			
7782-49-2 Se	↓	↓	↓	-2.45	-3.96	✓	↓	↓	↓	↓	↓	↓	NA	↓	↓		↓			
7440-38-2 As	↓	↓	↓	✓	✓	✓	↓	↓	↓	↓	↓	↓	✓	↓	↓		↓			
7440-36-0 Sb																				
7440-28-0 Tl																				
7440-29-1 Th	✓	✓	✓	0.005	0.006	✓	149	NA	NA	✓	✓	✓	✓	✓	NA		✓			
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓	✓	NA	NA	NA	✓	✓	✓		
Cyanide CN																				

Notes: Shaded rows are RCRA metals. Solids-to-aqueous conversion: mg/kg = µg/g: [(µg/g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg/l

Comments: (1) Samples -020, -031, -032, -035 dil. 5X for Ba due to high conc. of target analytes. All samples dil. std. 2X for ICP-AES + -MS soil analyses.
(2) No ICSAB analyzed @ end of ICP-MS run sequence.
(3) Field dup. submitted. No QC criteria.

Reviewed By: [signature] Date: 7/9/03

Inorganic Metals

Site/Project: SWMU 87 CRA Sampling AR/COC #: 606451/606452 Laboratory Sample IDs: S1194-004 (ES)

Laboratory: GEL SDG #: S1194

Methods: EPA 6010C (ICP-AES), EPA 6020 (ICP-MS), EPA 7470A (CVAA)

# of Samples: 1 Matrix: aqueous Batch #s: 254528, 255499, 254812

CAS #/ Analyte	QC Element																		
	TAL	ICV	CCV	ICB (µg/L)	CCB (µg/L)	Method Blanks	LCS	① LCSD	LCSD RPD	MS	MSD	MSD RPD	Rep. RPD	② ICS AB	Serial Dilu-tion	Field Dup. RPD	Equip. Blanks	Field Blanks	
7429-90-5 Al																NA	NA	NA	
7440-39-3 Ba	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA				✓	NA				
7440-41-7 Be	✓	↓	↓	↓	↓	↓	↓	↓	↓					↓	↓				
7440-43-9 Cd	✓	↓	↓	↓	↓	↓	↓	↓	↓					↓	↓				
7440-70-2 Ca																			
7440-47-3 Cr	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	NA				
7440-48-4 Co																			
7440-50-8 Cu	✓																		
7439-89-6 Fe																			
7439-95-4 Mg																			
7439-96-5 Mn																			
7440-02-0 Ni																			
7440-09-7 K																			
7440-22-4 Ag	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	NA				
7440-23-5 Na																			
7440-62-2 V																			
7440-66-6 Zn																			
7439-92-1 Pb	✓	✓	✓	-2.62	-2.13	✓	✓	✓	✓					✓	NA				
7782-49-2 Se	✓	↓	↓	✓	✓	↓	↓	↓	↓					↓	↓				
7440-38-2 As	✓	↓	↓	✓	-2.47	↓	↓	↓	↓					↓	↓				
7440-36-0 Sb																			
7440-28-0 Tl																			
7440-29-1 Th	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	NA	NA	NA	✓	NA				
7439-97-6 Hg	✓	✓	✓	✓	✓	✓	✓	"	"	✓	"	"	NA	NA	NA	↓	↓	↓	
Cyanide CN																			

Notes: Shaded rows are RCRA metals. **Solids-to-aqueous conversion:** mg / kg = µg / g : [(µg / g) x (sample mass (g) / sample vol. (ml)) x (1000 ml / 1 liter)] / Dilution Factor = µg / l

Comments: ① QC for ICP-MS + CVAA performed on an SWL sample of similar matrix from another SDG. For ICP-AES, only Serial Dil. analyzed on a sample from another SDG; LCS ① analyzed for precision

② No ICS AB analyzed @ end of ICP-MS run sequence.

Reviewed By: [signature] Date: 7/9/03

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. N/A

SMO Use

AR/COC **606451**

Dept. No./Mail Stop:	6133/MS1087	Date Samples Shipped:	5/29/03	Project/Task No.: 7219 .02.02.06	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	22973	SMO Authorization:	-Send preliminary/copy report to:
Project Name: WJG ~~SWMU 78~~ SWMU 78		Lab Contact:	Edie Kent/ (843) 769-7385	Contract #: po21671	☐ Released by COC No.:
Record Center Code:		Lab Destination:	GEL	See Attached Bottle orde	☐ Validation Required
Logbook Ref. No.:		SMO Contact/Phone:	Doug Perry/ 845-0867		Bill To: Sandia National Labs (Accounts Payable)
Service Order No.	CFO41-03	Send Report to SMO:			P.O. Box 5800 MS 0154
Location	Tech Area				Albuquerque, NM 87185-0154
Building	Room	Reference LOV(available at SMO)		81192 %	

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Samp ID
062264-001	TA3/5-78-C01-4.5-6.5-S	6	78	052703/1050	S	AC	125 ml	None	G	SA	VOCs 8260	01
062264-002	TA3/5-78-C01-4.5-6.5-S	6	78	052703/1050	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	02
062265-001	TA3/5-78-C01-9.5-11.5-S	11	78	052703/1105	S	AC	125 ml	None	G	SA	VOCs 8260	01
062265-002	TA3/5-78-C01-9.5-11.5-S	11	78	052703/1105	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	02
062266-001	TA3/5-78-C02-4.5-6.5-S	6	78	052703/1123	S	AC	125 ml	None	G	SA	VOCs 8260	01
062266-002	TA3/5-78-C02-4.5-6.5-S	6	78	052703/1123	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03
062267-001	TA3/5-78-C02-9.5-11.5-S	11	78	052703/1135	S	AC	125 ml	None	G	SA	VOCs 8260	01
062267-002	TA3/5-78-C02-9.5-11.5-S	11	78	052703/1135	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03
062268-001	TA3/5-78-C03-4.5-6.5-S	6	78	052703/0910	S	AC	125 ml	None	G	SA	VOCs 8260	01
062268-002	TA3/5-78-C03-4.5-6.5-S	6	78	052703/0910	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03

RMMA	☐ Yes ☑ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC Inits.	

Special Instructions/QC Requirements

EDD ☑ Yes ☐ No

Level D Package ☑ Yes ☐ No

*Send report to:

Stacey Griffith

*Please list as separate report.

Abnormal Conditions on Receipt

Lab Use

2C/3.(

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members WJG	W. Gibson	William G Gibson	WJG	6135/284-5232/Weston Solutions
	G. Quintana	Gabriel Quintana	GQ	6135/284-3309/Shaw
	~~S. Griffith~~			~~6133/284-2588/Orem~~

1.Relinquished by	William G Gibson	Org. 6134	Date 5-28-03	Time 1610	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6133	Date 5/28/03	Time 1610	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6133	Date 5/29/03	Time 1100	5.Relinquished by	Org.	Date	Time
2. Received by	Q Robbins	Org.	Date 5/30/03	Time 0730	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 60645

Project Name:	SWMV 78	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	7219 .02.02.06
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)	81192%		

Sample No- Fraction	ER Sample ID or Sample Location detail	Beginning Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv- ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
062269-001	TA3/5-78-C03-14.5-16.5-S	16	78	052703/0940	S	AC	125 ml	None	G	SA	VOCs 8260	015
062269-002	TA3/5-78-C03-14.5-16.5-S	16	78	052703/0940	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03
062270-001	TA3/5-78-C04-4.5-6.5-S	6	78	052703/0948	S	AC	125 ml	None	G	SA	VOCs 8260	016
062270-002	TA3/5-78-C04-4.5-6.5-S	6	78	052703/0948	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03
062298-001	TA3/5-78-C04-4.5-6.5-DUP	6	78	052703/0948	S	AC	125 ml	None	G	DUP	VOCs 8260 field QC	017
062298-002	TA3/5-78-C04-4.5-6.5-DUP	6	78	052703/0948	S	AG	250 ml	None	G	DUP	SVOCs (8270), RCRA Metals, Be, total Thorium field QC	03
062271-001	TA3/5-78-C04-14.5-16.5-S	11	78	052703/1031	S	AC	125 ml	None	G	SA	VOCs 8260	018
062271-002	TA3/5-78-C04-14.5-16.5-S	11	78	052703/1031	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	03
062299-001	TA3/5-78-EB-052703	0	78	052703/1319	L	G	3x40ml	HCL	C	EB	VOCs 8260 81194%	00
062299-003	TA3/5-78-EB-052703	0	78	052703/1319	L	AG	1 Liter	None	C	EB	SVOCs (8270)	00
062299-004	TA3/5-78-EB-052703	0	78	052703/1319	L	P	500 ml	HNO3	C	EB	RCRA Metals, Be, total Thorium	00
062304-001	TA3/5-78-TB-052703	0	78	052703/1319	L	G	3x40ml	HCL	C	TB	VOCs	00

Abnormal Conditions on Receipt LAB USE

Recipient Initials JR

PLEASE DOT M MILLER 5/28/03 S67634

CONTRACT LABORATORY
ANALYSIS REQUEST AND CHAIN OF CUSTODY

Internal Lab

Batch No. 330314

SMO Use

AR/COC 606452

Dept. No./Mail Stop:	6133/MS1087	Date Samples Shipped:	5/29/03	Project/Task No.: 7219 .02.02.06	☐ Waste Characterization
Project/Task Manager:	Brenda Langkopf	Carrier/Waybill No.	22973	SMO Authorization:	-Send preliminary/copy report to:
Project Name:	WPP ~~SWMU 78~~ SWMU 78	Lab Contact:	Edie Kent/ (843) 769-7385	Contract #: PO 21671	
Record Center Code:		Lab Destination:	GEL	See Attached Bottle order	☐ Released by COC No.: 606453
Logbook Ref. No.:		SMO Contact/Phone:	Doug Perry/ 845-0867		☐ Validation Required
Service Order No.	CFO41-03	Send Report to SMO:			Bill To: Sandia National Labs (Accounts Payable)
Location	Tech Area				P.O. Box 5800 MS 0154
Building	Room	Reference LOV(available at SMO)		81192 %	Albuquerque, NM 87185-0154

Sample No.-Fraction	ER Sample ID or Sample Location Detail	Pump Depth (ft)	ER Site No.	Date/Time(hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv-ative	Collection Method	Sample Type	Parameter & Method Requested	Lab Sample ID
062272-001	TA3/5-78-C07-4.5-6.5-S	6	78	052703/1332	S	AC	125 ml	None	G	SA	VOCs 8260	~~001~~
062272-002	TA3/5-78-C07-4.5-6.5-S	6	78	052703/1332	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	019
062273-001	TA3/5-78-C07-9.5-11.5-S	11	78	052703/1340	S	AC	125 ml	None	G	SA	VOCs 8260	~~002~~
062273-002	TA3/5-78-C07-9.5-11.5-S	11	78	052703/1340	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	020
062274-001	TA3/5-78-C07-14.5-16.5-S	16	78	052703/1348	S	AC	125 ml	None	G	SA	VOCs 8260	~~003~~
062274-002	TA3/5-78-C07-14.5-16.5-S	16	78	052703/1348	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	021
062275-001	TA3/5-78-C09-4.5-6.5-S	6	78	052703/1425	S	AC	125 ml	None	G	SA	VOCs 8260	~~004~~
062275-002	TA3/5-78-C09-4.5-6.5-S	6	78	052703/1425	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	022
062276-001	TA3/5-78-C09-9.5-11.5-S	11	78	052703/1436	S	AC	125 ml	None	G	SA	VOCs 8260	~~005~~
062276-002	TA3/5-78-C09-9.5-11.5-S	11	78	052703/1436	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	023

RMMA	☑ Yes ☐ No Ref. No.	Sample Tracking	Smo Use
Sample Disposal	☐ Return to Client ☑ Disposal by lab	Date Entered(mm/dd/yy)	
Turnaround Time	☐ 7 Day ☐ 15 Day ☑ 30 Day	Entered by:	
Return Samples By:	☐ Negotiated TAT	QC Inits.	

Special Instructions/QC Requirements
EDD ☑ Yes ☑ No
Level D Package ☑ Yes ☐ No
*Send report to:
Stacey Griffith

Abnormal Conditions on Receipt

Lab Use 2 · C

	Name	Signature	Init	Company/Organization/Phone/Cellular
Sample Team Members	W. Gibson	William Gibson	WG	6135/284-5232/Weston Solutions
	G. Quintana	Gilbert Quintana	GQ	6135/284-3309/Shaw
	~~S. Griffith~~			~~6133/284-2388/Gram~~

*Please list as separate report.

1.Relinquished by	William Gibson	Org. 6134	Date 5-28-03	Time 1415	4.Relinquished by	Org.	Date	Time
1. Received by		Org. 6135	Date 5/28/03	Time 1415	4. Received by	Org.	Date	Time
2.Relinquished by		Org. 6134	Date 5/29/03	Time 1030	5.Relinquished by	Org.	Date	Time
2. Received by		Org.	Date 5/29/03	Time 0730	5. Received by	Org.	Date	Time
3.Relinquished by		Org.	Date	Time	6.Relinquished by	Org.	Date	Time
3. Received by		Org.	Date	Time	6. Received by	Org.	Date	Time

OFF-SITE LABORATORY
Analysis Request And Chain Of Custody (Continuation)

AR/COC- 60645

Project Name:	SWMV 78	Project/Task Manger:	Brenda Langkopf	Project/Task No.:	7219 .02.02.06
Location	Tech Area				
Building	Room	Reference LOV (available at SMO)		81192%	

Sample No- Fraction	ER Sample ID or Sample Location detail	Beginning Depth (ft)	ER Site No.	Date/Time (hr) Collected	Sample Matrix	Container Type	Container Volume	Preserv- ative	Collection Method	Sample Type	Parameter & Method Requested	Lab use Lab Sample ID
062300-001	TA3/5-78-C09-14.5-16.5-S	16	78	052703/1445	S	AC	125 ml	None	G	SA	VOCs 8260	001
062300-002	TA3/5-78-C09-14.5-16.5-S	16	78	052703/1445	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	02
062277-001	TA3/5-78-C10-4.5-6.5-S	6	78	052703/1525	S	AC	125 ml	None	G	SA	VOCs 8260	00
062277-002	TA3/5-78-C10-4.5-6.5-S	6	78	052703/1525	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	02
062301-001	TA3/5-78-C10-4.5-6.5-DUP	6	78	052703/1525	S	AC	125 ml	None	G	DUP	VOCs 8260 field QC	001
062301-002	TA3/5-78-C10-4.5-6.5-DUP	6	78	052703/1525	S	AG	250 ml	None	G	DUP	SVOCs (8270), RCRA Metals, Be, total Thorium field QC	02
062278-001	TA3/5-78-C10-9.5-11.5-S	11	78	052703/1540	S	AC	125 ml	None	G	SA	VOCs 8260	00
062278-002	TA3/5-78-C10-9.5-11.5-S	11	78	052703/1540	S	AG	250 ml	None	G	SA	SVOCs (8270), RCRA Metals, Be, total Thorium	02

Abnormal Conditions on Receipt

LAB USE

Recipient Initials

RECORDS CENTER CODE: _____

SMO ANALYTICAL DATA ROUTING FORM

PROJECT NAME: SWMU 87 CRA Sampling
PROJECT/TASK: 7219_02.02.06
SNL TASK LEADER: Langkopf
ORG/MS/CF0#: 6133/1087/CF041-03
SMO PROJECT LEAD: Palencia
SAMPLE SHIP DATE: 5/29/2003

ARCOC	LAB	LAB ID	PRELIM DATE	FINAL DATE	EDD	EDD ON Q	Cust CD	RC CD
606451	GEL	81192A			X			
606452	GEL	81192B			X			

DATA PACKAGE TAT:		RUSH	X	NORMAL
CORRECTIONS REQUESTED BY/DATE:				
PROBLEM #/DATE CORRECTION RECEIVED:				
CVR COMPLETED BY/DATE:	W. Palencia		7/2/03	
FINAL TRANSMITTED TO/DATE:	Griffith		7/2/03	
SENT TO VALIDATION BY/DATE:	J. Conn		7/2/03	
REVISIONS REQUESTED/REVISIONS RECEIVED (DATE):				
VALIDATION COMPLETED BY/DATE:				
COPY TO WM BY/DATE:				
CD REQUESTED BY/DATE	J. Conn		7/2/03	
CD RECEIVED BY/DATE				
TO ERDMS OR RECORDS CENTER BY/DATE:				

COMMENTS:

Contract Verification Review (CVR)

Project Leader LANGKOPF Project Name SWMU 87 CRA SAMPLING Case No. 7219_02.02.06

AR/COC No. 606451 & 606452 Analytical Lab GEL SDG No. 81192A & B

In the tables below, mark any information that is missing or incorrect and give an explanation.

1.0 Analysis Request and Chain of Custody Record and Log-In Information

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
1.1	All items on COC complete - data entry clerk initialed and dated	X				
1.2	Container type(s) correct for analyses requested	X				
1.3	Sample volume adequate for # and types of analyses requested	X				
1.4	Preservative correct for analyses requested	X				
1.5	Custody records continuous and complete	X				
1.6	Lab sample number(s) provided and SNL sample number(s) cross referenced and correct	X				
1.7	Date samples received	X				
1.8	Condition upon receipt information provided	X				

2.0 Analytical Laboratory Report

Line No.	Item	Complete? Yes	Complete? No	If no, explain	Resolved? Yes	Resolved? No
2.1	Data reviewed, signature	X				
2.2	Method reference number(s) complete and correct	X				
2.3	QC analysis and acceptance limits provided (MB, LCS, Replicate)	X				
2.4	Matrix spike/matrix spike duplicate data provided (if requested)	X				
2.5	Detection limits provided; PQL and MDL (or IDL), MDA and L_c	X				
2.6	QC batch numbers provided	X				
2.7	Dilution factors provided and all dilution levels reported	X				
2.8	Data reported in appropriate units and using correct significant figures	X				
2.9	Radiochemistry analysis uncertainty (2 sigma error) and tracer recovery (if applicable) reported	N/A				
2.10	Narrative provided	X				
2.11	TAT met	X				
2.12	Hold times met	X				
2.13	Contractual qualifiers provided	X				
2.14	All requested result and TIC (if requested) data provided	X				

3.0 Data Quality Evaluation

Item	Yes	No	If no, Sample ID No./Fraction(s) and Analysis
3.1 Are reporting units appropriate for the matrix and meet contract specified or project-specific requirements? Inorganics and metals reported as ppm (mg/liter or mg/Kg)? Tritium reported in picocuries per liter with percent moisture for soil samples? Units consistent between QC samples and sample data	X		
3.2 Quantitation limit met for all samples	X		
3.3 Accuracy a) Laboratory control samples accuracy reported and met for all samples		X	THORIUM FAILED RECOVERY LIMITS FOR LCS
b) Surrogate data reported and met for all organic samples analyzed by a gas chromatography technique	X		
c) Matrix spike recovery data reported and met	X		
3.4 Precision a) Replicate sample precision reported and met for all inorganic and radiochemistry samples	X		
b) Matrix spike duplicate RPD data reported and met for all organic samples	X		
3.5 Blank data a) Method or reagent blank data reported and met for all samples		X	ACETONE DETECTED IN VOC METHOD BLANK LEAD DETECTED IN METALS BLANK
b) Sampling blank (e.g., field, trip, and equipment) data reported and met		X	ACETONE &BROMODICHLOROMETHANE DETECTED IN EQUIPMENT BLANK BARIUM & CHROMIUM DETECTED IN EQUIPMENT BLANK
3.6 Contractual qualifiers provided: "J"- estimated quantity; "B"-analyte found in method blank above the MDL for organic or above the PQL for inorganic; "U"- analyte undetected (results are below the MDL, IDL, or MDA (radiochemical)); "H"-analysis done beyond the holding time	X		
3.7 Narrative addresses planchet flaming for gross alpha/beta	N/A		
3.8 Narrative included, correct, and complete	X		
3.9 Second column confirmation data provided for methods 8330 (high explosives) and 8082 (pesticides/PCBs)	N/A		

4.0 Calibration and Validation Documentation

Item	Yes	No	Comments
4.1 GC/MS (8260, 8270, etc.)			
a) 12-hour tune check provided	X		
b) Initial calibration provided	X		
c) Continuing calibration provided	X		
d) Internal standard performance data provided	X		
e) Instrument run logs provided	X		
4.2 GC/HPLC (8330 and 8010 and 8082)			
a) Initial calibration provided	N/A		
b) Continuing calibration provided	N/A		
c) Instrument run logs provided	N/A		
4.3 Inorganics (metals)			
a) Initial calibration provided	X		
b) Continuing calibration provided	X		
c) ICP interference check sample data provided	X		
d) ICP serial dilution provided	X		
e) Instrument run logs provided	X		
4.4 Radiochemistry			
a) Instrument run logs provided	N/A		

Contract Verification Review (Concluded)

5.0 Problem Resolution

Summarize the findings in the table below. List only samples/fractions for which deficiencies have been noted.

Sample/Fraction No.	Analysis	Problems/Comments/Resolutions

Were deficiencies unresolved? Yes (No)

Based on the review, this data package is complete. (Yes) No

If no, provide: nonconformance report or correction request number _____ and date correction request was submitted:_____

Reviewed by: W. Palencia Date: 7-2-2003 Closed by:_____ Date:_____

Annex B
Revised Table 11 for SWMU 1

Revised Table 11
Risk Assessment Values for SWMU 46 Nonradiological COCs

COC	Maximum Concentration/UCL (mg/kg)	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Inorganic					
Arsenic	5.23 / **2.8**	0.02	3E-6	0.24 / **Below Background**	1E-5 / **Below Background**
Barium	572	0.01	–	0.11	–
Beryllium	0.891	0.00	4E-10	0.01	8E-10
Cadmium	213 / **40.6**	0.42	7E-8	5.46 / **1.03**	1E-7 / **3E-8**
Chromium VI	2.08	0.00	4E-9	0.01	1E-8
Chromium-total	120	0.00	–	0.00	–
Copper	133 J	0.00	–	0.05	–
Mercury	0.0766	0.00	–	0.00	–
Nickel	379 / **87.5**	0.02	–	0.25 / **0.03**	–
Selenium	1.28	0.00	–	0.00	–
Silver	16.2	0.00	–	0.04	–
Thallium	2.19 / **1.1**	0.03	–	0.44 / **0.22**	–
Vanadium	46.5	0.01	–	0.09	–
Zinc	149 J	0.00	–	0.01	–
Cyanide-total	12.7	0.00	–	0.01	–
VOCs					
Acetone	0.0132	0.00	–	0.00	–
2-Butanone	0.107	0.00	–	0.00	–
Methylene chloride	0.00385 J	0.00	3E-8	0.00	5E-8
Toluene	0.017	0.00	–	0.00	–
SVOCs					
Acenaphthene	0.00626 J	0.00	–	0.00	–
Acenaphthylene	0.00406 J	0.00	–	0.00	–
Anthracene	0.0212 J	0.00	–	0.00	–
Benzo(a)anthracene	0.258	0.00	1E-7	0.00	4E-7
Benzo(a)pyrene	0.435 / **0.06**	0.00	2E-6	0.00	7E-6 / **1E-6**
Benzo(b)fluoranthene	0.506	0.00	2E-7	0.00	8E-7
Benzo(ghi)perylene	0.309 / **0.05**	0.00	1E-6	0.00	5E-6 / **8E-7**
Benzo(k)fluoranthene	0.471	0.00	2E-8	0.00	8E-8
Butylbenzylphthalate	0.0565 J	0.00	–	0.00	–
Carbazole	0.0182 J	0.00	1E-10	0.00	6E-10
2-Chlorophenol	0.00835 J	0.00	–	0.00	–
Chrysene	0.435	0.00	2E-9	0.00	7E-9
Di-n-butylphthalate	0.0495 J	0.00	–	0.00	–
Di-n-octylphthalate	0.0102 J	0.00	–	0.00	–
Diethylpthalate	0.0877 J	0.00	–	0.00	–
Dibenzofuran	0.0094 J	0.00	–	0.00	–
1,2-Dichlorobenzene	0.00451 J	0.00	–	0.00	–
1,3-Dichlorobenzene	0.00486 J	0.00	–	0.00	–
Diphenylamine	0.0073 J	0.00	–	0.00	–

Refer to footnotes at end of table.

Revised Table 11 (Concluded)
Risk Assessment Values for SWMU 46 Nonradiological COCs

COC	Maximum Concentration/**UCL (mg/kg)**	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
bis(2-Ethylhexyl) phthalate[b]	2.04	0.00	1E-8	0.00	5E-8
Fluoranthene	0.450	0.00	–	0.00	–
Fluorene	0.014 J	0.00	–	0.00	–
Hexachlorobenzene	0.0057 J	0.00	5E-9	0.00	2E-8
Indeno(1,2,3-c,d)pyrene	0.345 J	0.00	2E-7	0.00	6E-7
Naphthalene	0.00345 J	0.00	–	0.00	–
Phenanthrene	0.139	0.00	–	0.00	–
Phenol	1.59	0.00	–	0.00	–
Pyrene	0.603	0.00	–	0.00	–
HE Compound					
2-Nitrotoluene	0.0152	0.00	–	0.00	–
Total		0.52	7E-6	6.72 / **1.61**	3E-5 / **4E-6**

[a]EPA 1989.

[b]The maximum concentration in this table previously was 0.00704. This value was from a trip blank. The hazard index and cancer risk included in this table and the previous table was for the 0.00385 J concentration for this COC.

COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
HE = High explosive(s).
J = Estimated concentration.
mg/kg = Milligram(s) per kilogram.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
UCL = Upper Confidence Limit.
VOC = Volatile organic compound.
– = Information not available.

Annex C
Revised Table B-11 for SWMU 1

Table B-11
Summary of Tritium Analytical Results, May 2003, for the Over-Excavation Trench Soil Placed in the SWMU 1 Excavation as Lifts 8 through 14 (On-site laboratory)

Sample Attributes			Activity	
Record Number[a]	ER Sample ID	Sample Depth (ft)	Tritium, pCi/L (EPA Method 906.0)	Tritium, pCi/g (LSC method)
606387	TA2-1-GRAB1-10FT-3-S	5–10	**1,660**	**ND (11.5)**
606387	TA2-1-GRAB1-15FT-3-S	10–15	**801**	**ND (11.5)**
606387	TA2-1-GRAB1-20FT-3-S	15–20	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB1-5FT-3-S	0–5	**13,300**	**ND (11.5)**
606387	TA2-1-GRAB2-10FT-3-S	5–10	**3,820**	**ND (11.5)**
606387	TA2-1-GRAB2-15FT-3-S	10–15	350	**ND (11.5)**
606387	TA2-1-GRAB2-20FT-3-S	15–20	304	**ND (11.5)**
606387	TA2-1-GRAB2-5FT-3-S	0–5	**19,700**	**ND (11.5)**
606387	TA2-1-GRAB3-10FT-2-S	5–10	**27,800**	**ND (11.5)**
606387	TA2-1-GRAB3-15FT-3-S	10–15	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB3-20FT-3-S	15–20	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB3-5FT-3-S	0–5	**769**	**ND (11.5)**
606387	TA2-1-GRAB4-10FT-3-S	5–10	**3,860**	**4.49**
606387	TA2-1-GRAB4-15FT-3-S	10–15	**18,300**	**ND (11.5)**
606387	TA2-1-GRAB4-20FT-3-S	15–20	**1,430**	**ND (11.5)**
606387	TA2-1-GRAB4-5FT-3-S	0–5	**79,400**	**ND (11.5)**
606387	TA2-1-GRAB5-10FT-3-S	5–10	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB5-5FT-3-S	10–15	ND (267)	**0.79**
606389	TA2-1-GRAB5-15FT-3-S	15–20	ND (248)	**0.61**
606389	TA2-1-GRAB5-20FT-3-S	0–5	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB6-10FT-3-S	5–10	ND (248)	**1.44**
606389	TA2-1-GRAB6-15FT-3-S	10–15	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB6-20FT-3-S	15–20	**561**	**1.01**
606389	TA2-1-GRAB6-5FT-3-S	0–5	**650**	**ND (11.5)**
606389	TA2-1-GRAB7-10FT-3-S	5–10	**8,480**	**ND (11.5)**
606389	TA2-1-GRAB7-15FT-3-S	10–15	**63,600**	**ND (11.5)**
606389	TA2-1-GRAB7-20FT-3-S	15–20	**11,400**	**ND (11.5)**
606389	TA2-1-GRAB7-5FT-3-S	0–5	**11,600**	**ND (11.5)**
606389	TA2-1-GRAB8-10FT-3-S	5–10	**1,630**	**ND (11.5)**
606389	TA2-1-GRAB8-15FT-3-S	10–15	289	**ND (11.5)**
606389	TA2-1-GRAB8-20FT-3-S	15–20	380	**ND (11.5)**
606389	TA2-1-GRAB8-5FT-3-S	0–5	**1,590**	**ND (11.5)**
606389	TA2-1-GRAB9-10FT-3-S	5–10	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB9-15FT-3-S	10–15	368	**ND (11.5)**
606389	TA2-1-GRAB9-20FT-3-S	15–20	**487**	**ND (11.5)**
606389	TA2-1-GRAB9-5FT-3-S	0–5	**698**	**ND (11.5)**
Background Activity[b]			420	0.021

Note: Values in **bold** exceed background soil activities.

[a]Analysis request/chain-of-custody record.

[b]Tharp, February 1999.

bgs = Below ground surface.
ER = Environmental Restoration.
GRAB = grab sample.
ID = Identification.
ft = Foot (feet).
LSC = Liquid Scintillation Counting.
ND ( ) = Not detected. The result is below the minimum detectable activity, shown in parentheses.
ND ( ) = Not detected, but the minimum detectable activity (shown in parentheses) exceeds background activity.
NR = Not required.
pCi/g = Picocurie(s) per gram.
pCi/L = Picocurie(s) per liter.
S = Soil.
SWMU = Solid Waste Management Unit.
TA2 = Technical Area II.

Annex B
Revised Table 11 for SWMU 1

Revised Table 11
Risk Assessment Values for SWMU 46 Nonradiological COCs

COC	Maximum Concentration/UCL (mg/kg)	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
Inorganic					
Arsenic	5.23 / **2.8**	0.02	3E-6	0.24 / **Below Background**	1E-5 / **Below Background**
Barium	572	0.01	–	0.11	–
Beryllium	0.891	0.00	4E-10	0.01	8E-10
Cadmium	213 / **40.6**	0.42	7E-8	5.46 / **1.03**	1E-7 / **3E-8**
Chromium VI	2.08	0.00	4E-9	0.01	1E-8
Chromium-total	120	0.00	–	0.00	–
Copper	133 J	0.00	–	0.05	–
Mercury	0.0766	0.00	–	0.00	–
Nickel	379 / **87.5**	0.02	–	0.25 / **0.03**	–
Selenium	1.28	0.00	–	0.00	–
Silver	16.2	0.00	–	0.04	–
Thallium	2.19 / **1.1**	0.03	–	0.44 / **0.22**	–
Vanadium	46.5	0.01	–	0.09	–
Zinc	149 J	0.00	–	0.01	–
Cyanide-total	12.7	0.00	–	0.01	–
VOCs					
Acetone	0.0132	0.00	–	0.00	–
2-Butanone	0.107	0.00	–	0.00	–
Methylene chloride	0.00385 J	0.00	3E-8	0.00	5E-8
Toluene	0.017	0.00	–	0.00	–
SVOCs					
Acenaphthene	0.00626 J	0.00	–	0.00	–
Acenaphthylene	0.00406 J	0.00	–	0.00	–
Anthracene	0.0212 J	0.00	–	0.00	–
Benzo(a)anthracene	0.258	0.00	1E-7	0.00	4E-7
Benzo(a)pyrene	0.435 / **0.06**	0.00	2E-6	0.00	7E-6 / **1E-6**
Benzo(b)fluoranthene	0.506	0.00	2E-7	0.00	8E-7
Benzo(ghi)perylene	0.309 / **0.05**	0.00	1E-6	0.00	5E-6 / **8E-7**
Benzo(k)fluoranthene	0.471	0.00	2E-8	0.00	8E-8
Butylbenzylphthalate	0.0565 J	0.00	–	0.00	–
Carbazole	0.0182 J	0.00	1E-10	0.00	6E-10
2-Chlorophenol	0.00835 J	0.00	–	0.00	–
Chrysene	0.435	0.00	2E-9	0.00	7E-9
Di-n-butylphthalate	0.0495 J	0.00	–	0.00	–
Di-n-octylphthalate	0.0102 J	0.00	–	0.00	–
Diethylpthalate	0.0877 J	0.00	–	0.00	–
Dibenzofuran	0.0094 J	0.00	–	0.00	–
1,2-Dichlorobenzene	0.00451 J	0.00	–	0.00	–
1,3-Dichlorobenzene	0.00486 J	0.00	–	0.00	–
Diphenylamine	0.0073 J	0.00	–	0.00	–

Refer to footnotes at end of table.

Revised Table 11 (Concluded)
Risk Assessment Values for SWMU 46 Nonradiological COCs

COC	Maximum Concentration/UCL (mg/kg)	Industrial Land-Use Scenario[a]		Residential Land-Use Scenario[a]	
		Hazard Index	Cancer Risk	Hazard Index	Cancer Risk
bis(2-Ethylhexyl) phthalate[b]	2.04	0.00	1E-8	0.00	5E-8
Fluoranthene	0.450	0.00	–	0.00	–
Fluorene	0.014 J	0.00	–	0.00	–
Hexachlorobenzene	0.0057 J	0.00	5E-9	0.00	2E-8
Indeno(1,2,3-c,d)pyrene	0.345 J	0.00	2E-7	0.00	6E-7
Naphthalene	0.00345 J	0.00	–	0.00	–
Phenanthrene	0.139	0.00	–	0.00	–
Phenol	1.59	0.00	–	0.00	–
Pyrene	0.603	0.00	–	0.00	–
HE Compound					
2-Nitrotoluene	0.0152	0.00	–	0.00	–
Total		0.52	7E-6	6.72 / **1.61**	3E-5 / **4E-6**

[a]EPA 1989.

[b]The maximum concentration in this table previously was 0.00704. This value was from a trip blank. The hazard index and cancer risk included in this table and the previous table was for the 0.00385 J concentration for this COC.

COC = Constituent of concern.
EPA = U.S. Environmental Protection Agency.
HE = High explosive(s).
J = Estimated concentration.
mg/kg = Milligram(s) per kilogram.
SVOC = Semivolatile organic compound.
SWMU = Solid Waste Management Unit.
UCL = Upper Confidence Limit.
VOC = Volatile organic compound.
– = Information not available.

Annex C
Revised Table B-11 for SWMU 1

Table B-11
Summary of Tritium Analytical Results, May 2003,
for the Over-Excavation Trench Soil Placed in the SWMU 1 Excavation
as Lifts 8 through 14 (On-site laboratory)

Sample Attributes			Activity	
Record Number[a]	ER Sample ID	Sample Depth (ft)	Tritium, pCi/L (EPA Method 906.0)	Tritium, pCi/g (LSC method)
606387	TA2-1-GRAB1-10FT-3-S	5–10	**1,660**	**ND (11.5)**
606387	TA2-1-GRAB1-15FT-3-S	10–15	**801**	**ND (11.5)**
606387	TA2-1-GRAB1-20FT-3-S	15–20	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB1-5FT-3-S	0–5	**13,300**	**ND (11.5)**
606387	TA2-1-GRAB2-10FT-3-S	5–10	**3,820**	**ND (11.5)**
606387	TA2-1-GRAB2-15FT-3-S	10–15	350	**ND (11.5)**
606387	TA2-1-GRAB2-20FT-3-S	15–20	304	**ND (11.5)**
606387	TA2-1-GRAB2-5FT-3-S	0–5	**19,700**	**ND (11.5)**
606387	TA2-1-GRAB3-10FT-2-S	5–10	**27,800**	**ND (11.5)**
606387	TA2-1-GRAB3-15FT-3-S	10–15	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB3-20FT-3-S	15–20	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB3-5FT-3-S	0–5	**769**	**ND (11.5)**
606387	TA2-1-GRAB4-10FT-3-S	5–10	**3,860**	**4.49**
606387	TA2-1-GRAB4-15FT-3-S	10–15	**18,300**	**ND (11.5)**
606387	TA2-1-GRAB4-20FT-3-S	15–20	**1,430**	**ND (11.5)**
606387	TA2-1-GRAB4-5FT-3-S	0–5	**79,400**	**ND (11.5)**
606387	TA2-1-GRAB5-10FT-3-S	5–10	ND (267)	**ND (11.5)**
606387	TA2-1-GRAB5-5FT-3-S	10–15	ND (267)	**0.79**
606389	TA2-1-GRAB5-15FT-3-S	15–20	ND (248)	**0.61**
606389	TA2-1-GRAB5-20FT-3-S	0–5	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB6-10FT-3-S	5–10	ND (248)	**1.44**
606389	TA2-1-GRAB6-15FT-3-S	10–15	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB6-20FT-3-S	15–20	**561**	**1.01**
606389	TA2-1-GRAB6-5FT-3-S	0–5	**650**	**ND (11.5)**
606389	TA2-1-GRAB7-10FT-3-S	5–10	**8,480**	**ND (11.5)**
606389	TA2-1-GRAB7-15FT-3-S	10–15	**63,600**	**ND (11.5)**
606389	TA2-1-GRAB7-20FT-3-S	15–20	**11,400**	**ND (11.5)**
606389	TA2-1-GRAB7-5FT-3-S	0–5	**11,600**	**ND (11.5)**
606389	TA2-1-GRAB8-10FT-3-S	5–10	**1,630**	**ND (11.5)**
606389	TA2-1-GRAB8-15FT-3-S	10–15	289	**ND (11.5)**
606389	TA2-1-GRAB8-20FT-3-S	15–20	380	**ND (11.5)**
606389	TA2-1-GRAB8-5FT-3-S	0–5	**1,590**	**ND (11.5)**
606389	TA2-1-GRAB9-10FT-3-S	5–10	ND (248)	**ND (11.5)**
606389	TA2-1-GRAB9-15FT-3-S	10–15	368	**ND (11.5)**
606389	TA2-1-GRAB9-20FT-3-S	15–20	**487**	**ND (11.5)**
606389	TA2-1-GRAB9-5FT-3-S	0–5	**698**	**ND (11.5)**
Background Activity[b]			420	0.021

Note: Values in **bold** exceed background soil activities.

[a]Analysis request/chain-of-custody record.

[b]Tharp, February 1999.

bgs = Below ground surface.
ER = Environmental Restoration.
GRAB = grab sample.
ID = Identification.
ft = Foot (feet).
LSC = Liquid Scintillation Counting.
ND ( ) = Not detected. The result is below the minimum detectable activity, shown in parentheses.
ND ( ) = Not detected, but the minimum detectable activity (shown in parentheses) exceeds background activity.
NR = Not required.
pCi/g = Picocurie(s) per gram.
pCi/L = Picocurie(s) per liter.
S = Soil.
SWMU = Solid Waste Management Unit.
TA2 = Technical Area II.