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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1669 was composed of two 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 March 8, 2002.

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 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 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

No 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

3/8/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1669

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13DY8	200 West, Well No. C3803	SOLID		R201155-01	B01-113	B01-113-37	01/17/02 00:10
B13DY9	200 West, Well No. C3803	SOLID		R201155-02	B01-113	B01-113-38	01/18/02 02:15
Method Blank		SOLID		R201155-04	B01-113		
Lab Control Sample		SOLID		R201155-03	B01-113		
Duplicate (R201155-02)	200 West, Well No. C3803	SOLID		R201155-05	B01-113		01/18/02 02:15
Spike (R201155-02)	200 West, Well No. C3803	SOLID		R201155-06	B01-113		01/18/02 02:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1669

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
7205	B01-113-37	B13DY8	SOLID	93.5	1166 g		01/22/02	5	R201155-01	7205-001
	B01-113-38	B13DY9	SOLID	92.9	1446 g		01/22/02	4	R201155-02	7205-002
		Method Blank	SOLID						R201155-04	7205-004
		Lab Control Sample	SOLID						R201155-03	7205-003
		Duplicate (R201155-02)	SOLID	92.9	1446 g		01/22/02	4	R201155-05	7205-005
		Spike (R201155-02)	SOLID		1446 g		01/22/02	4	R201155-06	7205-006

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1669

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7018-197	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	7018-197	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7018-197	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7018-197	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7018-197	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7018-197	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7018-197	20.0	2			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7018-197	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7018-197	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	7018-197	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.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1669

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13DY8			R201155-01	7205-001	93A/93		02/27/02	03/08/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/17/02	7205-001	93B/93		02/27/02	03/08/02	MCM	Gross Beta in Soil
B01-113-37	B01-113		01/22/02	7205-001	AM		02/28/02	03/08/02	MCM	Americium 241 in Soil
				7205-001	GAM		02/26/02	03/08/02	MCM	Gamma Scan
				7205-001	NP		02/21/02	03/08/02	MCM	Neptunium in Soil
				7205-001	PU		03/05/02	03/08/02	MCM	Plutonium, Isotopic in Solids
				7205-001	SR		02/21/02	03/08/02	MCM	Total Strontium in Soil
B13DY9			R201155-02	7205-002	93A/93		02/27/02	03/08/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/18/02	7205-002	93B/93		02/27/02	03/08/02	MCM	Gross Beta in Soil
B01-113-38	B01-113		01/22/02	7205-002	AM		02/28/02	03/08/02	MCM	Americium 241 in Soil
				7205-002	GAM		02/26/02	03/08/02	MCM	Gamma Scan
				7205-002	H		03/05/02	03/08/02	MCM	Tritium in Soil
				7205-002	NP		02/21/02	03/08/02	MCM	Neptunium in Soil
				7205-002	PU		03/05/02	03/08/02	MCM	Plutonium, Isotopic in Solids
				7205-002	SR		02/21/02	03/08/02	MCM	Total Strontium in Soil
				7205-002	TC		03/06/02	03/08/02	MCM	Technetium 99 in Soil
				7205-002	U		02/22/02	03/08/02	MCM	Uranium, Isotopic in Soil
Method Blank			R201155-04	7205-004	93A/93		02/27/02	03/08/02	MCM	Gross Alpha in Soil
		SOLID		7205-004	93B/93		02/27/02	03/08/02	MCM	Gross Beta in Soil
	B01-113			7205-004	AM		02/28/02	03/08/02	MCM	Americium 241 in Soil
				7205-004	GAM		02/26/02	03/08/02	MCM	Gamma Scan
				7205-004	H		03/05/02	03/08/02	MCM	Tritium in Soil
				7205-004	NP		02/21/02	03/08/02	MCM	Neptunium in Soil
				7205-004	PU		03/05/02	03/08/02	MCM	Plutonium, Isotopic in Solids
				7205-004	SR		02/21/02	03/08/02	MCM	Total Strontium in Soil
				7205-004	TC		03/05/02	03/08/02	MCM	Technetium 99 in Soil
				7205-004	U		02/22/02	03/08/02	MCM	Uranium, Isotopic in Soil

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1669

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R201155-03	7205-003	93A/93		03/01/02	03/08/02	MCM	Gross Alpha in Soil
		SOLID		7205-003	93B/93		03/01/02	03/08/02	MCM	Gross Beta in Soil
	B01-113			7205-003	AM		02/28/02	03/08/02	MCM	Americium 241 in Soil
				7205-003	GAM		02/26/02	03/08/02	MCM	Gamma Scan
				7205-003	H		03/05/02	03/08/02	MCM	Tritium in Soil
				7205-003	NP		02/21/02	03/08/02	MCM	Neptunium in Soil
				7205-003	PU		03/05/02	03/08/02	MCM	Plutonium, Isotopic in Solids
				7205-003	SR		02/21/02	03/08/02	MCM	Total Strontium in Soil
				7205-003	TC		03/04/02	03/08/02	MCM	Technetium 99 in Soil
				7205-003	U		02/22/02	03/08/02	MCM	Uranium, Isotopic in Soil
Duplicate (R201155-02)			R201155-05	7205-005	93A/93		02/27/02	03/08/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/18/02	7205-005	93B/93		02/27/02	03/08/02	MCM	Gross Beta in Soil
	B01-113		01/22/02	7205-005	AM		02/28/02	03/08/02	MCM	Americium 241 in Soil
				7205-005	GAM		02/27/02	03/08/02	MCM	Gamma Scan
				7205-005	H		03/05/02	03/08/02	MCM	Tritium in Soil
				7205-005	NP		02/21/02	03/08/02	MCM	Neptunium in Soil
				7205-005	PU		03/05/02	03/08/02	MCM	Plutonium, Isotopic in Solids
				7205-005	SR		02/21/02	03/08/02	MCM	Total Strontium in Soil
				7205-005	TC		03/06/02	03/08/02	MCM	Technetium 99 in Soil
				7205-005	U		02/22/02	03/08/02	MCM	Uranium, Isotopic in Soil
Spike (R201155-02)			R201155-06	7205-006	H		03/05/02	03/08/02	MCM	Tritium in Soil
200 West, Well No. C3803		SOLID	01/18/02							
	B01-113		01/22/02							

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

SAMPLE DELIVERY GROUP H1669

SDG 7205
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1669

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	2			1	1	1		5
93B/93	B01-113	Gross Beta in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
AM	B01-113	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
GAM	B01-113	Gamma Scan	GAMMA_GS	2			1	1	1		5
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	2			1	1	1		5
PU	B01-113	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
SR	B01-113	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
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				17			10	10	10	1	48

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

R201155-04 Method Blank

METHOD BLANK

SDG	7205	Client/Case no	Hanford	SDG	H1669
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201155-04	Client sample id	Method Blank		
Dept sample id	7205-004	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	0.282	1.8	3.1	10	U	93A
Gross Beta	12587-47-2	-1.26	3.6	6.2	15	U	93B
Tritium	10028-17-8	0.028	0.16	0.27	400	U	H
Total Strontium	SR-RAD	-0.142	0.12	0.30	1.0	U	SR
Technetium 99	14133-76-7	-0.123	0.35	0.58	15	U	TC
Uranium 233/234	U-233/234	0.026	0.053	0.20	1.0	U	U
Uranium 235	15117-96-1	0.032	0.064	0.24	1.0	U	U
Uranium 238	U-238	0	0.053	0.20	1.0	U	U
Neptunium 237	13994-20-2	-0.029	0.058	0.22	1.0	U	NP
Plutonium 238	13981-16-3	0	0.065	0.25	1.0	U	PU
Plutonium 239/240	PU-239/240	0.033	0.065	0.25	1.0	U	PU
Americium 241	14596-10-2	0.057	0.11	0.22	1.0	U	AM
Potassium 40	13966-00-2	U		2.5		U	GAM
Cobalt 60	10198-40-0	U		0.078	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.68		U	GAM
Antimony 125	14234-35-6	U		0.18		U	GAM
Cesium 134	13967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.088	0.10	U	GAM
Radium 226	13982-63-3	U		0.17	0.10	U	GAM
Radium 228	15262-20-1	U		0.40	0.20	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	TH-232	U		0.40		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		8.1		U	GAM
Americium 241	14596-10-2	U		0.069		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/08/02

B L A N K , c o n t .

SDG	7205	Client/Case no	Hanford	SDG H1669	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201155-04	Client sample id	Method Blank		
Dept sample id	7205-004	Material/Matrix		SOLID	
		SAF No	B01-113		

QC-BLANK 41245

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

R201155-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7205 Client/Case no Hanford SDG H1669
Contact Melissa C. Mannion Case no No. 630

Lab sample id R201155-03 Client sample id Lab Control Sample
Dept sample id 7205-003 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	232	16	3.6	10		93A	215	8.6	108	65-135	70-130
Gross Beta	234	12	8.6	15		93B	238	9.5	98	76-124	70-130
Tritium	12.2	0.41	0.26	400	J	H	12.0	0.48	102	83-117	80-120
Total Strontium	23.4	0.88	0.26	1.0		SR	22.8	0.91	103	82-118	80-120
Technetium 99	122	2.1	0.54	15		TC	120	4.8	102	83-117	80-120
Uranium 233/234	19.8	1.9	0.93	1.0		U	19.3	0.77	103	82-118	80-120
Uranium 235	16.2	1.7	0.22	1.0		U	15.7	0.63	103	81-119	80-120
Uranium 238	21.0	2.0	0.89	1.0		U	21.0	0.84	100	83-117	80-120
Neptunium 237	22.0	1.6	0.083	1.0		NP	21.8	0.87	101	85-115	80-120
Plutonium 238	26.2	2.3	0.17	1.0		PU	27.0	1.1	97	84-116	80-120
Plutonium 239/240	28.4	2.5	0.17	1.0		PU	29.0	1.2	98	84-116	80-120
Americium 241	19.6	1.9	0.19	1.0		AM	21.0	0.84	93	84-116	80-120
Cobalt 60	4.01	0.36	0.21	0.050		GAM	4.59	0.18	87	76-124	80-120
Cesium 137	5.46	0.34	0.23	0.10		GAM	5.47	0.22	100	75-125	80-120

PFP Well Installation Smpl. & Anal.

QC-LCS 41244

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

R201155-05 B13DY9

DUPLICATE

SDG	7205			Client/Case no	Hanford SDG H1669
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R201155-05	Lab sample id	R201155-02	Client sample id	B13DY9
Dept sample id	7205-005	Dept sample id	7205-002	Location/Matrix	200 West, Well No. C3803 SOLID
		Received	01/22/02	Collected/Weight	01/18/02 02:15 1446 g
% solids	92.9	% solids	92.9	Custody/SAF No	B01-113-38 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 PROT TOT LIMIT
Gross Alpha	2.53	3.0	4.1	10	U	93A	1.04	2.8	4.4	U	-	
Gross Beta	20.4	5.2	7.2	15		93B	21.2	4.6	5.9		4	59
Tritium	0	0.097	0.17	400	U	H	0.043	0.097	0.16	U	-	
Total Strontium	-0.088	0.17	0.37	1.0	U	SR	-0.068	0.13	0.30	U	-	
Technetium 99	0.008	0.26	0.54	15	U	TC	0.002	0.22	0.56	U	-	
Uranium 233/234	0.247	0.14	0.17	1.0	J	U	0.247	0.15	0.19	J	0	125
Uranium 235	0	0.054	0.21	1.0	U	U	0.090	0.12	0.23	U	-	
Uranium 238	0.270	0.14	0.17	1.0	J	U	0.222	0.15	0.19	J	20	126
Neptunium 237	0.061	0.061	0.091	1.0	U	NP	0.034	0.069	0.10	U	-	
Plutonium 238	0	0.044	0.17	1.0	U	PU	0.026	0.053	0.20	U	-	
Plutonium 239/240	0.022	0.044	0.17	1.0	U	PU	0	0.053	0.20	U	-	
Americium 241	0	0.14	0.53	1.0	U	AM	0	0.062	0.24	U	-	
Potassium 40	9.77	1.6	1.1			GAM	9.53	1.6	1.1		2	47
Cobalt 60	U		0.10	0.050	U	GAM	U		0.086	U	-	
Ruthenium 106	U		0.67		U	GAM	U		0.71	U	-	
Antimony 125	U		0.17		U	GAM	U		0.18	U	-	
Cesium 134	U		0.11		U	GAM	U		0.092	U	-	
Cesium 137	U		0.10	0.10	U	GAM	U		0.086	U	-	
Radium 226	0.162	0.16	0.18	0.10	U	GAM	0.315	0.14	0.14		64	138
Radium 228	U		0.57	0.20	U	GAM	U		0.74	U	-	
Europium 152	U		0.20	0.10	U	GAM	U		0.21	U	-	
Europium 154	U		0.24	0.10	U	GAM	U		0.26	U	-	
Europium 155	U		0.20	0.10	U	GAM	U		0.18	U	-	
Thorium 228	0.439	0.13	0.14			GAM	0.448	0.12	0.13		2	68
Thorium 232	U		0.57		U	GAM	U		0.74	U	-	
Uranium 235	U		0.30		U	GAM	U		0.24	U	-	
Uranium 238	U		11		U	GAM	U		10	U	-	
Americium 241	U		0.34		U	GAM	U		0.18	U	-	

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/08/02

DUPLICATE, cont.

SDG	7205			Client/Case no	Hanford SDG H1669
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R201155-05	Lab sample id	R201155-02	Client sample id	B13DY9
Dept sample id	7205-005	Dept sample id	7205-002	Location/Matrix	200 West, Well No. C3803 SOLID
		Received	01/22/02	Collected/Weight	01/18/02 02:15 1446 g
% solids	92.9	% solids	92.9	Custody/SAF No	B01-113-38 B01-113

QC-DUP#2 41246

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

R201155-06 B13DY9

MATRIX SPIKE

SDG	7205			Client/Case no	Hanford SDG H1669
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R201155-06	Lab sample id	R201155-02	Client sample id	B13DY9
Dept sample id	7205-006	Dept sample id	7205-002	Location/Matrix	200 West, Well No. C3803 SOLID
		Received	01/22/02	Collected/Weight	01/18/02 02:15 1446 g
		% solids	92.9	Custody/SAF No	B01-113-38 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	50.9	0.64	0.17	400	JX	H	55.1	2.2	0.043	0.097	92	85-115	60-140

PFP Well Installation Smpl. & Anal.

QC-MS#2 41247

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 03/08/02

E B E R L I N E S E R V I C E S / R I C H M O N D

SAMPLE DELIVERY GROUP H1669

R201155-01 B13DY8

D A T A S H E E T

SDG	7205	Client/Case no	Hanford SDG H1669
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R201155-01	Client sample id	B13DY8
Dept sample id	7205-001	Location/Matrix	200 West, Well No. C3803 SOLID
Received	01/22/02	Collected/Weight	01/17/02 00:10 1166 g
% solids	93.5	Custody/SAF No	B01-113-37 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	2.88	3.6	5.1	10	U	93A
Gross Beta	12587-47-2	12.2	5.4	8.0	15	J	93B
Total Strontium	SR-RAD	0.071	0.16	0.31	1.0	U	SR
Neptunium 237	13994-20-2	0.061	0.061	0.091	1.0	U	NP
Plutonium 238	13981-16-3	0	0.052	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0.026	0.052	0.20	1.0	U	PU
Americium 241	14596-10-2	-0.030	0.061	0.23	1.0	U	AM
Potassium 40	13966-00-2	10.1	1.1	0.30			GAM
Cobalt 60	10198-40-0	U		0.068	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.50		U	GAM
Antimony 125	14234-35-6	U		0.12		U	GAM
Cesium 137	10045-97-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	0.440	0.12	0.11	0.10		GAM
Radium 228	15262-20-1	0.580	0.26	0.24	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.608	0.11	0.12			GAM
Thorium 232	TH-232	0.580	0.26	0.24			GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		7.9		U	GAM
Americium 241	14596-10-2	U		0.24		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

R201155-02 B13DY9

DATA SHEET

SDG	7205	Client/Case no	Hanford	SDG H1669	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201155-02	Client sample id	B13DY9		
Dept sample id	7205-002	Location/Matrix	200 West, Well No. C3803	SOLID	
Received	01/22/02	Collected/Weight	01/18/02 02:15	1446 g	
% solids	92.9	Custody/SAF No	B01-113-38	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	1.04	2.8	4.4	10	U	93A
Gross Beta	12587-47-2	21.2	4.6	5.9	15		93B
Tritium	10028-17-8	0.043	0.097	0.16	400	U	H
Total Strontium	SR-RAD	-0.068	0.13	0.30	1.0	U	SR
Technetium 99	14133-76-7	0.002	0.22	0.56	15	U	TC
Uranium 233/234	U-233/234	0.247	0.15	0.19	1.0	J	U
Uranium 235	15117-96-1	0.090	0.12	0.23	1.0	U	U
Uranium 238	U-238	0.222	0.15	0.19	1.0	J	U
Neptunium 237	13994-20-2	0.034	0.069	0.10	1.0	U	NP
Plutonium 238	13981-16-3	0.026	0.053	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	0.062	0.24	1.0	U	AM
Potassium 40	13966-00-2	9.53	1.6	1.1			GAM
Cobalt 60	10198-40-0	U		0.086	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.71		U	GAM
Antimony 125	14234-35-6	U		0.18		U	GAM
Cesium 134	13967-70-9	U		0.092		U	GAM
Cesium 137	10045-97-3	U		0.086	0.10	U	GAM
Radium 226	13982-63-3	0.315	0.14	0.14	0.10		GAM
Radium 228	15262-20-1	U		0.74	0.20	U	GAM
Europium 152	14683-23-9	U		0.21	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.448	0.12	0.13			GAM
Thorium 232	TH-232	U		0.74		U	GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.18		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test AM Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7018-197						
B13DY8	R201155-01			7205-001	U	
B13DY9	R201155-02			7205-002	U	
BLK (QC ID=41245)	R201155-04			7205-004	U	
LCS (QC ID=41244)	R201155-03			7205-003	ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197	2σ prep error 5.0 %			Reference Lab Notebook 7018 pg. 197												
B13DY8	R201155-01			0.23	0.500			74		104			42	02/28/02	02/28	SS-041
B13DY9	R201155-02			0.24	0.500			75		102			41	02/28/02	02/28	SS-047
BLK (QC ID=41245)	R201155-04			0.22	0.500			87		102				02/28/02	02/28	SS-049
LCS (QC ID=41244)	R201155-03			0.19	0.500			90		102				02/28/02	02/28	SS-048
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.53	0.500			32		102			41	02/28/02	02/28	SS-050
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD				
FOR 5 SAMPLES	MDA	0.28	±	0.28
	YIELD	72	±	46

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test NP Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7018-197						
B13DY8	R201155-01			7205-001	U	
B13DY9	R201155-02			7205-002	U	
BLK (QC ID=41245)	R201155-04			7205-004	U	
LCS (QC ID=41244)	R201155-03			7205-003	ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197	2σ prep error 5.0 %							Reference Lab Notebook 7018 pg. 197								
B13DY8	R201155-01			0.091	0.500			73		103			35	02/20/02	02/21	SS-031
B13DY9	R201155-02			0.10	0.500			64		103			34	02/20/02	02/21	SS-032
BLK (QC ID=41245)	R201155-04			0.22	0.500			73		109				02/20/02	02/21	SS-040
LCS (QC ID=41244)	R201155-03			0.083	0.500			76		109				02/20/02	02/21	SS-039
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.091	0.500			70		110			34	02/20/02	02/21	SS-041
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 5 SAMPLES				
	MDA	0.12	±	0.12
	YIELD	71	±	9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test PU Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7018-197								
B13DY8	R201155-01			7205-001	U		U	
B13DY9	R201155-02			7205-002	U		U	
BLK (QC ID=41245)	R201155-04			7205-004	U		U	
LCS (QC ID=41244)	R201155-03			7205-003	ok		ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197	2σ prep error 5.0 %			Reference Lab Notebook 7018 pg. 197												
B13DY8	R201155-01			0.20	0.500			81		114			47	03/05/02	03/05	SS-057
B13DY9	R201155-02			0.20	0.500			80		114			46	03/05/02	03/05	SS-058
BLK (QC ID=41245)	R201155-04			0.25	0.500			62		112				03/05/02	03/05	SS-060
LCS (QC ID=41244)	R201155-03			0.17	0.500			94		112				03/05/02	03/05	SS-059
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.17	0.500			95		113			46	03/05/02	03/05	SS-062
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 5 SAMPLES
MDA 0.20 ± 0.065
YIELD 82 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test U Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1669

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 7018-197											
B13DY9	R201155-02			7205-002	0.247 J	U	0.222 J	111	101	41	61
BLK (QC ID=41245)	R201155-04			7205-004	U	U	U				
LCS (QC ID=41244)	R201155-03			7205-003	ok	ok	ok				
Duplicate (R201155-02)	R201155-05			7205-005	ok J	- U	ok J	91	70	0	20
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
PFP Well Installation Smpl. & Anal.								Averages 101		20	

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 7018-197 2σ prep error 5.0 % Reference Lab Notebook 7018 pg. 197																
B13DY9	R201155-02			0.23	0.500			85		110			35	02/22/02	02/22	SS-056
BLK (QC ID=41245)	R201155-04			0.24	0.500			83		110				02/22/02	02/22	SS-058
LCS (QC ID=41244)	R201155-03			0.93	0.500			93		110				02/22/02	02/22	SS-057
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.21	0.500			94		109			35	02/22/02	02/22	SS-060
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 0.40 ± 0.70
YIELD 89 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test	SR
Matrix	SOLID
SDG	7205
Contact	Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7018-197						
B13DY8	R201155-01			7205-001	U	
B13DY9	R201155-02			7205-002	U	
BLK (QC ID=41245)	R201155-04			7205-004	U	
LCS (QC ID=41244)	R201155-03			7205-003	ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197 2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 197																
B13DY8	R201155-01			0.31	1.00			93		100			35	02/21/02	02/21	GRB-217
B13DY9	R201155-02			0.30	1.00			97		100			34	02/21/02	02/21	GRB-218
BLK (QC ID=41245)	R201155-04			0.30	1.00			91		100				02/21/02	02/21	GRB-220
LCS (QC ID=41244)	R201155-03			0.26	1.00			95		100				02/21/02	02/21	GRB-229
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.37	1.00			98		100			34	02/21/02	02/21	GRB-201
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 4
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.31	±	0.079
YIELD	95	±	6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test TC Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7018-197						
B13DY9	R201155-02			7205-002	U	
BLK (QC ID=41245)	R201155-04			7205-004	U	
LCS (QC ID=41244)	R201155-03			7205-003	ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 197															
B13DY9	R201155-02			0.56	1.01			88		50			47	03/01/02	03/06	GRB-222
BLK (QC ID=41245)	R201155-04			0.58	1.00			87		50				03/01/02	03/05	GRB-218
LCS (QC ID=41244)	R201155-03			0.54	1.00			98		50				03/01/02	03/04	GRB-202
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.54	1.01			92		50			47	03/01/02	03/06	GRB-224
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	0.56	±	0.038
	YIELD	91	±	10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test 93A Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7018-197						
B13DY8	R201155-01	93		7205-001	U	
B13DY9	R201155-02	93		7205-002	U	
BLK (QC ID=41245)	R201155-04	93		7205-004	U	
LCS (QC ID=41244)	R201155-03	93		7205-003	ok	
Duplicate (R201155-02)	R201155-05	93		7205-005	-	U

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 7018-197	2σ prep error 20.0 % Reference Lab Notebook 7018 pg. 197															
B13DY8	R201155-01	93		5.1	0.100			71		100			41	02/27/02	02/27	GRB-105
B13DY9	R201155-02	93		4.4	0.100			56		100			40	02/27/02	02/27	GRB-109
BLK (QC ID=41245)	R201155-04	93		3.1	0.100			24		100				02/27/02	02/27	GRB-102
LCS (QC ID=41244)	R201155-03	93		3.6	0.100			22		100				02/27/02	03/01	GRB-114
Duplicate (R201155-02) (QC ID=41246)	R201155-05	93		4.1	0.100			58		100			40	02/27/02	02/27	GRB-112
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 5 SAMPLES
MDA 4.1 ± 1.5
RESIDUE 46 ± 44

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test 93B Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7018-197						
B13DY8	R201155-01	93		7205-001	12.2	J
B13DY9	R201155-02	93		7205-002	21.2	
BLK (QC ID=41245)	R201155-04	93		7205-004	U	
LCS (QC ID=41244)	R201155-03	93		7205-003	ok	
Duplicate (R201155-02)	R201155-05	93		7205-005	ok	

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 7018-197 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 197																
B13DY8	R201155-01	93		8.0	0.100			71		100			41	02/27/02	02/27	GRB-105
B13DY9	R201155-02	93		5.9	0.100			56		100			40	02/27/02	02/27	GRB-109
BLK (QC ID=41245)	R201155-04	93		6.2	0.100			24		100				02/27/02	02/27	GRB-102
LCS (QC ID=41244)	R201155-03	93		8.6	0.100			22		100				02/27/02	03/01	GRB-114
Duplicate (R201155-02) (QC ID=41246)	R201155-05	93		7.2	0.100			58		100			40	02/27/02	02/27	GRB-112
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 5 SAMPLES				
	MDA	7.2	±	2.3
	RESIDUE	46	±	44

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test GAM Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7018-197								
B13DY8	R201155-01			7205-001	U		U	
B13DY9	R201155-02			7205-002	U		U	
BLK (QC ID=41245)	R201155-04			7205-004	U		U	
LCS (QC ID=41244)	R201155-03			7205-003	ok		ok	
Duplicate (R201155-02)	R201155-05			7205-005	-	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 7018-197 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 197																
B13DY8	R201155-01			0.50	189					173			40	02/22/02	02/26	JR,05,00
B13DY9	R201155-02			0.71	179					173			39	02/22/02	02/26	JR,03,00
BLK (QC ID=41245)	R201155-04			0.68	179					118				02/22/02	02/26	JR,07,00
LCS (QC ID=41244)	R201155-03			0.21	179					118				02/22/02	02/26	JR,03,00
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.67	179					100			40	02/22/02	02/27	JR,05,00
Nominal values and limits from method				0.050	179					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 5 SAMPLES
MDA 0.55 ± 0.42
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1669

Test H Matrix SOLID
SDG 7205
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1669

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7018-197						
B13DY9	R201155-02			7205-002	U	
BLK (QC ID=41245)	R201155-04			7205-004	U	
LCS (QC ID=41244)	R201155-03			7205-003	ok	J
Duplicate (R201155-02)	R201155-05			7205-005	-	U
Spike (R201155-02)	R201155-06			7205-006	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 7018-197	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 197															
B13DY9	R201155-02			0.16	20.6			50		120			46	03/05/02	03/05	LSC-005
BLK (QC ID=41245)	R201155-04			0.27	20.0			33		120				03/05/02	03/05	LSC-005
LCS (QC ID=41244)	R201155-03			0.26	20.0			33		120				03/05/02	03/05	LSC-005
Duplicate (R201155-02) (QC ID=41246)	R201155-05			0.17	20.1			50		120			46	03/05/02	03/05	LSC-005
Spike (R201155-02) (QC ID=41247)	R201155-06			0.17	20.3			50		120			46	03/05/02	03/05	LSC-005
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 FOR 5 SAMPLES
MDA 0.21 ± 0.11
YIELD 43 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/08/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-37	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 H1669 (7205) 200 West; Well Number C3803, Well Name 299-W15-42		SAF No. B01-113	Air Quality ☐	
Ice Chest No. ERC 02 103	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express		
Shipped To TMA/RECRA	Offsite Property No. A 020064		Bill of Lading/Air Bill No. 4235 7955 0431		

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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 - 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									
B13DY8 ✓	SOIL ✓	1-17-02 ✓	0010 ✓		X ✓						X ✓	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By R. Nielson / R. Nielson	1-17-02 0445	Received By Stored in Ref #2C	1-17-02 0445
Relinquished By Ref 2C 3728	1-21-02/1030	Received By Doug Bowers / Doug Bowers	1-21-02/1030
Relinquished By Doug Bowers / Doug Bowers	1-21-02/1030	Received By FCR Ex	1-21-02
Relinquished By FED EXPRESS	1-22-02 9:30	Received By E. Mcgees / E. MAESTAS	1-22-02
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) RJN 1/15/02
(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
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/98)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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** H1669 / 7205 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-113	**Air Quality** ☐
Ice Chest No. ERC 02-103	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA TMA	**Offsite Property No.** A 020064	**Bill of Lading/Air Bill No.** 4235 7955 0431	

POSSIBLE SAMPLE HAZARDS/REMARKS
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Special Handling and/or Storage

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										
B13DY9 ✓	SOIL ✓	1-18-02 ✓	0215 ✓			X ✓			X ✓				

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson R. Nielson	1-18-02	Starzinski Ref #2B	1/18/02 0420
REF 2B	1 21 02 1000	SSGALE	1 21 02 1000
ERC SSGALE	1 21 02 1000	FED EX	1-21-02
FED EXPRESS	9:30 1-22-02	E. Maestas E. MAESTAS	9:30 1-22-02

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-38	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** H1669 (7205) 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-113	**Air Quality** ☐
Ice Chest No. ERC 02-103	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA TMA	**Offsite Property No.** A Ø20 Ø64	**Bill of Lading/Air Bill No.** 4235 7955 0431	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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**								
B13DY9	SOIL	1-18-02	0215			X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1-18-02 0420	Storedum REF # 2B	1/18/02 0420
REF 2B	1/21/02 1000	SJGALE	1/21/02 1000
ERC SJGALE	1/21/02 1000	FED EX	1-21-02
FED EXPRESS	1-22-02 9:30	E. Massler E. HALSTAS	1-22-02 9:30

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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 1-22-02 9:30

CoC No. B01-113-37, 38, 54, AND 55,

Container I.D. No. ERC-02-103 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 4 (2 samples have to ship to Maxum)
7. Number of containers per sample: 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 E. S. MacTar Date: 1-22-02 Time: 9:30

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
TNU-HANFORD B01-113 H1669

RFW LOT # :0201L624

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13DY9	001	S	02LVG017	01/18/02	01/22/02	N/A	01/29/02
B13DY8	002	S	02LVG015	01/17/02	01/22/02	N/A	01/25/02
B13DY8	002 MS	S	02LVG015	01/17/02	01/22/02	N/A	01/25/02
B13DY8	002 MSD	S	02LVG015	01/17/02	01/22/02	N/A	01/25/02
LAB QC:							
VBLKIK	MB1	S	02LVG017	N/A	N/A	N/A	01/29/02
VBLKIK	MB1 BS	S	02LVG017	N/A	N/A	N/A	01/29/02
VBLKIL	MB1	S	02LVG015	N/A	N/A	N/A	01/25/02
VBLKIL	MB1 BS	S	02LVG015	N/A	N/A	N/A	01/25/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0201L824
SDG/SAF #: H1669/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-22-2002

GC/MS VOLATILE

Two (2) soil samples were collected on 01-17,18-2002.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 01-25,29-2002.

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

1. All results presented in this report are derived from samples that met LVLI's sample acceptance policy with the exception of the cooler temperature, which has been recorded on the chain of custody upon receipt.

2. The analysis holding time was met.

3. A non-target compound was detected in the method blank (02LVG015-MB1).

4. All surrogate recoveries were within EPA QC limits.

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

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

7. Internal standard area criteria were not met for sample B13DY8. The analysis of associated matrix spike samples fulfills the reanalysis requirement.

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

02-04-02
Date

som\group\data\voa\tnu-hanford\0201-824.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 7 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.

VLI
LIONVILLE LABORATORY INC.

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.

VLI
LIONVILLE LABORATORY INC.

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.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 01/30/02 12:23

RFW Batch Number: **0201L824** Client: **TNUHANFORD B01-113 H1669** Work Order: 11343606001 Page: 1a

	Cust ID:	B13DY9		B13DY8		B13DY8		B13DY8		VBLKIK		VBLKIK BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		02LVG017-MB1		02LVG017-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.943		0.962		1.04		0.943		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	99	%	97	%	97	%	99	%	107	%	93	%
	Bromofluorobenzene	108	%	108	%	111	%	112	%	113	%	105	%
	1,2-Dichloroethane-d4	103	%	90	%	104	%	102	%	114	%	107	%
Chloromethane		10	U	10	U	11	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	11	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	11	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	11	U	10	U	10	U	10	U
Methylene Chloride		9		24		12		11		5	U	2	J
Acetone		10	U	5	J	6	J	7	J	10	U	10	U
Carbon Disulfide		5	U	5	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	61	%	62	%	5	U	82	%
1,1-Dichloroethane		5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	6	U	5	U	5	U	5	U
Chloroform		5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	6	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	11	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	6	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	89	%	91	%	5	U	102	%
Dibromochloromethane		5	U	5	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	6	U	5	U	5	U	5	U
Benzene		5	U	5	U	87	%	88	%	5	U	101	%
Trans-1,3-Dichloropropene		5	U	5	U	6	U	5	U	5	U	5	U
Bromoform		5	U	5	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	11	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	11	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	6	U	5	U	5	U	5	U
Toluene		5	U	5	U	101	%	104	%	5	U	109	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0201L824** Client: **TNUHANFORD B01-113 H1669** Work Order: 11343606001 Page: 1b

Cust ID:	B13DY9	B13DY8	B13DY8	B13DY8	VBLKIK	VBLKIK BS
RFW#:	001	002	002 MS	002 MSD	02LVG017-MB1	02LVG017-MB1
Chlorobenzene	5 U	5 U	96 %	98 %	5 U	103 %
Ethylbenzene	5 U	5 U	6 U	5 U	5 U	5 U
Styrene	5 U	5 U	6 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	6 U	5 U	5 U	5 U
N-butylbenzene	5 U	5 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 01/30/02 12:23

RFW Batch Number: **0201L824** Client: ***TNUHANFORD B01-113 H1669*** *Work Order: 11343606001* *Page: 2a*

	Cust ID:	**VBLKIL**	**VBLKIL BS**
Sample Information	RFW#:	**02LVG015-MB1**	**02LVG015-MB1**
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	ug/Kg	ug/Kg

	Toluene-d8	93	%	91	%
Surrogate	Bromofluorobenzene	114	%	108	%
Recovery	1,2-Dichloroethane-d4	102	%	105	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		5	U	13	
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	59	%
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	92	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	90	%
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U
Toluene		5	U	92	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKIL	VBLKIL BS
RFW#:	02LVG015-MB1	02LVG015-MB1

Chlorobenzene	5	U	92	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U
N-butylbenzene	5	U	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B13DY9

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0201L824-001

Sample wt/vol: 5.30 (g/mL) G Lab File ID: g012909

Level: (low/med) LOW Date Received: 01/22/02

% Moisture: not dec. 9 Date Analyzed: 01/29/02

Column: (pack/cap) CAP Dilution Factor: 0.943

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B13DY8

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) SOIL Lab Sample ID: 0201L824-002

Sample wt/vol: 5.20 (g/mL) G Lab File ID: q012512

Level: (low/med) LOW Date Received: 01/22/02

% Moisture: not dec. 7 Date Analyzed: 01/25/02

Column: (pack/cap) CAP Dilution Factor: 0.962

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKIK

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 02LVG017-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: g012905

Level: (low/med) LOW Date Received: 01/29/02

% Moisture: not dec. 0 Date Analyzed: 01/29/02

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKIL

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 02LVG015-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: g012504

Level: (low/med) LOW Date Received: 01/25/02

% Moisture: not dec. 0 Date Analyzed: 01/25/02

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	19.660	10	J

FORM 1 VOA-TIC 1/87 Rev.

Lionville Laboratory Use Only

02011924

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-113

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 1-22-02 Date Due: 2-21-02

		A	B			C	D	E	F		G	H	I	J		
Refrigerator #		1	3			1	3	3	3		3	3	3	3		
#/Type Container	Liquid	1AG														
	Solid	1AG	1AG			1AG	1AG	1AG	1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250			250	60	120	500		500	500	60	120		
Preservatives		—	—			—	—	—	—		—	—	—	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	TIC TOC	Oil Grease Chem Hex		TAL Metal	CN	TCLP MET	I.C. Anions	Ammonia	Sulfides Cyanides		LEACHATE
		Lionville Laboratory Use Only														
		0624X	0625X			ITIC IOLT	IOGER	ICR6	METO		ITCLP	INORGO	INH3N	ISFD TCNTO		MRCRATCN

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X			ITIC IOLT	IOGER	ICR6	METO		ITCLP	INORGO	INH3N	ISFD TCNTO		MRCRATCN
001	B13D49			S	1-18-02	0215	X	X			X	X	X	X		X	X	X	X		
002	B13D48			S	1-17-02	0010	X	X			X	X	X	X			X				
003	B13D49 tclp of 001			L	*																✓

* See labchron

Special Instructions: SAF # B01-113
Run Matrix QC

DATE/REVISIONS:
METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P
INORGO 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FEDEX	Carl Henry	1-22-02	0940

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0453

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. 10 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9 / SOIL / 1-18-02 / 0215	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1-18-02 0420	Stored in Ref # 2B	1/18/02 0420
Ref 2B, 3728,	1-21-02/1026	Doug Bowers	1-21-02/1026
Doug Bowers ERC	1-21-02/1030	FedEx	
FEDEX	1-22-02 0940	Carl Hanf	1-22-02 0940

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-38	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. ERC 96 064	**Field Logbook No.** EL-1562 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA	**Offsite Property No.** A028094	**Bill of Lading/Air Bill No.** 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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											
B13DY9 / SOIL / 1-18-02 / 0215	X	X									

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Nielson	1-18-02 0120	Received By: Stored in Ref #2B	1/18/02 0120
Relinquished By: Ref 2B 3728	1-21-02 / 1026	Received By: Doug Bowers / Doug Bowers	1-21-02 / 1026
Relinquished By: Doug Bowers / Doug Bowers EAC	1-21-02 / 1030	Received By: Fed Ex	
Relinquished By: FEDEX	1-22-02 0940	Received By: Carl Denf	1-22-02 0940
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) 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, P[illegible] Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-37	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 96 064	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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 - 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								
B13DY8	SOIL	1-17-02	0010	X		X	X	X	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: Renee Nielson / R. Nielson	1-17-02 0445	Received By: REF #2C / Stoedin	1-17-02 0445
Relinquished By: Ref 2C 3728	1-21-02 1100	Received By: Doug Bowers / Doug Bowers	1-21-02 1100
Relinquished By: Doug Bowers / Doug Bowers ERC	1-21-02 1100	Received By: Fed Ex	
Relinquished By: FEDEX	1-22-02 0940	Received By: Carl Hemf	1-22-02 0940
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) 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

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/17/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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)

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY9	001	S	02LE0073	01/18/02	01/23/02	01/30/02
B13DY9	001 MS	S	02LE0073	01/18/02	01/23/02	01/30/02
B13DY9	001 MSD	S	02LE0073	01/18/02	01/23/02	01/30/02
B13DY8	002	S	02LE0073	01/17/02	01/23/02	01/30/02
LAB QC:						
SBLKOJ	MB1	S	02LE0073	N/A	01/23/02	01/30/02
SBLKOJ	MB1 BS	S	02LE0073	N/A	01/23/02	01/30/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0201L824
SDG/SAF #: H1669/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-22-2002

SEMIVOLATILE

Two (2) soil samples were collected on 01-17,18-2002.

The samples and their associated QC samples were extracted on 01-23-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 01-30-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of the cooler temperature, which has been recorded on the chain of custody upon sample receipt.

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. All matrix spike recoveries were within EPA QC limits.

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

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

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

By J. Michael Taylor
President
Lionville Laboratory Incorporated

02-05-02
Date

som\gorup\data\bna\tnu-hanford-0201-824.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.

VLI
LIONVILLE LABORATORY INC.

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.

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.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 02/04/02 16:16

RFW Batch Number: **0201L824** Client: **TNUHANFORD B01-113 H1669** Work Order: 11343606001 Page: 1a

	Cust ID:	B13DY9		B13DY9		B13DY9		B13DY8		SBLKOJ		SBLKOJ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		02LE0073-MB1		02LE0073-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	72	%	71	%	64	%	96	%	76	%	75	%
	2-Fluorobiphenyl	68	%	72	%	61	%	93	%	72	%	75	%
	p-Terphenyl-d14	70	%	76	%	65	%	106	%	79	%	80	%
	Phenol-d5	64	%	64	%	57	%	83	%	67	%	67	%
	2-Fluorophenol	72	%	71	%	61	%	89	%	67	%	71	%
	2,4,6-Tribromophenol	76	%	84	%	72	%	110	%	84	%	89	%
Phenol		370	U	61	%	52	%	360	U	330	U	61	%
bis(2-Chloroethyl)ether		370	U	370	U	370	U	360	U	330	U	330	U
2-Chlorophenol		370	U	67	%	57	%	360	U	330	U	65	%
1,3-Dichlorobenzene		370	U	370	U	370	U	360	U	330	U	330	U
1,4-Dichlorobenzene		370	U	69	%	58	%	360	U	330	U	63	%
1,2-Dichlorobenzene		370	U	370	U	370	U	360	U	330	U	330	U
2-Methylphenol		370	U	370	U	370	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	360	U	330	U	330	U
3- and/or 4-Methylphenol		370	U	370	U	370	U	360	U	330	U	330	U
N-Nitroso-Di-n-propylamine		370	U	72	%	61	%	360	U	330	U	71	%
Hexachloroethane		370	U	370	U	370	U	360	U	330	U	330	U
Nitrobenzene		370	U	370	U	370	U	360	U	330	U	330	U
Isophorone		370	U	370	U	370	U	360	U	330	U	330	U
2-Nitrophenol		370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dimethylphenol		370	U	370	U	370	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dichlorophenol		370	U	370	U	370	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	73	%	63	%	360	U	330	U	75	%
Naphthalene		370	U	370	U	370	U	360	U	330	U	330	U
4-Chloroaniline		370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorobutadiene		370	U	370	U	370	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	69	%	61	%	360	U	330	U	72	%
2-Methylnaphthalene		370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		910	U	910	U	910	U	900	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0201L824 Client: TNUHANFORD B01-113 H1669 Work Order: 11343606001 Page: 1b

Cust ID:	B13DY9		B13DY9		B13DY9		B13DY8		SBLKOJ		SBLKOJ BS	
RFW#:	001		001 MS		001 MSD		002		02LE0073-MB1		02LE0073-MB1	
2-Chloronaphthalene	370	U	370	U	370	U	360	U	330	U	330	U
2-Nitroaniline	910	U	910	U	910	U	900	U	830	U	830	U
Dimethylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
Acenaphthylene	370	U	370	U	370	U	360	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	370	U	360	U	330	U	330	U
3-Nitroaniline	910	U	910	U	910	U	900	U	830	U	830	U
Acenaphthene	370	U	72	%	59	%	360	U	330	U	73	%
2,4-Dinitrophenol	910	U	910	U	910	U	900	U	830	U	830	U
4-Nitrophenol	910	U	85	%	60	%	900	U	830	U	80	%
Dibenzofuran	370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dinitrotoluene	370	U	75	%	60	%	360	U	330	U	79	%
Diethylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	360	U	330	U	330	U
Fluorene	370	U	370	U	370	U	360	U	330	U	330	U
4-Nitroaniline	910	U	910	U	910	U	900	U	830	U	830	U
4,6-Dinitro-2-methylphenol	910	U	910	U	910	U	900	U	830	U	830	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	370	U	360	U	330	U	330	U
Pentachlorophenol	910	U	91	%	72	%	900	U	830	U	87	%
Phenanthrene	370	U	370	U	370	U	360	U	330	U	330	U
Anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Carbazole	370	U	370	U	370	U	360	U	330	U	330	U
Di-n-Butylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
Fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Pyrene	370	U	78	%	64	%	360	U	330	U	80	%
Butylbenzylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Chrysene	370	U	370	U	370	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	24	J	370	U	23	J	330	U	330	U
Di-n-Octyl phthalate	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	370	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	360	U	330	U	330	U
Dibenzo(a,h)anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	360	U	330	U	330	U
Tributylphosphate	370	U	370	U	370	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13DY9

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

Client: TNUHANFORD B01-113 H1669

Matrix: (soil/water) SOIL

Lab Sample ID: 0201L824-001

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

Lab File ID: D013011

Level: (low/med) LOW

Date Received: 01/22/02

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

Date Extracted: 01/23/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/30/02

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	5.266	500	JB

FORM 1 SV-TIC

RFW (v3.3)

8

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13DY8

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

Client: TNUHANFORD B01-113 H1669

Matrix: (soil/water) SOIL

Lab Sample ID: 0201L824-002

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: D013014

Level: (low/med) LOW

Date Received: 01/22/02

% Moisture: 7 decanted: (Y/N)__

Date Extracted: 01/23/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/30/02

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	5.260	600	JB

FORM 1 SV-TIC

RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKOJ

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

Client: TNUHANFORD B01-113 H1669

Matrix: (soil/water) SOIL

Lab Sample ID: 02LE0073-MB1

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

Lab File ID: D013009

Level: (low/med) LOW

Date Received: 01/23/02

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

Date Extracted: 01/23/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/30/02

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	5.267	400	J

Lionville Laboratory Use Only
02014924

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-113
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30 days
Date Rec'd: 1-22-02 Date Due: 2-21-02

		A	B			C	D	E	F		G	H	I	J		
Refrigerator #		1	3			1	3	3	3		3	3	3	3		
#/Type Container	Liquid	~~1AG~~														
	Solid	1AG	1AG			1AG	1AG	1AG	1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250			250	60	120	500	<	500	500	60	120		
Preservatives		—	—			—	—	—	—		—	-	—	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	TIC TOC	Oil Grease	Chrom Hex	TAL Metal	CN	TCLP MET	I.C. Anions	Ammonia	Sulfides Cyanides		LCA CHATC
		Lionville Laboratory Use Only														
		0624x	0625x			ZTIC ZOLT	IOGGR	ICP6	METO		ITCLP	INORGO	INH3N	ISFD ICNZO		MACRATCN

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624x	0625x			ZTIC ZOLT	IOGGR	ICP6	METO		ITCLP	INORGO	INH3N	ISFD ICNZO		MACRATCN
001	B13D49			S	1-18-02	0215	X	X			X	X	X	X		X	X	X	X		
002	B13D48			S	1-17-02	0010	X	X			X	X	X	X			X				
003	B13D49 tclp of 001			L	x																✓
					* See labchron																

Special Instructions: SAF # B01-113
Run Matrix QC

DATE/REVISIONS:
METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P
INORGO 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FEDEX	Carl Henry	1-22-02	0940

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0453

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. 10 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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									
813DY9	SOIL	1-18-02	0215	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1-18-02 0420	Stored in Ref # 2B	1/18/02 0420
Ref 2B 3728	1-21-02/1026	Doug Bowers	1-21-02/1026
Doug Bowers ERC	1-21-02/1030	Fed EX	
FEDEX	1-22-02 0940	Carla Hong	1-22-02 0940

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-38	Page 2 of 2

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
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. ERC 96 064	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA	Offsite Property No. A0ZD094		Bill of Lading/Air Bill No. 4235 7955 0453

Price Code 8N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9	SOIL	1-18-02	0215	X	X								

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

Relinquished By	Date/Time	Received By	Date/Time
R Nielson	1-18-02 0120	Stored in Ref #2B	1/18/02 0120
Ref 2B 3728	1-21-02/1026	Doug Bowers	1-21-02/1026
Doug Bowers EAC	1-21-02/1030	FedEx	
FEDEX	1-22-02 0940	Carl Senf	1-22-02 0940

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, [illegible] Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/12/02 FOR SHIPMENT.

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	B01-113-37	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 96 064	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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 - 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									
B13DY8	SOIL	1-17-02	0010	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	1-17-02 0445	Ref #2C / Stoedin	1-17-02 0445
Ref 2C 3728	1-21-02 1100	Doug Bowers	1-21-02 1100
Doug Bowers ERC	1-21-02 1100	Fed Ex	
FEDEX	1-22-02 0940	Carl Demf	1-22-02 0940

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

SAMPLES STORED IN REF. #2C AT THE 3728 SHIPPING FACILITY ON 1/17/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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
Ve=Vegetation
X=Other

Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

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

BHI-EE-011 (10/99)

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY9						
TCLP	001	S	02LTO170	01/18/02	01/29/02	01/30/02
CALCIUM, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
CALCIUM, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
CALCIUM, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
CADMIUM, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
CADMIUM, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
CADMIUM, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
CHROMIUM, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
CHROMIUM, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
CHROMIUM, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
IRON, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
IRON, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
IRON, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
MAGNESIUM, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
MAGNESIUM, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
MAGNESIUM, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
SODIUM, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
SODIUM, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
SODIUM, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
NICKEL, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
NICKEL, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
NICKEL, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
PHOSPHORUS, TOTAL	001	S	02L0022	01/18/02	01/23/02	01/23/02
PHOSPHORUS, TOTAL	001 REP	S	02L0022	01/18/02	01/23/02	01/23/02
PHOSPHORUS, TOTAL	001 MS	S	02L0022	01/18/02	01/23/02	01/23/02
B13DY8						
CALCIUM, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
CADMIUM, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
CHROMIUM, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
IRON, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
MAGNESIUM, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
SODIUM, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
NICKEL, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHORUS, TOTAL	002	S	02L0022	01/17/02	01/23/02	01/23/02
B13DY9						
SILVER, TCLP LEACHAT	003	W	02L0044	01/30/02	01/31/02	01/31/02
SILVER, TCLP LEACHAT	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
SILVER, TCLP LEACHAT	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
ARSENIC, TCLP LEACHA	003	W	02L0044	01/30/02	01/31/02	01/31/02
ARSENIC, TCLP LEACHA	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
ARSENIC, TCLP LEACHA	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
BARIUM, TCLP LEACHAT	003	W	02L0044	01/30/02	01/31/02	01/31/02
BARIUM, TCLP LEACHAT	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
BARIUM, TCLP LEACHAT	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	003	W	02L0044	01/30/02	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
CHROMIUM, TCLP LEACH	003	W	02L0044	01/30/02	01/31/02	01/31/02
CHROMIUM, TCLP LEACH	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
CHROMIUM, TCLP LEACH	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
MERCURY, TCLP LEACHA	003	W	02C0037	01/30/02	01/30/02	01/31/02
MERCURY, TCLP LEACHA	003 REP	W	02C0037	01/30/02	01/30/02	01/31/02
MERCURY, TCLP LEACHA	003 MS	W	02C0037	01/30/02	01/30/02	01/31/02
LEAD, TCLP LEACHATE	003	W	02L0044	01/30/02	01/31/02	01/31/02
LEAD, TCLP LEACHATE	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
LEAD, TCLP LEACHATE	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02
SELENIUM, TCLP LEACH	003	W	02L0044	01/30/02	01/31/02	01/31/02
SELENIUM, TCLP LEACH	003 REP	W	02L0044	01/30/02	01/31/02	01/31/02
SELENIUM, TCLP LEACH	003 MS	W	02L0044	01/30/02	01/31/02	01/31/02

LAB QC:

CALCIUM LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
CALCIUM, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
CADMIUM LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
CADMIUM, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
CHROMIUM LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
CHROMIUM, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
IRON LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
MAGNESIUM LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
MAGNESIUM, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
SODIUM LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
SODIUM, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
NICKEL LABORATORY	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
NICKEL, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
PHOSPHORUS LCS	LC1 BS	S	02L0022	N/A	01/23/02	01/23/02
PHOSPHORUS, TOTAL	MB1	S	02L0022	N/A	01/23/02	01/23/02
SILVER LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
SILVER, TCLP LEACHAT	MB1	W	02L0044	N/A	01/31/02	01/31/02
SILVER, TCLP LEACHAT	MB2	W	02L0044	N/A	01/31/02	01/31/02
ARSENIC LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
ARSENIC, TCLP LEACHA	MB1	W	02L0044	N/A	01/31/02	01/31/02
ARSENIC, TCLP LEACHA	MB2	W	02L0044	N/A	01/31/02	01/31/02
BARIUM LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
BARIUM, TCLP LEACHAT	MB1	W	02L0044	N/A	01/31/02	01/31/02
BARIUM, TCLP LEACHAT	MB2	W	02L0044	N/A	01/31/02	01/31/02
CADMIUM LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	MB1	W	02L0044	N/A	01/31/02	01/31/02
CADMIUM, TCLP LEACHA	MB2	W	02L0044	N/A	01/31/02	01/31/02
CHROMIUM LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
CHROMIUM, TCLP LEACH	MB1	W	02L0044	N/A	01/31/02	01/31/02
CHROMIUM, TCLP LEACH	MB2	W	02L0044	N/A	01/31/02	01/31/02
MERCURY LABORATORY	LC1 BS	W	02C0037	N/A	01/30/02	01/31/02
MERCURY, TOTAL	MB1	W	02C0037	N/A	01/30/02	01/31/02
MERCURY, TCLP LEACHA	MB2	W	02C0037	N/A	01/30/02	01/31/02
LEAD LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
LEAD, TCLP LEACHATE	MB1	W	02L0044	N/A	01/31/02	01/31/02
LEAD, TCLP LEACHATE	MB2	W	02L0044	N/A	01/31/02	01/31/02
SELENIUM LABORATORY	LC1 BS	W	02L0044	N/A	01/31/02	01/31/02
SELENIUM, TCLP LEACH	MB1	W	02L0044	N/A	01/31/02	01/31/02
SELENIUM, TCLP LEACH	MB2	W	02L0044	N/A	01/31/02	01/31/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL#: 0201L824
SDG/SAF#: H1669/B01-113

W.O.#: 11343-606-001-9999-00
Date Received: 01-22-02

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples and 1 TCLP leachate sample.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The leachate sample was reported with a six fold dilution due to sample matrix.

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

4. All results presented in this report are derived from samples that met LVLI's sample acceptance policy with the exception of cooler temperature, which has 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) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13DY9	Chromium	300	95.6
	Iron	50,000	82.4

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B13DY9 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

02-01-02
Date

gmb/m01-824

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#:

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other: Phosphorous Method: 6010B

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 02/01/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY9	Calcium, Total	2830	MG/KG	1.9	1.0
		Cadmium, Total	0.73 u	MG/KG	0.73	1.0
		Chromium, Total	19.9	MG/KG	0.58	1.0
		Iron, Total	17400	MG/KG	0.57	1.0
		Magnesium, Total	4160	MG/KG	2.6	1.0
		Sodium, Total	288	MG/KG	3.8	1.0
		Nickel, Total	18.8	MG/KG	1.5	1.0
		Phosphorus, Total	350	MG/KG	1.5	1.0
-002	B13DY8	Calcium, Total	3700	MG/KG	1.9	1.0
		Cadmium, Total	0.73 u	MG/KG	0.73	1.0
		Chromium, Total	24.2	MG/KG	0.58	1.0
		Iron, Total	19700	MG/KG	0.57	1.0
		Magnesium, Total	5160	MG/KG	2.6	1.0
		Sodium, Total	358	MG/KG	3.8	1.0
		Nickel, Total	23.1	MG/KG	1.5	1.0
		Phosphorus, Total	542	MG/KG	1.5	1.0
-003	B13DY9	Silver, TCLP Leachate	4.2 u	UG/L	4.2	6.0
		Arsenic, TCLP Leachate	18.0 u	UG/L	18.0	6.0
		Barium, TCLP Leachate	437	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	19.7	UG/L	4.8	6.0
		Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0
		Lead, TCLP Leachate	13.2 u	UG/L	13.2	6.0
		Selenium, TCLP Leachate	21.6 u	UG/L	21.6	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/01/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0022-MB1	Calcium, Total	4.0	MG/KG	1.8	1.0
		Cadmium, Total	0.68 u	MG/KG	0.68	1.0
		Chromium, Total	0.54 u	MG/KG	0.54	1.0
		Iron, Total	3.1	MG/KG	0.53	1.0
		Magnesium, Total	2.4 u	MG/KG	2.4	1.0
		Sodium, Total	3.5 u	MG/KG	3.5	1.0
		Nickel, Total	1.4 u	MG/KG	1.4	1.0
		Phosphorus, Total	1.4 u	MG/KG	1.4	1.0
BLANK1	02L0044-MB1	Silver, TCLP Leachate	0.70 u	UG/L	0.70	1.0
		Arsenic, TCLP Leachate	3.0 u	UG/L	3.0	1.0
		Barium, TCLP Leachate	0.49	UG/L	0.20	1.0
		Cadmium, TCLP Leachate	0.30 u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	0.80 u	UG/L	0.80	1.0
		Lead, TCLP Leachate	2.2 u	UG/L	2.2	1.0
		Selenium, TCLP Leachate	3.6 u	UG/L	3.6	1.0
BLANK2	02L0044-MB2	Silver, TCLP Leachate	4.2 u	UG/L	4.2	6.0
		Arsenic, TCLP Leachate	18.0 u	UG/L	18.0	6.0
		Barium, TCLP Leachate	3.2	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	4.8 u	UG/L	4.8	6.0
		Lead, TCLP Leachate	13.2 u	UG/L	13.2	6.0
		Selenium, TCLP Leachate	21.6 u	UG/L	21.6	6.0
BLANK1	02C0037-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	02C0037-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/01/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY9	Calcium, Total	5960	2830	2680	116.6	1.0
		Cadmium, Total	4.8	0.73u	5.4	88.9	1.0
		Chromium, Total	54.2	19.9	21.5	159.5	1.0
		Iron, Total	20500	17400	107	2856 *	1.0
		Magnesium, Total	7140	4160	2680	111.1	1.0
		Sodium, Total	2880	288	2680	96.4	1.0
		Nickel, Total	77.8	18.8	53.7	109.9	1.0
		Phosphorus, Total	924	350	537	107.1	1.0
-003	B13DY9	Silver, TCLP Leachate	3490	4.2 u	5000	69.9	6.0
		Arsenic, TCLP Leachate	4950	18.0 u	5000	98.9	6.0
		Barium, TCLP Leachate	94900	437	100000	94.4	6.0
		Cadmium, TCLP Leachate	1010	1.8 u	1000	101.3	6.0
		Chromium, TCLP Leachat	4980	19.7	5000	99.2	6.0
		Mercury, TCLP Leachate	190	0.10u	200	94.9	50.0
		Lead, TCLP Leachate	5080	13.2 u	5000	101.7	6.0
		Selenium, TCLP Leachat	976	21.6 u	1000	97.6	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/01/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY9	Calcium, Total	2830	3500	21.3	1.0
		Cadmium, Total	0.73u	0.73u	NC	1.0
		Chromium, Total	19.9	22.6	12.7	1.0
		Iron, Total	17400	21000	18.6	1.0
		Magnesium, Total	4160	4400	5.5	1.0
		Sodium, Total	288	259	10.8	1.0
		Nickel, Total	18.8	20.5	8.7	1.0
		Phosphorus, Total	350	523	39.8	1.0
-003REP	B13DY9	Silver, TCLP Leachate	4.2 u	6.3	~~NC~~ 200	6.0
		Arsenic, TCLP Leachate	18.0 u	18.0 u	NC	6.0
		Barium, TCLP Leachate	437	401	8.6	6.0
		Cadmium, TCLP Leachate	1.8 u	1.8 u	NC	6.0
		Chromium, TCLP Leachate	19.7	8.8	76.5	6.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Lead, TCLP Leachate	13.2 u	13.2 u	NC	6.0
		Selenium, TCLP Leachate	21.6 u	21.6 u	NC	6.0

Ups 2/1/02

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/01/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0022-LC1	Calcium, LCS	2390	2500	MG/KG	95.5
		Cadmium, LCS	22.1	25.0	MG/KG	88.4
		Chromium, LCS	48.5	50.0	MG/KG	97.0
		Iron, LCS	487	500	MG/KG	97.4
		Magnesium, LCS	2400	2500	MG/KG	95.9
		Sodium, LCS	2380	2500	MG/KG	95.3
		Nickel, LCS	196	200	MG/KG	98.2
		Phosphorus, LCS	469	500	MG/KG	93.9
LCS1	02L0044-LC1	Silver, LCS	447	500	UG/L	89.5
		Arsenic, LCS	9440	10000	UG/L	94.4
		Barium, LCS	4780	5000	UG/L	95.7
		Cadmium, LCS	242	250	UG/L	96.8
		Chromium, LCS	487	500	UG/L	97.4
		Lead, LCS	2430	2500	UG/L	97.3
		Selenium, LCS	9370	10000	UG/L	93.7
LCS1	02C0037-LC1	Mercury, LCS	5.3	5.0	UG/L	105.8

Lionville Laboratory Use Only

02011924

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-113

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 1-22-02 Date Due: 2-21-02

		A	B			C	D	E	F		G	H	I	J		
Refrigerator #	CAL-2202	1	3			1	3	3	3		3	3	3	3		
#/Type Container	Liquid	1AG														
	Solid	1AG	1AG			1DG	1AG	1AG	1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250			250	60	120	500	<	500	500	60	120		
Preservatives		—	—			—	—	—	—		—	—	—	—		
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	TIC TOC	Oil Grease Chem Hex		INORG: TAL Metal	CN	TCLP MET.	I.C. Anions	Ammonia	Sulfides Cyanides		CLEACHATE

Lionville Laboratory Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624x	0625x			ZTIC ZOLT	ZOGGR	ICR6	METO		ITCLP	INORG①	INH3N	ISFD ICNTO		MRCEATCH
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	B13D49			S	1-18-02	0215	X	X			X	X	X	X		X	X	X	X		
	002	B13D48			S	1-17-02	0010	X	X			X	X	X	X			X				
	003	B13D49 tclp of 001			L	*																✓
						* See labchron																

Special Instructions: SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

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

INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
FEDEX	Carl Henry	1-22-02	0940

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7955 0453

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. 10 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9	SOIL	1-18-02	0215	X	X		X	X		X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
[signature] R. Nielson	1-18-02 0420	[signature] Ref # 2B	1/18/02 0420
[signature] Ref 2B 3728	1-21-02/1026	Doug Bowers [signature]	1-21-02/1026
Doug Bowers [signature] ERC	1-21-02/1030	Fed EX	
FEDEX	1-22-02 0940	[signature]	1-22-02 0940

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9	SOIL	1-18-02	0215	X	X								

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

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson / R. Nielson	1-18-02 0120	Stored in Ref # 2B	1/18/02 0120
Ref 2B 3728	1-21-02 / 1026	Doug Bowers / Doug Bowers	1-21-02 / 1026
Doug Bowers / Doug Bowers EAC	1-21-02 / 1030	F.E.Ex	
FEDEX	1-22-02 0940	Carl Denf	1-22-02 0940

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, P... Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-37	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 96 06	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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 - 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								
B13DY8	SOIL	1-17-02	0010	X		X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Renee Nielson	1-17-02 0145	Ref #2C Stoedin	1-17-02 0145
Ref 2C 3728	1-21-02 1100	Doug Bowers	1-21-02 1100
Doug Bowers ERC	1-21-02 1100	Fed Ex	
FEDEX	1-22-02 0940	Gale Hemf	1-22-02 0940

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

SAMPLES STORED IN REF.#2C AT THE 3728 SHIPPING FACILITY ON 1/17/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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)

16

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY9						
% SOLIDS	001	S	02L%S007	01/18/02	01/25/02	01/29/02
% SOLIDS	001 REP	S	02L%S007	01/18/02	01/25/02	01/29/02
CHLORIDE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
CHLORIDE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
CHLORIDE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
FLUORIDE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
FLUORIDE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
FLUORIDE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRITE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRITE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRITE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRATE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRATE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRATE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
TOTAL CYANIDE	001	S	02LC008	01/18/02	01/24/02	01/24/02
TOTAL CYANIDE	001 REP	S	02LC008	01/18/02	01/24/02	01/24/02
TOTAL CYANIDE	001 MS	S	02LC008	01/18/02	01/24/02	01/24/02
PHOSPHATE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
PHOSPHATE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
PHOSPHATE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
CHROMIUM VI	001	S	02LVI005	01/18/02	02/08/02	02/08/02
CHROMIUM VI	001 REP	S	02LVI005	01/18/02	02/08/02	02/08/02
CHROMIUM VI	001 MS	S	02LVI005	01/18/02	02/08/02	02/08/02
CHROMIUM VI	001 MSD	S	02LVI005	01/18/02	02/08/02	02/08/02
SULFATE BY IC	001	S	02LICD13	01/18/02	02/07/02	02/07/02
SULFATE BY IC	001 REP	S	02LICD13	01/18/02	02/07/02	02/07/02
SULFATE BY IC	001 MS	S	02LICD13	01/18/02	02/07/02	02/07/02
NITRATE NITRITE	001	S	02LN3F10	01/18/02	02/11/02	02/11/02
NITRATE NITRITE	001 REP	S	02LN3F10	01/18/02	02/11/02	02/11/02
NITRATE NITRITE	001 MS	S	02LN3F10	01/18/02	02/11/02	02/11/02
AMMONIA	001	S	02LAMA01	01/18/02	01/23/02	01/23/02
AMMONIA	001 REP	S	02LAMA01	01/18/02	01/23/02	01/23/02
AMMONIA	001 MS	S	02LAMA01	01/18/02	01/23/02	01/23/02
TOTAL ORGANIC CARBON	001	S	02LTZ002	01/18/02	02/14/02	02/14/02
TOTAL ORGANIC CARBON	001 REP	S	02LTZ002	01/18/02	02/14/02	02/14/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	001 MS	S	02LTZ002	01/18/02	02/14/02	02/14/02
OIL & GREASE BY GRAV	001	S	02LOG004	01/18/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 REP	S	02LOG004	01/18/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 MS	S	02LOG004	01/18/02	01/31/02	02/01/02
PH	001	S	02LPH004	01/18/02	01/25/02	01/25/02
PH	001 REP	S	02LPH004	01/18/02	01/25/02	01/25/02
SULFIDE	001	S	02LSD003	01/18/02	01/25/02	01/25/02
SULFIDE	001 REP	S	02LSD003	01/18/02	01/25/02	01/25/02
SULFIDE	001 MS	S	02LSD003	01/18/02	01/25/02	01/25/02
TCLP	001	S	02LTO170	01/18/02	01/29/02	01/30/02
TOTAL INORGANIC CARB	001	S	02LTZA02	01/18/02	02/14/02	02/14/02
B13DY8						
% SOLIDS	002	S	02L%S007	01/17/02	01/25/02	01/29/02
CHLORIDE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
FLUORIDE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
NITRITE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
NITRATE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
PHOSPHATE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
CHROMIUM VI	002	S	02LVI005	01/17/02	02/08/02	02/08/02
SULFATE BY IC	002	S	02LICD13	01/17/02	02/07/02	02/07/02
NITRATE NITRITE	002	S	02LN3F10	01/17/02	02/11/02	02/11/02
TOTAL ORGANIC CARBON	002	S	02LTZ002	01/17/02	02/14/02	02/14/02
OIL & GREASE BY GRAV	002	S	02LOG004	01/17/02	01/31/02	02/01/02
PH	002	S	02LPH004	01/17/02	01/25/02	01/25/02
TOTAL INORGANIC CARB	002	S	02LTZA02	01/17/02	02/14/02	02/14/02

LAB QC:

CHLORIDE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
CHLORIDE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
FLUORIDE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
FLUORIDE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRITE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
NITRITE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1669

DATE RECEIVED: 01/22/02 LVL LOT # :0201L824

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	LCS L	S	02LC008	N/A	01/24/02	01/24/02
TOTAL CYANIDE	LCS L	S	02LC008	N/A	01/24/02	01/24/02
TOTAL CYANIDE	MB1	S	02LC008	N/A	01/24/02	01/24/02
PHOSPHATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
PHOSPHATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
CHROMIUM VI	MB1	S	02LVI005	N/A	02/08/02	02/08/02
CHROMIUM VI	MB1 BS	S	02LVI005	N/A	02/08/02	02/08/02
CHROMIUM VI	MB1 BSD	S	02LVI005	N/A	02/08/02	02/08/02
SULFATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
SULFATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE NITRITE	MB1	S	02LN3F10	N/A	02/11/02	02/11/02
NITRATE NITRITE	MB1 BS	S	02LN3F10	N/A	02/11/02	02/11/02
AMMONIA	MB1	S	02LAMA01	N/A	01/23/02	01/23/02
AMMONIA	MB1 BS	S	02LAMA01	N/A	01/23/02	01/23/02
AMMONIA	MB1 BSD	S	02LAMA01	N/A	01/23/02	01/23/02
TOTAL ORGANIC CARBON	MB1	W	02LTZ002	N/A	02/14/02	02/14/02
TOTAL ORGANIC CARBON	MB1 BS	W	02LTZ002	N/A	02/14/02	02/14/02
OIL & GREASE BY GRAV	MB1	S	02LOG004	N/A	01/31/02	02/01/02
OIL AND GREASE BY GR	MB1 BS	S	02LOG004	N/A	01/31/02	02/01/02
SULFIDE	MB1	S	02LSD003	N/A	01/25/02	01/25/02
SULFIDE	MB1 BS	S	02LSD003	N/A	01/25/02	01/25/02
TOTAL INORGANIC CARB	MB1	W	02LTZA02	N/A	02/14/02	02/14/02
TOTAL INORGANIC CARB	MB1 BS	W	02LTZA02	N/A	02/14/02	02/14/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B010-113 H1669
LVL#: 0201L824

W.O.#: 11343-606-001-9999-00
Date Received: 01-22-02

INORGANIC NARRATIVE

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

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

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of the cooler temperature that was recorded on the chain of custody.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit with the exception of Total Organic Carbon (TOC) that was outside the control limit and may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis TOC samples are dried prior to analysis.

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

02-20-02
Date

njp\i01-824

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 17 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/EPA 413.1	
Carbon, Total Organic and Inorganic		__ 9060	✓ Lloyd Kahn (mod)/EPA 415.1
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 (mod.)

L-WI-034/B-01/01

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
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 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY9	% Solids	91.3		%	0.01	1.0
		Chloride by IC	4.7		MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.37	u	MG/KG	1.37	1.0
		Nitrate by IC	5.68		MG/KG	1.37	1.0
		Cyanide, Total	0.40	u	MG/KG	0.40	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	5.6		MG/KG	1.4	1.0
		Nitrate Nitrite	1.4		MG/KG	0.22	1.0
		Ammonia, as N	6.2		MG/KG	5.1	1.0
		Total Organic Carbon	193		MG/KG	25.8	1.0
		Oil & Grease Gravimetri	146	u	MG/KG	146	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	21.1		MG/KG	21.1	1.0
		Total Inorganic Carbon	161		MG/KG	25.8	1.0
-002	B13DY8	% Solids	92.6		%	0.01	1.0
		Chloride by IC	3.7		MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.35	u	MG/KG	1.35	1.0
		Nitrate by IC	2.58		MG/KG	1.35	1.0
		Phosphate by IC	2.2		MG/KG	1.4	1.0
		Chromium VI	0.53		MG/KG	0.43	1.0
		Sulfate by IC	6.8		MG/KG	1.4	1.0
		Nitrate Nitrite	0.67		MG/KG	0.22	1.0
		Total Organic Carbon	334		MG/KG	24.4	1.0
		Oil & Grease Gravimetri	549		MG/KG	145	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Total Inorganic Carbon	24.4	u	MG/KG	24.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LICD13-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	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
BLANK1	02LC008-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	02LVI005-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	02LN3F10-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	02LAMA01-MB1	Ammonia, as N	2.5	u	MG/KG	2.5	1.0
BLANK10	02LTZ002-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0
BLANK10	02LSD003-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0
BLANK10	02LTZA02-MB1	Total Inorganic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY9	Chloride by IC	33.2	4.7	27.4	104.1	1.0
		Fluoride by IC	29.2	0.49	27.4	104.9	1.0
		Nitrite by IC	27.1	1.37u	27.4	98.8	1.0
		Nitrate by IC	33.2	5.68	27.4	100.6	1.0
		Cyanide, Total	4.33	0.40u	4.54	95.4	1.0
		Phosphate by IC	26.6	1.4 u	27.4	97.1	1.0
		Soluble Chromium VI	4.1	0.41u	4.4	87.3	1.0
		Insoluble Chromium VI	1410	0.41u	1230	115.0	100
		Sulfate by IC	32.4	5.6	27.4	97.9	1.0
		Nitrate Nitrite	6.9	1.4	5.4	100.6	1.0
		Ammonia, as N	208	6.2	218	92.4	1.0
		Total Organic Carbon	2180	193	1980	100.4	1.0
		Oil & Grease Gravimetr	7350	146 u	8430	87.2	1.0
		Sulfide	269	21.1	297	83.5	1.0
BLANK10	02LICD13-MB1	Chloride by IC	23.3	1.2 u	25.0	93.1	1.0
		Fluoride by IC	51.6	1.2 u	50.0	103.3	1.0
		Nitrite by IC	23.6	1.25u	25.0	94.3	1.0
		Nitrate by IC	24.4	1.25u	25.0	97.6	1.0
		Phosphate by IC	25.9	1.2 u	25.0	103.6	1.0
		Sulfate by IC	24.1	1.2 u	25.0	96.2	1.0
BLANK10	02LVI005-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.0	1.0
		Insoluble Chromium VI	1240	0.40u	1170	106.5	100
BLANK10	02LN3F10-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.6	1.0
BLANK10	02LAMA01-MB1	Ammonia, as N	104	2.5 u	100	104.5	1.0
		Ammonia, as N MSD	108	2.5 u	100	107.8	1.0
BLANK10	02LTZ002-MB1	Total Organic Carbon	409	4.7 u	400	102.2	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetr	6930	133 u	7710	90.0	1.0
BLANK10	02LSD003-MB1	Sulfide	525	40.0 u	558	94.0	1.0
BLANK10	02LTZA02-MB1	Total Inorganic Carbon	409	4.7 u	400	102.2	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	02LAMA01-MB1	Ammonia, as N	104.5	107.8	3.1

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY9	% Solids	91.3	91.2	0.11	1.0
		Chloride by IC	4.7	4.0	16.8	1.0
		Fluoride by IC	1.4 u	1.4 u	NC	1.0
		Nitrite by IC	1.37u	1.37u	NC	1.0
		Nitrate by IC	5.68	4.98	13.1	1.0
		Cyanide, Total	0.40u	0.45u	NC	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Chromium VI	0.44u	0.44u	NC	1.0
		Sulfate by IC	5.6	4.8	15.8	1.0
		Nitrate Nitrite	1.4	1.5	8.2	1.0
		Ammonia, as N	6.2	7.0	11.1	1.0
		Total Organic Carbon	193	256	27.9	1.0
		Oil & Grease Gravimetri	146 u	262	NC	1.0
		pH	9.0	9.1	0.2	1.0
		Sulfide	21.1	21.5 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1669 LVL LOT #: 0201L824

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	02LC008-LCS1	Cyanide, Total LCS	1.78	2.0	MG/KG	89.2
LCSS2	02LC008-LCS2	Cyanide, Total LCS	9.78	10.0	MG/KG	97.8

Lionville Laboratory Use Only

02011924

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI 13

Client: TNU-Hanford B01-113

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 1-22-02 Date Due: 2-21-02

		A	B			C	D	E	F		G	H	I	J		
Refrigerator #	CMA-22-02	1	3			1	3	3	3		3	3	3	3		
#/Type Container	Liquid	~~1AG~~														
	Solid	1AG	1AG			1AG	1AG	1AG	1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250			250	60	120	500		500	500	60	120		
Preservatives		—	—			—	—	—	—		—	—	—	—		
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	TIC TOC	Oil Grease	Chrom Hex	INORG: TAL Metal	CN	TCLP MET.	T.C. Anions	Ammonia	Sulfides Cyanide		LEACHATE
Lionville Laboratory Use Only		0624X	0625X			ZTIC ZOLT	ZOGGR	ZCR6	METO		ZTCLP	INORGO	INH3N	ISFD ICNZO		MRCREATEW

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X			ZTIC ZOLT	ZOGGR	ZCR6	METO		ZTCLP	INORGO	INH3N	ISFD ICNZO		MRCREATEW
001	B13D49			S	1-18-02	0215	X	X			X	X	X	X		X	X	X	X		
002	B13D48			S	1-17-02	0010	X	X			X	X	X	X			X				
003	B13D49 tclp of 001			L	*																✓

* See labchron

Special Instructions: SAF # B01-113
Run Matrix QC

DATE/REVISIONS:
METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P
INORGO 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FEDEX	Carl Henry	1-22-02	0940

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 0453

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. 10 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9 / SOIL / 1-18-02 / 0215	X	X		X	X		X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1-18-02 0420	Stored in Ref #2B	1/18/02 0420
Ref 2B, 3728	1-21-02/1026	Doug Bowers	1-21-02/1026
Doug Bowers ERC	1-21-02/1030	Fed EX	
FEDEX	1-22-02 0940	Carl Hanf	1-22-02 0940

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

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-38	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.: ERC 96 064	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A028094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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										
B13DY9	SOIL	1-18-02	0215	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: Renee Nielson / R. Nielson	1-18-02 0420	Received By: Stored in Ref #2B	1/18/02 0420
Relinquished By: Ref 2B 3728	1-21-02 / 1026	Received By: Doug Bowers / Doug Bowers	1-21-02 / 1026
Relinquished By: Doug Bowers / Doug Bowers EAC	1-21-02 / 1030	Received By: FedEx	
Relinquished By: FEDEX	1-22-02 0940	Received By: Carl Denf	1-22-02 0940
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) 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, P[illegible] Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/18/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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	B01-113-37	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.: ERC 96 064	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020094	Bill of Lading/Air Bill No.: 4235 7955 0453	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

Preservation	Cool 4C	None	Cool 4C	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	aG	
No. of Container(s)	1	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								
B13DY8	SOIL	1-17-02	0010	X		X	X	X	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: Renee Nielson/R. Nielson	1-17-02 0445	Received By: REF #2C Stoedin	1-17-02 0445
Relinquished By: REF 2C 3728	1-21-02 1100	Received By: Doug Bowers	1-21-02 1100
Relinquished By: Doug Bowers EAC	1-21-02 1100	Received By: Fed Ex	
Relinquished By: FEDEX	1-22-02 0940	Received By: Carl Denny	1-22-02 0940
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 1/15/01
(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

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/17/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/21/02 FOR SHIPMENT.

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: 1-22-02 0940

SDG#: 0201L824

Work Order Number: _____ SAF# B01-113

Shipping Container ID: ERC96-064 Chain of Custody # B01-113-38

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 1°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 29
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Carla Henry Date: 1-22-02

Telephoned to: _____ On _____ By _____