1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1176 was composed of four other solid samples designated under SAF No. B99-029 with a Project Designation of: 100-KR-4 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Tritium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

1/19/01
Date

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

SAMPLE SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1176

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B11256	100-KR-4	SOLID		R012049-01	B99-029	B99-29-063	12/05/00 10:15
B11257	100-KR-4	SOLID		R012049-02	B99-029	B99-29-063	12/05/00 10:32
B11258	100-KR-4	SOLID		R012049-03	B99-029	B99-29-063	12/05/00 10:55
B11259	100-KR-4	SOLID		R012049-04	B99-029	B99-29-063	12/05/00 11:02
Method Blank		SOLID		R012049-06	B99-029		
Lab Control Sample		SOLID		R012049-05	B99-029		
Duplicate (R012049-03)	100-KR-4	SOLID		R012049-07	B99-029		12/05/00 10:55

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

QC SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1176

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7591	B99-29-063	B11256	SOLID	100.0			12/07/00	2	R012049-01	7591-001
		B11257	SOLID	100.0			12/07/00	2	R012049-02	7591-002
		B11258	SOLID	100.0			12/07/00	2	R012049-03	7591-003
		B11259	SOLID	100.0			12/07/00	2	R012049-04	7591-004
		Method Blank	SOLID						R012049-06	7591-006
		Lab Control Sample	SOLID						R012049-05	7591-005
		Duplicate (R012049-03)	SOLID	100.0			12/07/00	2	R012049-07	7591-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

PREP BATCH SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1176

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6962-199	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6962-199	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6962-199	10.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6962-199	10.0	4			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

WORK SUMMARY

SDG 7591
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1176

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B11256			R012049-01	7591-001	H		01/01/01	01/19/01	MCM	Tritium in Soil
100-KR-4		SOLID	12/05/00	7591-001	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
B99-29-063	B99-029		12/07/00	7591-001	TC		01/12/01	01/19/01	MCM	Technetium 99 in Soil
				7591-001	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11257			R012049-02	7591-002	H		01/01/01	01/19/01	MCM	Tritium in Soil
100-KR-4		SOLID	12/05/00	7591-002	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
B99-29-063	B99-029		12/07/00	7591-002	TC		01/12/01	01/19/01	MCM	Technetium 99 in Soil
				7591-002	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11258			R012049-03	7591-003	H		01/01/01	01/19/01	MCM	Tritium in Soil
100-KR-4		SOLID	12/05/00	7591-003	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
B99-29-063	B99-029		12/07/00	7591-003	TC		01/16/01	01/19/01	MCM	Technetium 99 in Soil
				7591-003	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
B11259			R012049-04	7591-004	H		01/01/01	01/19/01	MCM	Tritium in Soil
100-KR-4		SOLID	12/05/00	7591-004	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
B99-29-063	B99-029		12/07/00	7591-004	TC		01/16/01	01/19/01	MCM	Technetium 99 in Soil
				7591-004	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
Method Blank			R012049-06	7591-006	H		01/01/01	01/19/01	MCM	Tritium in Soil
		SOLID		7591-006	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
	B99-029			7591-006	TC		01/13/01	01/19/01	MCM	Technetium 99 in Soil
				7591-006	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R012049-05	7591-005	H		01/01/01	01/19/01	MCM	Tritium in Soil
		SOLID		7591-005	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
	B99-029			7591-005	TC		01/13/01	01/19/01	MCM	Technetium 99 in Soil
				7591-005	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil
Duplicate (R012049-03)			R012049-07	7591-007	H		01/01/01	01/19/01	MCM	Tritium in Soil
100-KR-4		SOLID	12/05/00	7591-007	SR		12/22/00	01/19/01	MCM	Total Strontium in Soil
	B99-029		12/07/00	7591-007	TC		01/15/01	01/19/01	MCM	Technetium 99 in Soil
				7591-007	U		12/27/00	01/19/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

SDG 7591
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1176

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-029	Tritium in Soil	TRITIUM_COX_LSC	4			1	1	1	7
SR	B99-029	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1	7
TC	B99-029	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1	7
U	B99-029	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				16			4	4	4	28

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-06 **Method Blank**

METHOD BLANK

SDG	7591	Client/Case no	Hanford	SDG H1176	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012049-06	Client sample id	Method Blank		
Dept sample id	7591-006	Material/Matrix		SOLID	
		SAF No	B99-029		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.223	3.2	5.5	400	U	H
Total Strontium	SR-RAD	0.019	0.12	0.24	1.0	U	SR
Technetium 99	14133-76-7	-0.040	0.19	0.66	15	U	TC
Uranium 233	U-233/234	0	0.023	0.089	1.0	U	U
Uranium 235	15117-96-1	0	0.028	0.11	1.0	U	U
Uranium 238	U-238	0	0.023	0.089	1.0	U	U

100-HR-4 Pump & Treat-Resin Sampling

QC-BLANK 37068

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7591
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1176
Case no TRC-SBB-207925

Lab sample id R012049-05
Dept sample id 7591-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-029

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	1410	20	5.0	400		H	1480	59	95	84-116	80-120
Total Strontium	23.5	0.81	0.22	1.0		SR	22.0	0.88	107	82-118	80-120
Technetium 99	121	4.0	0.68	15		TC	118	4.7	102	83-117	80-120
Uranium 233	9.83	0.86	0.40	1.0		U	9.29	0.37	106	83-117	80-120
Uranium 235	7.39	0.73	0.087	1.0		U	7.55	0.30	98	83-117	80-120
Uranium 238	10.3	0.88	0.38	1.0		U	10.1	0.40	102	84-116	80-120

100-HR-4 Pump & Treat-Resin Sampling

QC-LCS 37067

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-07 B11258

DUPLICATE

SDG	7591			Client/Case no	Hanford SDG H1176
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R012049-07	Lab sample id	R012049-03	Client sample id	B11258
Dept sample id	7591-007	Dept sample id	7591-003	Location/Matrix	100-KR-4 SOLID
		Received	12/07/00	Collected	12/05/00 10:55
% solids	100.0	% solids	100.0	Custody/SAF No	B99-29-063 B99-029

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	12.5	3.7	5.4	400	J	H	12.4	3.7	5.5	J	1	67
Total Strontium	0.038	0.11	0.22	1.0	U	SR	0.051	0.11	0.22	U	-	
Technetium 99	0.321	0.38	1.1	15	U	TC	0.346	0.29	1.0	U	-	
Uranium 233	1.23	0.25	0.082	1.0		U	0.782	0.17	0.070	J	45	46
Uranium 235	0.052	0.052	0.10	1.0	U	U	0.055	0.044	0.084	U	-	
Uranium 238	1.14	0.23	0.082	1.0		U	0.837	0.19	0.070	J	31	47

100-HR-4 Pump & Treat-Resin Sampling

QC-DUP#3 37069

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/19/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1176

R012049-01 B11256

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H1176
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012049-01	Client sample id	B11256
Dept sample id	7591-001	Location/Matrix	100-KR-4 SOLID
Received	12/07/00	Collected	12/05/00 10:15
% solids	100.0	Custody/SAF No	B99-29-063 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	16.8	3.9	5.4	400	J	H
Total Strontium	SR-RAD	0.036	0.11	0.22	1.0	U	SR
Technetium 99	14133-76-7	1.42	0.34	0.85	15	J	TC
Uranium 233	U-233/234	0.842	0.19	0.069	1.0	J	U
Uranium 235	15117-96-1	0.022	0.022	0.083	1.0	U	U
Uranium 238	U-238	0.627	0.15	0.069	1.0	J	U

100-HR-4 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-02 B11257

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H1176
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012049-02	Client sample id	B11257
Dept sample id	7591-002	Location/Matrix	100-KR-4 SOLID
Received	12/07/00	Collected	12/05/00 10:32
% solids	100.0	Custody/SAF No	B99-29-063 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	29.4	4.1	5.1	400	J	H
Total Strontium	SR-RAD	0.057	0.12	0.24	1.0	U	SR
Technetium 99	14133-76-7	1.10	0.61	1.3	15	U	TC
Uranium 233	U-233/234	10.0	0.85	0.13	1.0		U
Uranium 235	15117-96-1	0.522	0.17	0.089	1.0	J	U
Uranium 238	U-238	7.87	0.72	0.13	1.0		U

100-HR-4 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-03

B11258

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H1176
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012049-03	Client sample id	B11258
Dept sample id	7591-003	Location/Matrix	100-KR-4 SOLID
Received	12/07/00	Collected	12/05/00 10:55
% solids	100.0	Custody/SAF No	B99-29-063 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	12.4	3.7	5.5	400	J	H
Total Strontium	SR-RAD	0.051	0.11	0.22	1.0	U	SR
Technetium 99	14133-76-7	0.346	0.29	1.0	15	U	TC
Uranium 233	U-233/234	0.782	0.17	0.070	1.0	J	U
Uranium 235	15117-96-1	0.055	0.044	0.084	1.0	U	U
Uranium 238	U-238	0.837	0.19	0.070	1.0	J	U

100-HR-4 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

R012049-04 **B11259**

DATA SHEET

SDG	7591	Client/Case no	Hanford SDG H1176
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R012049-04	Client sample id	B11259
Dept sample id	7591-004	Location/Matrix	100-KR-4 SOLID
Received	12/07/00	Collected	12/05/00 11:02
% solids	100.0	Custody/SAF No	B99-29-063 B99-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	12.0	3.6	5.2	400	J	H
Total Strontium	SR-RAD	-0.018	0.089	0.18	1.0	U	SR
Technetium 99	14133-76-7	-0.020	0.39	1.2	15	U	TC
Uranium 233	U-233/234	0.029	0.039	0.074	1.0	U	U
Uranium 235	15117-96-1	0	0.024	0.090	1.0	U	U
Uranium 238	U-238	0.010	0.019	0.074	1.0	U	U

100-HR-4 Pump & Treat-Resin Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

Test U	Matrix SOLID
SDG 7591	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1176	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6962-199											
B11256	R012049-01			7591-001	0.842 J	U	0.627 J	134	44	4	4
B11257	R012049-02			7591-002	10.0	0.522 J	7.87	127	16	7	2
B11258	R012049-03			7591-003	0.782 J	U	0.837 J	93	29	7	5
B11259	R012049-04			7591-004	U	U	U				
BLK (QC ID=37068)	R012049-06			7591-006	U	U	U				
LCS (QC ID=37067)	R012049-05			7591-005	ok	ok	ok				
Duplicate (R012049-03)	R012049-07			7591-007	ok	- U	ok	108	31	5	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-4 Pump & Treat-Resin Sampling							Averages	116		5	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-199	2σ prep error 5.0 %			Reference Lab Notebook 6962 pg. 199												
B11256	R012049-01			0.083	1.00			100		127			22	12/22/00	12/27	SS-033
B11257	R012049-02			0.13	1.00			93		127			22	12/22/00	12/27	SS-034
B11258	R012049-03			0.084	1.01			100		127			22	12/22/00	12/27	SS-035
B11259	R012049-04			0.090	1.00			95		127			22	12/22/00	12/27	SS-036
BLK (QC ID=37068)	R012049-06			0.11	1.00			94		106				12/22/00	12/27	SS-035
LCS (QC ID=37067)	R012049-05			0.40	1.00			98		127				12/22/00	12/27	SS-041
Duplicate (R012049-03) (QC ID=37069)	R012049-07			0.10	1.02			100		106			22	12/22/00	12/27	SS-036
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES	MDA	0.14	± 0.23
	YIELD	97	± 6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

Test SR Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1176

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6962-199						
B11256	R012049-01			7591-001	U	
B11257	R012049-02			7591-002	U	
B11258	R012049-03			7591-003	U	
B11259	R012049-04			7591-004	U	
BLK (QC ID=37068)	R012049-06			7591-006	U	
LCS (QC ID=37067)	R012049-05			7591-005	ok	
Duplicate (R012049-03)	R012049-07			7591-007	-	U
Nominal values and limits from method 100-HR-4 Pump & Treat-Resin Sampling				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-199 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 199																
B11256	R012049-01			0.22	1.00			81		100			17	12/22/00	12/22	GRB-222
B11257	R012049-02			0.24	1.00			74		100			17	12/22/00	12/22	GRB-223
B11258	R012049-03			0.22	1.00			80		100			17	12/22/00	12/22	GRB-224
B11259	R012049-04			0.18	1.02			78		135			17	12/22/00	12/22	GRB-230
BLK (QC ID=37068)	R012049-06			0.24	1.00			80		100				12/22/00	12/22	GRB-231
LCS (QC ID=37067)	R012049-05			0.22	1.00			83		100				12/22/00	12/22	GRB-230
Duplicate (R012049-03) (QC ID=37069)	R012049-07			0.22	1.00			83		100			17	12/22/00	12/22	GRB-232
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 2
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.22 ± 0.040
YIELD 80 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

Test TC Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1176

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6962-199						
B11256	R012049-01			7591-001	1.42	J
B11257	R012049-02			7591-002	U	
B11258	R012049-03			7591-003	U	
B11259	R012049-04			7591-004	U	
BLK (QC ID=37068)	R012049-06			7591-006	U	
LCS (QC ID=37067)	R012049-05			7591-005	ok	
Duplicate (R012049-03)	R012049-07			7591-007	-	U
Nominal values and limits from method 100-HR-4 Pump & Treat-Resin Sampling				RDLs (pCi/g)	15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-199 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 199																
B11256	R012049-01			0.85	1.09			39		100			38	01/10/01	01/12	GRB-223
B11257	R012049-02			1.3	1.09			25		100			38	01/10/01	01/12	GRB-224
B11258	R012049-03			1.0	1.03			47		50			42	01/10/01	01/16	GRB-230
B11259	R012049-04			1.2	1.08			41		50			42	01/10/01	01/16	GRB-231
BLK (QC ID=37068)	R012049-06			0.66	1.00			75		50				01/10/01	01/13	GRB-222
LCS (QC ID=37067)	R012049-05			0.68	1.00			79		50				01/10/01	01/13	GRB-221
Duplicate (R012049-03) (QC ID=37069)	R012049-07			1.1	1.03			44		50			41	01/10/01	01/15	GRB-203
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Test	TC
Matrix	SOLID
SDG	7591
Contact	Melissa C. Mannion

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1176

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES				
	MDA	0.97	±	0.50
	YIELD	50	±	39

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1176

Test H Matrix SOLID
SDG 7591
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1176

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6962-199						
B11256	R012049-01			7591-001	16.8	J
B11257	R012049-02			7591-002	29.4	J
B11258	R012049-03			7591-003	12.4	J
B11259	R012049-04			7591-004	12.0	J
BLK (QC ID=37068)	R012049-06			7591-006	U	
LCS (QC ID=37067)	R012049-05			7591-005	ok	
Duplicate (R012049-03)	R012049-07			7591-007	ok	J

Nominal values and limits from method RDLs (pCi/g) 400
100-HR-4 Pump & Treat-Resin Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-199	2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 199															
B11256	R012049-01			5.4	0.205			100		100			27	12/30/00	01/01	LSC-005
B11257	R012049-02			5.1	0.215			100		100			27	12/30/00	01/01	LSC-005
B11258	R012049-03			5.5	0.204			100		100			27	12/30/00	01/01	LSC-005
B11259	R012049-04			5.2	0.208			100		100			27	12/30/00	01/01	LSC-005
BLK (QC ID=37068)	R012049-06			5.5	0.200			100		100				12/30/00	01/01	LSC-005
LCS (QC ID=37067)	R012049-05			5.0	0.200			100		100				12/30/00	01/01	LSC-005
Duplicate (R012049-03) (QC ID=37069)	R012049-07			5.4	0.203			100		100			27	12/30/00	01/01	LSC-005
Nominal values and limits from method				400	0.200					25			180			

PROCEDURES	REFERENCE	TRITIUM_COX_LSC
	CP-060	Soil Preparation, rev 2
	CP-251	Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 5.3 ± 0.40
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-63	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT. SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4 H1176 (7591)	SAF No.: B99-029	Air Quality
Ice Chest No.: SRC 99-066 (1061)	Field Logbook No.: EL 1517-1 — COA: R10KR4C560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA RCF 12.5.00	Offsite Property No.: A010156	Bill of Lading/Air Bill No.: 42357953 1047	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples R. Fabler 12.5.00

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) {Bis(2-ethylhexyl) phthalate}	See item (1) in Special Instructions	IC Anions - 300.0 {Nitrate}	See item (2) in Special Instructions		
B11256	OTHER SOLID	12.5.00	1015	X	X	X	X						
B11257	OTHER SOLID	12.5.00	1032	X	X	X	X						
B11258	OTHER SOLID	12.5.00	1058	X	X	X	X						
B11259	OTHER SOLID	12.5.00	1102	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RF Fahlberg	12.5.00 1210	Ref 2-A (R. Stanford)	12.5.00 1210
Ref 2A 3728	12.6.00 0800	R Thorem	12.6.00 0800
R Thorem	12.6.00 0800	FED EX	12-06-00
FED EXPRESS	12-07-00 10 AM	E. Segura	12-07-00 10 AM

SPECIAL INSTRUCTIONS

~~(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add On) {Trichlorofluoromethane}~~

~~(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add on - 1311/6010 {Antimony, Beryllium, Nickel}~~

RT 12.6.00

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment.

RT 12.6.00

Matrix *: S=Soil, SE=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 12-07-00 10:AM

CoC No. B99-029-63

Container I.D. No. ERC99-066 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 4
7. Number of containers per sample: 4 each (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. Segura Date: 12-07-00 Time: 10:AM

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11256						
% SOLIDS	001	SO	00L%S195	12/05/00	12/08/00	12/09/00
% SOLIDS	001 REP	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	001	SO	00LXC080	12/05/00	12/15/00	12/15/00
NITRATE BY IC	001 REP	SO	00LXC080	12/05/00	12/15/00	12/15/00
NITRATE BY IC	001 MS	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	001	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11257						
% SOLIDS	002	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	002	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	002	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11258						
% SOLIDS	003	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	003	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	003	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11259						
% SOLIDS	004	SO	00L%S195	12/05/00	12/08/00	12/09/00
NITRATE BY IC	004	SO	00LXC080	12/05/00	12/15/00	12/15/00
TCLP	004	SO	00LTO144	12/05/00	12/27/00	12/28/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC080	N/A	12/15/00	12/15/00
NITRATE BY IC	MB1 BS	S	00LXC080	N/A	12/15/00	12/15/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-029 H1176
RFW# : 0012L508

W.O. # : 10985-001-001-9999-00
Date Received: 12-07-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 solid samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank for Nitrate was within method criteria.

6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.

7. The matrix spike recovery for Nitrate was within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. The results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-16-01
Date

njp\i12-508

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate **Method:** EPA 300.0 (mod.)

Other: **Method**

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/29/00

CLIENT: TNUHANFORD B99-029 H1176

RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B11256	% Solids	45.1	%	0.01	1.0
		Nitrate by IC	13	MG/KG	2.8	1.0
-002	B11257	% Solids	45.4	%	0.01	1.0
		Nitrate by IC	15	MG/KG	2.8	1.0
-003	B11258	% Solids	44.8	%	0.01	1.0
		Nitrate by IC	10	MG/KG	2.8	1.0
-004	B11259	% Solids	44.5	%	0.01	1.0
		Nitrate by IC	7.9	MG/KG	2.8	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/29/00

CLIENT: TNUHANFORD B99-029 H1176

RECRA LOT #: 0012LS08

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC080-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/29/00

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B11256	Nitrate by IC	67	13	55	98.9	1.0
BLANK10	00LXC080-MB1	Nitrate by IC	24	1.2 u	25	96.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/29/00

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B11256	% Solids	45.1	45.4	0.75	1.0
		Nitrate by IC	13	12	9.0	1.0

RECRA LabNet Use Only

00121508

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client ~~HANFORD~~ Tru-Hanford TK 12-7-00 SAF # B99-029

Est. Final Proj. Sampling Date

Project # 10985-001001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due 1-6-01 TK 12-7-00

Account #

		A	B						C		D					
Refrigerator #		1	S						S		S					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	IC anions Nitrate					

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X						ITCLP		ICM3		MetD			
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B11256			X	12/5/00	1015	1	1						1		1					
	002	7					1032	1	1						1		1					
	003	8					1055	1	1						1		1					
	004	9					1102	1	1						1		1					
	005	B11256 tclp of 001			L	*	-												✓			
	006	7 002					-												✓			
	007	8 003					-												✓			
	008	9 004					-												✓			

Leachates

Special Instructions: SAF B99029

X = other solids

Run Matrix QC

DATE/REVISIONS:

* 1. See lab chron

MetD 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
FedEx	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

4235 7954 1058

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.4 °C

00121508

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-63	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: SM1-457 (1of2)	Field Logbook No.: EL 1517-1	COA: R10KR4C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA R.F. 12.5.00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235 7953 - 1058

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RF 12.5.00

Special Handling and/or Storage
** Historical data indicates that samples are less than 2000 pCi/g total activity.

SAMPLE ANALYSIS	Isotopic Uranium	Strontium 89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.
Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Strontium 89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.
B11256	OTHER SOLID	12.5.00	1015					X	X	X	X
B11257	OTHER SOLID	12.5.00	1032					X	X	X	X
B11258	OTHER SOLID	12.5.00	1085 RF					X	X	X	X
B11259	OTHER SOLID	12.5.00	1102 RF					X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg R.Fahlberg	12.5.00 1210	RT 12.6.00 Storedin Ref 2-A	12.5.00 1210
Removed from Ref 2-A 3728	12.6.00 0800	R.Thorer	12.6.00 0800
R.Thorer	12.6.00 0800	FEDEX	
FedEx	12-7-00 0945	Vicki Hennig	12-7-00 0945

RT 12.6.00

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Samples stored in Ref.#2A at the 3728
Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

4.4

JAN 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11256						
TCLP	001	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11257						
TCLP	002	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11258						
TCLP	003	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11259						
TCLP	004	SO	00LTO144	12/05/00	12/27/00	12/28/00
B11256						
SILVER, TCLP LEACHAT	005	W	99L1861	12/28/00	12/28/00	12/31/00
SILVER, TCLP LEACHAT	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
SILVER, TCLP LEACHAT	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	005	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	005	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	005	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	005	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	005	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	005	W	99L1861	12/28/00	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	005	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	005	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	005	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	005 REP	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	005 MS	W	99L1861	12/28/00	12/28/00	12/31/00
B11257						
SILVER, TCLP LEACHAT	006	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	006	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	006	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	006	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	006	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	006	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	006	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	006	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	006	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	006	W	99L1861	12/28/00	12/28/00	12/31/00
B11258						
SILVER, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	007	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	007	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	007	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	007	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	007	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	007	W	99L1861	12/28/00	12/28/00	12/31/00
B11259						
SILVER, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	008	W	99L1861	12/28/00	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	008	W	99L1861	12/28/00	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	008	W	99L1861	12/28/00	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	008	W	99L1861	12/28/00	12/28/00	12/31/00
LEAD, TCLP LEACHATE	008	W	99L1861	12/28/00	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00
SELENIUM, TCLP LEACH	008	W	99L1861	12/28/00	12/28/00	12/31/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
SILVER, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
SILVER, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	MB1	W	99L1861	N/A	12/28/00	12/31/00
ARSENIC, TCLP LEACHA	MB2	W	99L1861	N/A	12/28/00	12/31/00
BARIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
BARIUM, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1861	N/A	12/28/00	12/31/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	MB1	W	99L1861	N/A	12/28/00	12/31/00
CADMIUM, TCLP LEACHA	MB2	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00
CHROMIUM, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00
NICKEL LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	MB1	W	99L1861	N/A	12/28/00	12/31/00
NICKEL, TCLP LEACHAT	MB2	W	99L1861	N/A	12/28/00	12/31/00
LEAD LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
LEAD, TCLP LEACHATE	MB1	W	99L1861	N/A	12/28/00	12/31/00
LEAD, TCLP LEACHATE	MB2	W	99L1861	N/A	12/28/00	12/31/00
ANTIMONY LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
ANTIMONY, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00
SELENIUM LABORATORY	LC1 BS	W	99L1861	N/A	12/28/00	12/31/00
SELENIUM, TCLP LEACH	MB1	W	99L1861	N/A	12/28/00	12/31/00
SELENIUM, TCLP LEACH	MB2	W	99L1861	N/A	12/28/00	12/31/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW#: 0012L508
SDG/SAF#: H1176/B99-029

W.O.#: 10985-001-001-9999-00
Date Received: 12-07-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

10. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from sample B11256 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

for Pat G

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

gmb/m12-508

01-15-01
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0012L50F.

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B11256	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	58.6		UG/L	33.9	1.0
		Barium, TCLP Leachate	20.6		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	2660		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
-006	B11257	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	42.7		UG/L	33.9	1.0
		Barium, TCLP Leachate	22.1		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	2760		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B11258	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	46.3		UG/L	33.9	1.0
		Barium, TCLP Leachate	5.0		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	4220		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
-008	B11259	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	34.1		UG/L	33.9	1.0
		Barium, TCLP Leachate	5.8		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	3780		UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1861-MB1	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u	UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u	UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0
BLANK2	99L1861-MB2	Silver, TCLP Leachate	2.5	u	UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u	UG/L	33.9	1.0
		Barium, TCLP Leachate	4.1		UG/L	3.0	1.0
		Beryllium,TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u	UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u	UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u	UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-005	B11256	Silver, TCLP Leachate	3250	2.5 u	5000	65.0	1.0
		Arsenic, TCLP Leachate	4980	58.6	5000	98.4	1.0
		Barium, TCLP Leachate	97800	20.6	100000	97.7	1.0
		Beryllium, TCLP Leacha	892	0.60u	1000	89.2	1.0
		Cadmium, TCLP Leachate	942	3.4 u	1000	94.2	1.0
		Chromium, TCLP Leachat	7200	2660	5000	90.8	1.0
		Nickel, TCLP Leachate	942	12.5 u	1000	94.2	1.0
		Lead, TCLP Leachate	4810	25.0 u	5000	96.3	1.0
		Antimony, TCLP Leachat	624	17.0 u	1000	62.4	1.0
		Selenium, TCLP Leachat	970	62.3 u	1000	97.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-005REP	B11256	Silver, TCLP Leachate	2.5 u	2.5 u	NC	1.0
		Arsenic, TCLP Leachate	58.6	33.9 u	~~NC~~ 200	1.0
		Barium, TCLP Leachate	20.6	24.7	18.1	1.0
		Beryllium TCLP Leachate	0.60u	0.60u	NC	1.0
		Cadmium, TCLP Leachate	3.4 u	3.4 u	NC	1.0
		Chromium, TCLP Leachate	2660	2490	6.4	1.0
		Nickel, Leachate	12.5 u	12.5 u	NC	1.0
		Lead, TCLP Leachate	25.0 u	25.0 u	NC	1.0
		Antimony, Leachate	17.0 u	17.0 u	NC	1.0
		Selenium, TCLP Leachate	62.3 u	62.3 u	NC	1.0

JB 1/15/01

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/10/01

CLIENT: TNUHANFORD B99-029 H1176 RECRA LOT #: 0012L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1861-LC1	Silver, LCS	485	500	UG/L	97.0
		Arsenic, LCS	10100	10000	UG/L	101.1
		Barium, LCS	4710	5000	UG/L	94.1
		Beryllium, LCS	243	250	UG/L	97.2
		Cadmium, LCS	252	250	UG/L	100.6
		Chromium, LCS	499	500	UG/L	99.9
		Nickel, LCS	2000	2000	UG/L	100.1
		Lead, LCS	2550	2500	UG/L	102.1
		Antimony, LCS	3020	3000	UG/L	100.7
		Selenium, LCS	10000	10000	UG/L	100.4

RECRA LabNet Use Only

00121508

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client ~~HANFORD~~ TRU-HANFORD SAF # B99-029

Est. Final Proj. Sampling Date

Project # 10985-001001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due ~~N~~ 1-6-01 TRU-HANFORD

Account #

		A	B	C	D
Refrigerator #		1	5	5	5
#/Type Container	Liquid				
	Solid	1AG	1AG	1AG	1AG
Volume	Liquid				
	Solid	250	250	500	250
Preservatives		—	—	—	—

ANALYSES REQUESTED →

ORGANIC				INORG		
VOA	BNA	Pest/PCB	Herb	Metal	CN	IC ANIONS NITRITE

RECRA LabNet Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X						ITCLP		ICN03		MetW			
001	B11256			X	12/5/00	1015	1	1						1		1					
002	7					1032	1	1						1		1					
003	8					1055	1	1						1		1					
004	9					1102	1	1						1		1					
005	B112560 trip of 001			L	*	-												✓			
006	7 002					-												✓			
007	8 003					-												✓			
008	9 004					-												✓			

Special Instructions: SAF B99029

X = other solids

Run Matrix QC

DATE/REVISIONS:

* 1. See lab chron

MetW 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # Ground

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N; 2) Unbroken on Outer Package Y or N; 3) Present on Sample Y or N; 4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.4 °C

Relinquished by	Received by	Date	Time
FedEx	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 1058

C-15

00121508

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-	Page 1 of 1
Collector: Fahlberg/Cowgill	Company Contact: T Pickett; Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	Air Quality ☐
Ice Chest No.: SM1-452 (1of2)	Field Logbook No.: EL 1517-1; COA: R10KR4C560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA T.E. 12.5.00	Offsite Property No.: A010037	Bill of Lading/Air Bill No.: 42357953-1056	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. T.E. 12.5.00

Special Handling and/or Storage

** Historical data indicates that samples are less than 2000 pCi/g total activity.

SAMPLE ANALYSIS												
Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C				
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1	1				
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL				
	Isotopic Uranium	Strontium 89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.				
Sample No.	Matrix *	Sample Date	Sample Time									
B11256	OTHER SOLID	12.5.00	1015				X	X	X	X		
B11257	OTHER SOLID	12.5.00	1032				X	X	X	X		
B11258	OTHER SOLID	12.5.00	1085				X	X	X	X		
B11259	OTHER SOLID	12.5.00	1102				X	X	X	X		

CHAIN OF POSSESSION (Sign/Print Names)

Relinquished By	Date/Time	Received By	Date/Time
P. Fahlberg / P. Fahlberg	12.5.00	Storedin / Ref 2A	12.5.00 1210
Removed from Ref 2A 3728	12.16.00 0800	R. Thoren	12.16.00 0800
R. Thoren	12.16.00 0800	FED EX	
FED EX	12-7-00 0945	Vicki Hernandez	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichloromonofluoromethane}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel}

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

4.4

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11256	001	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11256	001 MS	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11256	001 MSD	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11257	002	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11258	003	SO	00LE1614	12/05/00	12/08/00	12/29/00
B11259	004	SO	00LE1614	12/05/00	12/08/00	12/29/00

LAB QC:

SBLKJX	MB1	S	00LE1614	N/A	12/08/00	12/29/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0012L508
SDG/SAF #: H1176/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

SEMIVOLATILE

Four (4) solid samples were collected on 12-05-2000.

The samples and their associated QC samples were extracted on 12-08-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compound Bis(2-Ethylhexyl)phthalate on 12-29-2000.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. The analyses were spiked with base/neutral surrogate at 150ug/mL instead of the specified 100ug/mL. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

4. Five (5) of twenty-one (21) surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria for two base/neutral compounds were outside the criteria; however, the recovery of Terphenyl-d14 was within criteria; consequently, there was no significant impact on the data.

5. The blank spike extract went to dryness in the laboratory. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. All matrix spike recoveries were within EPA QC limits.

   The target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level less than the CRQL.

8. Internal standard area and retention time criteria were met.

9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-19-01
Date

som\group\data\bna\tnu-hanford-12-508.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

RECRA **Sample Discrepancy Report (SDR)** SDR #: 01 MS08

Initiator: John W. Smith Batch: 0012 L508 Parameter: 15W A
Date: 1/3/01 Samples: 001, 002 Matrix: Soil
Client: Two Hanford 899-029 H1176 Method: SW846/MCAWW/CLP/ Prep Batch: COLE 1614

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

1) Two surrogates fail in both samples.
2) Two spikes fail in BS

2. Known or Probable Causes(s) (To be used for trend analysis)

__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
__ Other (Please explain):

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:
Late eluting surrogates met criteria.
MS/MSD met criteria.
Report + Narrate

4. Project Manager Instructions...signature/date: [signature] 1/3/01

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 01-18-01

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
__ Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00EX197

Initiator: Clara Boothield Batch: 00LE1614 Parameter: 0625
Date: 12/12/00 Samples: BS Matrix: S
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1614

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

BS went dry on RACK.

2. Known or Probable Causes(s) (To be used for trend analysis)

__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
✓ Other (Please explain): Cracked glassware

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
I Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	X	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
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Y	=	Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Special List

Report Date: 01/08/01 09:53

RFW Batch Number: **0012L508** Client: **TNUHANFORD B99-029 H1176** Work Order: 10985001001 Page: 1a

	Cust ID:	B11256	B11256	B11256	B11257	B11258	B11259
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	17 * %	55 %	59 %	11 * %	41 %	29 %
	2-Fluorobiphenyl	19 * %	55 %	53 %	17 * %	38 %	27 * %
	p-Terphenyl-d14	39 %	81 %	76 %	48 %	54 %	61 %
bis(2-Ethylhexyl)phthalate		750 U	170 JB	740 U	120 JB	740 U	730 U

	Cust ID:	SBLKJX
Sample Information	RFW#:	00LE1614-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	46 %
	2-Fluorobiphenyl	47 %
	p-Terphenyl-d14	77 %
bis(2-Ethylhexyl)phthalate		18 J

*= Outside of EPA CLP QC limits.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1176 RFW Lot No.: 0012L508-001

MATRIX Spike - Sample No.: B11256 Level:(low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	3780	0	2580	68	28 -104
N-Nitroso-Di-n-propylamine	3780	0	2790	74	41 -126
1,2,4-Trichlorobenzene	3780	0	2680	71	38 -107
Acenaphthene	3780	0	2910	77	31 -137
2,4-Dinitrotoluene	3780	0	2890	76	28 -89
Pyrene	3780	0	3510	93	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
1,4-Dichlorobenzene	3710	2100	57	17	27	28 -104
N-Nitroso-Di-n-propylamine	3710	2200	59	22	38	41 -126
1,2,4-Trichlorobenzene	3710	2140	58	20	23	38 -107
Acenaphthene	3710	2200	59	26 *	19	31 -137
2,4-Dinitrotoluene	3710	2140	58	26	47	28 -89
Pyrene	3710	2250	61	41 *	36	35 -142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 2 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS:

RECRA LabNet Use Only

00121508

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client ~~HANFORD~~ TRU-HANFORD SAF # B99-029

Est. Final Proj. Sampling Date

Project # 10985-001001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due ~~11~~ 1-6-01 TK 12-7-00

Account #

		A	B						C		D					
Refrigerator #		1	S						S		S					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	IC anions Nitrate					

RECRA LabNet Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X					ITCLP		ICNO3		MetD			
001	B11256			X	12/5/00	1015	1	1					1		1					
002	7					1032	1	1					1		1					
003	8					1055	1	1					1		1					
004	9					1102	1	1					1		1					
005	B11256 tclp of 001			L	*	-											✓			
006	7 002					-											✓			
007	8 003					-											✓			
008	9 004					-											✓			

Special Instructions: SAF B99029

X = other solids

Run Matrix QC

DATE/REVISIONS:

* 1. See lab chron

MetD 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 1058

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Blind

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.4 °C

00125 08

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-63	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	Air Quality ☐
Ice Chest No.: JM1-452 (1 of 2)	Field Logbook No.: EL 1517-1 — COA: R10KR4C560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA TC 12.5.00	Offsite Property No.: A010037	Bill of Lading/Air Bill No.: 4235 7953 - 1058	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. TC 12.5.00

Special Handling and/or Storage
** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Strontium 89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
B11256	OTHER SOLID	12.5.00	1015					X	X	X	X		
B11257	OTHER SOLID	12.5.00	1032					X	X	X	X		
B11258	OTHER SOLID	12.5.00	1085					X	X	X	X		
B11259	OTHER SOLID	12.5.00	1102					X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12.5.00 1210	Stonelin / Ref 2.A	12.5.00 1210
Removed from Ref 2.A 3728	12.6.00 0800	R. L. Thoren	12.6.00 0800
R. L. Thoren	12.6.00 0800	FED EX	
FedEx	12-7-00 0945	Vicki Hernandez	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

4.4

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1176

DATE RECEIVED: 12/07/00 RFW LOT # :0012L508

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B11256	001		SO	00LVH548	12/05/00	N/A	12/18/00
B11256	001	R1	SO	00LVH550	12/05/00	N/A	12/19/00
B11257	002		SO	00LVH548	12/05/00	N/A	12/18/00
B11257	002	R1	SO	00LVH550	12/05/00	N/A	12/19/00
B11258	003		SO	00LVH548	12/05/00	N/A	12/18/00
B11258	003	R1	SO	00LVX538	12/05/00	N/A	12/20/00
B11259	004		SO	00LVH548	12/05/00	N/A	12/18/00
B11259	004 MS		SO	00LVH548	12/05/00	N/A	12/18/00
B11259	004 MSD		SO	00LVH548	12/05/00	N/A	12/18/00

LAB QC:

VBLKGH	MB1		S	00LVH548	N/A	N/A	12/18/00
VBLKGH	MB1 BS		S	00LVH548	N/A	N/A	12/18/00
VBLKGI	MB1		S	00LVH550	N/A	N/A	12/19/00
VBLKGI	MB1 BS		S	00LVH550	N/A	N/A	12/19/00
VBLKIW	MB1		S	00LVX538	N/A	N/A	12/20/00
VBLKIW	MB1 BS		S	00LVX538	N/A	N/A	12/20/00

JAN 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0012L508
SDG/SAF #: H1176/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

GC/MS VOLATILE

Four (4) solid samples were collected on 12-05-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 12-18,19,20-2000.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. All samples were analyzed within required holding time with the exception of reanalysis of sample B11258, which was performed outside holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. Eight (8) of forty-five (45) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B11259. The initial analysis fulfills the reanalysis requirement of sample B11256 RE. Other out of criteria samples B11257 and B11258 were reanalyzed on 12-19,20-2000 and reported.

4. All matrix spike recoveries were within EPA QC limits.

   All blank spike recoveries were within EPA QC limits.

   The target compounds are not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL.

6. Internal standard area criteria were not met for all samples. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B11259. All other samples were reanalyzed on 12-19,20-2000 and reported.

by J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-18-01
Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 3 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

RECRA **Sample Discrepancy Report (SDR)** SDR #: CCVT31C

Initiator: Drzymak Batch: CCD2L5C Parameter: Cd24
Date: 12/7/00 Samples: CC3 Matrix: SOIL
Client: TDD Method: SW846/MCAWW/CLP/ Prep Batch: —

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary) 2nd analysis received due to internals and surrogate problems with 1st run 1 day out of Hold - (sample is Ambient pellets)

2. Known or Probable Causes(s) (To be used for trend analysis)

__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
__ Other (Please explain):

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 12/20/00

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 1/15/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
2 Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
1 Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

3

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

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GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 01/11/01 21:30

RFW Batch Number: **0012L508** Client: **TNUHANFORD B99-029 H1176** Work Order: 10985001001 Page: 1a

	Cust ID:	B11256	B11256	B11257	B11257	B11258	B11258
Sample Information	RFW#:	001	001	002	002	003	003
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.09	1.09	1.06	1.11	1.02	1.04
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
			REPREP		REPREP		REPREP
Surrogate Recovery	1,2-Dichloroethane-d4	84 %	88 %	88 %	92 %	90 %	93 %
	Toluene-d8	135 %	157 * %	145 * %	154 * %	147 * %	142 * %
	Bromofluorobenzene	66 %	73 %	72 %	71 %	66 %	78 %
		fl	fl	fl	fl	fl	fl
Trichlorofluoromethane		12 U	12 U	12 U	12 U	12 U	2 J
Methylene Chloride		51 B	36 B	42 B	38 B	39 B	30 B
Chloroform		8 J	9 J	10 J	10 J	4 J	5 J

	Cust ID:	B11259	B11259	B11259	VBLKGH	VBLKGH BS	VBLKGI
Sample Information	RFW#:	004	004 MS	004 MSD	00LVH548-MB1	00LVH548-MB1	00LVH550-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL	SOIL
	D.F.:	1.09	1.09	1.02	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	83 %	95 %	92 %	89 %	88 %	88 %
	Toluene-d8	127 %	127 %	133 %	98 %	92 %	116 %
	Bromofluorobenzene	63 * %	63 * %	59 * %	85 %	80 %	90 %
		fl	fl	fl	fl	fl	fl
Trichlorofluoromethane		12 U	12 U	12 U	5 U	5 U	5 U
Methylene Chloride		47 B	45 B	51 B	5	6 B	7
Chloroform		5 J	4 J	5 J	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 01/11/01 21:30

RFW Batch Number: **0012L508** Client: **TNUHANFORD B99-029 H1176** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKGI BS**		**VBLKIW**		**VBLKIW BS**	
Sample Information	RFW#:	**00LVH550-MB1**		**00LVX538-MB1**		**00LVX538-MB1**	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG	
Surrogate Recovery	1,2-Dichloroethane-d4	88	%	108	%	95	%
	Toluene-d8	100	%	117	%	104	%
	Bromofluorobenzene	78	%	106	%	94	%
Trichlorofluoromethane		5	U	5	U	5	U
Methylene Chloride		8	B	7		8	B
Chloroform		5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 12L508

Matrix Spike - EPA Sample No.: B11259 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	122.13	0.0000	129.04	106	59-172
Trichloroethene	122.13	0.0000	110.97	91	62-137
Benzene	122.13	0.0000	113.09	92	66-142
Toluene	122.13	0.0000	159.77	131	59-139
Chlorobenzene	122.13	0.0000	105.78	87	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	114.65	124.00	108	2	22	59-172
Trichloroethene	114.65	108.14	94	3	24	62-137
Benzene	114.65	111.72	97	5	21	66-142
Toluene	114.65	157.58	137	4	21	59-139
Chlorobenzene	114.65	103.35	90	3	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 12L508

Matrix Spike - EPA Sample No.: VBLKGH Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50.000	0.0000	51.950	104	59-172
Trichloroethene	50.000	0.0000	46.079	92	62-137
Benzene	50.000	0.0000	47.900	96	66-142
Toluene	50.000	0.0000	49.430	99	59-139
Chlorobenzene	50.000	0.0000	48.721	97	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 12L508

Matrix Spike - EPA Sample No.: VBLKGI Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50.000	0.0000	44.178	88	59-172
Trichloroethene	50.000	0.0000	43.062	86	62-137
Benzene	50.000	0.0000	47.263	94	66-142
Toluene	50.000	0.0000	52.103	104	59-139
Chlorobenzene	50.000	0.0000	51.524	103	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 12L508

Matrix Spike - EPA Sample No.: VBLKIW Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50.000	0.0000	41.675	83	61-145
Trichloroethene	50.000	0.0000	47.065	94	71-120
Benzene	50.000	0.0000	47.003	94	76-127
Toluene	50.000	0.0000	48.788	98	76-125
Chlorobenzene	50.000	0.0000	47.488	95	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 5 outside limits

COMMENTS:

RECRA LabNet Use Only

00121508

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client ~~Hanford~~ TRU-Hanford SAF # B99-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPCC Del Std TAT 30 day

Date Rec'd 12-7-00 Date Due ~~N~~ 1-6-01 TK 12-7-00

Account #

		A	B						C		D					
Refrigerator #		1	S						S		S					
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		—	—						—		—					
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	IC anions Nitrate					
		RECRA LabNet Use Only														
		0624X	0625X						ITCLP		ICno3					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil	001	B11256			X	12/5/00	1015	1	1					1		1				
SE - Sediment	002	7					1032	1	1					1		1				
SO - Solid	003	8					1055	1	1					1		1				
SL - Sludge	004	9					1102	1	1					1		1				
W - Water	005	B11256 tcip of 001			L	*	-											✓		
O - Oil	006	7 002					-											✓		
A - Air	007	8 003					-											✓		
DS - Drum Solids	008	9 004					-											✓		
DL - Drum Liquids																				
L - EP/TCLP Leachate																				
Wi - Wipe																				
X - Other																				
F - Fish																				

Special Instructions: SAF B99029

X = other solids

Run Matrix QC

DATE/REVISIONS:

* 1. See lab chron

Mrch(1) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # [illegible]

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.4 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

4235 7954 1058

Relinquished by	Received by	Date	Time
FedEx	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

00125 08

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-63	Page 1 of 1

Collector: Fahlberg/Cowgill	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Project Designation: 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4		SAF No.: B99-029
Ice Chest No.: SM1-457 (1 of 2)	Field Logbook No.: EL 1517-1	COA: R10KR4C560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA T.E. 12.5.00	Offsite Property No.: A010037		Bill of Lading/Air Bill No.: 4235 7953 -1056

Price Code: 9N
Air Quality: ☐
Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. T.E. 12.5.00

Special Handling and/or Storage
** Historical data indicates that samples are less than 2000 pCi/g total activity.

Preservation	None	None	None	None	Cool 4C B	Cool 4C A	None D	None C		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium 89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		

Sample No.	Matrix *	Sample Date	Sample Time										
B11256	OTHER SOLID	12.5.00	1015					X	X	X	X		
B11257	OTHER SOLID	12.5.00	1032					X	X	X	X		
B11258	OTHER SOLID	12.5.00	1055					X	X	X	X		
B11259	OTHER SOLID	12.5.00	1102					X	X	X	X		

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg	12.5.00 1210	Storedin Ref 2.A	12.5.00 1210
Removed from Ref 2.A 3728	12.6.00 0800	R. Thorer	12.6.00 0800
R. Thorer	12.6.00 0800	FED EX	
FED EX	12-7-00 0945	Vicki Hernandez	12-7-00 0945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Samples stored in Ref.# 2A at the 3728 Shipping Facility on 12/5/00
Collector not available to relinquish samples on 12/6/00 for shipment. RT 12.6.00

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

4.4