1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1623 was composed of three solid (soil) samples designated under SAF No. B01-113 with a Project Designation of: PFP Well Installation Sampling and Analysis – Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 31, 2002.

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2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium 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 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

The RPD between sample B13DY2 and its samples duplicate was 200%, greater than the 3σ limit of 162%. The difference between sample B13DY2 and its duplicate was less than the RDL (1 pCi/g) for Np-237. No other problems were encountered during the course of the analyses.

2.9 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

Melissa C. Mannion
Program Manager

2/5/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1623

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13DY2	200 West; Well No. C3803	SOLID		R112002-01	B01-113	B01-113-31	11/28/01 02:35
B13DY3	200 West; Well No. C3803	SOLID		R112002-02	B01-113	B01-113-32	11/30/01 00:45
B13F01	200 West; Well No. C3803	SOLID		R112002-03	B01-113	B01-113-40	11/30/01 00:45
Method Blank		SOLID		R112002-05	B01-113		
Lab Control Sample		SOLID		R112002-04	B01-113		
Duplicate (R112002-01)	200 West; Well No. C3803	SOLID		R112002-06	B01-113		11/28/01 02:35
Spike (R112002-01)	200 West; Well No. C3803	SOLID		R112002-07	B01-113		11/28/01 02:35

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1623

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
7172	B01-113-31	B13DY2	SOLID	95.9	1387 g		12/03/01	5	R112002-01	7172-001
	B01-113-32	B13DY3	SOLID	89.7	1063 g		12/03/01	3	R112002-02	7172-002
	B01-113-40	B13F01	SOLID	90.0	1073 g		12/03/01	3	R112002-03	7172-003
		Method Blank	SOLID						R112002-05	7172-005
		Lab Control Sample	SOLID						R112002-04	7172-004
		Duplicate (R112002-01)	SOLID	95.9	1387 g		12/03/01	5	R112002-06	7172-006
		Spike (R112002-01)	SOLID		1387 g		12/03/01	5	R112002-07	7172-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1623

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	7018-063	5.0	3			1	1	1/1		
NP	SOLID	Neptunium in Soil	7018-063	5.0	3			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7018-063	5.0	3			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7018-063	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7018-063	10.0	3			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7018-063	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7018-063	20.0	3			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7018-063	15.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7018-063	15.0	3			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	7018-063	10.0	1			1	1	1/1	1/1	X

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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1623

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13DY2			R112002-01	7172-001	93A/93		01/17/02	01/31/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	11/28/01	7172-001	93B/93		01/17/02	01/31/02	MCM	Gross Beta in Soil
B01-113-31	B01-113		12/03/01	7172-001	AM		01/19/02	01/31/02	MCM	Americium 241 in Soil
				7172-001	GAM		01/18/02	01/31/02	MCM	Gamma Scan
				7172-001	H		01/22/02	01/31/02	MCM	Tritium in Soil
				7172-001	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-001	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-001	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
				7172-001	TC		01/16/02	01/31/02	MCM	Technetium 99 in Soil
				7172-001	U		01/10/02	01/31/02	MCM	Uranium, Isotopic in Soil
B13DY3			R112002-02	7172-002	93A/93		01/17/02	01/31/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	11/30/01	7172-002	93B/93		01/17/02	01/31/02	MCM	Gross Beta in Soil
B01-113-32	B01-113		12/03/01	7172-002	AM		01/19/02	01/31/02	MCM	Americium 241 in Soil
				7172-002	GAM		01/15/02	01/31/02	MCM	Gamma Scan
				7172-002	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-002	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-002	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
B13F01			R112002-03	7172-003	93A/93		01/17/02	01/31/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	11/30/01	7172-003	93B/93		01/17/02	01/31/02	MCM	Gross Beta in Soil
B01-113-40	B01-113		12/03/01	7172-003	AM		01/19/02	01/31/02	MCM	Americium 241 in Soil
				7172-003	GAM		01/15/02	01/31/02	MCM	Gamma Scan
				7172-003	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-003	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-003	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
Method Blank			R112002-05	7172-005	93A/93		01/18/02	01/31/02	MCM	Gross Alpha in Soil
		SOLID		7172-005	93B/93		01/18/02	01/31/02	MCM	Gross Beta in Soil
	B01-113			7172-005	AM		01/19/02	01/31/02	MCM	Americium 241 in Soil
				7172-005	GAM		01/15/02	01/31/02	MCM	Gamma Scan
				7172-005	H		01/22/02	01/31/02	MCM	Tritium in Soil
				7172-005	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-005	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-005	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
				7172-005	TC		01/15/02	01/31/02	MCM	Technetium 99 in Soil
				7172-005	U		01/10/02	01/31/02	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1623

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R112002-04	7172-004	93A/93		01/17/02	01/31/02	MCM	Gross Alpha in Soil
		SOLID		7172-004	93B/93		01/17/02	01/31/02	MCM	Gross Beta in Soil
	B01-113			7172-004	AM		01/21/02	01/31/02	MCM	Americium 241 in Soil
				7172-004	GAM		01/18/02	01/31/02	MCM	Gamma Scan
				7172-004	H		01/22/02	01/31/02	MCM	Tritium in Soil
				7172-004	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-004	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-004	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
				7172-004	TC		01/15/02	01/31/02	MCM	Technetium 99 in Soil
				7172-004	U		01/11/02	01/31/02	MCM	Uranium, Isotopic in Soil
Duplicate (R112002-01)			R112002-06	7172-006	93A/93		01/18/02	01/31/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	11/28/01	7172-006	93B/93		01/18/02	01/31/02	MCM	Gross Beta in Soil
	B01-113		12/03/01	7172-006	AM		01/19/02	01/31/02	MCM	Americium 241 in Soil
				7172-006	GAM		01/19/02	01/31/02	MCM	Gamma Scan
				7172-006	H		01/22/02	01/31/02	MCM	Tritium in Soil
				7172-006	NP		01/12/02	01/31/02	MCM	Neptunium in Soil
				7172-006	PU		01/19/02	01/31/02	MCM	Plutonium, Isotopic in Solids
				7172-006	SR		01/15/02	01/31/02	MCM	Total Strontium in Soil
				7172-006	TC		01/14/02	01/31/02	MCM	Technetium 99 in Soil
				7172-006	U		01/11/02	01/31/02	MCM	Uranium, Isotopic in Soil
Spike (R112002-01)			R112002-07	7172-007	H		01/22/02	01/31/02	MCM	Tritium in Soil
200 West; Well No. C3803		SOLID	11/28/01							
	B01-113		12/03/01							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

SDG 7172
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1623

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B01-113	Gross Alpha in Soil	900.0_ALPHABETA_GPC	3			1	1	1		6
93B/93	B01-113	Gross Beta in Soil	900.0_ALPHABETA_GPC	3			1	1	1		6
AM	B01-113	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	3			1	1	1		6
GAM	B01-113	Gamma Scan	GAMMA_GS	3			1	1	1		6
H	B01-113	Tritium in Soil	906.0_H3_LSC	1			1	1	1	1	5
NP	B01-113	Neptunium in Soil	NP237_LLE_PLATE_AEA	3			1	1	1		6
PU	B01-113	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	3			1	1	1		6
SR	B01-113	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	3			1	1	1		6
TC	B01-113	Technetium 99 in Soil	TC99_TR_SEP_LSC	1			1	1	1		4
U	B01-113	Uranium, Isotopic in Soil	UISO_PLATE_AEA	1			1	1	1		4
TOTALS				24			10	10	10	1	55

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-05 **Method Blank**

METHOD BLANK

SDG	7172	Client/Case no	Hanford	SDG H1623	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112002-05	Client sample id	Method Blank		
Dept sample id	7172-005	Material/Matrix		SOLID	
		SAF No	B01-113		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.536	1.4	3.0	10	U	93A
Gross Beta	12587-47-2	-2.05	3.0	5.4	15	U	93B
Tritium	10028-17-8	0.021	0.15	0.26	400	U	H
Total Strontium	SR-RAD	0.048	0.16	0.32	1.0	U	SR
Technetium 99	14133-76-7	-0.054	0.11	0.25	15	U	TC
Uranium 233/234	U-233/234	-0.030	0.051	0.10	1.0	U	U
Uranium 235	15117-96-1	-0.006	0.037	0.068	1.0	U	U
Uranium 238	U-238	0	0.020	0.039	1.0	U	U
Neptunium 237	13994-20-2	0.041	0.035	0.050	1.0	U	NP
Plutonium 238	13981-16-3	0.025	0.050	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.050	0.19	1.0	U	PU
Americium 241	14596-10-2	-0.164	0.16	0.50	1.0	U	AM
Potassium 40	13966-00-2	U		0.16		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.12		U	GAM
Antimony 125	14234-35-6	U		0.032		U	GAM
Cesium 134	13967-70-9	U		0.017		U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	U		0.025	0.10	U	GAM
Radium 228	15262-20-1	U		0.059	0.20	U	GAM
Europium 152	14683-23-9	U		0.034	0.10	U	GAM
Europium 154	15585-10-1	U		0.041	0.10	U	GAM
Europium 155	14391-16-3	U		0.020	0.10	U	GAM
Thorium 228	14274-82-9	U		0.014		U	GAM
Thorium 232	TH-232	U		0.059		U	GAM
Uranium 235	15117-96-1	U		0.035		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Americium 241	14596-10-2	U		0.012		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/31/02

B L A N K , c o n t .

SDG	7172	Client/Case no	Hanford	SDG H1623	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112002-05	Client sample id	Method Blank		
Dept sample id	7172-005	Material/Matrix		SOLID	
		SAF No	B01-113		

QC-BLANK 40773

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7172
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1623
Case no No. 630

Lab sample id R112002-04
Dept sample id 7172-004

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-113

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
Gross Alpha	218	15	3.5	10		93A	200	8.0	109	65-135	70-130
Gross Beta	223	11	7.0	15		93B	217	8.7	103	75-125	70-130
Tritium	11.6	0.38	0.26	400	J	H	11.6	0.46	100	83-117	80-120
Total Strontium	23.1	0.88	0.25	1.0		SR	21.7	0.87	106	82-118	80-120
Technetium 99	124	1.4	0.28	15		TC	118	4.7	105	83-117	80-120
Uranium 233/234	18.7	1.8	0.87	1.0		U	18.6	0.74	100	83-117	80-120
Uranium 235	15.6	1.6	0.24	1.0		U	15.1	0.60	103	81-119	80-120
Uranium 238	19.5	1.8	0.83	1.0		U	20.2	0.81	97	84-116	80-120
Neptunium 237	18.8	0.65	0.045	1.0		NP	19.9	0.80	94	89-111	80-120
Plutonium 238	23.3	2.4	0.21	1.0		PU	24.6	0.98	95	83-117	80-120
Plutonium 239/240	25.7	2.6	0.21	1.0		PU	26.4	1.1	97	82-118	80-120
Americium 241	19.2	0.61	0.025	1.0		AM	19.1	0.76	100	89-111	80-120
Cobalt 60	1.05	0.050	0.015	0.050		GAM	1.07	0.043	98	76-124	80-120
Cesium 137	1.34	0.047	0.023	0.10		GAM	1.26	0.050	106	75-125	80-120

PFP Well Installation Smpl. & Anal.

QC-LCS 40772

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-06 B13DY2

DUPLICATE

SDG	7172			Client/Case no	Hanford SDG H1623
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R112002-06	Lab sample id	R112002-01	Client sample id	B13DY2
Dept sample id	7172-006	Dept sample id	7172-001	Location/Matrix	200 West; Well No. C3803 SOLID
		Received	12/03/01	Collected/Weight	11/28/01 02:35 1387 g
% solids	95.9	% solids	95.9	Custody/SAF No	B01-113-31 B01-113

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 TOT	PROT LIMIT
Gross Alpha	4.28	3.3	3.8	10	J	93A	6.34	3.9	4.2	J	39	151	
Gross Beta	14.0	4.6	6.4	15	J	93B	15.5	5.0	7.2		10	76	
Tritium	0.036	0.072	0.12	400	U	H	0.035	0.075	0.13	U	-		
Total Strontium	-0.087	0.12	0.27	1.0	U	SR	-0.046	0.12	0.26	U	-		
Technetium 99	-0.041	0.12	0.26	15	U	TC	0.109	0.18	0.56	U	-		
Uranium 233/234	0.280	0.15	0.20	1.0	J	U	0.436	0.21	0.16	J	44	109	
Uranium 235	0	0.062	0.24	1.0	U	U	0.025	0.050	0.19	U	-		
Uranium 238	0.408	0.21	0.20	1.0	J	U	0.374	0.17	0.16	J	9	104	
Neptunium 237	0.065	0.033	0.025	1.0	J	NP	-0.003	0.016	0.036	U	200	162	
Plutonium 238	0	0.053	0.20	1.0	U	PU	0	0.069	0.26	U	-		
Plutonium 239/240	0	0.053	0.20	1.0	U	PU	0.069	0.069	0.26	U	-		
Americium 241	0	0.19	0.45	1.0	U	AM	-0.035	0.070	0.27	U	-		
Potassium 40	9.62	0.82	0.48			GAM	9.48	0.75	0.40		1	36	
Cobalt 60	U		0.045	0.050	U	GAM	U		0.042	U	-		
Ruthenium 106	U		0.34		U	GAM	U		0.29	U	-		
Antimony 125	U		0.079		U	GAM	U		0.079	U	-		
Cesium 134	U		0.052		U	GAM	U		0.045	U	-		
Cesium 137	U		0.035	0.10	U	GAM	U		0.036	U	-		
Radium 226	0.433	0.079	0.077	0.10		GAM	0.389	0.065	0.056		11	49	
Radium 228	0.550	0.21	0.20	0.20		GAM	0.546	0.19	0.18		1	84	
Europium 152	U		0.089	0.10	U	GAM	U		0.076	U	-		
Europium 154	U		0.13	0.10	U	GAM	U		0.14	U	-		
Europium 155	U		0.11	0.10	U	GAM	U		0.068	U	-		
Thorium 228	0.456	0.047	0.050			GAM	0.491	0.042	0.038		7	38	
Thorium 232	0.550	0.21	0.20			GAM	0.546	0.19	0.18		1	84	
Uranium 235	U		0.14		U	GAM	U		0.11	U	-		
Uranium 238	U		5.0		U	GAM	U		5.0	U	-		
Americium 241	U		0.13		U	GAM	U		0.042	U	-		

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/31/02

DUPLICATE, cont.

SDG	7172			Client/Case no	Hanford SDG H1623
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R112002-06	Lab sample id	R112002-01	Client sample id	B13DY2
Dept sample id	7172-006	Dept sample id	7172-001	Location/Matrix	200 West; Well No. C3803 SOLID
		Received	12/03/01	Collected/Weight	11/28/01 02:35 1387 g
% solids	95.9	% solids	95.9	Custody/SAF No	B01-113-31 B01-113

QC-DUP#1 40774

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-07 B13DY2

MATRIX SPIKE

SDG	7172			Client/Case no	Hanford SDG H1623
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R112002-07	Lab sample id	R112002-01	Client sample id	B13DY2
Dept sample id	7172-007	Dept sample id	7172-001	Location/Matrix	200 West; Well No. C3803 SOLID
		Received	12/03/01	Collected/Weight	11/28/01 02:35 1387 g
		% solids	95.9	Custody/SAF No	B01-113-31 B01-113

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	44.3	0.47	0.12	400	JX	H	48.2	1.9	0.035	0.075	92	85-115	60-140

PFP Well Installation Smpl. & Anal.

QC-MS#1 40775

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-01 B13DY2

DATA SHEET

SDG	7172	Client/Case no	Hanford	SDG H1623	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112002-01	Client sample id	B13DY2		
Dept sample id	7172-001	Location/Matrix	200 West; Well No. C3803	SOLID	
Received	12/03/01	Collected/Weight	11/28/01 02:35	1387 g	
% solids	95.9	Custody/SAF No	B01-113-31	B01-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.34	3.9	4.2	10	J	93A
Gross Beta	12587-47-2	15.5	5.0	7.2	15		93B
Tritium	10028-17-8	0.035	0.075	0.13	400	U	H
Total Strontium	SR-RAD	-0.046	0.12	0.26	1.0	U	SR
Technetium 99	14133-76-7	0.109	0.18	0.56	15	U	TC
Uranium 233/234	U-233/234	0.436	0.21	0.16	1.0	J	U
Uranium 235	15117-96-1	0.025	0.050	0.19	1.0	U	U
Uranium 238	U-238	0.374	0.17	0.16	1.0	J	U
Neptunium 237	13994-20-2	-0.003	0.016	0.036	1.0	U	NP
Plutonium 238	13981-16-3	0	0.069	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0.069	0.069	0.26	1.0	U	PU
Americium 241	14596-10-2	-0.035	0.070	0.27	1.0	U	AM
Potassium 40	13966-00-2	9.48	0.75	0.40			GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.29		U	GAM
Antimony 125	14234-35-6	U		0.079		U	GAM
Cesium 134	13967-70-9	U		0.045		U	GAM
Cesium 137	10045-97-3	U		0.036	0.10	U	GAM
Radium 226	13982-63-3	0.389	0.065	0.056	0.10		GAM
Radium 228	15262-20-1	0.546	0.19	0.18	0.20		GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.068	0.10	U	GAM
Thorium 228	14274-82-9	0.491	0.042	0.038			GAM
Thorium 232	TH-232	0.546	0.19	0.18			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		5.0		U	GAM
Americium 241	14596-10-2	U		0.042		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-02 B13DY3

DATA SHEET

SDG	7172	Client/Case no	Hanford	SDG H1623	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112002-02	Client sample id	B13DY3		
Dept sample id	7172-002	Location/Matrix	200 West; Well No. C3803	SOLID	
Received	12/03/01	Collected/Weight	11/30/01 00:45	1063 g	
% solids	89.7	Custody/SAF No	B01-113-32	B01-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.02	3.1	3.6	10	J	93A
Gross Beta	12587-47-2	20.6	4.6	6.0	15		93B
Total Strontium	SR-RAD	-0.058	0.14	0.30	1.0	U	SR
Neptunium 237	13994-20-2	0.032	0.021	0.025	1.0	J	NP
Plutonium 238	13981-16-3	0.051	0.10	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.025	0.051	0.19	1.0	U	PU
Americium 241	14596-10-2	-0.038	0.076	0.29	1.0	U	AM
Potassium 40	13966-00-2	14.0	0.95	0.30			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.22		U	GAM
Antimony 125	14234-35-6	U		0.062		U	GAM
Cesium 134	13967-70-9	U		0.042		U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Radium 226	13982-63-3	0.493	0.057	0.052	0.10		GAM
Radium 228	15262-20-1	0.835	0.14	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.064	0.10	U	GAM
Europium 154	15585-10-1	U		0.095	0.10	U	GAM
Europium 155	14391-16-3	U		0.068	0.10	U	GAM
Thorium 228	14274-82-9	0.739	0.039	0.033			GAM
Thorium 232	TH-232	0.835	0.14	0.13			GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.039		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

R112002-03 B13F01

DATA SHEET

SDG	7172	Client/Case no	Hanford	SDG H1623	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112002-03	Client sample id	B13F01		
Dept sample id	7172-003	Location/Matrix	200 West; Well No. C3803	SOLID	
Received	12/03/01	Collected/Weight	11/30/01 00:45	1073 g	
% solids	90.0	Custody/SAF No	B01-113-40	B01-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.35	3.3	3.9	10	J	93A
Gross Beta	12587-47-2	13.2	5.0	7.4	15	J	93B
Total Strontium	SR-RAD	-0.006	0.13	0.28	1.0	U	SR
Neptunium 237	13994-20-2	0.025	0.019	0.030	1.0	U	NP
Plutonium 238	13981-16-3	0	0.054	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.053	0.20	1.0	U	PU
Americium 241	14596-10-2	-0.056	0.056	0.21	1.0	U	AM
Potassium 40	13966-00-2	12.3	1.0	0.65			GAM
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.42		U	GAM
Antimony 125	14234-35-6	U		0.10		U	GAM
Cesium 134	13967-70-9	U		0.068		U	GAM
Cesium 137	10045-97-3	U		0.041	0.10	U	GAM
Radium 226	13982-63-3	0.485	0.098	0.10	0.10		GAM
Radium 228	15262-20-1	0.613	0.21	0.22	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.730	0.061	0.062			GAM
Thorium 232	TH-232	0.613	0.21	0.22			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		6.3		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test AM Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7018-063						
B13DY2	R112002-01			7172-001	U	
B13DY3	R112002-02			7172-002	U	
B13F01	R112002-03			7172-003	U	
BLK (QC ID=40773)	R112002-05			7172-005	U	
LCS (QC ID=40772)	R112002-04			7172-004	ok	
Duplicate (R112002-01)	R112002-06			7172-006	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	

PFP Well Installation Smpl. & Anal.

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 7018-063	2σ prep error 5.0 %				Reference Lab Notebook 7018 pg. 063											
B13DY2	R112002-01			0.27	0.500			62		105			52	01/19/02	01/19	SS-048
B13DY3	R112002-02			0.29	0.500			61		105			50	01/19/02	01/19	SS-049
B13F01	R112002-03			0.21	0.500			77		105			50	01/19/02	01/19	SS-050
BLK (QC ID=40773)	R112002-05			0.50	0.500			76		101				01/19/02	01/19	SS-021
LCS (QC ID=40772)	R112002-04			0.025	0.500			82		1100				01/19/02	01/21	SS-047
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.45	0.500			76		101			52	01/19/02	01/19	SS-022
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 6 SAMPLES	MDA	0.29	±	0.34
	YIELD	72	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test NP Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 7018-063					
B13DY2	R112002-01			7172-001	U
B13DY3	R112002-02			7172-002	0.032 J
B13F01	R112002-03			7172-003	U
BLK (QC ID=40773)	R112002-05			7172-005	U
LCS (QC ID=40772)	R112002-04			7172-004	ok
Duplicate (R112002-01)	R112002-06			7172-006	OUT J
Nominal values and limits from method				RDLs (pCi/g)	1.0
PFP Well Installation Smpl. & Anal.					

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 7018-063	2σ prep error 5.0 %								Reference Lab Notebook 7018 pg. 063							
B13DY2	R112002-01			0.036	0.500			77		1117			45	01/12/02	01/12	SS-042
B13DY3	R112002-02			0.025	0.500			77		1118			43	01/12/02	01/12	SS-043
B13F01	R112002-03			0.030	0.500			64		1118			43	01/12/02	01/12	SS-044
BLK (QC ID=40773)	R112002-05			0.050	0.500			70		1117				01/12/02	01/12	SS-047
LCS (QC ID=40772)	R112002-04			0.045	0.500			63		1117				01/12/02	01/12	SS-045
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.025	0.500			64		1117			45	01/12/02	01/12	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 6 SAMPLES				
MDA	0.035	±	0.021
YIELD	69	±	13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test PU Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7018-063								
B13DY2	R112002-01			7172-001	U		U	
B13DY3	R112002-02			7172-002	U		U	
B13F01	R112002-03			7172-003	U		U	
BLK (QC ID=40773)	R112002-05			7172-005	U		U	
LCS (QC ID=40772)	R112002-04			7172-004	ok		ok	
Duplicate (R112002-01)	R112002-06			7172-006	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	

PFP Well Installation Smpl. & Anal.

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 7018-063	2σ prep error 5.0 %				Reference Lab Notebook 7018 pg. 063											
B13DY2	R112002-01			0.26	0.500			66		104			52	01/19/02	01/19	SS-032
B13DY3	R112002-02			0.19	0.500			88		104			50	01/19/02	01/19	SS-033
B13F01	R112002-03			0.20	0.500			88		102			50	01/19/02	01/19	SS-042
BLK (QC ID=40773)	R112002-05			0.19	0.500			84		105				01/19/02	01/19	SS-044
LCS (QC ID=40772)	R112002-04			0.21	0.500			80		105				01/19/02	01/19	SS-043
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.20	0.500			83		105			52	01/19/02	01/19	SS-047
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 FOR 6 SAMPLES
MDA 0.21 ± 0.053
YIELD 82 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test U Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7018-063											
B13DY2	R112002-01			7172-001	0.436 J	U	0.374 J	117	77	7	14
BLK (QC ID=40773)	R112002-05			7172-005	U	U	U				
LCS (QC ID=40772)	R112002-04			7172-004	ok	ok	ok				
Duplicate (R112002-01)	R112002-06			7172-006	ok J	- U	ok J	69	51	0	15
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
PFP Well Installation Smpl. & Anal.							Averages	93		3	

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 7018-063 2σ prep error 5.0 % Reference Lab Notebook 7018 pg. 063																
B13DY2	R112002-01			0.19	0.500			94		113			43	01/10/02	01/10	SS-045
BLK (QC ID=40773)	R112002-05			0.10	0.500			91		684				01/10/02	01/10	SS-021
LCS (QC ID=40772)	R112002-04			0.87	0.500			97		1286				01/10/02	01/11	SS-051
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.24	0.500			86		105			44	01/10/02	01/11	SS-034
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.35 ± 0.70
YIELD 92 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test SR Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7018-063						
B13DY2	R112002-01			7172-001	U	
B13DY3	R112002-02			7172-002	U	
B13F01	R112002-03			7172-003	U	
BLK (QC ID=40773)	R112002-05			7172-005	U	
LCS (QC ID=40772)	R112002-04			7172-004	ok	
Duplicate (R112002-01)	R112002-06			7172-006	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
PFP Well Installation Smpl. & Anal.						

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 7018-063	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 063															
B13DY2	R112002-01			0.26	1.00			86		100			48	01/15/02	01/15	GRB-220
B13DY3	R112002-02			0.30	1.00			85		100			46	01/15/02	01/15	GRB-229
B13F01	R112002-03			0.28	1.00			80		100			46	01/15/02	01/15	GRB-230
BLK (QC ID=40773)	R112002-05			0.32	1.00			76		100				01/15/02	01/15	GRB-232
LCS (QC ID=40772)	R112002-04			0.25	1.00			83		100				01/15/02	01/15	GRB-205
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.27	1.00			85		100			48	01/15/02	01/15	GRB-222
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 6 SAMPLES
MDA 0.28 ± 0.052
YIELD 82 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test TC Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7018-063						
B13DY2	R112002-01			7172-001	U	
BLK (QC ID=40773)	R112002-05			7172-005	U	
LCS (QC ID=40772)	R112002-04			7172-004	ok	
Duplicate (R112002-01)	R112002-06			7172-006	-	U

Nominal values and limits from method RDLs (pCi/g) 15
PFP Well Installation Smpl. & Anal.

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 7018-063	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 063															
B13DY2	R112002-01			0.56	1.02			89		50			49	01/10/02	01/16	GRB-218
BLK (QC ID=40773)	R112002-05			0.25	1.00			97		200				01/10/02	01/15	GRB-203
LCS (QC ID=40772)	R112002-04			0.28	1.00			87		200				01/10/02	01/15	GRB-202
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.26	1.02			88		200			47	01/10/02	01/14	GRB-220
Nominal values and limits from method				15	1.00			20-105		50			180			

PROCEDURES	REFERENCE	
	TC99_TR_SEP_LSC	
	CP-060	Soil Preparation, rev 3
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.34 ± 0.30
YIELD 90 ± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test 93A Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7018-063						
B13DY2	R112002-01	93		7172-001	6.34	J
B13DY3	R112002-02	93		7172-002	4.02	J
B13F01	R112002-03	93		7172-003	4.35	J
BLK (QC ID=40773)	R112002-05	93		7172-005	U	
LCS (QC ID=40772)	R112002-04	93		7172-004	ok	
Duplicate (R112002-01)	R112002-06	93		7172-006	ok	J
Nominal values and limits from method				RDLs (pCi/g)	10	
PFP Well Installation Smpl. & Anal.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7018-063 *2σ prep error 20.0 %* *Reference Lab Notebook 7018 pg. 063*																
B13DY2	R112002-01	93		4.2	0.100			52		100			50	01/16/02	01/17	GRB-110
B13DY3	R112002-02	93		3.6	0.100			45		100			48	01/16/02	01/17	GRB-111
B13F01	R112002-03	93		3.9	0.100			46		100			48	01/16/02	01/17	GRB-112
BLK (QC ID=40773)	R112002-05	93		3.0	0.100			21		100				01/16/02	01/18	GRB-101
LCS (QC ID=40772)	R112002-04	93		3.5	0.100			22		100				01/16/02	01/17	GRB-115
Duplicate (R112002-01) (QC ID=40774)	R112002-06	93		3.8	0.100			52		100			51	01/16/02	01/18	GRB-102
Nominal values and limits from method				10	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 3.7 ± 0.82
RESIDUE 40 ± 29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test 93B Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7018-063						
B13DY2	R112002-01	93		7172-001	15.5	
B13DY3	R112002-02	93		7172-002	20.6	
B13F01	R112002-03	93		7172-003	13.2	J
BLK (QC ID=40773)	R112002-05	93		7172-005	U	
LCS (QC ID=40772)	R112002-04	93		7172-004	ok	
Duplicate (R112002-01)	R112002-06	93		7172-006	ok	J

Nominal values and limits from method RDLs (pCi/g) 15
PFP Well Installation Smpl. & Anal.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7018-063 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 063																
B13DY2	R112002-01	93		7.2	0.100			52		100			50	01/16/02	01/17	GRB-110
B13DY3	R112002-02	93		6.0	0.100			45		100			48	01/16/02	01/17	GRB-111
B13F01	R112002-03	93		7.4	0.100			46		100			48	01/16/02	01/17	GRB-112
BLK (QC ID=40773)	R112002-05	93		5.4	0.100			21		100				01/16/02	01/18	GRB-101
LCS (QC ID=40772)	R112002-04	93		7.0	0.100			22		100				01/16/02	01/17	GRB-115
Duplicate (R112002-01) (QC ID=40774)	R112002-06	93		6.4	0.100			52		100			51	01/16/02	01/18	GRB-102
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 6.6 ± 1.5
RESIDUE 40 ± 29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test GAM Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7018-063								
B13DY2	R112002-01			7172-001	U		U	
B13DY3	R112002-02			7172-002	U		U	
B13F01	R112002-03			7172-003	U		U	
BLK (QC ID=40773)	R112002-05			7172-005	U		U	
LCS (QC ID=40772)	R112002-04			7172-004	ok		ok	
Duplicate (R112002-01)	R112002-06			7172-006	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
PFP Well Installation Smpl. & Anal.								

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 7018-063	2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 063															
B13DY2	R112002-01			0.29	871					123			51	01/10/02	01/18	02,01,00
B13DY3	R112002-02			0.22	773					120			46	01/10/02	01/15	MB,07,00
B13F01	R112002-03			0.42	762					109			46	01/10/02	01/15	02,03,00
BLK (QC ID=40773)	R112002-05			0.12	761					185				01/10/02	01/15	01,01,00
LCS (QC ID=40772)	R112002-04			0.015	761					122				01/10/02	01/18	01,04,00
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.34	871					112			52	01/10/02	01/19	02,03,00
Nominal values and limits from method				0.050	761					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 FOR 6 SAMPLES				
	MDA	0.23	±	0.30
	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1623

Test H Matrix SOLID
SDG 7172
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1623

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7018-063						
B13DY2	R112002-01			7172-001	U	
BLK (QC ID=40773)	R112002-05			7172-005	U	
LCS (QC ID=40772)	R112002-04			7172-004	ok	J
Duplicate (R112002-01)	R112002-06			7172-006	-	U
Spike (R112002-01)	R112002-07			7172-007	ok	JX
Nominal values and limits from method				RDLs (pCi/g)	400	
PFP Well Installation Smpl. & Anal.						

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 7018-063	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 063															
B13DY2	R112002-01			0.13	20.6			67		120			55	01/17/02	01/22	LSC-004
BLK (QC ID=40773)	R112002-05			0.26	20.0			33		120				01/17/02	01/22	LSC-004
LCS (QC ID=40772)	R112002-04			0.26	20.0			33		120				01/17/02	01/22	LSC-004
Duplicate (R112002-01) (QC ID=40774)	R112002-06			0.12	20.6			69		120			55	01/17/02	01/22	LSC-004
Spike (R112002-01) (QC ID=40775)	R112002-07			0.12	20.5			71		120			55	01/17/02	01/22	LSC-004
Nominal values and limits from method				400	20.0					25			180			

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-060	Soil Preparation, rev 3
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 4

AVERAGES ± 2 SD	MDA	0.18	± 0.15
FOR 5 SAMPLES	YIELD	55	± 40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/31/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 1 of 2
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: H1623 (7172) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 4235795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 11/28/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	See item (1) in Special Instructions	TOC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
B13DY2	SOIL	11/28/01	0235			X			X			

Samples stored in Ref.# ____ at the 3728 Shipping Facility on __/__/__. Collector not available to relinquish samples on __/__/__ for shipment.

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson	11-28-01 0437	Stored in Ref #2B	11-28-01 0437
Relinquished By	Remove from Ref 2B 3728	11-30-01 0900	R. Thoren	11-30-01 0900
Relinquished By	R. Thoren ERC	11-30-01 0900	FEDEX	11-30-01
Relinquished By	FED. EXPRESS	12-01-01 12.00	E. Maestas	12-03-01 9.00
Relinquished By				
Relinquished By				

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
~~(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045~~

RT 11-28-01

TIC TO Radscreen B13F07

Matrix *: S=Soil; SD=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 2 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: H1623 (7172) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 4285795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.
RT 11-30-01

SAMPLE ANALYSIS

Preservation				Cool 4C	None	None						
Type of Container				aG	aG	aG						
No. of Container(s)				1	1	1						
Volume				500mL	500mL	1000mL						
SAMPLE ANALYSIS				See item (1) in Special Instructions	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time									
B13DY2	SOIL	11/28/01	0235			X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	11-28-01 0437	Stored in Ref #2B	11-28-01 0437
Remove from Ref 2B 3728	11-30-01 0900	R. Thorson	11-30-01 0900
R Thorson EPR	11-30-01 0900	FEDEX	11-30-01
FED. EXPRESS	12-01-01 12:00	E. Maestas	12-03-01 9:00

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.
RT 11-28-01

~~(1) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)~~
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr

Rad screen B13F07

Matrix *
S=Soil
SD=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-32	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ.	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 60.0'- 62.5' H1623 (7172) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 4235795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions	TIC - 8015M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B13DY3	SOIL	11-30-01	0045		X						X	
									TIC TO		B13F07	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R.Nelson	11-30-01 0440	Stevedin	0440
Relinquished By	Remaafron	11-30-01 0900	Ref #2B 3728	11-30-01 0900
Relinquished By	RThoren ERC	11-30-01 0900	RThoren	11-30-01 0900
Relinquished By	FED - EXPRESS	12-07-01 12:00	FEDEX	11-30-01 —
Relinquished By			ES. Masters E. MASTERS	12-03-01 0[illegible]:00
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

** The BRC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
~~(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045~~
~~(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)~~
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, ~~Cesium-134~~, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

RT (11-30-01)
RJN 11/5/01

Matrix *
S=Soil
SD=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-40	Page 1 of 1
Director Renee Nielson	Company Contact: Virginia Rohay Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N Data Turnaround: 45 Days Air Quality ☐
Project Designation PFP Well Installation Sampling and Analysis - Soil	Sampling Location: H1623 (7172) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No. B01-113	
Ice Chest No. ERC-01-029	Field Logbook No.: EL-1562 COA: T20ZP1D722	Method of Shipment Federal Express	
Shipped To TMA/RECRA TMA	Offsite Property No. A020084	Bill of Lading/Air Bill No. 4235795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.

RT 11-30-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TOC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13F01	SOIL	11-30-01	0045		X					X	
								TICTO		B13F07	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	11-30-01 0440	REF #2B	11-30-01 0440
Ref 2B 3728	11-30-01 0900	R.V. (R Thoren)	11-30-01 0900
R Thoren	11-30-01 0900	FED EX	11-30-01
FED-EXPRESS	12-01-01 12:00	E.S Maestas / E. MAESTAS	12-03-01 9:00

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by RPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

RT 11-30-01

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(2) IC Anions - 300.0 ~~(Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2, pH (Soil) - 9045~~
(3) ICP Metals - 6010A (TAL) ~~(Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-On) (Phosphorus)~~ RJN 11/5/01
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, ~~Cesium-134~~, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

Matrix *
S=Soil
SD=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 12-03-01 9:00

CoC No. B01-113-32, B01-113-40, B01-113-48, B01-113-49, & B01-113-57

Container I.D. No. ERC-01-029 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: 6 SAMPLES
7. Number of containers per sample: PLS CHECK (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 Elvie J. Maestas Date: 12-03-01 Time: 9:00 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 _____

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

JAN 2002 RECEIVED

RFW LOT # :01112148

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13F01	001	S	01LVG083	11/30/01	12/01/01	N/A	12/08/01
B13F01	001 MS	S	01LVG083	11/30/01	12/01/01	N/A	12/08/01
B13F01	001 MSD	S	01LVG083	11/30/01	12/01/01	N/A	12/08/01
B13DY3	002	S	01LVG086	11/30/01	12/01/01	N/A	12/10/01
B13DY2	003	S	01LVG086	11/28/01	12/01/01	N/A	12/10/01
LAB QC:							
VBLKCY	MB1	S	01LVG083	N/A	N/A	N/A	12/08/01
VBLKCY	MB1 BS	S	01LVG083	N/A	N/A	N/A	12/08/01
VBLKDB	MB1	S	01LVG086	N/A	N/A	N/A	12/10/01
VBLKDB	MB1 BS	S	01LVG086	N/A	N/A	N/A	12/10/01

gw 12.14.01

1

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0112L483
SDG/SAF #: H1623/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 12-01-2001

GC/MS VOLATILE

Three (3) soil samples were collected on 11-28,30-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 12-08,10-2001.

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. The analysis holding time was met.
3. Non-target compounds were not detected in the samples.
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. The method blanks contained the common laboratory contaminant Acetone at levels less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to OP L-QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
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
President
Lionville Laboratory Incorporated

12/18/01
Date

som\group\data\voa\tnu-hanford\0112-483.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 4 pages.

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

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.

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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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TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan 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 quan modifications:

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

PA - Peak Assignment: quan 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.

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Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 12/13/01 13:48

RFW Batch Number: **0112L483** Client: **TNUHANFORD B01-113 H1623** Work Order: 11343606001 Page: 2a

	Cust ID:	**VBLKCY BS**		**VBLKDB**		**VBLKDB BS**	
Sample Information	RFW#:	**01LVG083-MB1**		**01LVG086-MB1**		**01LVG086-MB1**	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	96	%	100	%	93	%
	Bromofluorobenzene	100	%	98	%	97	%
	1,2-Dichloroethane-d4	100	%	94	%	96	%
Chloromethane		10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U
Methylene Chloride		5	U	5	U	5	U
Acetone		2	JB	3	J	3	JB
Carbon Disulfide		5	U	5	U	5	U
1,1-Dichloroethene		78	%	5	U	68	%
1,1-Dichloroethane		5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U
Chloroform		5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U
Trichloroethene		91	%	5	U	78	%
Dibromochloromethane		5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U
Benzene		91	%	5	U	85	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U
Bromoform		5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U
Toluene		97	%	5	U	84	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKCY BS	VBLKDB	VBLKDB BS
RFW#:	01LVG083-MB1	01LVG086-MB1	01LVG086-MB1
Chlorobenzene	97 %	5 U	86 %
Ethylbenzene	5 U	5 U	5 U
Styrene	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U
N-butylbenzene	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 12/13/01 13:48

RFW Batch Number: **0112L483** Client: **TNUHANFORD B01-113 H1623** Work Order: 11343606001 Page: 1a

	Cust ID:	B13F01		B13F01		B13F01		B13DY3		B13DY2		VBLKCY	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		01LVG083-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.02		1.00		0.962		0.877		0.926		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	96	%	98	%	106	%	104	%	103	%	94	%
	Bromofluorobenzene	97	%	98	%	105	%	99	%	101	%	97	%
	1,2-Dichloroethane-d4	91	%	91	%	101	%	91	%	95	%	93	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	10	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	10	U	10	U
Methylene Chloride		6	U	6	U	5	U	5	U	5	U	5	U
Acetone		6	JB	5	JB	6	JB	6	JB	3	JB	2	J
Carbon Disulfide		6	U	6	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		6	U	84	%	86	%	5	U	5	U	5	U
1,1-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	5	U	5	U
Chloroform		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
2-Butanone		11	U	11	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Trichloroethene		6	U	85	%	91	%	5	U	5	U	5	U
Dibromochloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Benzene		6	U	92	%	96	%	5	U	5	U	5	U
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Bromoform		6	U	6	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	10	U	10	U
Tetrachloroethene		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Toluene		6	U	104	%	111	%	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0112L483 Client: TNUHANFORD B01-113 H1623 Work Order: 11343606001 Page: 1b

Cust ID:	B13F01	B13F01	B13F01	B13DY3	B13DY2	VBLKCY
RFW#:	001	001 MS	001 MSD	002	003	01LVG083-MB1
Chlorobenzene	6 U	95 %	103 %	5 U	5 U	5 U
Ethylbenzene	6 U	6 U	5 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U	5 U
N-butylbenzene	6 U	6 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

(8) VOA NET FUELS BNA Metal DIG

Lionville Laboratory Use Only: 0112L483

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNX-HANFORD SAF B01-113

Est. Final Proj. Sampling Date:

Project #: 11343-606 001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OS

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 12-1-01 Date Due: R-31-02

	A	B	X		C	D		E		F	G	H	I	J	
Refrigerator #	1	2	2		2	1		2		2	2	2	2	2	
#/Type Container, Solid	1AG	1AG	1AG		1AG	1AG		1AG		1AG	1AG	1AG	1AG	1AG	
Volume, Solid	250	250	60		60	250		500		500	120	60	125	500	
Preservatives	—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb	OIL GREASE	TIC TOC		INORG: Metal	CN	IC Anions	Hex Chrom	Alk Acidity	TOT CN Sulf	Met TCLP Hg TCLP	LEACHATE

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624 X	0625 X			IOGGR	IOCT ITIC		METO		INORG	ICAL	INH3N	ICNTO ISFD	ITCLP	RCRATCN
001	B13F01			S	11-30-01	0245	1	1			1	1		1		1	1				
002	1 DY3			1	1	1	1	1			1	1		1		1	1				
003	1 DY2			1	11-28-01	0235	1	1			1	1		1		1	1	1	1	1	
004	B13DY2 tclp of 003			L	*																✓
					*	See lab chron															

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

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

METO	1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P
INORG	2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, INH3N2
	3. IPH
12-4-01	4. Add MP-TO Cancel IPO4T
	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. 3° °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12-1-01	1045

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

NOTES: 4235 79549390

25

C112C403

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-40	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	C Cool 4C	None	G Cool 4C	B Cool 4C	D Cool 4C	A Cool 4C	F Cool 4C	E Cool 4C	None
Type of Container	aG	~~aG~~ PBA 1110	aG	aG	aG	aG	aG	aG	~~PBA~~ 1110
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL

SAMPLE ANALYSIS

	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.
Sample No. / Matrix * / Sample Date / Sample Time									
B13F01 / SOIL / 11-30-01 / 0045	X		X	X	X	X	X	X	

Tie to B13F07

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	11-30-01 0440	Rec #2B	11-30-01 0440
Remove From Rec 2B 3728	11-30-01 0900	R Thorp	11-30-01 0900
R Thorp ERC	11-30-01	FEDEX	
FedEx	12-1-01 1045	Nicole Hernandez	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Europium-154, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr~~

RUN 11/6/01
RT 11-30-01

Matrix *
S=Soil
SD=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)

3°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-32	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ.	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42 60 - 62.5	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RERA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	C aG	F aG	G aG	B aG	D aG	A aG	F aG	E aG	F aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13DY3	SOIL	11-30-01	0045	X		X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	11-30-01 0440	Stored in Ref #2B	11-30-01 0440
Renee Nielson	11-30-01 0900	R. Thorell	11-30-01 0900
R. Thorell Ref 2B	11-30-01 0900	Fed Ex	
Fed Ex	12-1-01 1045	[illegible]	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
(4) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Europium-154, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90~~ -- Total Sr

RIN 11/5/01
RT 11-30-01

Matrix *: S=Soil, SB=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 1 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See COSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020416	Bill of Lading/Air Bill No.: SEE COSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.

RT 11-30-01

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
3 B13DY2	SOIL	11-28-01	0235	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R. Nielson	11-28-01 0437	STOREDIN Ref #2B	11-28-01 0437
Ref 2B 3728	11-30-01 0700	R. Thorel	11-30-01 0700
R. Thorel ERC	11-30-01	FEDEX	
FedEx	12-1-01 1045	[illegible]	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045

Rad screen B13F07

Matrix *
S=Soil
SD=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

BHLEF-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 2 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020416	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	None
Type of Container	B aG	B aG	B aG
No. of Container(s)	1	1	1
Volume	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11-28-01. Collector not available to relinquish samples on 11-30-01 for shipment. RT 11-30-01

Sample No.	Matrix *	Sample Date	Sample Time			
3 B13DY2	SOIL	11-28-01	0237	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Nielson R.Nielson	0437 11-28-01	STORED IN Ref #2B	11-28-01 0437
R.Nielson	0700 11-30-01	R. Thoren	0700 11-30-01
R Thoren R Thoren	0700 11-30-01		
Ted Ek	12-1-01 1045	Ted Hernandez	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr~~ RT 11-28-01

RADSCREEN B13F07

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=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)

JAN 2002
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F01	001	S	01LE1451	11/30/01	12/04/01	12/18/01
B13F01	001 MS	S	01LE1451	11/30/01	12/04/01	12/18/01
B13F01	001 MSD	S	01LE1451	11/30/01	12/04/01	12/18/01
B13DY3	002	S	01LE1451	11/30/01	12/04/01	12/19/01
B13DY2	003	S	01LE1451	11/28/01	12/04/01	12/19/01

LAB QC:

SBLKLM	MB1	S	01LE1451	N/A	12/04/01	12/18/01
SBLKLM	MB1 BS	S	01LE1451	N/A	12/04/01	12/18/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0112L483
SDG/SAF #: H1623/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 12-01-2001

SEMIVOLATILE

Three (3) soil samples were collected on 11-28,30-2001.

The samples and their associated QC samples were extracted on 12-04-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified and Tributylphosphate Semivolatile target compounds on 12-18,19-2001.

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 required holding time.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
6. All blank spike recoveries were outside 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.

By J. Michael Taylor
President
Lionville Laboratory Incorporated

01-15-02
Date

som\gorup\data\bna\tnu-hanford-0112-483.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 8 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (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: 01/14/02 18:16

RFW Batch Number: 0112L483 Client: TNUHANFORD B01-113 H1623 Work Order: 11343606001 Page: 1a

	Cust ID:	B13F01		B13F01		B13F01		B13DY3		B13DY2		SBLKLM	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		01LE1451-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	82	%	97	%	97	%	86	%	87	%	97	%
	2-Fluorobiphenyl	82	%	98	%	97	%	92	%	85	%	89	%
	p-Terphenyl-d14	99	%	116	%	116	%	112	%	106	%	110	%
	Phenol-d5	68	%	80	%	80	%	69	%	68	%	78	%
	2-Fluorophenol	67	%	79	%	81	%	71	%	70	%	79	%
	2,4,6-Tribromophenol	78	%	92	%	96	%	71	%	75	%	82	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	81	%	82	%	360	U	340	U	330	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	340	U	330	U
2-Chlorophenol		360	U	80	%	84	%	360	U	340	U	330	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	330	U
1,4-Dichlorobenzene		360	U	87	%	88	%	360	U	340	U	330	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	330	U
2-Methylphenol		360	U	360	U	360	U	360	U	340	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	340	U	330	U
3- and/or 4-Methylphenol		360	U	360	U	360	U	360	U	340	U	330	U
N-Nitroso-Di-n-propylamine		360	U	85	%	75	%	360	U	340	U	330	U
Hexachloroethane		360	U	360	U	360	U	360	U	340	U	330	U
Nitrobenzene		360	U	360	U	360	U	360	U	340	U	330	U
Isophorone		360	U	360	U	360	U	360	U	340	U	330	U
2-Nitrophenol		360	U	360	U	360	U	360	U	340	U	330	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	340	U	330	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	340	U	330	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	340	U	330	U
1,2,4-Trichlorobenzene		360	U	99	%	99	%	360	U	340	U	330	U
Naphthalene		360	U	360	U	360	U	360	U	340	U	330	U
4-Chloroaniline		360	U	360	U	360	U	360	U	340	U	330	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	340	U	330	U
4-Chloro-3-methylphenol		360	U	91	%	88	%	360	U	340	U	330	U
2-Methylnaphthalene		360	U	360	U	360	U	360	U	340	U	330	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	340	U	330	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	340	U	330	U
2,4,5-Trichlorophenol		910	U	910	U	910	U	890	U	860	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0112L483 Client: TNUHANFORD B01-113 H1623 Work Order: 11343606001 Page: 1b

Cust ID:	B13F01		B13F01		B13F01		B13DY3		B13DY2		SBLKLM	
RFW#:	001		001 MS		001 MSD		002		003		01LE1451-MB1	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	340	U	330	U
2-Nitroaniline	910	U	910	U	910	U	890	U	860	U	830	U
Dimethylphthalate	360	U	360	U	360	U	360	U	340	U	330	U
Acenaphthylene	360	U	360	U	360	U	360	U	340	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	340	U	330	U
3-Nitroaniline	910	U	910	U	910	U	890	U	860	U	830	U
Acenaphthene	360	U	92	%	91	%	360	U	340	U	330	U
2,4-Dinitrophenol	910	U	910	U	910	U	890	U	860	U	830	U
4-Nitrophenol	910	U	87	%	83	%	890	U	860	U	830	U
Dibenzofuran	360	U	360	U	360	U	360	U	340	U	330	U
2,4-Dinitrotoluene	360	U	95 *	%	86	%	360	U	340	U	330	U
Diethylphthalate	360	U	360	U	360	U	360	U	340	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	330	U
Fluorene	360	U	360	U	360	U	360	U	340	U	330	U
4-Nitroaniline	910	U	910	U	910	U	890	U	860	U	830	U
4,6-Dinitro-2-methylphenol	910	U	910	U	910	U	890	U	860	U	830	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	340	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	340	U	330	U
Pentachlorophenol	910	U	88	%	89	%	890	U	860	U	830	U
Phenanthrene	360	U	360	U	360	U	360	U	340	U	330	U
Anthracene	360	U	360	U	360	U	360	U	340	U	330	U
Carbazole	360	U	360	U	360	U	360	U	340	U	330	U
Di-n-Butylphthalate	360	U	360	U	360	U	360	U	340	U	330	U
Fluoranthene	360	U	360	U	360	U	360	U	340	U	330	U
Pyrene	360	U	113	%	112	%	360	U	340	U	330	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	340	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	340	U	330	U
Benzo(a)anthracene	360	U	360	U	360	U	360	U	340	U	330	U
Chrysene	360	U	360	U	360	U	360	U	340	U	330	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	23	J	340	U	330	U
Di-n-Octyl phthalate	360	U	360	U	360	U	360	U	340	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	360	U	340	U	330	U
Benzo(k)fluoranthene	360	U	360	U	360	U	360	U	340	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	360	U	340	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	340	U	330	U
Dibenzo(a,h)anthracene	360	U	360	U	360	U	360	U	340	U	330	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	360	U	340	U	330	U
Tributylphosphate	360	U	360	U	360	U	360	U	340	U	330	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 01/14/02 18:16

RFW Batch Number: **0112L483** Client: **TNUHANFORD B01-113 H1623** Work Order: 11343606001 Page: 2a

Cust ID: **SBLKLM BS**

Sample Information	RFW#:	**01LE1451-MB1**
	Matrix:	SOIL
	D.F.:	1.00
	Units:	ug/Kg

Surrogate Recovery	Nitrobenzene-d5	96	%
	2-Fluorobiphenyl	90	%
	p-Terphenyl-d14	111	%
	Phenol-d5	75	%
	2-Fluorophenol	78	%
	2,4,6-Tribromophenol	84	%

==========fl==========fl==========fl==========fl==========fl==========fl

Phenol	73	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	75	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	81	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
3- and/or 4-Methylphenol	330	U
N-Nitroso-Di-n-propylamine	63	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	90	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	77	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

Cust ID: **SBLKLM BS**

RFW#: **01LE1451-MB1**

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	81	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	80	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	85	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	81	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-Butylphthalate	330	U
Fluoranthene	330	U
Pyrene	107	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	330	U
Di-n-Octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenzo(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U
Tributylphosphate	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.

B13F01

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

Client: TNUHANFORD B01-113 H1623

Matrix: (soil/water) SOIL

Lab Sample ID: 0112L483-001

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

Lab File ID: D121814

Level: (low/med) LOW

Date Received: 12/01/01

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 12/04/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 12/18/01

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	7.703	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13DY3

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

Client: TNUHANFORD B01-113 H1623

Matrix: (soil/water) SOIL

Lab Sample ID: 0112L483-002

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: D121904

Level: (low/med) LOW

Date Received: 12/01/01

% Moisture: 8 decanted: (Y/N)__

Date Extracted: 12/04/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 12/19/01

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	7.676	500	JB

11

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13DY2

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

Client: TNUHANFORD B01-113 H1623

Matrix: (soil/water) SOIL

Lab Sample ID: 0112L483-003

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: D121905

Level: (low/med) LOW

Date Received: 12/01/01

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 12/04/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 12/19/01

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	7.678	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKLM

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

Client: TNUHANFORD B01-113 H1623

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1451-MB1

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

Lab File ID: D121812

Level: (low/med) LOW

Date Received: 12/04/01

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

Date Extracted: 12/04/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 12/18/01

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	7.708	600	J

Lionville Laboratory Use Only

0112L483

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-HANFORD SAF B01-113

Est. Final Proj. Sampling Date

Project # 1343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OS

QC SPEC Del STD TAT 30 days

Date Rec'd 12-1-01 Date Due 12-31-01

		A	B	X		C	D		E		F	G	H	I	J	
Refrigerator #		1	2	2		2	1		2		2	2	2	2	2	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG	1AG		1AG		1AG	1AG	1AG	1AG	1AG	
Volume	Liquid															
	Solid	250	250	60		60	250		500		500	100	60	125	500	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	OIL GR	TIC TOC		INORG: Metal	CN	IC Anions	HCL Chloride	1 2 Metals	TOT CN Sulfide	Met TOT Hg TCLP	LCACHAYE
		Lionville Laboratory Use Only														
		0624 X	0625 X			IOGGR	IOCT ITIC		IPO4T METO		IANIONO	ICRL	IMHSN	ICNTO ISFD	ITCLP	ACRATCW

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	0624 X	0625 X			IOGGR	IOCT ITIC		IPO4T METO		IANIONO	ICRL	IMHSN	ICNTO ISFD	ITCLP	ACRATCW
001	B13F01			S	11-30-01	0045	1	1			1	1		1		1	1				
002	1 DY3			1	1	1	1	1			1	1		1		1	1				
003	1 DY2			1	11-28-01	0235	1	1			1	1		1		1	1	1	1	1	
004	B13DY2 tclp of 003			L	*																✓
					*	See lab chron															

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na,

INORG 1 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, ICNO3N2

3. IPH

4.

5.

6.

Relinquished by	Received by	Date	Time
Ed Fe	[illegible]	12-1-01	1045

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 79549390

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. 3.0 °C

2.5

01122483

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-40	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days; Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#23 AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	C Cool 4C	None	G Cool 4C	B Cool 4C	D Cool 4C	A Cool 4C	F Cool 4C	E Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	P
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time								
B13F01	SOIL	11-30-01	0045	X		X	X	X	X	X	X

TIETO B13F07

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: R. Nielson	11-30-01 0440	Received By: Rec #23	11-30-01 0440
Relinquished By: Remove From Rec 23 3728	11-30-01 0900	Received By: R Thorn	11-30-01 0900
Relinquished By: R Thorn ERC	11-30-01 0900	Received By: FEDEX	
Relinquished By: FedEx	12-1-01 1045	Received By: Nita Hernandez	12-1-01 1045
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

** The BRC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus) RJN 11/30/01
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Europium-154, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr~~
RT 11-30-01

Matrix *
S=Soil
SD=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)

3°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-32	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ.	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42 60 - 62.5	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RERA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/20/01 FOR SHIPMENT.
RT 11-30-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	C sG	R sG	G sG	B sG	D sG	A sG	F sG	E sG	F sG	
No. of Container(s)	1	11-30	1	1	1	1	1	1	11-30-01	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
B13DY3	SOIL	11-30-01	0045	X		X	X	X	X	X	X		
												B13F	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	11-30-01 0440	Stored in Ref #2B	11-30-01 0440
Ref 2B - 3728	11-30-01 0900	R. Thorer	11-30-01 0900
R. Thorer 2RC	11-30-01 0900	FED EX	
Fed Ex	12-1-01 1045	[illegible]	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. ** The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr~~

RJN 11/5/01
RT 11-30-01

Matrix *
S=Soil
SD=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

RHLEF.011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 1 of 2
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See ESPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: SEE ESPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.

RT 11-30-01

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.

	Sample No.	Matrix *	Sample Date	Sample Time										
3	B13DY2	SOIL	11-28-01	0235	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R. Nielson	11-28-01 0437	STOREDIN Ref #2B	11-28-01 0437
Ref 2B 3728	11-30-01 0900	R Thorell	11-30-01 0900
R Thorell ERC	11-30-01	FEDEX	
FedEx	12-1-01 1045	Rich Heerang	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045

Rad Screen B13F07

Matrix *
S=Soil
SD=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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 2 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA (circled) RECRA	Offsite Property No.: A020446	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	None								
Type of Container	B sG	B sG	HDPE								
No. of Container(s)	1	1	1								
Volume	500mL	500mL	1000mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.								
Sample No. / Matrix * / Sample Date / Sample Time											
3 B13DY2 / SOIL / 11-28-01 / 0237	X	X									

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11-28-01. Collector not available to relinquish samples on 11/30/01 for shipment.
RT 11-30-01

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	0437 11-28-01	STORED IN Ref #2B	11-28-01 0437
Renee Nielson / Ref 2B 3728	0900 11-30-01	R. Thoren	0900 11-30-01
R. Thoren / ERC	0900 11-30-01		
Ted Ex	12-1-01 1045	Leila Hernandez	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr~~
RT 11-28-01

Radscreen B13F07

Matrix *
S=Soil
SD=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)

JAN 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F01						
CALCIUM, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
CALCIUM, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
CALCIUM, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
CADMIUM, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
CADMIUM, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
CADMIUM, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
IRON, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
IRON, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
IRON, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
SODIUM, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
SODIUM, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
SODIUM, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
NICKEL, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
NICKEL, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
NICKEL, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001	S	01L0867	11/30/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001 REP	S	01L0867	11/30/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001 MS	S	01L0867	11/30/01	01/08/02	01/09/02
B13DY3						
CALCIUM, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
CADMIUM, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
CHROMIUM, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
IRON, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
SODIUM, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
NICKEL, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	002	S	01L0867	11/30/01	01/08/02	01/09/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY2						
TCLP	003	S	01LTO151	11/28/01	12/12/01	12/13/01
CALCIUM, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
CADMIUM, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
CHROMIUM, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
IRON, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
SODIUM, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
NICKEL, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	003	S	01L0867	11/28/01	01/08/02	01/09/02
SILVER, TCLP LEACHAT	004	W	01L0822	12/13/01	12/15/01	12/15/01
SILVER, TCLP LEACHAT	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
SILVER, TCLP LEACHAT	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	004	W	01L0822	12/13/01	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	004	W	01L0822	12/13/01	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	004	W	01L0822	12/13/01	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	004	W	01L0822	12/13/01	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
MERCURY, TCLP LEACHA	004	W	01C0420	12/13/01	12/21/01	12/24/01
MERCURY, TCLP LEACHA	004 REP	W	01C0420	12/13/01	12/21/01	12/24/01
MERCURY, TCLP LEACHA	004 MS	W	01C0420	12/13/01	12/21/01	12/24/01
LEAD, TCLP LEACHATE	004	W	01L0822	12/13/01	12/15/01	12/15/01
LEAD, TCLP LEACHATE	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
LEAD, TCLP LEACHATE	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01
SELENIUM, TCLP LEACH	004	W	01L0822	12/13/01	12/15/01	12/15/01
SELENIUM, TCLP LEACH	004 REP	W	01L0822	12/13/01	12/15/01	12/15/01
SELENIUM, TCLP LEACH	004 MS	W	01L0822	12/13/01	12/15/01	12/15/01

LAB QC:

CALCIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
CADMIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
CADMIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
CHROMIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
CHROMIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
IRON LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
IRON, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
MAGNESIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
MAGNESIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
SODIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
SODIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
NICKEL LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
NICKEL, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
PHOSPHORUS LCS	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
PHOSPHORUS, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
SILVER LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
SILVER, TCLP LEACHAT	MB1	W	01L0822	N/A	12/15/01	12/15/01
SILVER, TCLP LEACHAT	MB2	W	01L0822	N/A	12/15/01	12/15/01
SILVER, TCLP LEACHAT	MB3	W	01L0822	N/A	12/15/01	12/15/01
SILVER, TCLP LEACHAT	MB4	W	01L0822	N/A	12/15/01	12/15/01
ARSENIC LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	MB1	W	01L0822	N/A	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	MB2	W	01L0822	N/A	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	MB3	W	01L0822	N/A	12/15/01	12/15/01
ARSENIC, TCLP LEACHA	MB4	W	01L0822	N/A	12/15/01	12/15/01
BARIUM LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	MB1	W	01L0822	N/A	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	MB2	W	01L0822	N/A	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	MB3	W	01L0822	N/A	12/15/01	12/15/01
BARIUM, TCLP LEACHAT	MB4	W	01L0822	N/A	12/15/01	12/15/01
CADMIUM LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	MB1	W	01L0822	N/A	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	MB2	W	01L0822	N/A	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	MB3	W	01L0822	N/A	12/15/01	12/15/01
CADMIUM, TCLP LEACHA	MB4	W	01L0822	N/A	12/15/01	12/15/01
CHROMIUM LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	MB1	W	01L0822	N/A	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	MB2	W	01L0822	N/A	12/15/01	12/15/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	MB3	W	01L0822	N/A	12/15/01	12/15/01
CHROMIUM, TCLP LEACH	MB4	W	01L0822	N/A	12/15/01	12/15/01
MERCURY LABORATORY	LC1 BS	W	01C0420	N/A	12/21/01	12/24/01
MERCURY, TOTAL	MB1	W	01C0420	N/A	12/21/01	12/24/01
MERCURY, TCLP LEACHA	MB2	W	01C0420	N/A	12/21/01	12/24/01
LEAD LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
LEAD, TCLP LEACHATE	MB1	W	01L0822	N/A	12/15/01	12/15/01
LEAD, TCLP LEACHATE	MB2	W	01L0822	N/A	12/15/01	12/15/01
LEAD, TCLP LEACHATE	MB3	W	01L0822	N/A	12/15/01	12/15/01
LEAD, TCLP LEACHATE	MB4	W	01L0822	N/A	12/15/01	12/15/01
SELENIUM LABORATORY	LC1 BS	W	01L0822	N/A	12/15/01	12/15/01
SELENIUM, TCLP LEACH	MB1	W	01L0822	N/A	12/15/01	12/15/01
SELENIUM, TCLP LEACH	MB2	W	01L0822	N/A	12/15/01	12/15/01
SELENIUM, TCLP LEACH	MB3	W	01L0822	N/A	12/15/01	12/15/01
SELENIUM, TCLP LEACH	MB4	W	01L0822	N/A	12/15/01	12/15/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL#: 0112L483
SDG/SAF#: H1623/B01-113

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

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 soil samples and 1 TCLP leachate sample.

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. All cooler temperatures have been recorded on the Chain of Custody.

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

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 the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recovery for 1 analyte was 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13F01	Iron	50,000	81.1

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 21 pages.

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

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B13DY2 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

14. 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.

15. 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

01-14-02
Date

gmb/m12-483

LVLI
LIONVILLE LABORATORY INC

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0112L4S03 1/14/02

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: _____ 1/14/02

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: Phosphorous Method: 6010B

L-WI-033/M-03/01

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 Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13F01	Calcium, Total	10100	MG/KG	0.96	1.0
		Cadmium, Total	0.08	MG/KG	0.03	1.0
		Chromium, Total	12.0	MG/KG	0.06	1.0
		Iron, Total	22600	MG/KG	1.9	1.0
		Magnesium, Total	5100	MG/KG	0.44	1.0
		Sodium, Total	223	MG/KG	0.39	1.0
		Nickel, Total	12.1	MG/KG	0.11	1.0
		Phosphorus, Total	579	MG/KG	2.2	1.0
-002	B13DY3	Calcium, Total	9910	MG/KG	0.83	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	11.7	MG/KG	0.06	1.0
		Iron, Total	22200	MG/KG	1.6	1.0
		Magnesium, Total	4950	MG/KG	0.38	1.0
		Sodium, Total	223	MG/KG	0.34	1.0
		Nickel, Total	13.3	MG/KG	0.09	1.0
		Phosphorus, Total	570	MG/KG	1.9	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13DY2	Calcium, Total	6900		MG/KG	0.90	1.0
		Cadmium, Total	0.04		MG/KG	0.03	1.0
		Chromium, Total	5.1		MG/KG	0.06	1.0
		Iron, Total	25600		MG/KG	1.7	1.0
		Magnesium, Total	3650		MG/KG	0.41	1.0
		Sodium, Total	274		MG/KG	0.36	1.0
		Nickel, Total	6.6		MG/KG	0.10	1.0
		Phosphorus, Total	983		MG/KG	2.0	1.0
-004	B13DY2	Silver, TCLP Leachate	5.1	u	UG/L	5.1	1.0
		Arsenic, TCLP Leachate	46.5	u	UG/L	46.5	1.0
		Barium, TCLP Leachate	256		UG/L	4.8	1.0
		Cadmium, TCLP Leachate	5.7	u	UG/L	5.7	1.0
		Chromium, TCLP Leachate	6.6		UG/L	5.8	1.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Lead, TCLP Leachate	27.8	u	UG/L	27.8	1.0
		Selenium, TCLP Leachate	50.4	u	UG/L	50.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0867-MB1	Calcium, Total	3.8		MG/KG	0.89	1.0
		Cadmium, Total	0.03	u	MG/KG	0.03	1.0
		Chromium, Total	0.06	u	MG/KG	0.06	1.0
		Iron, Total	1.7	u	MG/KG	1.7	1.0
		Magnesium, Total	0.87		MG/KG	0.41	1.0
		Sodium, Total	5.7		MG/KG	0.36	1.0
		Nickel, Total	0.10	u	MG/KG	0.10	1.0
		Phosphorus, Total	3.1		MG/KG	2.0	1.0
BLANK1	01L0822-MB1	Silver, TCLP Leachate	5.1	u	UG/L	5.1	1.0
		Arsenic, TCLP Leachate	46.5	u	UG/L	46.5	1.0
		Barium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Cadmium, TCLP Leachate	5.7	u	UG/L	5.7	1.0
		Chromium, TCLP Leachate	5.8	u	UG/L	5.8	1.0
		Lead, TCLP Leachate	27.8	u	UG/L	27.8	1.0
		Selenium, TCLP Leachate	50.4	u	UG/L	50.4	1.0
BLANK2	01L0822-MB2	Silver, TCLP Leachate	5.1	u	UG/L	5.1	1.0
		Arsenic, TCLP Leachate	46.5	u	UG/L	46.5	1.0
		Barium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Cadmium, TCLP Leachate	5.7	u	UG/L	5.7	1.0
		Chromium, TCLP Leachate	5.8	u	UG/L	5.8	1.0
		Lead, TCLP Leachate	27.8	u	UG/L	27.8	1.0
		Selenium, TCLP Leachate	50.4	u	UG/L	50.4	1.0
BLANK3	01L0822-MB3	Silver, TCLP Leachate	5.1	u	UG/L	5.1	1.0
		Arsenic, TCLP Leachate	52.3		UG/L	46.5	1.0
		Barium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Cadmium, TCLP Leachate	5.7	u	UG/L	5.7	1.0
		Chromium, TCLP Leachate	5.8	u	UG/L	5.8	1.0
		Lead, TCLP Leachate	27.8	u	UG/L	27.8	1.0
		Selenium, TCLP Leachate	50.4	u	UG/L	50.4	1.0
BLANK4	01L0822-MB4	Silver, TCLP Leachate	5.1	u	UG/L	5.1	1.0
		Arsenic, TCLP Leachate	46.5	u	UG/L	46.5	1.0
		Barium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Cadmium, TCLP Leachate	5.7	u	UG/L	5.7	1.0
		Chromium, TCLP Leachate	5.8	u	UG/L	5.8	1.0
		Lead, TCLP Leachate	27.8	u	UG/L	27.8	1.0
		Selenium, TCLP Leachate	50.4	u	UG/L	50.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01C0420-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	01C0420-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13F01	Calcium, Total	12800	10100	2700	98.9	1.0
		Cadmium, Total	4.8	0.08	5.4	87.4	1.0
		Chromium, Total	33.2	12.0	21.6	98.1	1.0
		Iron, Total	23700	22600	108	1049 *	1.0
		Magnesium, Total	7770	5100	2700	98.8	1.0
		Sodium, Total	2900	223	2700	99.0	1.0
		Nickel, Total	62.3	12.1	54.0	93.0	1.0
		Phosphorus, Total	1080	579	540	92.7	1.0
-004	B13DY2	Silver, TCLP Leachate	4090	5.1 u	5000	81.9	1.0
		Arsenic, TCLP Leachate	4350	46.5 u	5000	87.1	1.0
		Barium, TCLP Leachate	88400	256	100000	88.2	1.0
		Cadmium, TCLP Leachate	828	5.7 u	1000	82.8	1.0
		Chromium, TCLP Leachat	4210	6.6	5000	84.1	1.0
		Mercury, TCLP Leachate	213	1.0 u	200	106.3	50.0
		Lead, TCLP Leachate	4240	27.8 u	5000	84.8	1.0
		Selenium, TCLP Leachat	851	50.4 u	1000	85.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13F01	Calcium, Total	10100	9760	3.9	1.0
		Cadmium, Total	0.08	0.1	22.2	1.0
		Chromium, Total	12.0	13.3	10.3	1.0
		Iron, Total	22600	21200	6.3	1.0
		Magnesium, Total	5100	4980	2.4	1.0
		Sodium, Total	223	228	2.4	1.0
		Nickel, Total	12.1	14.0	14.6	1.0
		Phosphorus, Total	579	556	4.0	1.0
-004REP	B13DY2	Silver, TCLP Leachate	5.1 u	5.1 u	NC	1.0
		Arsenic, TCLP Leachate	46.5 u	46.5 u	NC	1.0
		Barium, TCLP Leachate	256	265	3.6	1.0
		Cadmium, TCLP Leachate	5.7 u	5.7 u	NC	1.0
		Chromium, TCLP Leachate	6.6	5.8 u	~~NC~~ 200	1.0
		Mercury, TCLP Leachate	1.0 u	1.0 u	NC	10.0
		Lead, TCLP Leachate	27.8 u	27.8 u	NC	1.0
		Selenium, TCLP Leachate	50.4 u	50.4 u	NC	1.0

JMB 1/14/02

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/10/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0867-LC1	Calcium, LCS	2370	2500	MG/KG	94.7
		Cadmium, LCS	23.7	25.0	MG/KG	94.8
		Chromium, LCS	48.3	50.0	MG/KG	96.6
		Iron, LCS	486	500	MG/KG	97.2
		Magnesium, LCS	2400	2500	MG/KG	95.8
		Sodium, LCS	2400	2500	MG/KG	95.9
		Nickel, LCS	193	200	MG/KG	96.6
		Phosphorus, LCS	450	500	MG/KG	90.1
LCS1	01L0822-LC1	Silver, LCS	428	500	UG/L	85.6
		Arsenic, LCS	9560	10000	UG/L	95.6
		Barium, LCS	4700	5000	UG/L	94.0
		Cadmium, LCS	239	250	UG/L	95.5
		Chromium, LCS	477	500	UG/L	95.4
		Lead, LCS	2340	2500	UG/L	93.4
		Selenium, LCS	9440	10000	UG/L	94.4
LCS1	01C0420-LC1	Mercury, LCS	5.5	5.0	UG/L	109.9

(8) VOA WET Metals BNP Nickel DIG

Lionville Laboratory Use Only

0112L483

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratories Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF B01-113

Est. Final Proj. Sampling Date:

Project #: 11343-606 001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OS

QC: SPEC Del: STD TAT: 30 Days

Date Rec'd: 12-1-01 Date Due: 12-31-01

		A	B	X		C	D		E		F	G	H	I	J	
Refrigerator #		1	2	2		2	1		2		2	2	2	2	2	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG	1AG		1AG		1AG	1AG	1AG	1AG	1AG	
Volume	Liquid															
	Solid	250	250	60		60	250		500		500	120	60	125	500	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Oil Grease	TIC TOC		Metal	CN	IC Anions	HCL CHROM	Nitrate	TOT CN Sulfide	Mercury Hg	LCACHATE

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624 X	0625 X			2OGGR	1OCT 1TIC		METO		1NO3N	1CRL	1NH3N	1CNTO 1SFD	1TCLP	RCRATOW
S - Soil	001	B13F01			S	11-30-01	0045	1	1			1	1		1		1	1				
SE - Sediment	002	1 DY3			1	1	1	1	1			1	1		1		1	1				
SO - Solid	003	1 DY2			1	11-28-01	0235	1	1			1	1		1		1	1	1	1	1	
SL - Sludge	004	B13DY2 tel of 003			L	*																✓
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish						*	See lab chron															

Lionville Laboratory Use Only

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P

INORG 1 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2

3. IPH

12-4-01 4. Add MP-TO Cancel IPO4T

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. 3.0 °C

Relinquished by	Received by	Date	Time
Ed Ep	[illegible]	12-1-01	1045

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

NOTES: 4235 7954 9390

25

Lionville Laboratory Use Only

01121483

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client TNU-HANFORD SAF B01-113

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager 05

QC SPEC Del STD TAT 30 days

Date Rec'd 12-1-01 Date Due 12-31-01

		A	B	X	C	D	E	F	G	H	I	J
Refrigerator #		1	2	2	2	1	2	2	2	2	2	2
#/Type Container	Liquid											
	Solid	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG
Volume	Liquid											
	Solid	250	250	60	60	250	500	500	60	60	125	500
Preservatives		—	—	—	—		—	—	—	—		—
ANALYSES REQUESTED		ORGANIC VOA	BNA	Pest/PCB	Herb	OIL GR	TIC TR	INORG Metal	CN	SC Air	HCL CAMON	1 2 Mn
		TOT CN S	MET TCLP Hg TCLP	LEACHATE								

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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624 X	0625 X			IOGGR	IOCT ETIC		IPO4T METO		INORG	ICRG	INH3N	ICNTO ISFD	ITCLP	RCRATCN
001	B13F01			S	11-30-01	0245	1	1			1	1		1		1	1				
002	1 DY3			1	1	1	1	1			1	1		1		1	1				
003	1 DY2			1	11-28-01	0235	1	1			1	1		1		1	1	1	1	1	
004	B13DY2 tclp of 003			L	*																✓
					*	See lab chron															

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na,

INORG 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, INH3N2

3. IPH

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. 3° °C

Relinquished by	Received by	Date	Time
Ed Ed	[illegible]	12-1-01	1045

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES: 4235 7954 9390

25

0112483

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-40	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RCRA REERA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	C Cool 4C	None	G Cool 4C	B Cool 4C	D Cool 4C	A Cool 4C	F Cool 4C	E Cool 4C	None
Type of Container	aG	PG	aG	aG	aG	aG	aG	aG	PG
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B13F01	SOIL	11-30-01	0045	X		X	X	X	X	X	X	

TIE TO B13F07

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson	11-30-01 0440	Rec #2B	11-30-01 0440
Relinquished By	Remove From Rec 2B 3724	11-30-01 0900	R Thorp	11-30-01 0900
Relinquished By	R Thorp ERC	11-30-01 0950	FEDEX	
Relinquished By	FEDEX	12-1-01 1045	Received By	12-1-01 1045
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on {Antimony-125, Cesium-134; Ruthenium-106}; Americium-241, Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr~~
RT 11-30-01

Matrix *
S=Soil
SD=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)

3°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-32	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ.	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42 60 - 62.5	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA REARA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/20/01 FOR SHIPMENT.
RT 11-30-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	C aG	~~F aG~~ d	G aG	B aG	D aG	A aG	F aG	E aG	~~F~~	
No. of Container(s)	1	11-30	1	1	1	1	1	1	11-30-01	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	

	Sample No.	Matrix *	Sample Date	Sample Time										
2	B13DY3	SOIL	11-30-01	0045	X		X	X	X	X	X	X		
													B13F07	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson / R. Nielson	11-30-01 0440	Stored in REF #2B	11-30-01 0440
Renee Nielson	11-30-01 0900	R. Thore	11-30-01 0900
R. Thore / R. Thore 2B	11-30-01	Fed Ex	
Fed Ex	12-1-01 1045	[illegible]	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus) RJN 11/5/01
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60), Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106), Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90~~ -- Total Sr
RT 11-30-01

Matrix *
S=Soil
SD=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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 1 of 2
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.
RT 11-30-01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	1	
Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL	
	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time									
3 B13DY2	SOIL	11-28-01	0235	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R. Nielson	11-28-01 0437	Stored in Ref #2B	11-28-01 0437
Relinquished By: Removed	Date/Time 0900	Received By: R Thore	Date/Time 0900 11-30-01
Ref 2B 3728 11-30-01			
Relinquished By: R Thore ERC 11-30-01	Date/Time 0900	Received By: FEDEX	Date/Time
Relinquished By: FedEx	Date/Time 12-1-01 1045	Received By: Nicki Hernandez	Date/Time 12-1-01 1045
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045

Rad Screen B13F07

Matrix *
S=Soil
SD=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

20

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 2 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA (circled) RECRA	Offsite Property No.: A070046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	None
Type of Container	B sG	B sG	
No. of Container(s)	1	1	
Volume	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11-28-01. Collector not available to relinquish samples on 11/30/01 for shipment.
RT 11-30-01

Sample No.	Matrix *	Sample Date	Sample Time			
3 B13DY2	SOIL	11-28-01	0237	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson R. Nielson	11-28-01 0437	STORED IN Ref #2B	11-28-01 0437
Ref 2B 3728	11-30-01 0900	R. Thoren	11-30-01 0900
R. Thoren SRC	11-30-01 0900		
Ref 2B	12-1-01 1045		12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

(1) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr~~
RT 11-28-01

RadScreen B13F07

Matrix *: S=Soil, SD=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

21

HNF-5041 (10/99)

JAN 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F01						
% SOLIDS	001	S	01L%S168	11/30/01	12/03/01	12/04/01
% SOLIDS	001 REP	S	01L%S168	11/30/01	12/03/01	12/04/01
CHLORIDE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
CHLORIDE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
CHLORIDE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
FLUORIDE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
FLUORIDE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
FLUORIDE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRITE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRITE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRITE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
PHOSPHATE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
PHOSPHATE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
PHOSPHATE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
CHROMIUM VI	001	S	01LVI089	11/30/01	12/20/01	12/20/01
SULFATE BY IC	001	S	01LICG83	11/30/01	12/11/01	12/11/01
SULFATE BY IC	001 REP	S	01LICG83	11/30/01	12/11/01	12/11/01
SULFATE BY IC	001 MS	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE NITRITE	001	S	01LN3A68	11/30/01	12/18/01	12/18/01
NITRATE NITRITE	001 REP	S	01LN3A68	11/30/01	12/18/01	12/18/01
NITRATE NITRITE	001 MS	S	01LN3A68	11/30/01	12/18/01	12/18/01
TOTAL ORGANIC CARBON	001	S	01LTZ044	11/30/01	12/07/01	12/19/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ044	11/30/01	12/07/01	12/19/01
TOTAL ORGANIC CARBON	001 MS	S	01LTZ044	11/30/01	12/07/01	12/19/01
OIL & GREASE BY GRAV	001	S	01LOG045	11/30/01	12/20/01	12/27/01
OIL AND GREASE BY GR	001 REP	S	01LOG045	11/30/01	12/20/01	12/27/01
OIL AND GREASE BY GR	001 MS	S	01LOG045	11/30/01	12/20/01	12/27/01
PH	001	S	01LPH082	11/30/01	12/05/01	12/05/01
PH	001 REP	S	01LPH082	11/30/01	12/05/01	12/05/01
TOTAL INORGANIC CARB	001	S	01LTZA44	11/30/01	12/07/01	12/19/01
B13DY3						
% SOLIDS	002	S	01L%S168	11/30/01	12/03/01	12/04/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
FLUORIDE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRITE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
PHOSPHATE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
CHROMIUM VI	002	S	01LVI089	11/30/01	12/20/01	12/20/01
SULFATE BY IC	002	S	01LICG83	11/30/01	12/11/01	12/11/01
NITRATE NITRITE	002	S	01LN3A68	11/30/01	12/18/01	12/18/01
TOTAL ORGANIC CARBON	002	S	01LTZ044	11/30/01	12/07/01	12/19/01
OIL & GREASE BY GRAV	002	S	01LOG045	11/30/01	12/20/01	12/27/01
PH	002	S	01LPH082	11/30/01	12/05/01	12/05/01
TOTAL INORGANIC CARB	002	S	01LTZA44	11/30/01	12/07/01	12/19/01
B13DY2						
% SOLIDS	003	S	01L%S168	11/28/01	12/03/01	12/04/01
CHLORIDE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
FLUORIDE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
NITRITE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
NITRATE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
TOTAL CYANIDE	003	S	01LC1B9	11/28/01	12/10/01	12/10/01
TOTAL CYANIDE	003 REP	S	01LC1B9	11/28/01	12/10/01	12/10/01
TOTAL CYANIDE	003 MS	S	01LC1B9	11/28/01	12/10/01	12/10/01
PHOSPHATE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
CHROMIUM VI	003	S	01LVI089	11/28/01	12/20/01	12/20/01
CHROMIUM VI	003 REP	S	01LVI089	11/28/01	12/20/01	12/20/01
CHROMIUM VI	003 MS	S	01LVI089	11/28/01	12/20/01	12/20/01
CHROMIUM VI	003 MSD	S	01LVI089	11/28/01	12/20/01	12/20/01
SULFATE BY IC	003	S	01LICG83	11/28/01	12/11/01	12/11/01
NITRATE NITRITE	003	S	01LN3A68	11/28/01	12/18/01	12/18/01
AMMONIA	003	S	01LAM055	11/28/01	12/19/01	12/19/01
AMMONIA	003 REP	S	01LAM055	11/28/01	12/19/01	12/19/01
AMMONIA	003 MS	S	01LAM055	11/28/01	12/19/01	12/19/01
TOTAL ORGANIC CARBON	003	S	01LTZ044	11/28/01	12/07/01	12/19/01
OIL & GREASE BY GRAV	003	S	01LOG045	11/28/01	12/20/01	12/27/01
PH	003	S	01LPH082	11/28/01	12/05/01	12/05/01
SULFIDE	003	S	01LSDA66	11/28/01	12/06/01	12/06/01
SULFIDE	003 REP	S	01LSDA66	11/28/01	12/06/01	12/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1623

DATE RECEIVED: 12/01/01 LVL LOT # :0112L483

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	003 MS	S	01LSDA66	11/28/01	12/06/01	12/06/01
TCLP	003	S	01LTO151	11/28/01	12/12/01	12/13/01
TOTAL INORGANIC CARB	003	S	01LTZA44	11/28/01	12/07/01	12/19/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
CHLORIDE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
FLUORIDE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
FLUORIDE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
NITRITE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
NITRITE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
NITRATE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
NITRATE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
PHOSPHATE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
PHOSPHATE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
CHROMIUM VI	MB1	S	01LVI089	N/A	12/20/01	12/20/01
CHROMIUM VI	MB1 BS	S	01LVI089	N/A	12/20/01	12/20/01
CHROMIUM VI	MB1 BSD	S	01LVI089	N/A	12/20/01	12/20/01
SULFATE BY IC	MB1	S	01LICG83	N/A	12/11/01	12/11/01
SULFATE BY IC	MB1 BS	S	01LICG83	N/A	12/11/01	12/11/01
NITRATE NITRITE	MB1	S	01LN3A68	N/A	12/18/01	12/18/01
NITRATE NITRITE	MB1 BS	S	01LN3A68	N/A	12/18/01	12/18/01
TOTAL ORGANIC CARBON	MB1	W	01LTZ044	N/A	12/07/01	12/19/01
TOTAL ORGANIC CARBON	MB1 BS	W	01LTZ044	N/A	12/07/01	12/19/01
OIL & GREASE BY GRAV	MB1	S	01LOG045	N/A	12/20/01	12/27/01
OIL AND GREASE BY GR	MB1 BS	S	01LOG045	N/A	12/20/01	12/27/01
TOTAL INORGANIC CARB	MB1	W	01LTZA44	N/A	12/07/01	12/19/01
TOTAL INORGANIC CARB	MB1 BS	W	01LTZA44	N/A	12/07/01	12/19/01
TOTAL CYANIDE	LCS L	S	01LC1B9	N/A	12/10/01	12/10/01
TOTAL CYANIDE	LCS L	S	01LC1B9	N/A	12/10/01	12/10/01
TOTAL CYANIDE	MB1	S	01LC1B9	N/A	12/10/01	12/10/01
AMMONIA	MB1	S	01LAM055	N/A	12/19/01	12/19/01
AMMONIA	MB1 BS	S	01LAM055	N/A	12/19/01	12/19/01
AMMONIA	MB1 BSD	S	01LAM055	N/A	12/19/01	12/19/01
SULFIDE	MB1	S	01LSDA66	N/A	12/06/01	12/06/01
SULFIDE	MB1 BS	S	01LSDA66	N/A	12/06/01	12/06/01
SULFIDE	MB1 BSD	S	01LSDA66	N/A	12/06/01	12/06/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113 H1623
LVL#: 0112L483

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

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil 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 temperatures were recorded on the chain of custody.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of LCS 01LOG045-MB1 for Oil and Grease that was below the 80-120% control limit. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike (MS) recoveries were within the 75-125% control limits with the exception of MS recovery for Oil and Grease that was below the control limits and MS recovery for Insoluble Chromium VI that was above the control limits. Poor MS recoveries may be attributed to sample inhomogeneity.

8. The replicate analyses were within the 20% 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
Laboratory Manager
Lionville Laboratory Incorporated

01-15-02
Date

njp\i12-483

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 19 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 / 9014	__ 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 / 413.1	
Carbon, Total Organic and ~~Total~~ Inorganic		__ 9060	✓ Lloyd Kahn (mod) / EPA 415.
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: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0 (mod.)

Other: Nitrite, Phosphate, Sulfate **Method**

Nitrate Nitrite EPA 353.2 (mod.)

Ammonia EPA 350.3

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 Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13F01	% Solids	91.7		%	0.01	1.0
		Chloride by IC	7.1		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.36	u	MG/KG	1.36	1.0
		Nitrate by IC	17.2		MG/KG	1.36	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	9.6		MG/KG	1.4	1.0
		Nitrate Nitrite	3.9		MG/KG	0.21	1.0
		Total Organic Carbon	191		MG/KG	159	1.0
		Oil & Grease Gravimetri	566		MG/KG	145	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Total Inorganic Carbon	2540		MG/KG	135	1.0
-002	B13DY3	% Solids	92.3		%	0.01	1.0
		Chloride by IC	6.6		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.35	u	MG/KG	1.35	1.0
		Nitrate by IC	18.4		MG/KG	1.35	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	1.0		MG/KG	0.43	1.0
		Sulfate by IC	9.0		MG/KG	1.4	1.0
		Nitrate Nitrite	4.1		MG/KG	0.21	1.0
		Total Organic Carbon	245		MG/KG	142	1.0
		Oil & Grease Gravimetri	159		MG/KG	144	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Total Inorganic Carbon	2960		MG/KG	142	1.0
-003	B13DY2	% Solids	96.5		%	0.01	1.0
		Chloride by IC	7.8		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.30	u	MG/KG	1.30	1.0
		Nitrate by IC	1.30	u	MG/KG	1.30	1.0
		Cyanide, Total	0.43	u	MG/KG	0.43	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.72		MG/KG	0.42	1.0
		Sulfate by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate Nitrite	0.21	u	MG/KG	0.21	1.0
		Ammonia, as N	2.5	u	MG/KG	2.5	1.0
		Total Organic Carbon	161		MG/KG	136	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B13DY2	Oil & Grease Gravimetri	290		MG/KG	138	1.0
		pH	9.5		SOIL PH	0.01	1.0
		Sulfide	22.9	u	MG/KG	22.9	1.0
		Total Inorganic Carbon	479		MG/KG	136	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICG83-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	01LVI089-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	01LN3A68-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	01LTZ044-MB1	Total Organic Carbon	20.0	u	MG/KG	20.0	1.0
BLANK10	01LOG045-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0
BLANK10	01LTZA44-MB1	Total Inorganic Carbon	20.0	u	MG/KG	20.0	1.0
BLANK1	01LC1B9-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	01LAM055-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	01LSDA66-MB1	Sulfide	20.0	u	MG/KG	20.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13F01	Chloride by IC	34.1	7.1	27.3	99.0	1.0
		Fluoride by IC	57.6	0.56	54.5	104.6	1.0
		Nitrite by IC	26.4	1.36u	27.3	97.0	1.0
		Nitrate by IC	46.2	17.2	27.3	106.2	1.0
		Phosphate by IC	27.2	1.4 u	27.3	99.7	1.0
		Sulfate by IC	37.0	9.6	27.3	100.3	1.0
		Nitrate Nitrite	9.9	3.9	5.5	109.8	1.0
		Total Organic Carbon	3160	191	3150	94.3	1.0
		Oil & Grease Gravimetr	4380	566	6380	59.7	1.0
-003	B13DY2	Cyanide, Total	3.14	0.43u	3.52	89.1	1.0
		Soluble Chromium VI	5.0	0.72	4.1	103.5	1.0
		Insoluble Chromium VI	1610	0.72	1270	126.8	100
		Ammonia, as N	101	2.5 u	103	97.5	1.0
		Sulfide	79.3	0.92	89.9	87.2	1.0
BLANK10	01LICG83-MB1	Chloride by IC	23.6	1.2 u	25.0	94.5	1.0
		Fluoride by IC	53.8	2.5 u	50.0	107.7	1.0
		Nitrite by IC	23.8	1.25u	25.0	95.3	1.0
		Nitrate by IC	24.0	1.25u	25.0	95.9	1.0
		Phosphate by IC	26.5	1.2 u	25.0	106.1	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.2	1.0
BLANK10	01LVI089-MB1	Soluble Chromium VI	3.6	0.40u	4.0	90.3	1.0
		Insoluble Chromium VI	1590	0.40u	1350	117.9	100
BLANK10	01LN3A68-MB1	Nitrate Nitrite	5.2	0.20u	5.0	104.0	1.0
BLANK10	01LTZ044-MB1	Total Organic Carbon	405	20.0 u	400	101.4	1.0
BLANK10	01LOG045-MB1	Oil & Grease Gravimetr	4150	133 u	5850	70.8	1.0
BLANK10	01LTZA44-MB1	Total Inorganic Carbon	405	20.0 u	400	101.4	1.0
BLANK10	01LAM055-MB1	Ammonia, as N	91.5	2.5 u	100	91.5	1.0
		Ammonia, as N MSD	93.8	2.5 u	100	93.8	1.0
BLANK10	01LSDA66-MB1	Sulfide	83.0	20.0 u	85.0	97.6	1.0
		Sulfide MSD	166	20.0 u	170	97.6	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM055-MB1	Ammonia, as N	91.5	93.8	2.4
BLANK10	01LSDA66-MB1	Sulfide	97.6	97.6	0.00

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13F01	% Solids	91.7	91.8	0.098	1.0
		Chloride by IC	7.1	6.4	9.9	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.36u	1.36u	NC	1.0
		Nitrate by IC	17.2	16.3	5.6	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	9.6	8.7	10.3	1.0
		Nitrate Nitrite	3.9	4.5	13.5	1.0
		Total Organic Carbon	191	199	4.3	1.0
		Oil & Grease Gravimetri	566	480	16.6	1.0
		pH	9.0	9.0	0.2	1.0
-003REP	B13DY2	Cyanide, Total	0.43u	0.35u	NC	1.0
		Chromium VI	0.72	0.67	7.0	1.0
		Ammonia, as N	2.5 u	2.6 u	NC	1.0
		Sulfide	22.9 u	21.8 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/02/02

CLIENT: TNUHANFORD B01-113 H1623 LVL LOT #: 0112L483

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC1B9-LCS1	Cyanide, Total LCS	1.70	2.0	MG/KG	85.0
LCSS2	01LC1B9-LCS2	Cyanide, Total LCS	9.79	10.0	MG/KG	97.9

(8) VOA NET Metal BNA Misc DIG

Lionville Laboratory Use Only: 0112L483

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

14

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD SAF B01-113

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: 05

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 12-1-01 Date Due: 12-31-01

		A	B	X		C	D		E		F	G	H	I	J	
Refrigerator #		1	2	2		2	1		2		2	2	2	2	2	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG	1AG		1AG		1AG	1AG	1AG	1AG	1AG	
Volume	Liquid															
	Solid	250	250	60		60	250		500		500	100	60	125	500	
Preservatives		—	—	—		—			—		—	—	—		—	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Oil Grease	TIC TPH		Metal	CN	Sp Cond	Hex Chrom	Alk Nitrite	TOT CN Sulfide	Metals Hg Total	LCACHAFE
		Lionville Laboratory Use Only														
		0624 X	0625 X			IOGGR	IOCT ITIC		MET		INORG	ICAL	INH3N	ICNTO ISFD	ITCLP	RCRATEN

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	0624 X	0625 X			IOGGR	IOCT ITIC		MET		INORG	ICAL	INH3N	ICNTO ISFD	ITCLP	RCRATEN
001	B13F01			S	11-30-01	0045	1	1			1	1		1		1	1				
002	1 DY3				1	1	1	1			1	1		1		1	1				
003	1 DY2			1	11-28-01	0235	1	1			1	1		1		1	1	1	1	1	
004	B13DY2 tclp of 003			L	*																✓
					*	See lab chron															

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

MET 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P

INORG 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2

3. IPH

12-4-01 4. Add MP-TO Cancel IPO4T

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. 3° °C 2.5°C

Relinquished by	Received by	Date	Time
Fed Ex	V Kennedy	12-1-01	1045

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

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

NOTES: 4235 7954 9390

0112403

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-40	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days; Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Preservation	C Cool 4C	None	G Cool 4C	B Cool 4C	D Cool 4C	A Cool 4C	F Cool 4C	E Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13F01	SOIL	11-30-01	0045	X		X	X	X	X	X	X

TIE TO B13F07

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 0440 11-30-01	Received By: Rec #2B	Date/Time: 11-30-01 0440
Relinquished By: Renee Fry Rec 2B 3728	Date/Time: 0900 11-30-01	Received By: R Thorn	Date/Time: 0900 11-30-01
Relinquished By: R Thorn ERC	Date/Time: 0900 11-30-01	Received By: FED EXP	Date/Time:
Relinquished By: Fed Exp	Date/Time: 12-1-01 1045	Received By: Nicole Hernandez	Date/Time: 12-1-01 1045
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr~~

RJN 11/5/01
RT 11-30-01

Matrix *
S=Soil
SD=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)

3°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-32	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ.	Price Code: 8N; Data Turnaround: 45 Days; Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42 60-62.5	SAF No.: B01-113	
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA REGRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.

RT 11-30-01

Preservation			Cool 4C	~~None~~	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	~~None~~
Type of Container			C aG	~~F aG~~ d	G aG	B aG	D aG	A aG	F aG	E aG	~~F aG~~
No. of Container(s)			1	1	1	1	1	1	1	1	1
Volume			60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS			Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time								
B13DY3	SOIL	11-30-01	0045	X		X	X	X	X	X	X

B13F02

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Nielson	11-30-01 0440	Received By: STORED IN REF #2B	11-30-01 0440
Relinquished By: Remove from Ref 2B - 3728	11-30-01 0900	Received By: R. Thore	11-30-01 0900
Relinquished By: R. Thore 2RC	11-30-01 0900	Received By: FED EX	
Relinquished By: Fed Ex	12-1-01 1045	Received By: [illegible]	12-1-01 1045
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr~~

RIN 11/5/01
RT 11-30-01

Matrix *: S=Soil; SD=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 1 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.#2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.

RT 11-30-01

SAMPLE ANALYSIS

			Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
			Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1
			Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
				Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time										
3 B13DY2	SOIL	11-28-01	0235	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson/R. Nielson	11-28-01 0437	STOREDIN Ref #2B	11-28-01 0437
R. Nielson Ref 2B 3728	11-30-01 0900	R. Thorell	11-30-01 0900
R. Thorell ERC	11-30-01 0900	FEDEX	
Fed Ex	12-1-01 1045	Rich Hennang	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045

Rad screen B13F07

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-31	Page 2 of 2

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: See OSPC	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RCRA RCRA	Offsite Property No.: A020046	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 11-28-01. Collector not available to relinquish samples on 11-30-01 for shipment.
RT 11-30-01

Preservation	Cool 4C	None	None
Type of Container	B sG	B sG	B sG
No. of Container(s)	1	1	1
Volume	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time			
3 B13DY2	SOIL	11-28-01	0237	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	11-28-01 0437	STORED IN Ref #2B	11-28-01 0437
Ref 2B 3728	11-30-01 0900	R. T. RThoren	11-30-01 0900
R. Thoren ERC	11-30-01 0900		
Ted Ek	12-1-01 1045	Lisa Nunnally	12-1-01 1045

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

(1) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr~~
RT 11-28-01

Radscreen B13F07

Matrix *: S=Soil, SD=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: 12-1-01 1045

SDG#: 01126483

Work Order Number: ERC 99-042 SAF# B01-113

Shipping Container ID: 1 062 Chain of Custody # B01-113-31, 32, 40

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 3°, 2.5
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Peter Heinz / Louisville Laboratory Incorporated Date: 12-1-01

Telephoned to: _____ On _____ By _____

Maxim Technologies, Inc. St.-Louis, Missouri

Client Name: Eberline

Maxim Project Number: 9905093

Sample Identification				ASTM D422, Particle Size Distribution				ASTM 1557		ASTM 2216	ASTM 2937			ASTM 2434		
Maxim Sample Number	Client Sample Number	Sample Delivery Group	Sample Description	D_{100} (mm)	D_{60} (mm)	D_{30} (mm)	D_{10} (mm)	Maximum Dry Density (PCF)	Optimum Moisture Content (%)	Moisture Content (%)	Dry Density (PCF)	Length of Sample, (inches)	Diameter of Sample, (inches)	Percent Oversized Material	Void Ratio (%)	k (coefficient of permeability, cm/s)
0112001-001	B13F11	SDG# H1623	Silty Sand	2	1.112	0.573	0.263	nr	nr	4.2	111.9	6.00	3.93	nr	nr	nr
0112001-002	B13F12	SDG# H1623	Silty Sand	2	0.356	0.251	0.036	nr	nr	9.3	105.3	6.00	3.93	nr	nr	nr
0112001-003	B13F20	SDG# H1623	Silty Sand	nr	nr	nr	nr	nr	nr	10.3	nr	nr	nr	nr	nr	nr

nr: not requested

JAN 2002
RECEIVED

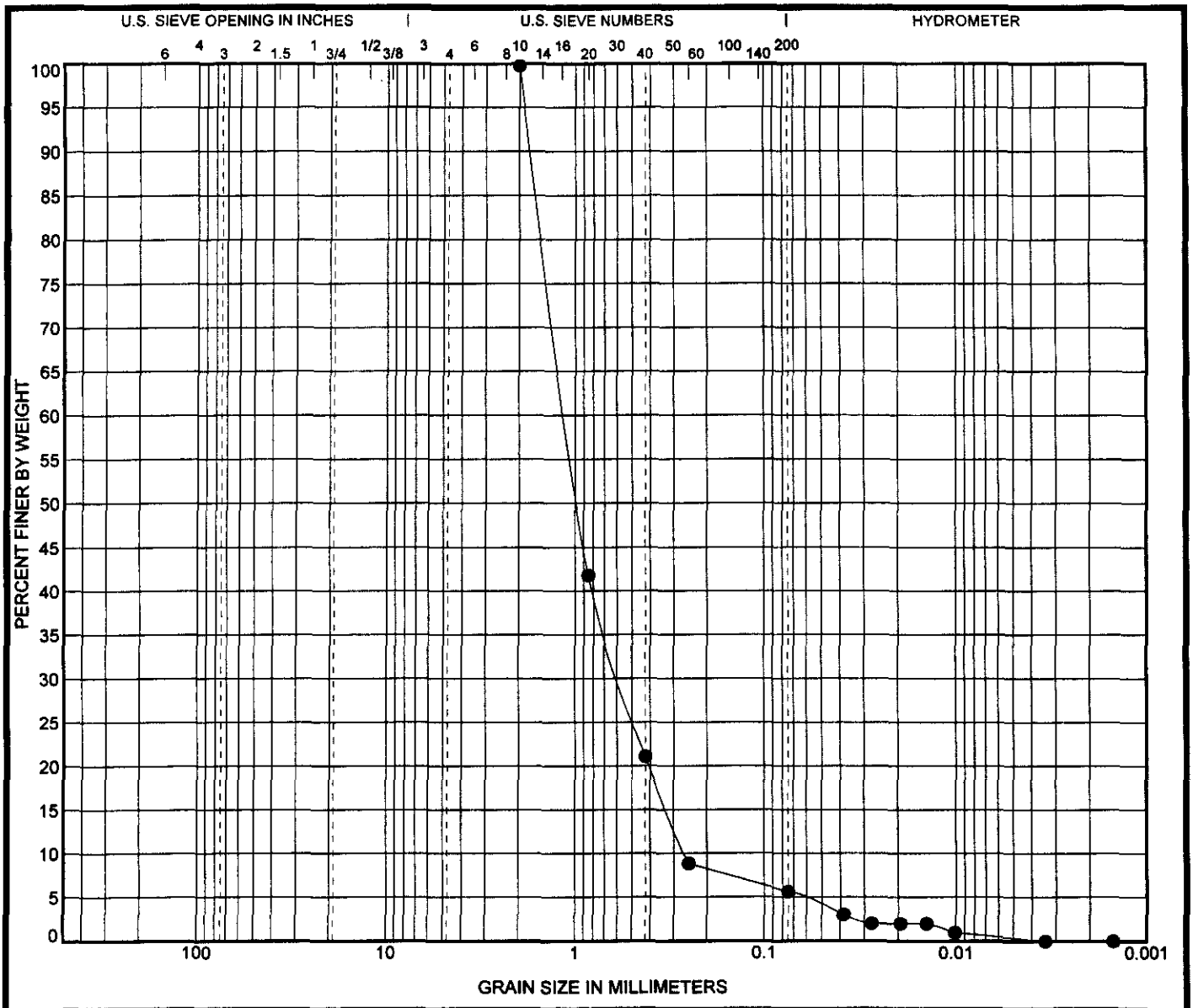
Maxim Technologies, Inc.

Bulk Density, ASTM D2937

Project #: 9905093 SDG# H1623
Performed by: B. Lindenbusch

Client: Eberline
Date: 12/7/01

Sample	Length (in.)	Diameter (in.)	Gross Weight (gm)	Container Weight (gm)	Moisture Content	Sample Volume (ft^3)	Net Weight (lb)	Wet Density (pcf)	Dry Density (pcf)
B13F11	6.00	3.93	2883.00	648.00	4.33	0.042	4.923	116.7	111.9
B13F12	6.00	3.93	2792.00	648.00	6.29	0.042	4.722	112.0	105.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	0112001-001	0.0	B13F11				1.12	4.23
	B13F11							

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	0112001-001	0.0	2	1.112	0.573	0.263	0.0	94.2	5.3	0.4

Maxim Technologies, Inc.
1908 Innerbelt Business Center Drive
St. Louis, Missouri 63114
Telephone: 314-426-0880
Fax: 314-426-4212

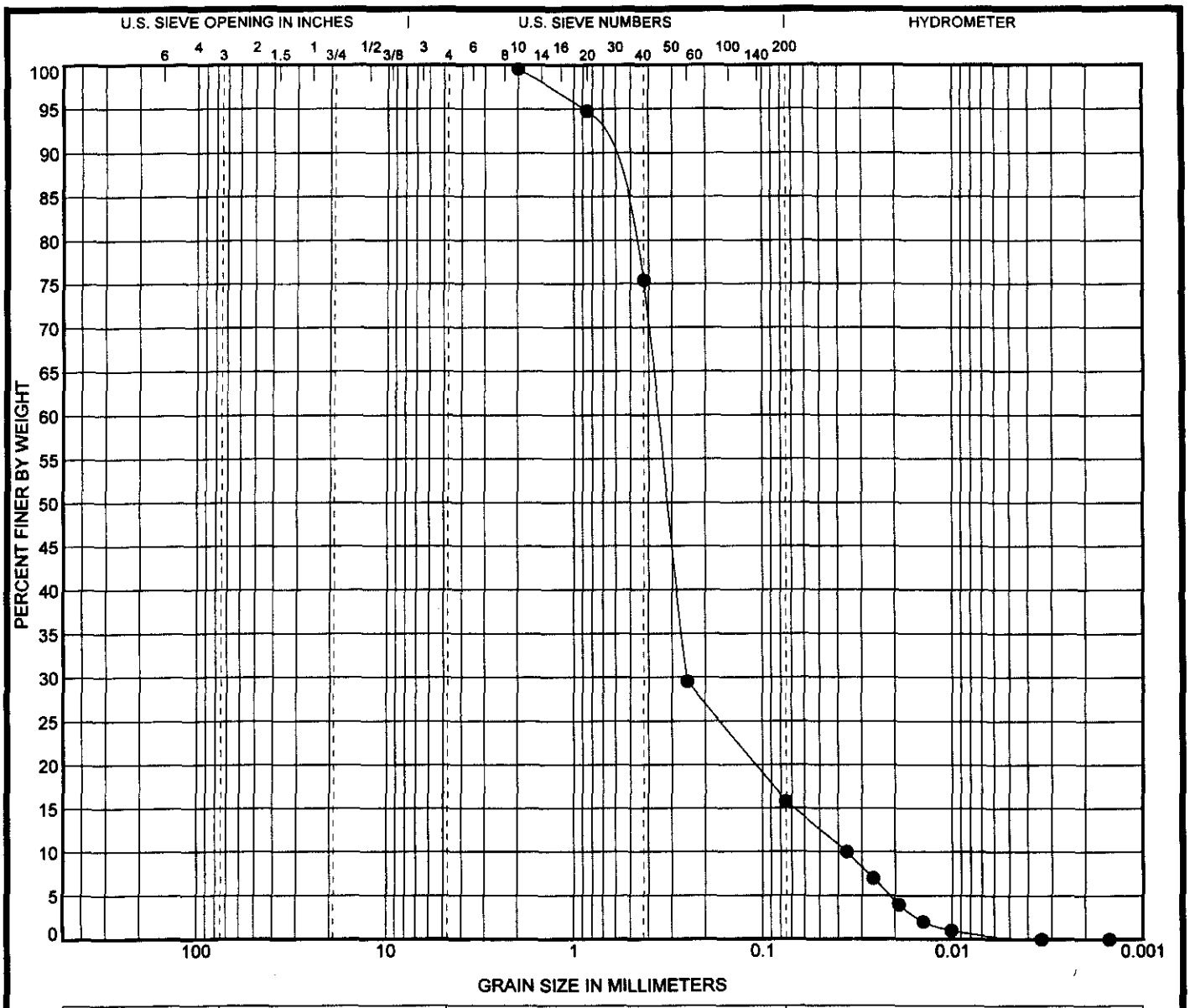
GRAIN SIZE DISTRIBUTION

Project: Eberline Services

Location:

Number: 9905093

US GRAIN SIZE BECHTEL.GPJ US LAB.GDT 12/17/01



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● 0112001-002	0.0	B13F12				4.92	9.85
B13F12							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 0112001-002	0.0	2	0.356	0.251	0.036	0.0	83.8	15.4	0.4

Maxim Technologies, Inc.
1908 Innerbelt Business Center Drive
St. Louis, Missouri 63114
Telephone: 314-426-0880
Fax: 314-426-4212

GRAIN SIZE DISTRIBUTION

Project: Eberline Services

Location:

Number: 9905093

US_GRAIN_SIZE_BECHTEL.GPJ US_LAB.GDT 12/17/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-48	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: Maxim Technologies, Inc.	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 42357954-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

EDD sent 1-8-02

Special Handling and/or Storage

Preservation	None	None								
Type of Container	Moisture Resistant Tin	Split Spoon Liner								
No. of Container(s)	1	1								
Volume	200g	1000g								
SAMPLE ANALYSIS	Moisture Content - D2216	See Item (1) in Special Instructions.								

Samples stored in Ref. #2B at the 3728 Shipping Facility on 11/28/01. Collector not available to relinquish samples on 11/30/01 for shipment.

RT 11-30-01

SDG# H1623 SJC

Sample No.	Matrix*	Sample Date	Sample Time									
B13F11	SOIL	11/28/01	0235	X	X							0112001-001

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Nielson	11-28-01 0437	Received By: STORED IN Ref #2B	11-28-01 0437
Relinquished By: Removed from Ref 2B 3728	11-30-01 0900	Received By: R. Thoren	11-30-01 0900
Relinquished By: R. Thoren ERC	11-30-01 0900	Received By: FEDEX	11-30-01
Relinquished By: FED-EXPRESS	12-01-01 12:00	Received By: E.S. Maestas / E. MAESTAS	12-03-01 9:00
Relinquished By: E. S. MAESTAS	12-03-01 4PM	Received By: FED-EXPRESS	12-03-01
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

(1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422; Particle Size (Hydrometer) - D422

TIETO

Radscreen B13F07

SDG# ~~H1622~~ H1623

Matrix*: S=Soil; SD=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: Ann Shelly	Title: SRO	Date/Time: 12/5/01 1200
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-49	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 60.0' - 62.5' 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: Maxim Technologies, Inc.	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 4235795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None										
Type of Container	Moisture Resistant Tin	Split Spoon Liner										
No. of Container(s)	1	1										
Volume	200g	1000g										
SAMPLE ANALYSIS	Moisture Content - D2216	Soil Bias (1) in Special Instructions.										
						SDG # 41622 3 BSL						
											TICTO	
Sample No.	Matrix *	Sample Date	Sample Time									
B13F12	SOIL	11-30-01	0045	X	X		01/2001-002				B13F07	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	11/30/01 0440	Stored in Ref #2B	11-30-01 0440
Remove From Ref 2B 3728	11-30-01 0900	R. Thoren	11-30-01 0900
R. Thoren ERC	11-30-01 0480	FED EX	11-30-01
FED-EXPRESS	12-01-01 1240	E. S. Maestas E. MAESTAS	12-03-01 9AM
E. S. MAESTAS	12-03-01 4PM	FED-EXPRESS	12-03-01

SPECIAL INSTRUCTIONS

(1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422; Particle Size (Hydrometer) - D422

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.

RT 11-30-01

Matrix *: S=Soil; SD=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: J. Shetley	Title: SRO	Date/Time: 12/5/01 1200	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time	

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-57	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-029	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: Maxim Technologies, Inc.	Offsite Property No.: A020084	Bill of Lading/Air Bill No.: 4235795 4-9379	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None 1	None									
Type of Container	Moisture Resistant Tin	Split Spoon Liner									
No. of Container(s)	1	1									
Volume	200g	1000g									
SAMPLE ANALYSIS	Moisture Content - D2216	See item (1) in Special Instructions.		SDG # H1623 BJL						TIE TO	
Sample No.	Matrix*	Sample Date	Sample Time								
B13F20 ✓	SOIL ✓	11-30-01 ✓	0045 ✓	X ✓		0112001-003				1613107	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature] / R. Nielsen	0440 11-30-01	STORED IN REF #2B	0440 11-30-01
Remove from Ref 2B 3728	0900 11-30-01	R. Thorey	0900 11-30-01
R. Thorey ERC	0900 11-30-01	FED EX	11-30-01
FED-EXPRESS	1200 12-01-01	E.S. Maestas / E. MAESTAS	9:00 12-03-01
E.S. MAESTAS	4PM 12-03-01	FED-EXPRESS	12-03-01
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422; Particle Size (Hydrometer) - D422

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 11/30/01. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 11/30/01 FOR SHIPMENT.
RT 11-30-01

Matrix*: S=Soil; SD=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: [signature]	Title: SRO	Date/Time: 12/5/01 1200
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)