Eberline Services
W.O. No. R1-06-062-7009

Bechtel Hanford Inc.
SDG H1379

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1379 was composed of two solid (soil) samples designated under SAF No. B01-084 with a Project Designation of: Z-9 Trench Well Deepening and Characterization – Soil.

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 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.3 Plutonium-241 Analyses

All Isotopic Plutonium results were less than 1 pCi/gram. No Pu-241 analyses were performed as per SAF No. B01-084.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

All Am-241 results were less than 1 pCi/gram. No Np-237 analyses were performed as per SAF No. B01-084.

2.6 Gamma Spectroscopy 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 7/26/01

Melissa C. Mannion
Program Manager

Date

RECEIVED
NOV 06 2001
EDMC

JUL 2001
RECEIVED

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

SDG 7009
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1379

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B120X9	200-Z-9	SOLID		R106062-01	B01-084	B01-084-05	06/08/01 11:03
B120Y0	200-Z-9	SOLID		R106062-02	B01-084	B01-084-05	06/08/01 14:00
Method Blank		SOLID		R106062-04	B01-084		
Lab Control Sample		SOLID		R106062-03	B01-084		
Duplicate (R106062-02)	200-Z-9	SOLID		R106062-05	B01-084		06/08/01 14:00

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

SDG 7009
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1379

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
7009	B01-084-05	B120X9	SOLID	90.1	1071 g		06/12/01	4	R106062-01	7009-001
		B120Y0	SOLID	86.8	1052 g		06/12/01	4	R106062-02	7009-002
		Method Blank	SOLID						R106062-04	7009-004
		Lab Control Sample	SOLID						R106062-03	7009-003
		Duplicate (R106062-02)	SOLID	86.8	1052 g		06/12/01	4	R106062-05	7009-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

SDG 7009
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1379

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6994-014	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-014	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-014	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-014	15.0	2			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 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

SDG 7009
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1379

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B120X9			R106062-01	7009-001	AM		07/03/01	07/26/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	06/08/01	7009-001	GAM		06/19/01	07/26/01	MCM	Gamma Scan
B01-084-05	B01-084		06/12/01	7009-001	PU		06/26/01	07/26/01	MCM	Plutonium, Isotopic in Solids
				7009-001	SR		06/18/01	07/26/01	MCM	Total Strontium in Soil
B120Y0			R106062-02	7009-002	AM		07/16/01	07/26/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	06/08/01	7009-002	GAM		06/19/01	07/26/01	MCM	Gamma Scan
B01-084-05	B01-084		06/12/01	7009-002	PU		06/26/01	07/26/01	MCM	Plutonium, Isotopic in Solids
				7009-002	SR		06/18/01	07/26/01	MCM	Total Strontium in Soil
Method Blank			R106062-04	7009-004	AM		07/13/01	07/26/01	MCM	Americium 241 in Soil
		SOLID		7009-004	GAM		06/21/01	07/26/01	MCM	Gamma Scan
	B01-084			7009-004	PU		06/26/01	07/26/01	MCM	Plutonium, Isotopic in Solids
				7009-004	SR		06/18/01	07/26/01	MCM	Total Strontium in Soil
Lab Control Sample			R106062-03	7009-003	AM		07/13/01	07/26/01	MCM	Americium 241 in Soil
		SOLID		7009-003	GAM		06/19/01	07/26/01	MCM	Gamma Scan
	B01-084			7009-003	PU		06/26/01	07/26/01	MCM	Plutonium, Isotopic in Solids
				7009-003	SR		06/18/01	07/26/01	MCM	Total Strontium in Soil
Duplicate (R106062-02)			R106062-05	7009-005	AM		07/13/01	07/26/01	MCM	Americium 241 in Soil
200-Z-9		SOLID	06/08/01	7009-005	GAM		06/21/01	07/26/01	MCM	Gamma Scan
	B01-084		06/12/01	7009-005	PU		06/26/01	07/26/01	MCM	Plutonium, Isotopic in Solids
				7009-005	SR		06/18/01	07/26/01	MCM	Total Strontium in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-084	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1	5
GAM	B01-084	Gamma Scan	GAMMA_GS	2			1	1	1	5
PU	B01-084	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1	5
SR	B01-084	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TOTALS				8			4	4	4	20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

R106062-04 Method Blank

METHOD BLANK

SDG	7009	Client/Case no	Hanford SDG H1379
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R106062-04	Client sample id	Method Blank
Dept sample id	7009-004	Material/Matrix	SOLID
		SAF No	B01-084

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.056	0.16	0.30	1.0	U	SR
Americium 241	14596-10-2	0	0.053	0.20	1.0	U	AM
Plutonium 238	13981-16-3	0	0.088	0.34	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.088	0.34	1.0	U	PU
Antimony 125	14234-35-6	U		0.039		U	GAM
Potassium 40	13966-00-2	U		0.28		U	GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	U		0.032	0.10	U	GAM
Radium 228	15262-20-1	U		0.072	0.20	U	GAM
Europium 152	14683-23-9	U		0.045	0.10	U	GAM
Europium 154	15585-10-1	U		0.038	0.10	U	GAM
Europium 155	14391-16-3	U		0.057	0.10	U	GAM
Thorium 228	14274-82-9	U		0.024		U	GAM
Thorium 232	TH-232	U		0.072		U	GAM
Uranium 235	15117-96-1	U		0.073		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

Z-9 Trench Wall Deepening & Chara.

QC-BLANK 38930

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

R106062-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7009
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1379
Case no No. 630

Lab sample id R106062-03
Dept sample id 7009-003

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-084

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
Total Strontium	23.2	0.89	0.25	1.0		SR	23.1	0.92	100	83-117	80-120
Americium 241	19.9	2.0	0.21	1.0		AM	21.0	0.84	95	83-117	80-120
Plutonium 238	28.1	2.8	0.22	1.0		PU	27.2	1.1	103	82-118	80-120
Plutonium 239/240	29.9	3.0	0.22	1.0		PU	29.0	1.2	103	82-118	80-120
Cobalt 60	0.315	0.030	0.014	0.050		GAM	0.353	0.014	89	75-125	80-120
Cesium 137	0.369	0.027	0.018	0.10		GAM	0.358	0.014	103	74-126	80-120

Z-9 Trench Wall Deepening & Chara.

QC-LCS 38929

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

R106062-05 B120Y0

DUPLICATE

SDG	7009			Client/Case no	Hanford SDG H1379
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R106062-05	Lab sample id	R106062-02	Client sample id	B120Y0
Dept sample id	7009-005	Dept sample id	7009-002	Location/Matrix	200-Z-9 SOLID
		Received	06/12/01	Collected/Weight	06/08/01 14:00 1052 g
% solids	86.8	% solids	86.8	Custody/SAF No	B01-084-05 B01-084

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
Total Strontium	-0.086	0.11	0.26	1.0	U	SR	-0.017	0.12	0.25	U	-	
Americium 241	0.027	0.053	0.20	1.0	U	AM	0	0.021	0.030	U	-	
Plutonium 238	-0.031	0.062	0.24	1.0	U	PU	0	0.11	0.43	U	-	
Plutonium 239/240	0	0.062	0.24	1.0	U	PU	0.056	0.11	0.43	U	-	
Antimony 125	U		0.081		U	GAM	U		0.084	U	-	
Potassium 40	17.5	0.99	0.37			GAM	18.3	0.92	0.40		4	34
Cobalt 60	U		0.037	0.050	U	GAM	U		0.040	U	-	
Cesium 137	U		0.034	0.10	U	GAM	U		0.039	U	-	
Radium 226	0.814	0.075	0.068	0.10		GAM	0.831	0.084	0.077		2	38
Radium 228	1.40	0.19	0.18	0.20		GAM	1.27	0.18	0.17		10	43
Europium 152	U		0.086	0.10	U	GAM	U		0.087	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.14	U	-	
Europium 155	U		0.16	0.10	U	GAM	U		0.15	U	-	
Thorium 228	1.15	0.048	0.040			GAM	1.09	0.051	0.045		5	33
Thorium 232	1.40	0.19	0.18			GAM	1.27	0.18	0.17		10	43
Uranium 235	U		0.18		U	GAM	U		0.19	U	-	
Uranium 238	U		4.2		U	GAM	U		4.9	U	-	
Americium 241	U		0.052		U	GAM	U		0.39	U	-	

Z-9 Trench Wall Deepening & Chara.

QC-DUP#2 38931

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

R106062-01 B120X9

DATA SHEET

SDG	7009	Client/Case no	Hanford	SDG H1379	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R106062-01	Client sample id	B120X9		
Dept sample id	7009-001	Location/Matrix	200-Z-9	SOLID	
Received	06/12/01	Collected/Weight	06/08/01 11:03	1071 g	
% solids	90.1	Custody/SAF No	B01-084-05	B01-084	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.030	0.11	0.22	1.0	U	SR
Americium 241	14596-10-2	0.039	0.052	0.050	1.0	U	AM
Plutonium 238	13981-16-3	0.028	0.056	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.028	0.056	0.21	1.0	U	PU
Antimony 125	14234-35-6	U		0.064		U	GAM
Potassium 40	13966-00-2	17.3	0.91	0.34			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Radium 226	13982-63-3	0.589	0.068	0.063	0.10		GAM
Radium 228	15262-20-1	0.911	0.15	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.069	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.064	0.10	U	GAM
Thorium 228	14274-82-9	0.786	0.038	0.032			GAM
Thorium 232	TH-232	0.911	0.15	0.14			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Americium 241	14596-10-2	U		0.041		U	GAM

Z-9 Trench Wall Deepening & Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

R106062-02 **B120Y0**

DATA SHEET

SDG	7009	Client/Case no	Hanford		SDG H1379
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R106062-02	Client sample id	B120Y0		
Dept sample id	7009-002	Location/Matrix	200-Z-9		SOLID
Received	06/12/01	Collected/Weight	06/08/01 14:00	1052 g	
% solids	86.8	Custody/SAF No	B01-084-05	B01-084	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.017	0.12	0.25	1.0	U	SR
Americium 241	14596-10-2	0	0.021	0.030	1.0	U	AM
Plutonium 238	13981-16-3	0	0.11	0.43	1.0	U	PU
Plutonium 239/240	PU-239/240	0.056	0.11	0.43	1.0	U	PU
Antimony 125	14234-35-6	U		0.084		U	GAM
Potassium 40	13966-00-2	18.3	0.92	0.40			GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	0.831	0.084	0.077	0.10		GAM
Radium 228	15262-20-1	1.27	0.18	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.087	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	1.09	0.051	0.045			GAM
Thorium 232	TH-232	1.27	0.18	0.17			GAM
Uranium 235	15117-96-1	U		0.19		U	GAM
Uranium 238	U-238	U		4.9		U	GAM
Americium 241	14596-10-2	U		0.39		U	GAM

Z-9 Trench Wall Deepening & Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

Test AM Matrix SOLID
SDG 7009
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1379

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-014						
B120X9	R106062-01			7009-001	U	
B120Y0	R106062-02			7009-002	U	
BLK (QC ID=38930)	R106062-04			7009-004	U	
LCS (QC ID=38929)	R106062-03			7009-003	ok	
Duplicate (R106062-02)	R106062-05			7009-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
Z-9 Trench Wall Deepening & Chara.						

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 6994-014	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 014											
B120X9	R106062-01			0.050	0.500			91		410			25	06/27/01	07/03	SS-011
B120Y0	R106062-02			0.030	0.500			86		1063			38	06/27/01	07/16	SS-009
BLK (QC ID=38930)	R106062-04			0.20	0.500			86		102				06/27/01	07/13	SS-056
LCS (QC ID=38929)	R106062-03			0.21	0.500			82		102				06/27/01	07/13	SS-055
Duplicate (R106062-02) (QC ID=38931)	R106062-05			0.20	0.500			88		102			35	06/27/01	07/13	SS-057
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.14 ± 0.18
YIELD 87 ± 7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

Test PU	Matrix SOLID
SDG 7009	
Contact Melissa C. Mannion	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1379	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-014								
B120X9	R106062-01			7009-001	U		U	
B120Y0	R106062-02			7009-002	U		U	
BLK (QC ID=38930)	R106062-04			7009-004	U		U	
LCS (QC ID=38929)	R106062-03			7009-003	ok		ok	
Duplicate (R106062-02)	R106062-05			7009-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
Z-9 Trench Wall Deepening & Chara.								

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 6994-014	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 014												
B120X9	R106062-01			0.21	0.500			80		106			18	06/25/01	06/26	SS-027
B120Y0	R106062-02			0.43	0.500			40		106			18	06/25/01	06/26	SS-028
BLK (QC ID=38930)	R106062-04			0.34	0.500			48		106				06/25/01	06/26	SS-032
LCS (QC ID=38929)	R106062-03			0.22	0.500			80		106				06/25/01	06/26	SS-029
Duplicate (R106062-02) (QC ID=38931)	R106062-05			0.24	0.500			70		106			18	06/25/01	06/26	SS-034
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA 0.29 ± 0.19
FOR 5 SAMPLES	YIELD 64 ± 37

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

Test SR Matrix SOLID
SDG 7009
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1379

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-014						
B120X9	R106062-01			7009-001	U	
B120Y0	R106062-02			7009-002	U	
BLK (QC ID=38930)	R106062-04			7009-004	U	
LCS (QC ID=38929)	R106062-03			7009-003	ok	
Duplicate (R106062-02)	R106062-05			7009-005	-	U
Nominal values and limits from method Z-9 Trench Wall Deepening & Chara.				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 6994-014 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 014																
B120X9	R106062-01			0.22	1.00			98		100			10	06/18/01	06/18	GRB-217
B120Y0	R106062-02			0.25	1.00			100		100			10	06/18/01	06/18	GRB-219
BLK (QC ID=38930)	R106062-04			0.30	1.00			89		100				06/18/01	06/18	GRB-229
LCS (QC ID=38929)	R106062-03			0.25	1.00			93		100				06/18/01	06/18	GRB-220
Duplicate (R106062-02) (QC ID=38931)	R106062-05			0.26	1.00			95		100			10	06/18/01	06/18	GRB-230
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 4
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.26 ± 0.058
YIELD 95 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/26/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1379

Test GAM Matrix SOLID
SDG 7009
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1379

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6994-014								
B120X9	R106062-01			7009-001	U		U	
B120Y0	R106062-02			7009-002	U		U	
BLK (QC ID=38930)	R106062-04			7009-004	U		U	
LCS (QC ID=38929)	R106062-03			7009-003	ok		ok	
Duplicate (R106062-02)	R106062-05			7009-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
Z-9 Trench Wall Deepening & Chara.								

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 6994-014	2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 014															
B120X9	R106062-01			0.073	759					120			11	06/19/01	06/19	MB,07,00
B120Y0	R106062-02			0.093	746					120			11	06/19/01	06/19	MB,05,00
BLK (QC ID=38930)	R106062-04			0.029	746					102				06/19/01	06/21	MB,05,00
LCS (QC ID=38929)	R106062-03			0.014	746					119				06/19/01	06/19	01,04,00
Duplicate (R106062-02) (QC ID=38931)	R106062-05			0.092	746					100			13	06/19/01	06/21	MB,07,00
Nominal values and limits from method				0.050	746					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD	MDA 0.060 ± 0.073
FOR 5 SAMPLES	YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 07/26/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-05	Page 1 of 1

Collector: Fahlberg	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9 H1379 (7009)	SAF No.: B01-084	
Ice Chest No.: ERC 96.082 (10f1)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA EBERline	Offsite Property No.: A010335	Bill of Lading/Air Bill No.: 4255795 4-5009	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000pCi/g according to BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL) 6-8-01	See item (2) in Special Instructions.	See item (3) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time								
B120X9	SOIL	6-8-01	1103					X			
B120Y0	SOIL	6-8-01	1400					X			
~~B120Y1~~	~~SOIL~~										
~~B120Y2~~	~~SOIL~~										

6-8-01 JEC

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg 6-8-01	1600	Received By: Raf 2-C 6-8-01	1600
Relinquished By: Remquestron R. Fahlberg 2C 3728 6-11-01	0900	Received By: R Thorn 6-11-01	0900
Relinquished By: R Thorn 6-11-01	0900	Received By: FED EXP 6-11-01	—
Relinquished By: FED. EXPRESS	10:AM 6-12-01	Received By: E Bequro E. SERRANO 6-12-01	10:AM
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

RT 6-11-01

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}~~
~~(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7470 - (CVAA)~~
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125}; Isotopic Plutonium; Americium-241; Neptunium-237; Plutonium-241; Strontium-89,90 -- Total Sr

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 6/8/01. Collector not available to relenquish samples on 6/11/01 for shipment.

RT 6-11-01

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)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 6-12-01 AT 10 AM

CoC No. B01-084-05

Container I.D. No. ERC96-082 Requested TAT (Days) 45 DAYS 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: 2 SAMPLES
7. Number of containers per sample: (1 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. Aguirre Date: 6-12-01 Time: AT 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 _____

JUL 2001 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120X9						
% SOLIDS	001	S	01L%S071	06/08/01	06/13/01	06/14/01
% SOLIDS	001 REP	S	01L%S071	06/08/01	06/13/01	06/14/01
OIL & GREASE BY GRAV	001	S	01LOG024	06/08/01	07/09/01	07/10/01
OIL AND GREASE BY GR	001 REP	S	01LOG024	06/08/01	07/09/01	07/10/01
OIL AND GREASE BY GR	001 MS	S	01LOG024	06/08/01	07/09/01	07/10/01
B120Y0						
% SOLIDS	002	S	01L%S071	06/08/01	06/13/01	06/14/01
OIL & GREASE BY GRAV	002	S	01LOG024	06/08/01	07/09/01	07/10/01

LAB QC:

OIL & GREASE BY GRAV	MB1	S	01LOG024	N/A	07/09/01	07/10/01
OIL AND GREASE BY GR	MB1 BS	S	01LOG024	N/A	07/09/01	07/10/01
OIL AND GREASE BY GR	MB1 BSD	S	01LOG024	N/A	07/09/01	07/10/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-084 H1379
LVL#: 0106L021

W.O.#: 11343-606-001-9999-00
Date Received: 06-12-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked 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 Oil and Grease was within the method criteria.

6. The Laboratory Control Sample (LCS) 01LOG024-MB1 (7360 mg/Kg spike level) for Oil and Grease was within the laboratory control limits of 80-120%, however LCS 01LOG024-MB1 (7470 mg/Kg spike level) was below the control limits.

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

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

9. 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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

07-23-01
Date

njp\i06-021

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 11 pages.

Lionville Laboratory Incorporated

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: **Method:**

Other: **Method**

L-WI-034/B-01/01

Lionville Laboratory Incorporated

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.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/17/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B120X9	% Solids	90.8		%	0.01	1.0
		Oil & Grease Gravimetri	147	u	MG/KG	147	1.0
-002	B120Y0	% Solids	91.0		%	0.01	1.0
		Oil & Grease Gravimetri	146	u	MG/KG	146	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/17/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LOG024-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 07/17/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT		SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B120X9	Oil & Grease Gravimetr	7440	147	u	8100	91.8	1.0
BLANK10	01LOG024-MB1	Oil & Grease Gravimetr	6360	133	u	7360	86.4	1.0
		Oil & Grease - Grav M	5590	133	u	7470	74.8	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 07/17/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B120X9	% Solids	90.8	90.9	0.13	1.0
		Oil & Grease Gravimetri	147 u	147 u	NC	1.0

Lionville Laboratory Use Only
01061021

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU- Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343-6010-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 6-12-01 Date Due: 7-12-01

		A	B			C			D							
Refrigerator #		1	4			4			4							
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG			1AG							
Volume	Liquid															
	Solid	250	250			250			500							
Preservatives		—	—			—			—							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Oil + Grease			ICP Metal	CN						
		Lionville Laboratory Use Only														
		OLC24H	OLC25X			IOGGR			Mrt(1)							

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	OLC24H	OLC25X			IOGGR			Mrt(1)						
001	B120X9			S	6-8-01	1103	X	X			X			X						
002	B120Y0			↓	↓	1400	X	X			X			X						

Special Instructions: SOF B01-084
Run Matrix QC

DATE/REVISIONS:
Mrt(1) 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	Inez Stoltzfus	6-12-01	0915

Relinquished by	Received by	Date	Time

COMPOSITE ORIGINAL

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4995

Lionville Laboratory 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) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal 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. 5.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-05	Page 1 of 1

Collector: Fahlberg	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality: ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9	SAF No.: B01-084	
Ice Chest No.: ERC 99.023 (2 of 2)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: ~~A410335~~ A410310 RT 6-11-01		Bill of Lading/Air Bill No.: 4235 7954 4995

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g according to BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions. RT 6-8-01						
Sample No.	Matrix *	Sample Date	Sample Time								
B120X9	SOIL	6-8-01	1103	X	X	X	X				
B120Y0	SOIL	6-8-01	1400	X	X	X	X				
~~B120Y1~~	~~SOIL~~										
~~B120Y2~~	~~SOIL~~										

8-01 SC

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg 6-8-01	1600	Received By: Storedin Raf 2-C 6-8-01	1600
Relinquished By: Removed from Raf 2C 3728 6-11-01	0900	Received By: R Thoren	0900 6-11-01
Relinquished By: R. Thoren	0900 6-11-01	Received By: FEDEX	
Relinquished By: FedEx	6-12-01 0915	Received By: Free Stolte Sis	6-12-01 0915
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7470 - (CV)
~~(3) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec – Add-on (Antimony-125); Isotopic Plutonium; Americium-241; Neptunium-237; Plutonium-241; Strontium-89,90 – Total Sr~~

RT 6-11-01

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 6 18 01.
Collector not available to relenquish samples on 6 11 01 for shipment.

RT 6-11-01

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)

Figure 1. Sample Check-in List

Date/Time Received: 6-12-01 0915

SDG#: 010601021

Work Order Number: — SAF# B01-084

Shipping Container ID: — Chain of Custody # B01-084-05

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 5.8°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 8
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - [✓] tape
   - ____ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

9. Samples are:
   - [✓] in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: TKeppie / LULI Date: 6-12-01

Telephoned to: _____ On _____ By _____

JUL 2001 RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120X9						
SILVER, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
SILVER, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
SILVER, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
BARIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
BARIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
BARIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
CALCIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
CALCIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
CALCIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
CADMIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
CADMIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
CADMIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
COBALT, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
COBALT, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
COBALT, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
COPPER, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
COPPER, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
COPPER, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
IRON, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
IRON, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
IRON, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
MERCURY, TOTAL	001	S	01C0191	06/08/01	06/27/01	06/27/01
MERCURY, TOTAL	001 REP	S	01C0191	06/08/01	06/27/01	06/27/01
MERCURY, TOTAL	001 MS	S	01C0191	06/08/01	06/27/01	06/27/01
POTASSIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
POTASSIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
MANGANESE, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
MANGANESE, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
MANGANESE, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
SODIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
SODIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
SODIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
NICKEL, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
NICKEL, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
NICKEL, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
LEAD, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
LEAD, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
LEAD, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
VANADIUM, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
VANADIUM, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
VANADIUM, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
ZINC, TOTAL	001	S	01L0393	06/08/01	07/05/01	07/06/01
ZINC, TOTAL	001 REP	S	01L0393	06/08/01	07/05/01	07/06/01
ZINC, TOTAL	001 MS	S	01L0393	06/08/01	07/05/01	07/06/01
B120Y0						
SILVER, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
ALUMINUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
BARIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
CALCIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
CADMIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
COBALT, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
CHROMIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
COPPER, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
IRON, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	002	S	01C0191	06/08/01	06/27/01	06/27/01
POTASSIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
MANGANESE, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
SODIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
NICKEL, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
LEAD, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
ANTIMONY, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
VANADIUM, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01
ZINC, TOTAL	002	S	01L0393	06/08/01	07/05/01	07/06/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SILVER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM LABORTORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BARIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BARIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CADMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CADMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COBALT LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COBALT, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COPPER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COPPER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
IRON LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
IRON, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MERCURY LABORATORY	LC1 BS	S	01C0191	N/A	06/27/01	06/27/01
MERCURY, TOTAL	MB1	S	01C0191	N/A	06/27/01	06/27/01
POTASSIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
POTASSIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MANGANESE LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
MANGANESE, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
SODIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SODIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
NICKEL LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
NICKEL, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
LEAD LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
LEAD, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ZINC LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ZINC, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-084
LVL#: 0106L021
SDG/SAF#: H1379/B01-084

W.O.#: 11343-606-001-9999-00
Date Received: 06-12-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil 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), 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 the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B120X9	Aluminum	20,000	109.5
	Calcium	20,000	98.3
	Iron	20,000	90.7
	Antimony	200	103.2

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 • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

12. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. 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.

14. 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.

15. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra LabNet Philadelphia.

for Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

07-21-01
Date

jjw/m06-021

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 01061021

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A X3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X6010B		__200.7				__99
Antimony	X6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	X6010B		__200.7				__99
Mercury	__7470A [3]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	X6010B	__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	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__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	X6010B		__200.7				__99
Zinc	X6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

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

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B120X9	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Aluminum, Total	5590	MG/KG	1.4	1.0
		Barium, Total	66.4	MG/KG	0.02	1.0
		Beryllium, Total	0.28	MG/KG	0.02	1.0
		Calcium, Total	8300	MG/KG	0.87	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Cobalt, Total	6.2	MG/KG	0.09	1.0
		Chromium, Total	12.0	MG/KG	0.1	1.0
		Copper, Total	12.9	MG/KG	0.07	1.0
		Iron, Total	18900	MG/KG	1.7	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1360	MG/KG	3.8	1.0
		Magnesium, Total	4100	MG/KG	0.94	1.0
		Manganese, Total	341	MG/KG	0.01	1.0
		Sodium, Total	112	MG/KG	0.18	1.0
		Nickel, Total	12.1	MG/KG	0.13	1.0
		Lead, Total	5.4	MG/KG	0.28	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Vanadium, Total	25.3	MG/KG	0.07	1.0
		Zinc, Total	32.8	MG/KG	0.03	1.0
-002	B120Y0	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Aluminum, Total	10600	MG/KG	1.4	1.0
		Barium, Total	90.2	MG/KG	0.02	1.0
		Beryllium, Total	0.50	MG/KG	0.02	1.0
		Calcium, Total	10600	MG/KG	0.88	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Cobalt, Total	8.8	MG/KG	0.09	1.0
		Chromium, Total	20.4	MG/KG	0.1	1.0
		Copper, Total	19.1	MG/KG	0.08	1.0
		Iron, Total	20800	MG/KG	1.7	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2210	MG/KG	3.8	1.0
		Magnesium, Total	6750	MG/KG	0.96	1.0
		Manganese, Total	396	MG/KG	0.01	1.0
		Sodium, Total	188	MG/KG	0.18	1.0
		Nickel, Total	19.7	MG/KG	0.13	1.0
		Lead, Total	8.6	MG/KG	0.28	1.0
		Antimony, Total	0.21	MG/KG	0.21	1.0
		Vanadium, Total	37.5	MG/KG	0.08	1.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B120Y0	Zinc, Total	50.5	MG/KG	0.03	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0393-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	1.3 u	MG/KG	1.3	1.0
		Barium, Total	0.04	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	1.6	MG/KG	0.81	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Copper, Total	0.07 u	MG/KG	0.07	1.0
		Iron, Total	1.6 u	MG/KG	1.6	1.0
		Potassium, Total	3.5 u	MG/KG	3.5	1.0
		Magnesium, Total	0.88 u	MG/KG	0.88	1.0
		Manganese, Total	0.03	MG/KG	0.01	1.0
		Sodium, Total	2.4	MG/KG	0.17	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Vanadium, Total	0.07 u	MG/KG	0.07	1.0
		Zinc, Total	0.05	MG/KG	0.03	1.0
BLANK1	01C0191-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B120X9	Silver, Total	5.1	0.11u	5.3	96.2	1.0
		Aluminum, Total	6950	5590	214	632.7*	1.0
		Barium, Total	273	66.4	214	96.6	1.0
		Beryllium, Total	5.3	0.28	5.3	94.6	1.0
		Calcium, Total	12000	8300	2670	137.1	1.0
		Cadmium, Total	5.0	0.03	5.3	93.7	1.0
		Cobalt, Total	55.8	6.2	53.4	92.9	1.0
		Chromium, Total	33.7	12.0	21.4	101.4	1.0
		Copper, Total	41.7	12.9	26.7	107.9	1.0
		Iron, Total	21400	18900	107	2340 *	1.0
		Mercury, Total	0.16	0.02u	0.17	95.9	1.0
		Potassium, Total	4190	1360	2670	105.8	1.0
		Magnesium, Total	7110	4100	2670	112.4	1.0
		Manganese, Total	404	341	53.4	119.1*	1.0
		Sodium, Total	2770	112	2670	99.4	1.0
		Nickel, Total	62.2	12.1	53.4	93.8	1.0
		Lead, Total	55.3	5.4	53.4	93.4	1.0
		Antimony, Total	29.9	0.20u	53.4	56.0	1.0
		Vanadium, Total	79.7	25.3	53.4	101.9	1.0
		Zinc, Total	84.7	32.8	53.4	97.2	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B120X9	Silver, Total	0.11u	0.11u	NC	1.0
		Aluminum, Total	5590	7070	23.3	1.0
		Barium, Total	66.4	69.0	3.8	1.0
		Beryllium, Total	0.28	0.33	13.6	1.0
		Calcium, Total	8300	8570	3.2	1.0
		Cadmium, Total	0.03	0.05	31.6	1.0
		Cobalt, Total	6.2	6.5	4.7	1.0
		Chromium, Total	12.0	15.2	23.5	1.0
		Copper, Total	12.9	13.2	2.3	1.0
		Iron, Total	18900	20500	8.4	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	1360	1580	14.7	1.0
		Magnesium, Total	4100	4820	16.1	1.0
		Manganese, Total	341	335	1.7	1.0
		Sodium, Total	112	155	31.7	1.0
		Nickel, Total	12.1	13.4	10.2	1.0
		Lead, Total	5.4	5.5	1.8	1.0
		Antimony, Total	0.20u	0.20u	NC	1.0
		Vanadium, Total	25.3	34.8	31.6	1.0
		Zinc, Total	32.8	37.1	12.3	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1379 LVL LOT #: 0106L021

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0393-LC1	Silver, LCS	47.5	50.0	MG/KG	95.0
		Aluminum, LCS	485	500	MG/KG	96.9
		Barium, LCS	483	500	MG/KG	96.5
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Calcium, LCS	2400	2500	MG/KG	96.0
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Cobalt, LCS	246	250	MG/KG	98.4
		Chromium, LCS	49.9	50.0	MG/KG	99.8
		Copper, LCS	122	125	MG/KG	97.8
		Iron, LCS	496	500	MG/KG	99.2
		Potassium, LCS	2390	2500	MG/KG	95.7
		Magnesium, LCS	2400	2500	MG/KG	95.8
		Manganese, LCS	75.7	75.0	MG/KG	100.9
		Sodium, LCS	2320	2500	MG/KG	92.9
		Nickel, LCS	193	200	MG/KG	96.7
		Lead, LCS	239	250	MG/KG	95.5
		Antimony, LCS	286	300	MG/KG	95.4
		Vanadium, LCS	253	250	MG/KG	101.2
		Zinc, LCS	95.5	100	MG/KG	95.5
LCS1	01C0191-LC1	Mercury, LCS	2.5	2.5	MG/KG	102.3

Lionville Laboratory Use Only
0106L021

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU- Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11243-6000-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: DJ
QC: Spec Del: site TAT: 30 day
Date Rec'd: 6-12-01 Date Due: 7-12-01

		A	B			C			D							
Refrigerator #		1	1			1			1							
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG			1AG							
Volume	Liquid															
	Solid	250	250			250			500							
Preservatives		–	–			–			–							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Oil + Grease			ICP Metal	CN						
		Lionville Laboratory Use Only														
		OL24H	OL25K			IOGGR			Met (1)							

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	OL24H	OL25K			IOGGR			Met (1)							
001	B120X9			S	6-8-01	1103	X	X			X			X							
002	B120Y0			↓	↓	1400	X	X			X			X							

Special Instructions: SOF B01-084
Run Matrix QC

DATE/REVISIONS:
Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Lionville Laboratory 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) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal 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. 5.8 °C

Relinquished by	Received by	Date	Time
Fed Ex	Inez Stoltzfus	6/20/01	0915

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4995

COMPOSITE ORIGINAL

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-05	Page 1 of 1

Collector: Fahlberg	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9	SAF No.: B01-084	
Ice Chest No.: ERC 99.023 (2of2)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/ECRA	Offsite Property No.: ~~A410335~~ A410310 RT 6-11-01	Bill of Lading/Air Bill No.: 4235 7954 4995	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000pCi/g according to BHI-01589

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	500mL	1000mL					
SAMPLE ANALYSIS	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions. RT 6-8-01					

Sample No.	Matrix *	Sample Date	Sample Time										
B120X9	SOIL	6-8-01	1103	X	X	X	X						
B120Y0	SOIL	6-8-01	1400	X	X	X	X						
~~B120Y1~~	~~SOIL~~												
~~B120Y2~~	~~SOIL~~												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	6-8-01 1600	Raf 2-C	6-8-01 1600
R. Fahlberg / R. Fahlberg	6-8-01 0900	R. Therrien	6-11-01 0900
R. Therrien	6-11-01 0900		
Fed Ex	6-12-01 0915	Free Stoltz Sys	6-12-01 0915

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)
(3) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec -- Add-on (Antimony-125); Isotopic Plutonium; Americium-241; Neptunium-237; Plutonium-241; Strontium-89,90 -- Total Sr~~

RT 6-11-01

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 6-18-01.
Collector not available to relenquish samples on 6-11-01 for shipment.
RT 6-11-01

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)

JUL 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

DATE RECEIVED: 06/12/01 LVL LOT # :0106L021

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B120X9	001	S	01LE0698	06/08/01	06/14/01	06/29/01
B120Y0	002	S	01LE0698	06/08/01	06/14/01	06/29/01
B120Y0	002 MS	S	01LE0698	06/08/01	06/14/01	06/29/01
B120Y0	002 MSD	S	01LE0698	06/08/01	06/14/01	06/29/01

LAB QC:

SBLKAE	MB1	S	01LE0698	N/A	06/14/01	06/29/01
SBLKAE	MB1 BS	S	01LE0698	N/A	06/14/01	06/29/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-084
RFW #: 0106L021
SDG/SAF #: H1379/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 06-12-2001

SEMIVOLATILE

Two (2) soil samples were collected on 06-08-2001.

The samples and their associated QC samples were extracted on 06-14-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 06-29-2001.

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. Samples were extracted and analyzed within holding times.

3. A non-target compound was detected in sample B120Y0.

4. All surrogate recoveries were within EPA QC limits.

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

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

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

8. "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
President
Lionville Laboratory Incorporated

7/13/01
Date

som\gorup\data\bna\tnu-hanford-0106-021.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 1 2 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

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.

GLOSSARY OF BNA 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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 07/03/01 13:26

RFW Batch Number: **0106L021** Client: **TNUHANFORD B01-084 H1379** Work Order: 11343606001 Page: 1a

	Cust ID:	B120X9		B120Y0		B120Y0		B120Y0		SBLKAE		SBLKAE BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LE0698-MB1		01LE0698-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	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	70	%	74	%	79	%	86	%	72	%	72	%
	2-Fluorobiphenyl	65	%	68	%	74	%	80	%	73	%	74	%
	p-Terphenyl-d14	85	%	91	%	95	%	96	%	95	%	95	%
	Phenol-d5	68	%	74	%	77	%	83	%	73	%	71	%
	2-Fluorophenol	64	%	70	%	72	%	78	%	70	%	73	%
	2,4,6-Tribromophenol	72	%	71	%	80	%	85	%	74	%	72	%
			fl		fl		fl		fl		fl		fl
Phenol		370	U	370	U	76	%	81	%	330	U	71	%
bis(2-Chloroethyl)ether		370	U	370	U	370	U	370	U	330	U	330	U
2-Chlorophenol		370	U	370	U	75	%	81	%	330	U	72	%
1,3-Dichlorobenzene		370	U	370	U	370	U	370	U	330	U	330	U
1,4-Dichlorobenzene		370	U	370	U	66	%	69	%	330	U	67	%
1,2-Dichlorobenzene		370	U	370	U	370	U	370	U	330	U	330	U
2-Methylphenol		370	U	370	U	370	U	370	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	370	U	330	U	330	U
4-Methylphenol		370	U	370	U	370	U	370	U	330	U	330	U
N-Nitroso-Di-n-propylamine		370	U	370	U	76	%	82	%	330	U	64	%
Hexachloroethane		370	U	370	U	370	U	370	U	330	U	330	U
Nitrobenzene		370	U	370	U	370	U	370	U	330	U	330	U
Isophorone		370	U	370	U	370	U	370	U	330	U	330	U
2-Nitrophenol		370	U	370	U	370	U	370	U	330	U	330	U
2,4-Dimethylphenol		370	U	370	U	370	U	370	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	370	U	330	U	330	U
2,4-Dichlorophenol		370	U	370	U	370	U	370	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	370	U	72	%	75	%	330	U	73	%
Naphthalene		370	U	370	U	370	U	370	U	330	U	330	U
4-Chloroaniline		370	U	370	U	370	U	370	U	330	U	330	U
Hexachlorobutadiene		370	U	370	U	370	U	370	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	370	U	72	%	76	%	330	U	65	%
2-Methylnaphthalene		370	U	370	U	370	U	370	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	370	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	370	U	330	U	330	U
2,4,5-Trichlorophenol		920	U	920	U	920	U	920	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0106L021 Client: TNUHANFORD B01-084 H1379 Work Order: 11343606001 Page: 1b

Cust ID:	B120X9		B120Y0		B120Y0		B120Y0		SBLKAE		SBLKAE BS	
RFW#:	001		002		002 MS		002 MSD		01LE0698-MB1		01LE0698-MB1	
2-Chloronaphthalene	370	U	370	U	370	U	370	U	330	U	330	U
2-Nitroaniline	920	U	920	U	920	U	920	U	830	U	830	U
Dimethylphthalate	370	U	370	U	370	U	370	U	330	U	330	U
Acenaphthylene	370	U	370	U	370	U	370	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	370	U	370	U	330	U	330	U
3-Nitroaniline	920	U	920	U	920	U	920	U	830	U	830	U
Acenaphthene	370	U	370	U	73	%	77	%	330	U	71	%
2,4-Dinitrophenol	920	U	920	U	920	U	920	U	830	U	830	U
4-Nitrophenol	920	U	920	U	67	%	70	%	830	U	56	%
Dibenzofuran	370	U	370	U	370	U	370	U	330	U	330	U
2,4-Dinitrotoluene	370	U	370	U	73	%	78	%	330	U	60	%
Diethylphthalate	370	U	370	U	370	U	370	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	370	U	330	U	330	U
Fluorene	370	U	370	U	370	U	370	U	330	U	330	U
4-Nitroaniline	920	U	920	U	920	U	920	U	830	U	830	U
4,6-Dinitro-2-methylphenol	920	U	920	U	920	U	920	U	830	U	830	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	370	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	370	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	370	U	370	U	330	U	330	U
Pentachlorophenol	920	U	920	U	75	%	78	%	830	U	69	%
Phenanthrene	370	U	370	U	370	U	370	U	330	U	330	U
Anthracene	370	U	370	U	370	U	370	U	330	U	330	U
Carbazole	370	U	370	U	370	U	370	U	330	U	330	U
Di-n-Butylphthalate	370	U	370	U	370	U	370	U	330	U	330	U
Fluoranthene	370	U	370	U	370	U	370	U	330	U	330	U
Pyrene	370	U	370	U	89	%	93	%	330	U	91	%
Butylbenzylphthalate	370	U	370	U	370	U	370	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	370	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	370	U	370	U	330	U	330	U
Chrysene	370	U	370	U	370	U	370	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	100	J	26	J	29	J	42	J	330	U	330	U
Di-n-Octyl phthalate	370	U	370	U	370	U	370	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	370	U	370	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	370	U	370	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	370	U	370	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	370	U	330	U	330	U
Dibenzo(a,h)anthracene	370	U	370	U	370	U	370	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	370	U	330	U	330	U
Tributylphosphate	370	U	370	U	370	U	370	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B120X9

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1379

Matrix: (soil/water) SOIL

Lab Sample ID: 0106L021-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D062912

Level: (low/med) LOW

Date Received: 06/12/01

% Moisture: 9 decanted: (Y/N) __

Date Extracted: 06/14/01

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/29/01

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B120Y0

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1379

Matrix: (soil/water) SOIL

Lab Sample ID: 0106L021-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D062913

Level: (low/med) LOW

Date Received: 06/12/01

% Moisture: 9 decanted: (Y/N)__

Date Extracted: 06/14/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.607	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKAE

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1379

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0698-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D062910

Level: (low/med) LOW

Date Received: 06/14/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 06/14/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 06/29/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.601	300	J

Lionville Laboratory Use Only
01061021

Custody Transfer Record/Lab Work Request

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU- Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343- Code: 001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 6-12-01 Date Due: 7-12-01

		A	B			C			D							
Refrigerator #		1	4			4			4							
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG			1AG							
Volume	Liquid															
	Solid	250	250			250			500							
Preservatives		—	—			—			—							
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Oil + Grease			INORG: ICP Metal	CN						
Lionville Laboratory Use Only		OL24H	OL25X			IOGGR			Met (1)							

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	OL24H	OL25X			IOGGR			Met (1)							
001	B120X9			S	6-8-01	1103	X	X			X			X							
002	B120Y0			↓	↓	1400	X	X			X			X							

Special Instructions: SOF B01-084
Run Matrix QC

DATE/REVISIONS:
Met (1) 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	Ines Schlitzfus	6/12/01	0915

Relinquished by	Received by	Date	Time

COMPOSITE ORIGINAL

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7964 4995

Lionville Laboratory 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) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal 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. 5.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-05	Page 1 of 1

Collector: Fahlberg	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9	SAF No.: B01-084	
Ice Chest No.: ERC 99.023 (2 of 2)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/ECRA	Offsite Property No.: ~~AA10335~~ AA10310		Bill of Lading/Air Bill No.: 4235 7954 4995

POSSIBLE SAMPLE HAZARDS/REMARKS
<200000 pCi/g according to BHI-01589

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	500mL	1000mL						
SAMPLE ANALYSIS	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.						

RT 6-8-01

Sample No.	Matrix *	Sample Date	Sample Time										
B120X9	SOIL	6-8-01	1103	X	X	X	X						
B120Y0	SOIL	6-8-01	1400	X	X	X	X						
~~B120Y1~~	~~SOIL~~												
~~B120Y2~~	~~SOIL~~												

6-8-01 RC

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg 6-8-01	1600	Received By: STORED IN Raf 2-C 6-8-01	1600
Relinquished By: ~~Removed from~~ R. Fahlberg 2C 3728 6-11-01	0900	Received By: R Thoren	0900 6-11-01
Relinquished By: R Thoren	0900 6-11-01	Received By: FEDEX	
Relinquished By: FedEx	6-12-01 0915	Received By: Free Stolt Hills	6-12-01 0915
Relinquished By:		Received By:	
Relinquished By:		Received By:	

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)
~~(3) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-On (Antimony-125); Isotopic Plutonium; Americium-241; Neptunium-237; Plutonium-241; Strontium-89,90 - Total Sr~~

RT 6-11-01

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 6/8/01.
Collector not available to relenquish samples on 6/11/01 for shipment.

RT 6-11-01

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)

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1379

RFW LOT # :0106L021

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B120X9	001	S	01LVX172	06/08/01	06/12/01	N/A	06/18/01
B120Y0	002	S	01LVX172	06/08/01	06/12/01	N/A	06/18/01
B120Y0	002 MS	S	01LVX172	06/08/01	06/12/01	N/A	06/18/01
B120Y0	002 MSD	S	01LVX172	06/08/01	06/12/01	N/A	06/18/01
LAB QC:							
VBLKFH	MB1	S	01LVX172	N/A	N/A	N/A	06/17/01
VBLKFH	MB1 BS	S	01LVX172	N/A	N/A	N/A	06/17/01

JUL 2001
RECEIVED

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-084
RFW #: 0106L021
SDG/SAF #: H1379/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 06-12-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 06-08-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 06-17,18-2001.

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. Samples were analyzed within required holding time.

3. Non-target compounds were not detected in the samples.

4. Three (3) of eighteen (18) surrogate recoveries were outside EPA QC limits. The initial analysis fulfills the reanalysis requirement of B120Y0 MS and B120Y0 MSD.

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

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

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.

8. Internal standard area criteria were not met for sample B120Y0 MS. The initial analysis fulfills the reanalysis requirement of sample B120Y0 MS.

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
President
Lionville Laboratory Incorporated

7/18/01
Date

som\group\data\voa\tnu-hanford\0106-021.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 9 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

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.

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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 07/11/01 16:51

RFW Batch Number: 0106L021 Client: TNUHANFORD B01-084 H1379 Work Order: 11343606001 Page: 1a

	Cust ID:	B120X9	B120Y0	B120Y0	B120Y0	VBLKFH	VBLKFH BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	01LVX172-MB1	01LVX172-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.06	0.893	0.926	0.909	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	98 %	87 %	103 %	91 %	122 %	103 %
	Bromofluorobenzene	83 %	75 %	62 * %	70 %	97 %	85 %
	1,2-Dichloroethane-d4	64 %	64 %	48 * %	61 * %	76 %	68 %
		fl	fl	fl	fl	fl	fl
Chloromethane		12 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		12 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		12 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		12 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		7 B	7 B	17 B	7 B	7	7 B
Acetone		12 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		6 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		6 U	5 U	139 %	88 %	5 U	82 %
1,1-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	5 U	5 U	5 U	5 U
Chloroform		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		12 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		6 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		6 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		6 U	5 U	87 %	87 %	5 U	86 %
Dibromochloromethane		6 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Benzene		6 U	5 U	87 %	90 %	5 U	88 %
Trans-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U
Bromoform		6 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		12 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		12 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		6 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Toluene		6 U	5 U	100 %	93 %	5 U	99 %

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0106L021** Client: **TNUHANFORD B01-084 H1379** Work Order: 11343606001 Page: 1b

Cust ID:	B120X9	B120Y0	B120Y0	B120Y0	VBLKFH	VBLKFH BS
RFW#:	001	002	002 MS	002 MSD	01LVX172-MB1	01LVX172-MB1
Chlorobenzene	6 U	5 U	92 %	92 %	5 U	92 %
Ethylbenzene	6 U	5 U	5 U	5 U	5 U	5 U
Styrene	6 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only
01061021

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU- Hanford B01-084
Est. Final Proj. Sampling Date:
Project #: 11343- code- 001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: DJ
QC: Spec Del: std TAT: 30 day
Date Rec'd: 6-12-01 Date Due: 7-12-01

		A	B			C			D							
Refrigerator #		1	4			4			4							
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG			1AG							
Volume	Liquid															
	Solid	250	250			250			500							
Preservatives		—	—			—			—							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Oil + Grease			ICP Metal	CN						
		Lionville Laboratory Use Only														
		OC24H	OC25X			TOGGR			Met(1)							

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	OC24H	OC25X			TOGGR			Met(1)						
001	B120X9			S	6-8-01	1103	X	X			X			X						
002	B120Y0			↓	↓	1400	X	X			X			X						

Special Instructions: SOF B01-084
Run Matrix QC

DATE/REVISIONS:
Met(1) 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
3.
4.
5.
6.

Lionville Laboratory 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) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal 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. 5.8 °C

Relinquished by	Received by	Date	Time
Fed Ex	Inez Stoltzfus	6/12/01	0915

Relinquished by	Received by	Date	Time

COMPOSITE ORIGINAL

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 4995

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-084-05	Page 1 of 1

Collector: Fahlberg	Company Contact: C W Miller	Telephone No.: 372-9274	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location: 200- Z- 9	SAF No.: B01-084	
Ice Chest No.: ERC 99.023 (2of2)	Field Logbook No.: EL 1517-1	COA: R20ZP2DP61	Method of Shipment: Fed EX
Shipped To: TMA/ECRA	Offsite Property No.: ~~AA10335~~ AA10310 RT 6-11-01	Bill of Lading/Air Bill No.: 4235 7954 4995	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000pCi/g according to BHI-01509

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1
Volume	250mL	250mL	250mL	500mL	1000mL

SAMPLE ANALYSIS

	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions. RT 6.8.01

Sample No.	Matrix *	Sample Date	Sample Time					
B120X9	SOIL	6.8.01	1103	X	X	X	X	
B120Y0	SOIL	6.8.01	1400	X	X	X	X	
~~B120Y1~~	~~SOIL~~							
~~B120Y2~~	~~SOIL~~							

6.8.01 RCC

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Fahlberg / R. Fahlberg	6-8-01 1600	Received By: J.S. Robin / Raf 2.C	6-8-01 1600
Relinquished By: Raf Moved from 2C 3728		6-11-01 0900	Received By: R. Thoren	6-11-01 0900
Relinquished By: R. Thoren		6-11-01 0900	Received By: FED EX	Date/Time
Relinquished By: Fed Ex		6-12-01 0915	Received By: Free Stoltzfus	6-12-01 0915
Relinquished By		Date/Time	Received By	Date/Time
Relinquished By		Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
See SAF Comment Concerning Pu Analysis

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)
~~(3) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125); Isotopic Plutonium; Americium-241; Neptunium-237; Plutonium-241; Strontium-89,90 -- Total Sr~~

RT 6-11-01

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 6/18/01.
Collector not available to relenquish samples on 6/11/01 for shipment.

RT 6-11-01

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)