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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1413 was composed of three solid (soil) samples designated under SAF No. B01-058 with a Project Designation of: 200-TW-1 & 2 – Soil Sampling.

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

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

The H3 activity in sample B125X6 (11,752 dpm per aliquot [20 grams]) was approximately five-times greater than the matrix spike (2,244 dpm per aliquot) activity added to the sample. Thus, the matrix spike recovery (72%) is indeterminate. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 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 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.8 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.9 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.10 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.11 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.12 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

8/20/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

SDG 7031
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1413

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B125X5	T-26/200 W	SOLID		R107027-01	B01-058	B01-058-5	07/02/01 03:30
B125X6	T-26/200 W	SOLID		R107027-02	B01-058	B01-058-5	07/02/01 03:30
B125Y9	T-26/200 W	SOLID		R107027-03	B01-058	B01-058-19	07/02/01 23:45
Method Blank		SOLID		R107027-06	B01-058		
Lab Control Sample		SOLID		R107027-05	B01-058		
Duplicate (R107027-02)	T-26/200 W	SOLID		R107027-07	B01-058		07/02/01 03:30
Spike (R107027-02)	T-26/200 W	SOLID		R107027-08	B01-058		07/02/01 03:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

QC SUMMARY

SDG 7031
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1413

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
7031	B01-058-19	B125Y9	SOLID	85.6	912.1 g		07/06/01	4	R107027-03	7031-003
	B01-058-5	B125X5	SOLID	94.7	692.8 g		07/06/01	4	R107027-01	7031-001
		B125X6	SOLID	94.0	717.4 g		07/06/01	4	R107027-02	7031-002
		Method Blank	SOLID						R107027-06	7031-006
		Lab Control Sample	SOLID						R107027-05	7031-005
		Duplicate (R107027-02)	SOLID	94.0	717.4 g		07/06/01	4	R107027-07	7031-007
		Spike (R107027-02)	SOLID	94.0	717.4 g		07/06/01	4	R107027-08	7031-008

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

PREP BATCH SUMMARY

SDG 7031
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H1413

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6994-099	5.0	3			1	1	1/1		
NP	SOLID	Neptunium in Soil	6994-099	5.0	3			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-099	5.0	3			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6994-099	5.0	3			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6994-099	5.0	3			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-099	10.0	3			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6994-099	10.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-099	15.0	3			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6994-099	9.0	3			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6994-099	10.0	3			1	1	1/1		
H	SOLID	Tritium in Soil	6994-099	10.0	3			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6994-099	10.0	3			1	1	1/1		

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

SDG 7031
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1413

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B125X5			R107027-01	7031-001	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/02/01	7031-001	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
B01-058-5	B01-058		07/06/01	7031-001	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-001	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-001	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-001	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-001	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-001	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-001	TC		07/31/01	08/16/01	MCM	Technetium 99 in Soil
				7031-001	TH		07/26/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-001	U		07/19/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-001	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil
B125X6			R107027-02	7031-002	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/02/01	7031-002	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
B01-058-5	B01-058		07/06/01	7031-002	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-002	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-002	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-002	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-002	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-002	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-002	TC		08/01/01	08/16/01	MCM	Technetium 99 in Soil
				7031-002	TH		07/24/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-002	U		07/18/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-002	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil
B125Y9			R107027-03	7031-003	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/02/01	7031-003	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
B01-058-19	B01-058		07/06/01	7031-003	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-003	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-003	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-003	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-003	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-003	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-003	TC		08/02/01	08/16/01	MCM	Technetium 99 in Soil
				7031-003	TH		07/24/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-003	U		07/18/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-003	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil

Lab id TMANC
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Version 3.06
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SDG 7031
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1413

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			R107027-06	7031-006	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
		SOLID		7031-006	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
	B01-058			7031-006	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-006	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-006	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-006	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-006	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-006	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-006	TC		08/01/01	08/16/01	MCM	Technetium 99 in Soil
				7031-006	TH		07/26/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-006	U		07/18/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-006	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil
Lab Control Sample			R107027-05	7031-005	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
		SOLID		7031-005	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
	B01-058			7031-005	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-005	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-005	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-005	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-005	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-005	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-005	TC		07/31/01	08/16/01	MCM	Technetium 99 in Soil
				7031-005	TH		07/26/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-005	U		07/18/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-005	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil
Duplicate (R107027-02)			R107027-07	7031-007	AM		07/26/01	08/16/01	MCM	Americium 241 in Soil
T-26/200 W		SOLID	07/02/01	7031-007	C		08/10/01	08/16/01	MCM	Carbon 14 in Soil
	B01-058		07/06/01	7031-007	GAM		07/20/01	08/16/01	MCM	Gamma Scan
				7031-007	H		08/06/01	08/16/01	MCM	Tritium in Soil
				7031-007	NI_L		07/19/01	08/16/01	MCM	Nickel 63 in Soil
				7031-007	NP		07/19/01	08/16/01	MCM	Neptunium in Soil
				7031-007	PU		07/24/01	08/16/01	MCM	Plutonium, Isotopic in Solids
				7031-007	SR		07/19/01	08/16/01	MCM	Total Strontium in Soil
				7031-007	TC		08/01/01	08/16/01	MCM	Technetium 99 in Soil
				7031-007	TH		07/27/01	08/16/01	MCM	Thorium, Isotopic in Soil
				7031-007	U		07/18/01	08/16/01	MCM	Uranium, Isotopic in Soil
				7031-007	U_T		08/08/01	08/16/01	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/20/01

SDG 7031
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1413

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Spike (R107027-02)			R107027-08	7031-008	H		08/06/01	08/16/01	MCM	Tritium in Soil
T-26/200 W		SOLID	07/02/01							
	B01-058		07/06/01							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-058	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	3			1	1	1		6
C	B01-058	Carbon 14 in Soil	C14_COX_LSC	3			1	1	1		6
GAM	B01-058	Gamma Scan	GAMMA_GS	3			1	1	1		6
H	B01-058	Tritium in Soil	906.0_H3_LSC	3			1	1	1	1	7
NI_L	B01-058	Nickel 63 in Soil	NI63_LSC	3			1	1	1		6
NP	B01-058	Neptunium in Soil	NP237_LLE_PLATE_AEA	3			1	1	1		6
PU	B01-058	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	3			1	1	1		6
SR	B01-058	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	3			1	1	1		6
TC	B01-058	Technetium 99 in Soil	TC99_TR_SEP_LSC	3			1	1	1		6
TH	B01-058	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	3			1	1	1		6
U	B01-058	Uranium, Isotopic in Soil	UISO_PLATE_AEA	3			1	1	1		6
U_T	B01-058	Uranium, Total in Soil	UTOT_KPA	3			1	1	1		6
TOTALS				36			12	12	12	1	73

Lab id TMANC
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-06 **Method Blank**

METHOD BLANK

SDG 7031 Client/Case no Hanford SDG H1413
Contact Melissa C. Mannion Contract No. 630

Lab sample id R107027-06 Client sample id Method Blank
Dept sample id 7031-006 Material/Matrix SOLID
SAF No B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.300	0.17	0.31	400	U	H
Carbon 14	14762-75-5	0.065	3.0	5.0	50	U	C
Nickel 63	13981-37-8	-0.156	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.087	0.18	0.24	1.0	U	SR
Americium 241	14596-10-2	-0.062	0.12	0.30	1.0	U	AM
Technetium 99	14133-76-7	-0.063	0.18	0.57	15	U	TC
Thorium 228	14274-82-9	-0.018	0.036	0.091		U	TH
Thorium 230	14269-63-7	0.142	0.15	0.29	1.0	U	TH
Thorium 232	TH-232	0.012	0.035	0.045	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.002	0.10	U	U_T
Uranium 233	U-233/234	0	0.048	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.059	0.22	1.0	U	U
Uranium 238	U-238	0	0.048	0.18	1.0	U	U
Neptunium 237	13994-20-2	0	0.10	0.15	1.0	U	NP
Plutonium 238	13981-16-3	-0.041	0.082	0.31	1.0	U	PU
Plutonium 239/240	PU-239/240	0.082	0.082	0.31	1.0	U	PU
Potassium 40	13966-00-2	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	U		0.080	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.066	0.10	U	GAM
Thorium 228	14274-82-9	U		0.049		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		4.8		U	GAM
Americium 241	14596-10-2	U		0.035		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 08/20/01

R107027-06 Method Blank

B L A N K , c o n t .

SDG	7031	Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107027-06	Client sample id	Method Blank
Dept sample id	7031-006	Material/Matrix	SOLID
		SAF No	B01-058

QC-BLANK 39189

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

SAMPLE DELIVERY GROUP H1413

R107027-05 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7031 Client/Case no Hanford SDG H1413
Contact Melissa C. Mannion Case no No. 630

Lab sample id R107027-05 Client sample id Lab Control Sample
Dept sample id 7031-005 Material/Matrix SOLID
SAF No B01-058

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	23.5	0.54	0.31	400	J	H	24.0	0.96	98	84-116	80-120
Carbon 14	10400	210	31	50		C	11300	450	92	85-115	80-120
Nickel 63	222	4.7	2.4	30		NI_L	232	9.3	96	84-116	80-120
Total Strontium	23.3	0.58	0.21	1.0		SR	22.0	0.88	106	83-117	80-120
Americium 241	19.2	1.9	0.18	1.0		AM	19.1	0.76	100	82-118	80-120
Technetium 99	117	2.2	0.52	15		TC	118	4.7	99	84-116	80-120
Thorium 230	42.2	2.6	0.36	1.0		TH	40.8	1.6	103	86-114	80-120
Total Uranium (ug/g)	13.7	1.6	0.022	0.10		U_T	14.4	0.58	95	78-122	80-120
Uranium 233	19.8	2.3	1.1	1.0		U	18.6	0.74	106	79-121	80-120
Uranium 235	14.8	1.9	0.29	1.0		U	15.1	0.60	98	79-121	80-120
Uranium 238	20.7	2.3	1.0	1.0		U	20.2	0.81	102	80-120	80-120
Neptunium 237	20.1	2.2	0.18	1.0		NP	21.2	0.85	95	82-118	80-120
Plutonium 238	23.7	2.6	0.25	1.0		PU	24.8	0.99	96	82-118	80-120
Plutonium 239/240	26.0	2.8	0.25	1.0		PU	26.4	1.1	98	81-119	80-120
Cobalt 60	1.30	0.066	0.027	0.050		GAM	1.31	0.052	99	76-124	80-120
Cesium 137	1.31	0.058	0.038	0.10		GAM	1.36	0.054	96	77-123	80-120

200-TW-1 & 2 - Soil Sampling

QC-LCS 39188

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-07

B125X6

DUPLICATE

SDG 7031
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1413
Case no No. 630

DUPLICATE	ORIGINAL	
Lab sample id R107027-07	Lab sample id R107027-02	Client sample id B125X6
Dept sample id 7031-007	Dept sample id 7031-002	Location/Matrix T-26/200 W SOLID
	Received 07/06/01	Collected/Weight 07/02/01 03:30 717.4 g
% solids 94.0	% solids 94.0	Custody/SAF No B01-058-5 B01-058

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	261	2.6	0.29	400	J	H	260	2.6	0.29	J	0	21
Carbon 14	-0.296	3.0	5.1	50	U	C	-1.97	3.3	5.7	U	-	
Nickel 63	0.726	1.4	2.3	30	U	NI_L	0.299	1.3	2.2	U	-	
Total Strontium	-0.055	0.13	0.18	1.0	U	SR	-0.018	0.12	0.16	U	-	
Americium 241	-0.025	0.050	0.19	1.0	U	AM	0.028	0.11	0.21	U	-	
Technetium 99	1.82	0.28	0.54	15	J	TC	1.61	0.28	0.60	J	12	41
Thorium 228	0.903	0.19	0.18			TH	1.05	0.53	0.54		15	87
Thorium 230	0.544	0.20	0.30	1.0	J	TH	0.741	0.44	0.42	J	31	113
Thorium 232	0.899	0.16	0.055	1.0	J	TH	1.26	0.44	0.33		33	66
Total Uranium (ug/g)	3.75	0.44	0.022	0.10		U_T	3.73	0.44	0.022		1	31
Uranium 233	1.04	0.33	0.18	1.0		U	1.00	0.36	0.22		4	73
Uranium 235	0	0.056	0.21	1.0	U	U	0.178	0.14	0.27	U	-	
Uranium 238	0.782	0.28	0.18	1.0	J	U	0.823	0.30	0.22	J	5	77
Neptunium 237	-0.033	0.066	0.25	1.0	U	NP	0	0.087	0.33	U	-	
Plutonium 238	-0.026	0.053	0.20	1.0	U	PU	-0.032	0.064	0.25	U	-	
Plutonium 239/240	0.026	0.053	0.20	1.0	U	PU	0.032	0.064	0.25	U	-	
Potassium 40	10.4	0.96	0.60			GAM	9.65	1.1	0.73		7	39
Cobalt 60	U		0.057	0.050	U	GAM	U		0.054	U	-	
Cesium 137	U		0.048	0.10	U	GAM	U		0.049	U	-	
Radium 226	0.302	0.097	0.11	0.10		GAM	0.435	0.10	0.10		36	65
Radium 228	0.511	0.20	0.24	0.20		GAM	0.573	0.18	0.20		11	81
Europium 152	U		0.12	0.10	U	GAM	U		0.12	U	-	
Europium 154	U		0.15	0.10	U	GAM	U		0.17	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.11	U	-	
Thorium 228	0.503	0.050	0.053			GAM	0.502	0.055	0.060		0	39
Thorium 232	0.511	0.20	0.24			GAM	0.573	0.18	0.20		11	81
Uranium 235	U		0.21		U	GAM	U		0.17	U	-	
Uranium 238	U		6.0		U	GAM	U		6.1	U	-	

200-TW-1 & 2 - Soil Sampling

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/20/01

DUPLICATE, cont.

SDG	7031			Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R107027-07	Lab sample id	R107027-02	Client sample id	B125X6
Dept sample id	7031-007	Dept sample id	7031-002	Location/Matrix	T-26/200 W SOLID
		Received	07/06/01	Collected/Weight	07/02/01 03:30 717.4 g
% solids	94.0	% solids	94.0	Custody/SAF No	B01-058-5 B01-058

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
Americium 241	U		0.12		U	GAM	U		0.12	U	-	

200-TW-1 & 2 - Soil Sampling

QC-DUP#2 39190

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-08 B125X6

MATRIX SPIKE

SDG	7031			Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R107027-08	Lab sample id	R107027-02	Client sample id	B125X6
Dept sample id	7031-008	Dept sample id	7031-002	Location/Matrix	T-26/200 W SOLID
		Received	07/06/01	Collected/Weight	07/02/01 03:30 717.4 g
% solids	94.0	% solids	94.0	Custody/SAF No	B01-058-5 B01-058

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	296	3.0	0.31	400	JX	H	49.8	2.0	260	2.6	72 -19-219	60-140

200-TW-1 & 2 - Soil Sampling

QC-MS#2 39191

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	08/20/01

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-01 **B125X5**

DATA SHEET

SDG	7031	Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107027-01	Client sample id	B125X5
Dept sample id	7031-001	Location/Matrix	T-26/200 W SOLID
Received	07/06/01	Collected/Weight	07/02/01 03:30 692.8 g
% solids	94.7	Custody/SAF No	B01-058-5 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	352	3.5	0.34	400	J	H
Carbon 14	14762-75-5	-0.361	3.0	5.1	50	U	C
Nickel 63	13981-37-8	1.06	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.035	0.13	0.18	1.0	U	SR
Americium 241	14596-10-2	0	0.11	0.20	1.0	U	AM
Technetium 99	14133-76-7	1.68	0.27	0.53	15	J	TC
Thorium 228	14274-82-9	0.753	0.28	0.17			TH
Thorium 230	14269-63-7	0.500	0.32	0.39	1.0	J	TH
Thorium 232	TH-232	0.705	0.27	0.17	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	3.41	0.40	0.022	0.10		U_T
Uranium 233	U-233/234	1.09	0.34	0.18	1.0		U
Uranium 235	15117-96-1	0.058	0.058	0.22	1.0	U	U
Uranium 238	U-238	1.43	0.39	0.18	1.0		U
Neptunium 237	13994-20-2	0.042	0.083	0.12	1.0	U	NP
Plutonium 238	13981-16-3	-0.031	0.12	0.30	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.031	0.062	0.24	1.0	U	PU
Potassium 40	13966-00-2	12.6	1.1	0.54			GAM
Cobalt 60	10198-40-0	U		0.068	0.050	U	GAM
Cesium 137	10045-97-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	0.422	0.12	0.13	0.10		GAM
Radium 228	15262-20-1	0.662	0.30	0.32	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.095	0.10	U	GAM
Thorium 228	14274-82-9	0.624	0.063	0.061			GAM
Thorium 232	TH-232	0.662	0.30	0.32			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		7.5		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

D A T A S H E E T , c o n t

SDG	7031	Client/Case no	Hanford	SDG H1413	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107027-01	Client sample id	B125X5		
Dept sample id	7031-001	Location/Matrix	T-26/200 W	SOLID	
Received	07/06/01	Collected/Weight	07/02/01 03:30	692.8 g	
% solids	94.7	Custody/SAF No	B01-058-5	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.055		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-02 **B125X6**

DATA SHEET

SDG	7031	Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107027-02	Client sample id	B125X6
Dept sample id	7031-002	Location/Matrix	T-26/200 W SOLID
Received	07/06/01	Collected/Weight	07/02/01 03:30 717.4 g
% solids	94.0	Custody/SAF No	B01-058-5 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	260	2.6	0.29	400	J	H
Carbon 14	14762-75-5	-1.97	3.3	5.7	50	U	C
Nickel 63	13981-37-8	0.299	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.018	0.12	0.16	1.0	U	SR
Americium 241	14596-10-2	0.028	0.11	0.21	1.0	U	AM
Technetium 99	14133-76-7	1.61	0.28	0.60	15	J	TC
Thorium 228	14274-82-9	1.05	0.53	0.54			TH
Thorium 230	14269-63-7	0.741	0.44	0.42	1.0	J	TH
Thorium 232	TH-232	1.26	0.44	0.33	1.0		TH
Total Uranium (ug/g)	7440-61-1	3.73	0.44	0.022	0.10		U_T
Uranium 233	U-233/234	1.00	0.36	0.22	1.0		U
Uranium 235	15117-96-1	0.178	0.14	0.27	1.0	U	U
Uranium 238	U-238	0.823	0.30	0.22	1.0	J	U
Neptunium 237	13994-20-2	0	0.087	0.33	1.0	U	NP
Plutonium 238	13981-16-3	-0.032	0.064	0.25	1.0	U	PU
Plutonium 239/240	PU-239/240	0.032	0.064	0.25	1.0	U	PU
Potassium 40	13966-00-2	9.65	1.1	0.73			GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	0.435	0.10	0.10	0.10		GAM
Radium 228	15262-20-1	0.573	0.18	0.20	0.20		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.502	0.055	0.060			GAM
Thorium 232	TH-232	0.573	0.18	0.20			GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		6.1		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

DATA SHEET, cont

SDG	7031	Client/Case no	Hanford	SDG H1413	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107027-02	Client sample id	B125X6		
Dept sample id	7031-002	Location/Matrix	T-26/200 W	SOLID	
Received	07/06/01	Collected/Weight	07/02/01 03:30	717.4 g	
% solids	94.0	Custody/SAF No	B01-058-5	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.12		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1413

R107027-03 **B125Y9**

DATA SHEET

SDG	7031	Client/Case no	Hanford SDG H1413
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R107027-03	Client sample id	B125Y9
Dept sample id	7031-003	Location/Matrix	T-26/200 W SOLID
Received	07/06/01	Collected/Weight	07/02/01 23:45 912.1 g
% solids	85.6	Custody/SAF No	B01-058-19 B01-058

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2650	26	1.1	400		H
Carbon 14	14762-75-5	2.86	3.0	4.9	50	U	C
Nickel 63	13981-37-8	0.151	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	-0.028	0.12	0.17	1.0	U	SR
Americium 241	14596-10-2	0.098	0.13	0.25	1.0	U	AM
Technetium 99	14133-76-7	4.87	0.39	0.44	15	J	TC
Thorium 228	14274-82-9	1.07	0.48	0.49			TH
Thorium 230	14269-63-7	0.592	0.40	0.30	1.0	J	TH
Thorium 232	TH-232	0.869	0.40	0.30	1.0	J	TH
Total Uranium (ug/g)	7440-61-1	9.47	1.1	0.022	0.10		U_T
Uranium 233	U-233/234	3.27	0.85	0.34	1.0		U
Uranium 235	15117-96-1	0.161	0.21	0.41	1.0	U	U
Uranium 238	U-238	2.65	0.75	0.34	1.0		U
Neptunium 237	13994-20-2	0	0.087	0.13	1.0	U	NP
Plutonium 238	13981-16-3	-0.064	0.13	0.36	1.0	U	PU
Plutonium 239/240	PU-239/240	0.032	0.064	0.25	1.0	U	PU
Potassium 40	13966-00-2	18.2	0.72	0.30			GAM
Cobalt 60	10198-40-0	0.074	0.041	0.043	0.050		GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	0.887	0.071	0.064	0.10		GAM
Radium 228	15262-20-1	1.48	0.15	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.079	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	1.24	0.044	0.039			GAM
Thorium 232	TH-232	1.48	0.15	0.14			GAM
Uranium 235	15117-96-1	0.224	0.13	0.18			GAM
Uranium 238	U-238	6.84	3.4	4.1			GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

DATA SHEET, cont

SDG	7031	Client/Case no	Hanford		SDG H1413
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R107027-03	Client sample id	B125Y9		
Dept sample id	7031-003	Location/Matrix	T-26/200 W		SOLID
Received	07/06/01	Collected/Weight	07/02/01 23:45	912.1 g	
% solids	85.6	Custody/SAF No	B01-058-19	B01-058	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	U		0.25		U	GAM

200-TW-1 & 2 - Soil Sampling

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test AM Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	U	
B125X6	R107027-02			7031-002	U	
B125Y9	R107027-03			7031-003	U	
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	
Duplicate (R107027-02)	R107027-07			7031-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 099												
B125X5	R107027-01			0.20	0.500			87		103			24	07/26/01	07/26	SS-028
B125X6	R107027-02			0.21	0.500			82		103			24	07/26/01	07/26	SS-029
B125Y9	R107027-03			0.25	0.500			71		103			24	07/26/01	07/26	SS-027
BLK (QC ID=39189)	R107027-06			0.30	0.500			73		103				07/26/01	07/26	SS-033
LCS (QC ID=39188)	R107027-05			0.18	0.500			93		103				07/26/01	07/26	SS-032
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.19	0.500			91		103			24	07/26/01	07/26	SS-034
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES			
	MDA	0.22	± 0.091
	YIELD	83	± 18

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test NP Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 6994-099					
B125X5	R107027-01			7031-001	U
B125X6	R107027-02			7031-002	U
B125Y9	R107027-03			7031-003	U
BLK (QC ID=39189)	R107027-06			7031-006	U
LCS (QC ID=39188)	R107027-05			7031-005	ok
Duplicate (R107027-02)	R107027-07			7031-007	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
200-TW-1 & 2 - Soil Sampling					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 099												
B125X5	R107027-01			0.12	0.500			59	101				17	07/18/01	07/19	SS-027
B125X6	R107027-02			0.33	0.500			53	101				17	07/18/01	07/19	SS-028
B125Y9	R107027-03			0.13	0.500			55	101				17	07/18/01	07/19	SS-029
BLK (QC ID=39189)	R107027-06			0.15	0.500			43	101					07/18/01	07/19	SS-032
LCS (QC ID=39188)	R107027-05			0.18	0.500			38	101					07/18/01	07/19	SS-031
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.25	0.500			68	101				17	07/18/01	07/19	SS-033
Nominal values and limits from method				1.0	0.500			20-105	100				180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES				
	MDA	0.19	±	0.16
	YIELD	53	±	22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test PU Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-099								
B125X5	R107027-01			7031-001	U		U	
B125X6	R107027-02			7031-002	U		U	
B125Y9	R107027-03			7031-003	U		U	
BLK (QC ID=39189)	R107027-06			7031-006	U		U	
LCS (QC ID=39188)	R107027-05			7031-005	ok		ok	
Duplicate (R107027-02)	R107027-07			7031-007	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200-TW-1 & 2 - Soil Sampling								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 5.0 %			Reference Lab Notebook 6994 pg. 099												
B125X5	R107027-01			0.30	0.500			74		101			22	07/24/01	07/24	SS-033
B125X6	R107027-02			0.25	0.500			72		101			22	07/24/01	07/24	SS-034
B125Y9	R107027-03			0.36	0.500			71		101			22	07/24/01	07/24	SS-041
BLK (QC ID=39189)	R107027-06			0.31	0.500			59		100				07/24/01	07/24	SS-027
LCS (QC ID=39188)	R107027-05			0.25	0.500			71		101				07/24/01	07/24	SS-042
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.20	0.500			89		100			22	07/24/01	07/24	SS-028
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.28 ± 0.11
YIELD 73 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test TH Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6994-099							
B125X5	R107027-01			7031-001	0.753	0.500 J	0.705 J
B125X6	R107027-02			7031-002	1.05	0.741 J	1.26
B125Y9	R107027-03			7031-003	1.07	0.592 J	0.869 J
BLK (QC ID=39189)	R107027-06			7031-006	U	U	U
LCS (QC ID=39188)	R107027-05			7031-005		ok	
Duplicate (R107027-02)	R107027-07			7031-007	ok	ok J	ok J
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (pCi/g)		1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.39	0.250			90		226			24	07/24/01	07/26	SS-043
B125X6	R107027-02			0.42	0.250			96		162			22	07/24/01	07/24	SS-022
B125Y9	R107027-03			0.30	0.250			101		162			22	07/24/01	07/24	SS-024
BLK (QC ID=39189)	R107027-06			0.29	0.250			86		890				07/24/01	07/26	SS-044
LCS (QC ID=39188)	R107027-05			0.36	0.250			94		226				07/24/01	07/26	SS-044
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.30	0.250			96		935			25	07/24/01	07/27	SS-024
Nominal values and limits from method				1.0	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-905	Thorium in Water and Dissolved Solid Sample Using TRU and AG 1x8 Resin, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.34 ± 0.11
YIELD 94 ± 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test U Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6994-099											
B125X5	R107027-01			7031-001	1.09	U	1.43	76	32	4	4
B125X6	R107027-02			7031-002	1.00	U	0.823 J	122	62	22	19
B125Y9	R107027-03			7031-003	3.27	U	2.65	123	47	6	8
BLK (QC ID=39189)	R107027-06			7031-006	U	U	U				
LCS (QC ID=39188)	R107027-05			7031-005	ok	ok	ok				
Duplicate (R107027-02)	R107027-07			7031-007	ok	- U	ok J	133	64	0	7
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-TW-1 & 2 - Soil Sampling							Averages	114		8	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 5.0 %	Reference Lab Notebook 6994 pg. 099														
B125X5	R107027-01			0.22	0.500			79		124			17	07/18/01	07/19	SS-028
B125X6	R107027-02			0.27	0.500			98		107			16	07/18/01	07/18	SS-019
B125Y9	R107027-03			0.41	0.500			68		110			16	07/18/01	07/18	SS-022
BLK (QC ID=39189)	R107027-06			0.22	0.500			93		100				07/18/01	07/18	SS-034
LCS (QC ID=39188)	R107027-05			1.1	0.500			92		110				07/18/01	07/18	SS-024
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.21	0.500			101		100			16	07/18/01	07/18	SS-042
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 6 SAMPLES
MDA 0.40 ± 0.70
YIELD 88 ± 25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test SR Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	U	
B125X6	R107027-02			7031-002	U	
B125Y9	R107027-03			7031-003	U	
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	
Duplicate (R107027-02)	R107027-07			7031-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.18	1.00			97		400			17	07/19/01	07/19	GRB-217
B125X6	R107027-02			0.16	1.00			98		400			17	07/19/01	07/19	GRB-218
B125Y9	R107027-03			0.17	1.00			94		400			17	07/19/01	07/19	GRB-224
BLK (QC ID=39189)	R107027-06			0.24	1.00			74		400				07/19/01	07/19	GRB-229
LCS (QC ID=39188)	R107027-05			0.21	1.00			80		400				07/19/01	07/19	GRB-223
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.18	1.00			94		400			17	07/19/01	07/19	GRB-230
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.19 ± 0.059
YIELD 90 ± 20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test IC Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Technetium 99	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	1.68	J
B125X6	R107027-02			7031-002	1.61	J
B125Y9	R107027-03			7031-003	4.87	J
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	
Duplicate (R107027-02)	R107027-07			7031-007	ok	J
Nominal values and limits from method				RDLs (pCi/g)	15	
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.53	1.02			92		50			29	07/26/01	07/31	GRB-222
B125X6	R107027-02			0.60	1.02			85		50			30	07/26/01	08/01	GRB-217
B125Y9	R107027-03			0.44	1.00			85		100			31	07/26/01	08/02	GRB-232
BLK (QC ID=39189)	R107027-06			0.57	1.00			91		50				07/26/01	08/01	GRB-219
LCS (QC ID=39188)	R107027-05			0.52	1.00			99		50				07/26/01	07/31	GRB-224
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.54	1.02			92		50			30	07/26/01	08/01	GRB-220
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test TC Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

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	MDA 0.53 ± 0.11
FOR 6 SAMPLES	YIELD 91 ± 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test GAM Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	U	U
B125X6	R107027-02			7031-002	U	U
B125Y9	R107027-03			7031-003	0.074	U
BLK (QC ID=39189)	R107027-06			7031-006	U	U
LCS (QC ID=39188)	R107027-05			7031-005	ok	ok
Duplicate (R107027-02)	R107027-07			7031-007	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.17	178					415			18	07/18/01	07/20	JR,01,00
B125X6	R107027-02			0.13	201					413			18	07/18/01	07/20	JR,03,00
B125Y9	R107027-03			0.093	663					212			18	07/18/01	07/20	MB,05,00
BLK (QC ID=39189)	R107027-06			0.087	178					411				07/18/01	07/20	JR,07,00
LCS (QC ID=39188)	R107027-05			0.027	178					412				07/18/01	07/20	JR,04,00
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.13	201					413			18	07/18/01	07/20	JR,03,00
Nominal values and limits from method				0.050	178					100			180			

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

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.11 ± 0.098
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test U T Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/g)
Preparation batch 6994-099					
B125X5	R107027-01			7031-001	3.41
B125X6	R107027-02			7031-002	3.73
B125Y9	R107027-03			7031-003	9.47
BLK (QC ID=39189)	R107027-06			7031-006	U
LCS (QC ID=39188)	R107027-05			7031-005	ok
Duplicate (R107027-02)	R107027-07			7031-007	ok
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling				RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 9.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.022	0.100								37	08/07/01	08/08	KPA-001
B125X6	R107027-02			0.022	0.100								37	08/07/01	08/08	KPA-001
B125Y9	R107027-03			0.022	0.100								37	08/07/01	08/08	KPA-001
BLK (QC ID=39189)	R107027-06			0.002	0.100									08/07/01	08/08	KPA-001
LCS (QC ID=39188)	R107027-05			0.022	0.100									08/07/01	08/08	KPA-001
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.022	0.100								37	08/07/01	08/08	KPA-001
Nominal values and limits from method				0.10	0.100								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 3
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.019 ± 0.016
YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test C Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	U	
B125X6	R107027-02			7031-002	U	
B125Y9	R107027-03			7031-003	U	
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	
Duplicate (R107027-02)	R107027-07			7031-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	50	
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 10.0 %	Reference Lab Notebook 6994 pg. 099														
B125X5	R107027-01			5.1	0.200			100		100			39	08/09/01	08/10	LSC-004
B125X6	R107027-02			5.7	0.200			100		100			39	08/09/01	08/10	LSC-004
B125Y9	R107027-03			4.9	0.199			100		100			39	08/09/01	08/10	LSC-004
BLK (QC ID=39189)	R107027-06			5.0	0.200			100		100				08/09/01	08/10	LSC-004
LCS (QC ID=39188)	R107027-05			31	0.200			100		3				08/09/01	08/10	LSC-004
Duplicate (R107027-02) (QC ID=39190)	R107027-07			5.1	0.200			100		100			39	08/09/01	08/10	LSC-004
Nominal values and limits from method				50	0.200					50			180			

PROCEDURES
REFERENCE C14_COX_LSC
CP-060 Soil Preparation, rev 3
CP-251 Tritium/Carbon-14 Oxidation, rev 3

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 9.5 ± 21
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test H Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	352	J
B125X6	R107027-02			7031-002	260	J
B125Y9	R107027-03			7031-003	2650	
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	J
Duplicate (R107027-02)	R107027-07			7031-007	ok	J
Spike (R107027-02)	R107027-08			7031-008	ok	JX
Nominal values and limits from method 200-TW-1 & 2 - Soil Sampling					RDLs (pCi/g) 400	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 099																
B125X5	R107027-01			0.34	20.4			98		12			35	08/06/01	08/06	LSC-004
B125X6	R107027-02			0.29	20.4			97		17			35	08/06/01	08/06	LSC-004
B125Y9	R107027-03			1.1	20.9			82		1			35	08/06/01	08/06	LSC-004
BLK (QC ID=39189)	R107027-06			0.31	20.0			33		120				08/06/01	08/06	LSC-004
LCS (QC ID=39188)	R107027-05			0.31	20.0			33		120				08/06/01	08/06	LSC-004
Duplicate (R107027-02) (QC ID=39190)	R107027-07			0.29	20.5			100		16			35	08/06/01	08/06	LSC-004
Spike (R107027-02) (QC ID=39191)	R107027-08			0.31	20.3			100		14			35	08/06/01	08/06	LSC-004
Nominal values and limits from method				400	20.0					25			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.42 ± 0.60
YIELD 78 ± 62

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1413

Test NI_L Matrix SOLID
SDG 7031
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1413

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6994-099						
B125X5	R107027-01			7031-001	U	
B125X6	R107027-02			7031-002	U	
B125Y9	R107027-03			7031-003	U	
BLK (QC ID=39189)	R107027-06			7031-006	U	
LCS (QC ID=39188)	R107027-05			7031-005	ok	
Duplicate (R107027-02)	R107027-07			7031-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	30	
200-TW-1 & 2 - Soil Sampling						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6994-099	2σ prep error 10.0 %			Reference Lab Notebook 6994 pg. 099												
B125X5	R107027-01			2.2	0.500			89		100			17	07/19/01	07/19	LSC-004
B125X6	R107027-02			2.2	0.500			90		100			17	07/19/01	07/19	LSC-004
B125Y9	R107027-03			2.2	0.500			91		100			17	07/19/01	07/19	LSC-004
BLK (QC ID=39189)	R107027-06			2.1	0.500			96		100				07/19/01	07/19	LSC-004
LCS (QC ID=39188)	R107027-05			2.4	0.500			96		74				07/19/01	07/19	LSC-004
Duplicate (R107027-02) (QC ID=39190)	R107027-07			2.3	0.500			90		100			17	07/19/01	07/19	LSC-004
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 3
	RP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 2.2 ± 0.21
YIELD 92 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/20/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-19	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Thomas G./Watson D.	Todd, M.E. (509) 372-9631	TRENT, SJ	8N / 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W H3144 (7031)	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. Shipping Dan 96-006	**Field Logbook No.** EL-1518 H1448 K9874	**COA** B20TW1A44C	**Method of Shipment** Fed EX
Shipped To TMA/RECRA EBERline	**Offsite Property No.** A01043S	**Bill of Lading/Air Bill No.** 423579641-5568	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive BACKGROUND COUNTS ON SPLIT SPOON <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40mL			

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions. ST 7/3/01	See item (2) in Special Instructions. ST 7/3/01	VOA - 8260A (TCL) ST 7/3/01	See item (3) in Special Instructions. ST 7/3/01	See item (4) in Special Instructions. 0.7w 0-0	See item (5) in Special Instructions.	VOA 8260A TCL ST 7/3/01			
B125Y9 ✓	SOIL ✓	07-02-01 ✓	2345 ✓	X	X	X	X		X	✓		TPH TO	B0263 B12637
B12607	water	07-02-01	2345							X			B12637
7.5.01													

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0200 7/3/01	Ref 1B 3728	0200 7/3/01
Ref 1B 3728	750	R.T. Thore	1130 7-5-01
R.T. Thore	1130 7.5.01	FEDEX	7-5-01
FED EXPRESS	7-6-01 10.0hrs	E. SEGURA	7-6-01 10.0hrs

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D DSW 07-02
(4) ICP Metals - 6010B (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7.2.01. Collector not available to relinquish samples on 7.5.01 for shipment. ST 7.5.01

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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	B01-058-5	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W H1413 (7031)	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1518 — COA: B20TW1A44C	Method of Shipment: Government Vehicle/Fed EX DSW02-2-01	
Shipped To: ~~Severn Trent Incorporated~~ ET 7501 Re TMA/Bechtel	Offsite Property No.: AD10435	Bill of Lading/Air Bill No.: 4258 0884 3568	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive — COUNTS BACKGROUND ON SALT SPOON

DOSE < 0.5 mR/hr

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		Cool 4°C
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	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
SAMPLE ANALYSIS	See Item (1) in Special Instructions	Chromium, Hex - 7196	See Item (2) in Special Instructions	VOA - 8260A (TCL)	See Item (3) in Special Instructions	See Item (4) in Special Instructions	See Item (5) in Special Instructions	Activity Scan		VOA - 8260A (TCL)

Sample No.	Matrix*	Sample Date	Sample Time										
B125X5	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~	B12637
~~B125X8 (TRIP BLANK)~~	~~WATER~~	~~7/2/01~~	~~0330~~			RT 7-5-01							X 40T

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas Mary Thoren	7/2/01 0830	Ref 1A 3728 7/2/01	0830
Ref. 1A 3728	7-5-01 1130	R Thoren	7-5-01 1130
R Thoren	7-5-01 1130	FEDEX	7-5-01
FED EXPRESS	7-6-01 0-AM	E. SEGURO SCA-2	7-6-01 10:A
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Uranium, Lead); Mercury - 7470 - (CV)

(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045

(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - WTPH-D

(4) ICP Metals - 6010TR (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)

(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01 Collector not available to relinquish samples on 7/5/01 for shipment. ET 7501

Matrix*

S=Soil
SD=Sediment
SO=Solid
SL=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	B01-058-6	Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W H1413 (7031)	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. Shipping Jan 96-004	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** DOW 07-02-01 ~~Government Vehicle~~/Fed EX	
Shipped To RT 7.5.01 ~~Severn Trent Incorporated~~ EBERline	**Offsite Property No.** AØ10435	**Bill of Lading/Air Bill No.** 4235 7984 – 5568	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728
Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment..

RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	Activity Scan	Tic to	

Delete 7.5.01 OT 7/2/01

Sample No.	Matrix *	Sample Date	Sample Time									
B125X6	SOIL	7/2/01	0330	X	X	X RT 7.5.01	X	X		X	X	B12635 RT 7.5.01 B12637

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0830 7/2/01	Ref 1A 3728	0830 7/2/01
Ref 1A 3728	1130 7-5-01	R. Thorer	1130 7-5-01
R. Thorer	1130 7-5-01	FED EX	7-5-01
FED EXPRESS	10:00 Am 7-6-01	E. Stevens SCA-2	1011 7-6-01

SPECIAL INSTRUCTIONS

RT 7.5.01

~~(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)~~
~~(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
~~(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
~~(4) ICP Metals - 6010B (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=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		B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W H1431 (7031)		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX	
Shipped To: ~~TMA/Hanford Sewell Trent~~ TMA 7/2/01	Offsite Property No.: A0010435		Bill of Lading/Air Bill No.: 4235 1954 - 5568	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mR/hr DOSE

Special Handling and/or Storage

CANCELLED 7/10/01 MMC

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/2/01. Collector not available to relenquish samples on 7/5/01 for shipment.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time								
B12600	SO	07-02-01	2345	X	X	X		X		TIE TO	B12637 RT 7.5.01
					T 7.5.01						B12637

RT 7.5.01

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
~~T. ED~~ Greg Thomas/Greg Thomas 7/3/01	0200	Rf 1B 3728 7/3/01	0200
Rf 1B 3728 7-5-01	1130	R Thoren	7-5-01 1430
R Thoren 7-5-01	1430	T Eddy	7-5-01
T. Eddy Fed Ex	7-6-01 10:00	SCA-2 E. Aeguin	7-6-01 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

RT 7.5.01

~~(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) (Bismuth, Lead); Mercury - 7470 - (CV); Chromium Hex - 7196~~

~~(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~

~~(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH Diesel Range - WTPH-D~~

~~(4) ICP Metals - 6010A (Target List) {Aluminum, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~

(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - *H3*; Isotopic *Uranium*

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

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 7-6-01

CoC No. B01-058-5, 42, 43, AND B01-058-68;

Shipping Container I.D. No. VAN-96-006 Requested TAT (Days) 45 DAYS P.O. Received Yes [ ] No [✓]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Cooler Temperature: _____	Packing material is:	Wet [ ]	Dry [✓]
6.	Number of samples in shipping container: 4 SAMPLES			
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. Segura Date: 7/6/01 Time: 10:30			

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.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B125X5						
% SOLIDS	001	S	01L%S084	07/02/01	07/09/01	07/10/01
% SOLIDS	001 REP	S	01L%S084	07/02/01	07/09/01	07/10/01
CHLORIDE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
CHLORIDE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
CHLORIDE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
FLUORIDE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
FLUORIDE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
FLUORIDE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRITE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRITE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRITE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
TOTAL CYANIDE	001	S	01LC068	07/02/01	07/11/01	07/11/01
PHOSPHATE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
PHOSPHATE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
PHOSPHATE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
CHROMIUM VI	001	S	01LVI062	07/02/01	07/24/01	07/24/01
CHROMIUM VI	001 REP	S	01LVI062	07/02/01	07/24/01	07/24/01
CHROMIUM VI	001 MS	S	01LVI062	07/02/01	07/24/01	07/24/01
CHROMIUM VI	001 MSD	S	01LVI062	07/02/01	07/24/01	07/24/01
SULFATE BY IC	001	S	01LICA45	07/02/01	07/10/01	07/10/01
SULFATE BY IC	001 REP	S	01LICA45	07/02/01	07/10/01	07/10/01
SULFATE BY IC	001 MS	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE NITRITE	001	S	01LN3A41	07/02/01	07/31/01	07/31/01
NITRATE NITRITE	001 REP	S	01LN3A41	07/02/01	07/31/01	07/31/01
NITRATE NITRITE	001 MS	S	01LN3A41	07/02/01	07/31/01	07/31/01
AMMONIA	001	S	01LAM035	07/02/01	07/10/01	07/11/01
AMMONIA	001 REP	S	01LAM035	07/02/01	07/10/01	07/11/01
AMMONIA	001 MS	S	01LAM035	07/02/01	07/10/01	07/11/01
TOTAL ORGANIC CARBON	001	S	01LTZ020	07/02/01	07/24/01	07/25/01
TOTAL ORGANIC CARBON	001 REP	S	01LTZ020	07/02/01	07/24/01	07/25/01
TOTAL ORGANIC CARBON	001 MS	S	01LTZ020	07/02/01	07/24/01	07/25/01
PH	001	S	01LPH050	07/02/01	07/19/01	07/19/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	001 REP	S	01LPH050	07/02/01	07/19/01	07/19/01
B125X6						
% SOLIDS	003	S	01L%S084	07/02/01	07/09/01	07/10/01
CHLORIDE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
FLUORIDE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRITE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
TOTAL CYANIDE	003	S	01LCD68	07/02/01	07/11/01	07/11/01
PHOSPHATE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
CHROMIUM VI	003	S	01LVI062	07/02/01	07/24/01	07/24/01
SULFATE BY IC	003	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE NITRITE	003	S	01LN3A41	07/02/01	07/31/01	07/31/01
AMMONIA	003	S	01LAM035	07/02/01	07/10/01	07/11/01
TOTAL ORGANIC CARBON	003	S	01LTZ020	07/02/01	07/24/01	07/25/01
PH	003	S	01LPH050	07/02/01	07/19/01	07/19/01
B125Y9						
% SOLIDS	005	S	01L%S084	07/02/01	07/09/01	07/10/01
CHLORIDE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
FLUORIDE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRITE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
TOTAL CYANIDE	005	S	01LCD68	07/02/01	07/11/01	07/11/01
TOTAL CYANIDE	005 REP	S	01LCD68	07/02/01	07/11/01	07/11/01
TOTAL CYANIDE	005 MS	S	01LCD68	07/02/01	07/11/01	07/11/01
PHOSPHATE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
CHROMIUM VI	005	S	01LVI062	07/02/01	07/24/01	07/24/01
SULFATE BY IC	005	S	01LICA45	07/02/01	07/10/01	07/10/01
NITRATE NITRITE	005	S	01LN3A41	07/02/01	07/31/01	07/31/01
AMMONIA	005	S	01LAM035	07/02/01	07/10/01	07/11/01
TOTAL ORGANIC CARBON	005	S	01LTZ020	07/02/01	07/24/01	07/25/01
PH	005	S	01LPH050	07/02/01	07/19/01	07/19/01

LAB QC:

CHLORIDE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
FLUORIDE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01
FLUORIDE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
NITRITE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01
NITRITE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
NITRATE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01
NITRATE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
TOTAL CYANIDE	LCS L	S	01LC068	N/A	07/11/01	07/11/01
TOTAL CYANIDE	LCS L	S	01LC068	N/A	07/11/01	07/11/01
TOTAL CYANIDE	MB1	S	01LC068	N/A	07/11/01	07/11/01
PHOSPHATE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01
PHOSPHATE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
CHROMIUM VI	MB1	S	01LVI062	N/A	07/24/01	07/24/01
CHROMIUM VI	MB1 BS	S	01LVI062	N/A	07/24/01	07/24/01
CHROMIUM VI	MB1 BSD	S	01LVI062	N/A	07/24/01	07/24/01
SULFATE BY IC	MB1	S	01LICA45	N/A	07/10/01	07/10/01
SULFATE BY IC	MB1 BS	S	01LICA45	N/A	07/10/01	07/10/01
NITRATE NITRITE	MB1	S	01LN3A41	N/A	07/31/01	07/31/01
NITRATE NITRITE	MB1 BS	S	01LN3A41	N/A	07/31/01	07/31/01
AMMONIA	MB1	S	01LAM035	N/A	07/10/01	07/11/01
AMMONIA	MB1 BS	S	01LAM035	N/A	07/10/01	07/11/01
AMMONIA	MB1 BSD	S	01LAM035	N/A	07/10/01	07/11/01
TOTAL ORGANIC CARBON	MB1	S	01LTZ020	N/A	07/24/01	07/25/01
TOTAL ORGANIC CARBON	MB1 BS	S	01LTZ020	N/A	07/24/01	07/25/01
TOTAL CYANIDE	LCS L	S	01LCD68	N/A	07/11/01	07/11/01
TOTAL CYANIDE	LCS L	S	01LCD68	N/A	07/11/01	07/11/01
TOTAL CYANIDE	MB1	S	01LCD68	N/A	07/11/01	07/11/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058 H1413
LVL#: 0107L239

W.O.#: 11343-606-001-9999-00
Date Received: 07-06-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

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

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. 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 with the exception of Soluble Chromium that was below the control limits and may be attributed to sample inhomogeneity.

8. The replicate analyses were within the 20% RPD control limit.

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

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

08-07-01
Date

njp\i07-239

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		✓ 9060	✓ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	
Other: Chloride, Fluoride, Nitrate		**Method:** EPA 300.0 (mod.)	
Other: Nitrite, Phosphate, Sulfate		**Method**	
Nitrate Nitrite		EPA 353.2 (mod.)	
Ammonia		EPA 350.3	

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B125X5	% Solids	94.1		%	0.01	1.0
		Chloride by IC	13.8		MG/KG	1.3	1.0
		Fluoride by IC	14.0		MG/KG	2.7	1.0
		Nitrite by IC	21.2		MG/KG	1.33	1.0
		Nitrate by IC	1030		MG/KG	26.6	20.0
		Cyanide, Total	0.90		MG/KG	0.36	1.0
		Phosphate by IC	59.5		MG/KG	6.6	5.0
		Chromium VI	0.97		MG/KG	0.42	1.0
		Sulfate by IC	83.1		MG/KG	6.6	5.0
		Nitrate Nitrite	225		MG/KG	10.6	50.0
		Ammonia, as N	25.8		MG/KG	5.3	1.0
		Total Organic Carbon	137	u	MG/KG	137	1.0
		pH	10.1		SOIL PH	0.01	1.0
-003	B125X6	% Solids	96.2		%	0.01	1.0
		Chloride by IC	11.2		MG/KG	1.3	1.0
		Fluoride by IC	13.0	u	MG/KG	13.0	5.0
		Nitrite by IC	17.1		MG/KG	1.30	1.0
		Nitrate by IC	803		MG/KG	26.0	20.0
		Cyanide, Total	1.99		MG/KG	0.50	1.0
		Phosphate by IC	55.2		MG/KG	6.5	5.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	91.9		MG/KG	6.5	5.0
		Nitrate Nitrite	216		MG/KG	10.0	50.0
		Ammonia, as N	24.8		MG/KG	5.2	1.0
		Total Organic Carbon	226		MG/KG	140	1.0
		pH	10.1		SOIL PH	0.01	1.0
-005	B125Y9	% Solids	88.0		%	0.01	1.0
		Chloride by IC	46.0		MG/KG	7.1	5.0
		Fluoride by IC	85.5		MG/KG	14.2	5.0
		Nitrite by IC	47.7		MG/KG	7.10	5.0
		Nitrate by IC	3070		MG/KG	142	100
		Cyanide, Total	7.90		MG/KG	0.50	1.0
		Phosphate by IC	213		MG/KG	7.1	5.0
		Chromium VI	1.6		MG/KG	0.42	1.0
		Sulfate by IC	250		MG/KG	7.1	5.0
		Nitrate Nitrite	672		MG/KG	22.6	100
		Ammonia, as N	94.9		MG/KG	5.6	1.0
		Total Organic Carbon	132		MG/KG	122	1.0

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B125Y9	pH	9.5	SOIL PH	0.01	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICA45-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	2.5 u	MG/KG	2.5	1.0
		Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	01LC068-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI062-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LN3A41-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	01LAM035-MB1	Ammonia, as N	5.0 u	MG/KG	5.0	1.0
BLANK10	01LTZ020-MB1	Total Organic Carbon	20.0 u	MG/KG	20.0	1.0
BLANK1	01LCD68-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/01/01

CLIENT: TNUHANPORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B125X5	Chloride by IC	66.3	13.8	53.2	98.7	2.0
		Fluoride by IC	290	14.0	266	103.9	5.0
		Nitrite by IC	73.7	21.2	53.2	98.7	2.0
		Nitrate by IC	2240	1030	1330	91.2	50.0
		Phosphate by IC	183	59.5	133	92.7	5.0
		Soluble Chromium VI	3.3	0.97	4.3	55.2	1.0
		Insoluble Chromium VI	1520	0.97	1230	123.3	100
		Sulfate by IC	202	83.1	133	89.7	5.0
		Nitrate Nitrite	490	225	264	100.4	50.0
		Ammonia, as N	237	25.8	212	99.3	1.0
		Total Organic Carbon	2960	122	2820	100.6	1.0
-005	B125Y9	Cyanide, Total	17.0	7.90	11.3	80.8	2.0
BLANK10	01LICA45-MB1	Chloride by IC	23.5	1.2 u	25.0	93.9	1.0
		Fluoride by IC	54.6	2.5 u	50.0	109.2	1.0
		Nitrite by IC	23.6	1.25u	25.0	94.4	1.0
		Nitrate by IC	25.0	1.25u	25.0	100.1	1.0
		Phosphate by IC	25.4	1.2 u	25.0	101.8	1.0
		Sulfate by IC	23.1	1.2 u	25.0	92.4	1.0
BLANK10	01LVI062-MB1	Soluble Chromium VI	4.4	0.40u	4.0	109.6	1.0
		Insoluble Chromium VI	1110	0.40u	1220	90.6	100
BLANK10	01LN3A41-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.6	1.0
BLANK10	01LAM035-MB1	Ammonia, as N	98.0	5.0 u	100	98.0	1.0
		Ammonia, as N MSD	99.5	5.0 u	100	99.5	1.0
BLANK10	01LTZ020-MB1	Total Organic Carbon	405	20.0 u	400	101.2	1.0

Lionville Lababoratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM035-MB1	Ammonia, as N	98.0	99.5	1.5

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B125X5	% Solids	94.1	94.9	0.87	1.0
		Chloride by IC	13.8	13.1	5.0	1.0
		Fluoride by IC	14.0	14.5	3.3	1.0
		Nitrite by IC	21.2	20.6	2.9	1.0
		Nitrate by IC	1030	960	7.2	20.0
		Phosphate by IC	59.5	62.0	4.1	5.0
		Chromium VI	0.97	1.0	3.5	1.0
		Sulfate by IC	83.1	76.2	8.7	5.0
		Nitrate Nitrite	225	222	1.2	50.0
		Ammonia, as N	25.8	26.3	1.7	1.0
		Total Organic Carbon	137 u	138 u	NC	1.0
		pH	10.1	10.1	0.0	1.0
-005REP	B125Y9	Cyanide, Total	7.90	8.64	9.0	1.0

Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC068-LCS1	Cyanide, Total LCS	1.97	2.0	MG/KG	98.6
LCSS2	01LC068-LCS2	Cyanide, Total LCS	9.76	10.0	MG/KG	97.6
LCSS1	01LCD68-LCS1	Cyanide, Total LCS	1.72	2.0	MG/KG	85.8
LCSS2	01LCD68-LCS2	Cyanide, Total LCS	9.65	10.0	MG/KG	96.5

Lionville Laboratory Use Only

0107L239

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) Gems 3DA Fran met Perrine Dig Wet

LVLE LIONVILLE LABORATORY INC.

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6006-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 7.6.01 Date Due: 8.5.01

		A	B	C	D	E
Refrigerator #		1	S	S	S	S
#/Type Container	Liquid	1pg				
	Solid	1pg	1pg	1pg	1pg	1pg
Volume	Liquid	40	J	J	J	J
	Solid	60	250	120'	60	250
Preservatives		—	-	—		

ANALYSES REQUESTED

	ORGANIC				INORG			
	TCL VOA	BNA	Pest/ PCB	Herb	TCL Metal	CN	Hex Chrom	TIC Anions

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	624H	625SX			ODRO			Met(1)		ICP/6	Inorg(1)			
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	B125X5			S	7/2/01	0330	X	X			X			X		X	X			
	002	B125Y8 TL 7-10-01			W			X													
	003	B125X6			S			X	X			X			X		X	X			
	004	B126000			S		2345	X(120)	X(500ml)			X	TL 7-10-01		X(500ml)		X	X(1Lg)			
	005	B125Y9			S			X(120)	X (500ml)			X			X(500ml)		X	X (1Lg.)			
	006	B126001 TL 7-10-01			W			X													

Special Instructions: SOF B01-058

Run Matrix QC

Met(1): Cd, Cr, Cu, Ni, Ag, Bi, Pb, Hg

Inorg(1): ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, INH3N, IN3N2, ICNTO, IOCT, IPH

DATE/REVISIONS:

Cr+6 1. #004-005: Metals: Cr+6 Share volume

7-10-01 2. #002, 006 Relogged to 0107L26S-001-002

1 3. #004: All analyses cancelled

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 423579545579

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	7/6/01	1005

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-5 | Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W		**SAF No.** B01-058
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** ~~Government Vehicle~~/Fed EX
Shipped To ~~Severn Trent Incorporated~~ RT 7.5.01 RECRA	**Offsite Property No.** AØ10311		**Bill of Lading/Air Bill No.** 4235795 4 -5579

Price Code 8N **Data Turnaround** 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS BACKGROUND ON SPLIT SPOON

DOSE < 0.5 MR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A **at the 3728 Shipping Facility on** 7/2/01.

Collector not available to relinquish samples on 7/5/01 **for shipment.** RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	None	None		Cool 4°C
Type of Container	aG	aG	aG	aG	aG	~~aG~~ 5A	1-aG	1-aG		aG
No. of Container(s)	1	1	1	1	1	1	1	1		1
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. SJT 7/24/01	See item (5) in Special Instructions.	Activity Scan	Tie to	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
1 B125X5	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~ B12637	
2 B125Y8 (TRIP BLANK)	WATER	7/2/01	0330										X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas Greg Thomas	7/2/01 0830	Ref 1A 3728 7/2/01	0830
Ref 1A 3728 7.5.01		R Thorey 7.5.01	1130
R Thorey 7-5-01	1130		
Fed Ex	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)

(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045

(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}

(5) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec -- Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium-115; Isotopic Uranium~~

RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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	B01-058-6	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Air Quality ☐
Ice Chest No: ERC-96034	Field Logbook No.: EL-1518 — COA: B20TW1A44C	Method of Shipment: DGW 07-02-01 ~~Government Vehicle~~/Fed EX	
Shipped To: RT 7.5.01 ~~Severn-Trent Incorporated~~ RECRA	Offsite Property No.: A010311	Bill of Lading/Air Bill No.: 4235795454 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. OT 7/2/01	See item (5) in Special Instructions.	Activity Scan	Tie to	

Sample No.	Matrix *	Sample Date	Sample Time									
3 B125X6	SOIL	7/2/01	0330	X	X	X	X	X		X	X	B12635 RT 7.5.01 B12637

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/2/01 0830	Ref 1A 3724	7/2/01 0830
Ref 1A 3728	7.5.01 1130	R Thorell	7-5.01 1130
R Thorell	7-5.01 1130	FED EX	
FED EX	7.6.01 10:25	D. Lyon	7.6.01 10:25
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; *Ammonia - 350.1; NO2/NO3 - 353.1;* Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium (Thorium-299); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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	B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: EPC 96-034	Field Logbook No.: EL-1518 — COA: B20TW1A44C	Method of Shipment: Fed EX	
Shipped To: BT 7/2/01 ~~200 Area Sewer~~ Treat RCRA	Offsite Property No.: A-010311	Bill of Lading/Air Bill No.: 4235-7954-5579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive — BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time								
B12600	SOIL	07-02-01	2345	X	X	X	X		X		TIE TO B12637 SD
											B12637

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish sample on 7/5/01 for shipment.

RT 7-5-01

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Greg Thomas — Date/Time: 0200 7/3/01	Received By/Stored In: Ref 1B 3728 — Date/Time: 0200 7/3/01	
Relinquished By/Removed From: Ref 1B 3728 7.5.01 — Date/Time: 1130	Received By/Stored In: R Thorek 7-5-01 — Date/Time: 1130	
Relinquished By/Removed From: R Thorek 7-5-01 — Date/Time: 1130	Received By/Stored In: FEDEX — Date/Time:	
Relinquished By/Removed From: FedEx 7.6.01 — Date/Time: 1025	Received By/Stored In: D. Yonico 7.6.01 — Date/Time: 1025	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Bismuth, Lead); Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D
~~(4) ICP Metals - 6010A (TAL) (Aluminum, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)~~
~~(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium, Isotopic Thorium (Thorium-232), Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

RT 7.5.01

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

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

RHLEF-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-19	Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA	**Offsite Property No.** A-010311	**Bill of Lading/Air Bill No.** 42387984 - 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive BACKGROUND COUNTS ON SPLIT SPOON <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1		1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DTW 07.02.01	See item (5) in Special Instructions. 5/1/01	VOA 8260A TCL			

Sample No.	Matrix *	Sample Date	Sample Time									
B125Y9	SOIL	07-02-01	2345	X	X	X	X		X			NFTO B125Y5.0
~~B126Q1~~ RT 7.5.01	~~WATER~~	~~07-02-01~~	~~2345~~							R RT 7.5.01		B126Q1
B126Q1	WATER	07-02-01	2345							X		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728 7.5.01 RThorez	7.5.01 1130	RThorez	7.5.01 1130
RThorez	7-5-01 1130	FEDEX	
FEDEX	7.6.01 1025	D. Jonita	7.6.01 1025

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D DSW 7.5.01
(4) ~~ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
(5) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155), Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237, Nickel-63, Strontium-89,90 - Total-Sr, Technetium-99, Total Uranium, Tritium - H3, Isotopic Uranium~~

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/5/01. Collector not available to relinquish samples on 7/5/01 for shipment RT 7.5.01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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: 7-6-01 / 10:25

SDG#: 01071239

Work Order Number: _____ SAF# B01-058

B01-058-20
-55
-56
-19

Shipping Container ID: ERC96-034 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [~~X~~] No [ ]
2. Custody Seals dated and signed? Yes [~~X~~] No [ ]
3. Chain-of-Custody record present? Yes [~~X~~] No [ ]
4. Cooler temperature 3.4 °C
5. Vermiculite/packing materials is Wet [ ] Dry [~~X~~]
6. Number of samples in shipping container: 20
7. Sample holding times exceeded? Yes [ ] No [~~X~~]

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

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

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

Sample Custodian/Laboratory: Trippel / LVLI Date: 7-6-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B125X5						
SILVER, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
SILVER, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
SILVER, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
CADMIUM, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
CADMIUM, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
CADMIUM, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
CHROMIUM, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
CHROMIUM, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
CHROMIUM, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
COPPER, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
COPPER, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
COPPER, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
MERCURY, TOTAL	001	S	01C0232	07/02/01	07/30/01	07/30/01
MERCURY, TOTAL	001 REP	S	01C0232	07/02/01	07/30/01	07/30/01
MERCURY, TOTAL	001 MS	S	01C0232	07/02/01	07/30/01	07/30/01
NICKEL, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
NICKEL, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
NICKEL, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
LEAD, TOTAL	001	S	01L0426	07/02/01	07/14/01	07/23/01
LEAD, TOTAL	001 REP	S	01L0426	07/02/01	07/14/01	07/23/01
LEAD, TOTAL	001 MS	S	01L0426	07/02/01	07/14/01	07/23/01
B125X6						
SILVER, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
CADMIUM, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
CHROMIUM, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
COPPER, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
MERCURY, TOTAL	003	S	01C0232	07/02/01	07/30/01	07/30/01
NICKEL, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
LEAD, TOTAL	003	S	01L0426	07/02/01	07/14/01	07/23/01
B125Y9						
SILVER, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01
CHROMIUM, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01
COPPER, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01
MERCURY, TOTAL	005	S	01C0232	07/02/01	07/30/01	07/30/01
NICKEL, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01
LEAD, TOTAL	005	S	01L0426	07/02/01	07/14/01	07/23/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
SILVER, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01
CADMIUM LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
CADMIUM, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01
CHROMIUM LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
CHROMIUM, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01
COPPER LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
COPPER, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01
MERCURY LABORATORY	LC1 BS	S	01C0232	N/A	07/30/01	07/30/01
MERCURY, TOTAL	MB1	S	01C0232	N/A	07/30/01	07/30/01
NICKEL LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
NICKEL, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01
LEAD LABORATORY	LC1 BS	S	01L0426	N/A	07/14/01	07/23/01
LEAD, TOTAL	MB1	S	01L0426	N/A	07/14/01	07/23/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-058
LVL#: 0107L239
SDG/SAF#: H1413/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-06-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 solid samples.

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

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exeption of CCV1 through CCV3 in file HG073011 which were high for Mercury. There is no significant impact to the data as all sample results are non-detect.

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. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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

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 17 pages.

a region of less-certain quantification.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

08-03-01
Date

gmb/m07-239

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01MR036

Initiator: [signature] Batch: 0107L239 Parameter: Hg
Date: 8/1/01 Samples: 001,RS,003,005 Matrix: soil
Client: TMI-Honeywell Method: SW846/MCAWW/CLP/ Prep Batch: 01C0232

1. Reason for SDR

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

b. General Discrepancy

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

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

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

CCV 1 = 112%, CCV's 2 and 3 = 122%. Sample results non-detect, data updated.
(Reruns would have been past sample hold time.)
(Remainder of prep batch reran with QC at 90-110%.)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 8/3/01

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

5. Final Action...signature/date: [signature] 8/5/01 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	1	√ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 01071239

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

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.

6
10/31/2

Lionville Lababoratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B125X5	Silver, Total	0.30 u	MG/KG	0.30	1.0
		Cadmium, Total	0.46 u	MG/KG	0.46	1.0
		Chromium, Total	16.5	MG/KG	0.41	1.0
		Copper, Total	13.4	MG/KG	0.26	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	12.6	MG/KG	1.2	1.0
		Lead, Total	8.4	MG/KG	3.3	1.0
-003	B125X6	Silver, Total	0.29 u	MG/KG	0.29	1.0
		Cadmium, Total	0.47	MG/KG	0.44	1.0
		Chromium, Total	13.6	MG/KG	0.40	1.0
		Copper, Total	10.6	MG/KG	0.25	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.9	MG/KG	1.2	1.0
		Lead, Total	10.4	MG/KG	3.2	1.0
-005	B125Y9	Silver, Total	0.36	MG/KG	0.32	1.0
		Cadmium, Total	0.49 u	MG/KG	0.49	1.0
		Chromium, Total	24.2	MG/KG	0.44	1.0
		Copper, Total	18.1	MG/KG	0.27	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	20.7	MG/KG	1.3	1.0
		Lead, Total	13.7	MG/KG	3.5	1.0

Lionville Lababoratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0426-MB1	Silver, Total	0.28 u	MG/KG	0.28	1.0
		Cadmium, Total	0.43 u	MG/KG	0.43	1.0
		Chromium, Total	0.39 u	MG/KG	0.39	1.0
		Copper, Total	0.24 u	MG/KG	0.24	1.0
		Nickel, Total	1.1 u	MG/KG	1.1	1.0
		Lead, Total	3.1 u	MG/KG	3.1	1.0
BLANK1	01C0232-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Lababoratory, Inc.

INORGANICS ACCURACY REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B125X5	Silver, Total	5.1	0.30u	5.3	96.2	1.0
		Cadmium, Total	4.5	0.46u	5.3	84.9	1.0
		Chromium, Total	33.7	16.5	21.3	80.8	1.0
		Copper, Total	37.0	13.4	26.6	88.7	1.0
		Mercury, Total	0.20	0.02u	0.18	111.3	1.0
		Nickel, Total	64.0	12.6	53.1	96.8	1.0
		Lead, Total	56.4	8.4	53.1	90.4	1.0

Lionville Lababoratory, Inc.

INORGANICS PRECISION REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B125X5	Silver, Total	0.30u	0.30u	NC	1.0
		Cadmium, Total	0.46u	0.48	~~NC~~ 200	1.0
		Chromium, Total	16.5	16.1	2.5	1.0
		Copper, Total	13.4	12.0	11.0	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	12.6	13.1	3.9	1.0
		Lead, Total	8.4	11.8	33.7	1.0

wjs 8/2/01

11

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Lionville Lababoratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/01/01

CLIENT: TNUHANFORD B01-058 H1413 LVL LOT #: 0107L239

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0426-LC1	Silver, LCS	47.0	50.0	MG/KG	94.0
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	49.4	50.0	MG/KG	98.8
		Copper, LCS	117	125	MG/KG	93.8
		Nickel, LCS	196	200	MG/KG	98.2
		Lead, LCS	241	250	MG/KG	96.4
LCS1	01C0232-LC1	Mercury, LCS	3.0	2.5	MG/KG	119.9

Lionville Laboratory Use Only
0107L239

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) Grabs BRA From Mrt Perrace Dig West

LVLI LIONVILLE LABORATORY, INC.

Client: TNW-Hanford B01-058
Est. Final Proj. Sampling Date:
Project #: 113413-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spcl Del: Std TAT: 30 day
Date Rec'd: 7-6-01 Date Due: 8-5-01

		A	B	C	D	E
Refrigerator #		1	5	5	5	5
#/Type Container	Liquid	1ag				
	Solid	1ag	1ag	1ag	1ag	1ag
Volume	Liquid	4L				
	Solid	60	250	120	60	250
Preservatives		—	—	—		

ANALYSES REQUESTED → ORGANIC: TCL VOA; BNA; Pest/PCB; Herb. INORG: # Je Metal; CN; Hex Chrome; HC Anions

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 4H	8260 5X		ODRO		Met①	ICP 6	Inorg①
001	B125X5			S	7/2/01	0330	X	X		X		X	X	X
002	B125Y8 TL 7-10-01			W	1	1	X							
003	B125X6			S		1	X	X		X		X	X	X
004	B126000			S		2315	X(12)	X(5cc)		X	TL 7-10-01	X(50ml)	X	X(1Lite)
005	B125Y9			S		1	X(12)	X	(50ml)	X		X(50ml)	X	X(1Lite)
006	B126001 TL 7-10-01			W	2	1	X							

Special Instructions: SOF B01-058

Run Matrix QC TL 7-10-01

Met①: Cd, Cr, Cu, Ni, Ag, Bi, Pb, Hg

Inorg① 1: ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, INH3N, IN3N2, ICNTO, IOCT, IPH

DATE/REVISIONS:

Cr+6 — 1. #004+005: Metals: Cr+6 Share volume
7-10-01 — 2. #002, 006 Blogged to 0107L26S-001-002
1 — 3. #004 - All analysis cancelled
7-16-01 — 4. Bi cancelled
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 1235 7954 5579
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

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

Cooler Temp. 3.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	7/6/01	1005
②			

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-5	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Data Turnaround: 45 Days
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: ~~Government Vehicle~~/Fed EX DW02-01
Shipped To: ~~Severn Trent Incorporated~~ RT 7.5.01 RCRA	Offsite Property No.: A Ø10311		Bill of Lading/Air Bill No.: 423579545579

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS BACKGROUND ON SPLIT SPOON

DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.

Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		Cool 4°C
Type of Container	aG	aG	aG	aG	aG	G	1-G	1-G		aG
No. of Container(s)	1	1	1	1	1					1
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	Activity Scan		VOA - 8260A (TCL)
Sample No.	Matrix *	Sample Date	Sample Time							
1 B125X5	SOIL	7/2/01	0330	X	X	X	X	X	X	X	B12635 B12637
2 B125Y8 (TRIP BLANK)	WATER	7/2/01	0330								X

Delete 7/24/01

Tie to

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Mary Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Ref 1A 3728 7.5.01	1130	R Thomas 7.5.01	1130
R Thomas	7-5-01 1130		
Fed Ex	7-6-01 1025	D. Mack	7-6-01 1025

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)

(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045

(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}

(5) ~~Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - LD; Isotopic Uranium~~

RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-6	Page 1 of 1
Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC-96034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** DOW 07-02-01 ~~Government Vehicle~~/Fed EX	
Shipped To ~~Severn Trent Incorporated~~ RT 7.5.01 RECRA	**Offsite Property No.** A0 10311	**Bill of Lading/Air Bill No.** 4235.7954 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/2/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	RT None 7.5.01	RT None 7.5.01		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. RT 7/2/01	See item (5) in Special Instructions.	Activity Scan	Tie to	

Sample No.	Matrix *	Sample Date	Sample Time									
3 B125X6	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~ RT 7.5.01 B12637

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Ref 1A 3728	7.5.01 1130	RThorek	7-5-01 1130
RThorek	7-5-01 1130	FED EX	
FED EX	7.6.01 10:25	D. Johnson	7.6.01 10:25

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isocopic Thorium {Thorium-228}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - HB; Isotopic Uranium~~

RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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		B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W		SAF No.: B01-058		
Ice Chest No.: ERC96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX		
Shipped To: BT 7/2/01 ~~RMA/RBCA~~ Severn Trent Recra	Offsite Property No.: A-10311		Bill of Lading/Air Bill No.: 423579545579		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish samples on 7/5/01 for shipment.

RT 7-5-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.			
B12600	SOIL	07-02-01	2345	X	X	X	X		X			TIE TO B12637 B12639 B12637
												B12637

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728	7-5-01 1130	R Thorek	7-5-01 1130
R Thorek	7-5-01 1130		
Fed Ex	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
~~(4) ICP-Metals - 6010A (Add-On) {Aluminum, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - HD; Isotopic Uranium~~

RT 7-5-01

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-19	Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA	**Offsite Property No.** A10311	**Bill of Lading/Air Bill No.** 423879845579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUNDS COUNTS ON SPLIT SAMPLE <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool/4C			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1		1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40 mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	VOA 8260A TCL			

Sample No.	Matrix *	Sample Date	Sample Time									
B125Y9	SOIL	07-02-01	2345	X	X	X	X		X			TF TO B12639
~~B126 01~~ RT 7.5.01	~~WATER~~	~~07-02-01~~	~~2346~~							R RT 7.5.01		B12601
B126001	WATER	07-02-01	2345							X		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/3/01 0200	Ref 183 3728	7/3/01 0200
Ref 183 3728	7.6.01 1130	RThomas	7.5.01 1130
RThomas	7-5-01 1130	Ref 183 3728	
Fed Ex	7.6.01 1025	D Smith	7.6.01 1025

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
~~(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

DJW 07-02-01

Samples stored in Ref.# 183 at the 3728 Shipping Facility on 7/3/01.
Collector not available to relinquish samples on 7/5/01 for shipment RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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 B01-058 H1413

DATE RECEIVED: 07/06/01 LVL LOT # :0107L239

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B125X5	001	S	01LE0812	07/02/01	07/09/01	07/17/01
B125X6	003	S	01LE0812	07/02/01	07/09/01	07/17/01
B125Y9	005	S	01LE0812	07/02/01	07/09/01	07/17/01
B125Y9	005 MS	S	01LE0812	07/02/01	07/09/01	07/17/01
B125Y9	005 MSD	S	01LE0812	07/02/01	07/09/01	07/17/01
LAB QC:						
SBLKBS	MB1	S	01LE0812	N/A	07/09/01	07/17/01
SBLKBS	MB1 BS	S	01LE0812	N/A	07/09/01	07/17/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-058
RFW #: 0107L239
SDG/SAF #: H1413/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-06-2001

SEMIVOLATILE

Three (3) soil samples were collected on 07-02-2001.

The samples and their associated QC samples were extracted on 07-09-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 07-17-2001.

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

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

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

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 _____ 08-30-01
J. Michael Taylor — Date
President
Lionville Laboratory Incorporated

som\gorup\data\bna\tnu-hanford-0107-239.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 9 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

VLI
LIONVILLE LABORATORY INC

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 07/30/01 08:11

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: **11343606001** Page: 1a

	Cust ID:	B125X5	B125X6	B125Y9	B125Y9	B125Y9	SBLKBS
Sample Information	RFW#:	001	003	005	005 MS	005 MSD	01LE0812-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	62 %	69 %	54 %	60 %	65 %	57 %
	2-Fluorobiphenyl	63 %	70 %	54 %	59 %	68 %	57 %
	p-Terphenyl-d14	95 %	101 %	84 %	86 %	88 %	97 %
	Phenol-d5	70 %	82 %	66 %	71 %	76 %	68 %
	2-Fluorophenol	61 %	71 %	58 %	63 %	69 %	61 %
	2,4,6-Tribromophenol	73 %	81 %	62 %	75 %	74 %	67 %
Phenol		350 U	350 U	380 U	71 %	75 %	330 U
bis(2-Chloroethyl)ether		350 U	350 U	380 U	380 U	380 U	330 U
2-Chlorophenol		350 U	350 U	380 U	64 %	67 %	330 U
1,3-Dichlorobenzene		350 U	350 U	380 U	380 U	380 U	330 U
1,4-Dichlorobenzene		350 U	350 U	380 U	48 %	53 %	330 U
1,2-Dichlorobenzene		350 U	350 U	380 U	380 U	380 U	330 U
2-Methylphenol		350 U	350 U	380 U	380 U	380 U	330 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	380 U	380 U	380 U	330 U
4-Methylphenol		350 U	350 U	380 U	380 U	380 U	330 U
N-Nitroso-Di-n-propylamine		350 U	350 U	380 U	79 %	85 %	330 U
Hexachloroethane		350 U	350 U	380 U	380 U	380 U	330 U
Nitrobenzene		350 U	350 U	380 U	380 U	380 U	330 U
Isophorone		350 U	350 U	380 U	380 U	380 U	330 U
2-Nitrophenol		350 U	350 U	380 U	380 U	380 U	330 U
2,4-Dimethylphenol		350 U	350 U	380 U	380 U	380 U	330 U
bis(2-Chloroethoxy)methane		350 U	350 U	380 U	380 U	380 U	330 U
2,4-Dichlorophenol		350 U	350 U	380 U	380 U	380 U	330 U
1,2,4-Trichlorobenzene		350 U	350 U	380 U	58 %	65 %	330 U
Naphthalene		350 U	350 U	380 U	380 U	380 U	330 U
4-Chloroaniline		350 U	350 U	380 U	380 U	380 U	330 U
Hexachlorobutadiene		350 U	350 U	380 U	380 U	380 U	330 U
4-Chloro-3-methylphenol		350 U	350 U	380 U	71 %	73 %	330 U
2-Methylnaphthalene		350 U	350 U	380 U	380 U	380 U	330 U
Hexachlorocyclopentadiene		350 U	350 U	380 U	380 U	380 U	330 U
2,4,6-Trichlorophenol		350 U	350 U	380 U	380 U	380 U	330 U
2,4,5-Trichlorophenol		890 U	860 U	950 U	940 U	950 U	830 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0107L239 Client: TNUHANFORD B01-058 H1413 Work Order: 11343606001

	Cust ID:	B125X5		B125X6		B125Y9		B125Y9		B125Y9		SBLKBS	
	RFW#:	001		003		005		005 MS		005 MSD		01LE0812-MB1	
2-Chloronaphthalene		350	U	350	U	380	U	380	U	380	U	330	U
2-Nitroaniline		890	U	860	U	950	U	940	U	950	U	830	U
Dimethylphthalate		350	U	350	U	380	U	380	U	380	U	330	U
Acenaphthylene		350	U	350	U	380	U	380	U	380	U	330	U
2,6-Dinitrotoluene		350	U	350	U	380	U	380	U	380	U	330	U
3-Nitroaniline		890	U	860	U	950	U	940	U	950	U	830	U
Acenaphthene		350	U	350	U	380	U	60	%	64	%	330	U
2,4-Dinitrophenol		890	U	860	U	950	U	940	U	950	U	830	U
4-Nitrophenol		890	U	860	U	950	U	51	%	51	%	830	U
Dibenzofuran		350	U	350	U	380	U	380	U	380	U	330	U
2,4-Dinitrotoluene		350	U	350	U	380	U	65	%	63	%	330	U
Diethylphthalate		350	U	350	U	380	U	380	U	380	U	330	U
4-Chlorophenyl-phenylether		350	U	350	U	380	U	380	U	380	U	330	U
Fluorene		350	U	350	U	380	U	380	U	380	U	330	U
4-Nitroaniline		890	U	860	U	950	U	940	U	950	U	830	U
4,6-Dinitro-2-methylphenol		890	U	860	U	950	U	940	U	950	U	830	U
N-Nitrosodiphenylamine (1)		350	U	350	U	380	U	380	U	380	U	330	U
4-Bromophenyl-phenylether		350	U	350	U	380	U	380	U	380	U	330	U
Hexachlorobenzene		350	U	350	U	380	U	380	U	380	U	330	U
Pentachlorophenol		890	U	860	U	950	U	69	%	65	%	830	U
Phenanthrene		350	U	350	U	380	U	380	U	380	U	330	U
Anthracene		350	U	350	U	380	U	380	U	380	U	330	U
Carbazole		350	U	350	U	380	U	380	U	380	U	330	U
Di-n-Butylphthalate		350	U	350	U	380	U	380	U	380	U	330	U
Fluoranthene		350	U	350	U	380	U	380	U	380	U	330	U
Pyrene		350	U	350	U	380	U	82	%	80	%	330	U
Butylbenzylphthalate		350	U	350	U	380	U	380	U	380	U	330	U
3,3'-Dichlorobenzidine		350	U	350	U	380	U	380	U	380	U	330	U
Benzo(a)anthracene		350	U	350	U	380	U	380	U	380	U	330	U
Chrysene		350	U	350	U	380	U	380	U	380	U	330	U
bis(2-Ethylhexyl)phthalate		350	U	350	U	380	U	380	U	380	U	330	U
Di-n-Octyl phthalate		350	U	350	U	380	U	380	U	380	U	330	U
Benzo(b)fluoranthene		350	U	350	U	380	U	380	U	380	U	330	U
Benzo(k)fluoranthene		350	U	350	U	380	U	380	U	380	U	330	U
Benzo(a)pyrene		350	U	350	U	380	U	380	U	380	U	330	U
Indeno(1,2,3-cd)pyrene		350	U	350	U	380	U	380	U	380	U	330	U
Dibenzo(a,h)anthracene		350	U	350	U	380	U	380	U	380	U	330	U
Benzo(g,h,i)perylene		350	U	350	U	380	U	380	U	380	U	330	U
Tributylphosphate		91	J	89	J	380	U	380	U	380	U	330	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 07/30/01 08:11

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: 11343606001 Page: 2a

Cust ID: **SBLKBS BS**

Sample Information

RFW#: **01LE0812-MB1**
Matrix: SOIL
D.F.: 1.00
Units: ug/Kg

Surrogate Recovery	Nitrobenzene-d5	64	%
	2-Fluorobiphenyl	68	%
	p-Terphenyl-d14	94	%
	Phenol-d5	74	%
	2-Fluorophenol	63	%
	2,4,6-Tribromophenol	73	%

Phenol	72	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	66	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	57	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-Di-n-propylamine	92	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	64	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	72	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

RFW#: **01LE0812-MB1**

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	65	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	55	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	67	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	79	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-Butylphthalate	330	U
Fluoranthene	330	U
Pyrene	87	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	330	U
Di-n-Octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenzo(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U
Tributylphosphate	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B125X5

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

Client: TNUHANFORD_B01-058 H1413

Matrix: (soil/water) SOIL

Lab Sample ID: 0107L239-001

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

Lab File ID: A071708

Level: (low/med) LOW

Date Received: 07/06/01

% Moisture: 6 decanted: (Y/N)__

Date Extracted: 07/09/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.685	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B125X6

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

Client: TNUHANFORD B01-058 H1413

Matrix: (soil/water) SOIL

Lab Sample ID: 0107L239-003

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

Lab File ID: A071709

Level: (low/med) LOW

Date Received: 07/06/01

% Moisture: 4 decanted: (Y/N)

Date Extracted: 07/09/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.685	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B125Y9

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

Client: TNUHANFORD B01-058 H1413

Matrix: (soil/water) SOIL

Lab Sample ID: 0107L239-005

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

Lab File ID: A071710

Level: (low/med) LOW

Date Received: 07/06/01

% Moisture: 12 decanted: (Y/N)__

Date Extracted: 07/09/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.685	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKBS

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

Client: TNUHANFORD B01-058 H1413

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0812-MB1

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

Lab File ID: A071704

Level: (low/med) LOW

Date Received: 07/09/01

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

Date Extracted: 07/09/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 07/17/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.697	100	J

Lionville Laboratory Use Only
0107L239

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) GCMS Met Perrone BRA Dig Wet Fran

LVLI LIONVILLE LABORATORY INC

Client: TNU-Hanford B01-058
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 7-6-01 Date Due: 8-5-01

		A	B	C	D	E
Refrigerator #		1	S	S	S	S
#/Type Container	Liquid	1ag				
	Solid	1as	1ag	1ag	1as	1as
Volume	Liquid	40	0			
	Solid	60	~~250~~	120	60	~~250~~
Preservatives		—	-	—		
ANALYSES REQUESTED →		ORGANIC: TCL VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: TAL Metal
		INORG: CN	INORG: Hex Chrome	INORG: HC Cyanide		

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	Lionville Laboratory Use Only: 624 H	625 SX			ODRO		Met(1)		ICAP	Inorg(1)	
001	B125X5			S	7/6/01	0330	X	X			X		X		X	X	
002	~~B125Y8~~ TL 7-10-01			W			~~X~~										
003	B125X6			S			X	X			X		X		X	X	
004	B126000			S		2315	X(120)	X (500ml)			X	TL 7-10-01	X (500ml)		X	X (11Lt)	
005	B125Y9			S			X(120)	X (500ml)			X		X (500ml)		X	X (11Lt.)	
006	~~B126001~~ TL 7-10-01			W			~~X~~										

Special Instructions: SOF B01-058

Run Matrix QC

Met(1): Cd, Cr, Cu, Ni, Ag, Bi, Pb, Hg

Inorg(1): ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, INH3N, IN3N2, ICNTO, IOCT, IPH

DATE/REVISIONS:

Cr+6 1. #004-005: Metals + Cr+6 Share volume

7-10-01 2. #002, 006 Blogged to 0107L245-002

1 3. #004 - All analyses cancelled

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 423579545579

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	7/6/01	1025

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-5	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W		SAF No.: B01-058		
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: DSV02-2-01 Government Vehicle/Fed EX		
Shipped To: RT 7.5.01 RECRA Severn Trent Incorporated	Offsite Property No.: A0 10311		Bill of Lading/Air Bill No.: 42357954 - 5579		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS BACKGROUND ON SPECIAL SPOON

DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.

Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	None	None		Cool 4°C
Type of Container	aG	aG	aG	aG	aG	G	1-G	1-G		aG
No. of Container(s)	1	1	1	1	1	1				1
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. OT 7/24/01	See item (5) in Special Instructions.	Activity Scan	Tie to	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
B125X5	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~ B1263	
2 B125Y8 (TRIP BLANK)	WATER	7/2/01	0330										X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Greg Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 1A 3728 7.5.01	1130	R.T. Thomas 7.5.01	1130
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.T. Thomas 7-5-01	1130	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED Ex	7-6-01 1025	D. Jones	7-6-01 1025
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); ~~Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

RT 7.5.01

Matrix *: S=Soil; SD=Sediment; SO=Solid; SL=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	B01-058-6	Page 1 of 1
Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC-96034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** DOW 07-02-01 Government Vehicle/Fed EX	
Shipped To Severn Trent Incorporated RT 7.5.01 RECRA	**Offsite Property No.** AP10311	**Bill of Lading/Air Bill No.** 4235.7954 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mr/hr

Special Handling and/or Storage
Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None RT 7.5.01	None RT 7.5.01	None RT 7.5.01				
Type of Container	aG	aG	aG	aG	aG	aG	G	T-G				
No. of Container(s)	1	1	1	1	1	1	1	1				
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL				
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. RT 7/2/01	See item (5) in Special Instructions.	Activity Scan		Tie to		
Sample No.	**Matrix***	**Sample Date**	**Sample Time**									
3 B125X6	SOIL	7/2/01	0330	X	X	X	X	X		X	X	B12635 RT 7.5.01 B12637

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 0830	Received By/Stored In	Date/Time 0830
Greg Thomas/Greg Thomas	7/2/01	Ref 1A 3728	7/2/01
Relinquished By/Removed From	Date/Time 1130	Received By/Stored In	Date/Time 1130
Ref 1A 3728	7.5.01	R Thorez	7-5-01
Relinquished By/Removed From	Date/Time 1130	Received By/Stored In	Date/Time
R Thorez	7-5-01	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	7.6.01 10:25	D Johnson	7.6.01 10:25
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}, Isotopic Plutonium, Isotopic Thorium {Thorium-228}, Americium-241; Carbon-14; Neptunium-237, Nickel-63, Strontium-89,90 -- Total Sr, Technetium-99, Total Uranium, Tritium -- H3, Isotopic Uranium~~
RT 7.5.01

Matrix*
S=Soil
SE=Sediment
SO=Solid
SS=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	B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518 COA: B20TW1A44C	Method of Shipment: Fed EX	
Shipped To: BT 7/2/01 ~~Roy Brown Severn Trent~~ RECRA	Offsite Property No.: A-10311	Bill of Lading/Air Bill No.: 4235 7954 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mR/hr DOSE

Special Handling and/or Storage

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish sample on 7/5/01 for shipment.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.					RT 7-5-01
Sample No.	Matrix *	Sample Date	Sample Time								
B12800	SOIL	07-02-01	2345	X	X	X	X		X		TIE TO B12637 SC B12637

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Greg Thomas	Date/Time: 7/3/01 0200	Received By/Stored In: Ref 1B 3728	Date/Time: 7/3/01 0200
Relinquished By/Removed From: Ref 1B 3728	Date/Time: 7.6.01 1130	Received By/Stored In: R Thorek	Date/Time: 7-5-01 1130
Relinquished By/Removed From: R Thorek	Date/Time: 7-5-01 1130	Received By/Stored In: FEDEX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 7.6.01 1025	Received By/Stored In: D. Smith	Date/Time: 7.6.01 1025
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
~~(4) ICP Metals - 6010A (TAL) {Aluminum, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}, Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

RT 7-5-01

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-19 | Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W		**SAF No.** B01-058
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** Fed EX
Shipped To TMA/RECRA	**Offsite Property No.** A-010311		**Bill of Lading/Air Bill No.** 423879845579

Price Code 8N **Data Turnaround** 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUND COUNTS ON SPLIT SPOON <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4 2			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1		1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	VOA 8260A TCL			

Sample No.	Matrix *	Sample Date	Sample Time									
B125Y9	SOIL	07-02-01	2345	X	X	X	X		X			TF TO B125Y
~~B126 01~~ RT 7.5.01	~~water~~	~~07-02-01~~	~~2346~~							R RT 7.5.01		B12601
B12601	WATER	07-02-01	2345							X		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728	7.5.01 1130	RT Thomas	7.5.01 1130
RT Thomas	7-5-01 1130	FEDEX	
FEDEX	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
~~(4) ICP Metals - 6010A (Class List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 — Total Sr, Technetium-90; Total Uranium; Tritium - H3; Isotopic Uranium~~

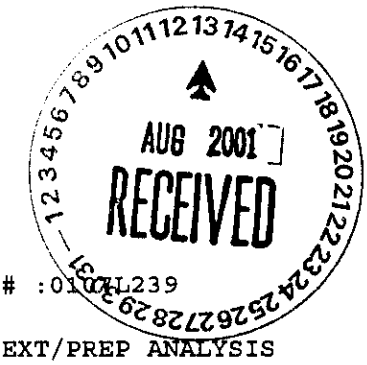
Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish samples on 7/5/01 for shipment RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

RFW LOT # :01[illegible]L239

CLIENT ID	RFW #	MTX	PREP #	COLLECTN DATE	REC	EXT/PREP	ANALYSIS
B125X5	001	S	01LE0809	07/02/01	07/06/01	07/09/01	07/26/01
B125X5	001 R1	S	01LE0898	07/02/01	07/06/01	07/27/01	08/01/01
B125X5	001 MS	S	01LE0898	07/02/01	07/06/01	07/27/01	08/01/01
B125X5	001 MSD	S	01LE0898	07/02/01	07/06/01	07/27/01	08/01/01
B125X6	003	S	01LE0809	07/02/01	07/06/01	07/09/01	07/26/01
B125X6	003 R1	S	01LE0898	07/02/01	07/06/01	07/27/01	08/01/01
B125Y9	005	S	01LE0809	07/02/01	07/06/01	07/09/01	07/26/01
B125Y9	005 R1	S	01LE0898	07/02/01	07/06/01	07/27/01	08/01/01
B125Y9	005 MS	S	01LE0809	07/02/01	07/06/01	07/09/01	07/26/01
B125Y9	005 MSD	S	01LE0809	07/02/01	07/06/01	07/09/01	07/26/01
LAB QC:							
BLK	MB1	S	01LE0809	N/A	N/A	07/09/01	07/25/01
BLK	MB1 BS	S	01LE0809	N/A	N/A	07/09/01	07/25/01
BLK	MB1	S	01LE0898	N/A	N/A	07/27/01	08/01/01
BLK	MB1 BS	S	01LE0898	N/A	N/A	07/27/01	08/01/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-058
LVL#: 0107L239
SDG/SAF#: H1413/B01-058

W.O.#: 11343-606-001-9999-00
Date Received: 07-06-01

DIESEL RANGE ORGANICS

The set of samples consisted of three (3) soil samples collected on 07-02-01.

The samples and their associated QC samples were prepared on 07-09-01, re-extracted on 07-27-01, and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 07-25,26-01 and 08-01-01. The analysis met the intent of method WTPH-D.

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

2. All required holding times for extraction and analysis were met. These samples were originally extracted within their required holding time. Due to low surrogate recoveries, the samples were re-extracted outside of hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. Seven (7) of fourteen (14) surrogate recoveries were outside acceptance criteria. A copy of SDR has been enclosed.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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.

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

8/7/01
Date

R:\share\dro\07-239.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 12 pages.

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 01LC057

Initiator: L. Kauffman Batch: 01071239 Parameter: ODRO
Date: 7-26-01 Samples: All Matrix: Soil
Client: FFU - Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0809

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Low or no surrogate recoveries on all samples and QC.

2. Known or Probable Causes(s)

Bad Surrogate mix.

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 7/26/01

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

5. Final Action...signature/date: Bryan Foley 7/27/01 Other Explanation:

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

01LE0398

Re-extracted past hold time. vc 7/27/01

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett	2	X GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

L-WI-006/E-01/01

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 08/02/01 07:47

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: 11343606001 Page: 1

4

	Cust ID:	B125X5	B125X5	B125X5	B125X5	B125X6	B125X6
Sample Information	RFW#:	001	001	001 MS	001 MSD	003	003
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg REPREP	mg/kg	mg/kg	mg/kg	mg/kg REPREP
	p-Terphenyl	7 * % fl	78 % fl	81 % fl	101 % fl	10 * % fl	101 % fl
Diesel Range Organics		12.6 U	12.7 U	77 %	88 %	12.2 U	12.0 U

	Cust ID:	B125Y9	B125Y9	B125Y9	B125Y9	BLK	BLK BS
Sample Information	RFW#:	005	005	005 MS	005 MSD	01LE0809-MB1	01LE0809-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg REPREP	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	9 * % fl	92 % fl	10 * % fl	10 * % fl	7 * % fl	10 * % fl
Diesel Range Organics		13.2 U	13.5 U	76 %	72 %	12.0 U	84 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

ck 8-2-01

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 08/02/01 07:47

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: 11343606001 Page: 2

	Cust ID:	**BLK**	**BLK BS**
Sample Information	RFW#:	**01LE0898-MB1**	**01LE0898-MB1**
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
	p-Terphenyl	79 %	99 %
Diesel Range Organics		12.0 U	86 %

LK 8-2-01

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g. 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10ug/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.

E = Indicates a compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike reagent grade water spiked with the matrix spiking solution. Spike recoveries are reported.

BSD = Indicates a blank spike duplicate.

MS = Indicates a matrix spike.

MSD = Indicates a matrix spike duplicate.

NA = Not Applicable.

NS = Not spiked.

DF = Dilution factor.

NR = Not required.

SP = Indicates a spiked compound.

Lionville Laboratory Use Only

0107L239

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) Grabs BBA From Mct Dig Terrace Well

LVLI LIONVILLE LABORATORY INC

Client TNU-Hanford B01-058

Est. Final Proj. Sampling Date

Project # 113433-6006-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 7.6.01 Date Due 8-5-01

		A	B				C		D	E				
Refrigerator #		1	5				5		5	5				
#/Type Container	Liquid	1AG												
	Solid	1AG	1AG				1AG		1AG	1AG				
Volume	Liquid	40	0											
	Solid	60	250				120		60	250				
Preservatives		—	—				—							

ANALYSES REQUESTED →	ORGANIC						INORG							
	TCL VOA	BNA	Pest/PCB	Herb			Tot Metal	CN	Hex Chrome	HC Anions				

Lionville Laboratory Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
								8260H	8260SX			8270D			Met(1)		ICAP	Inorg(1)		
	001	B125X5			S	7/2/01	0330	X	X			X			X		X	X		
	002	B125Y8 TL 7-10-01			W			X												
	003	B125X6			S			X	X			X			X		X	X		
	004	B126000			S		2345	X(12d)	X (500ml)			X	TL 7-10-01		X (500ml)		X	X (11Hg)		
	005	B125Y9			S			X(12d)	X (500ml)			X			X (500ml)		X	X (11Hg)		
	006	B126001 TL 7-10-01			W			X												

Special Instructions: SOF B01-058

Run Matrix QC TL 7-10-01

Met(1): Cd, Cr, Cu, Ni, Ag, Bi, Pb, Hg

Inorg(1): ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IHNH3N, IN3N2, ICNTO, IOCT, IPH

DATE/REVISIONS:

Cr+6 1. #004+005: Metals+Cr+6 Share Volume

7-10-01 2. #002, 006 Bflagged to 0107L245-001

1 3. #004-All analyses cancelled

7-16-01 4. Bi cancelled

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 423579545579

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3.4 °C

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

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	7/6/01	1025

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-5	Page 1 of 1
Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** ~~Government Vehicle~~/Fed EX DSW02-2-01	
Shipped To RT 7.5.01 ~~Severn Trent Incorporated~~ RCRA	**Offsite Property No.** A010311	**Bill of Lading/Air Bill No.** 42357954-5579	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive COUNTS BACKGROUND ON SPLIT SPOON
DOSE < 0.5 mR/hr

Special Handling and/or Storage
Samples stored in Ref.# 1A at the 3728
Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	None	None		Cool 4°C
Type of Container	aG	aG	aG	aG	aG	aG	1-L	1-L		aG
No. of Container(s)	1	1	1	1	1	1				1
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. OT 7/24/01	See item (5) in Special Instructions.	Activity Scan	Tie to	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time									
1 B125X5	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~ B12637
2 B125Y8 (TRIP BLANK)	WATER	7/2/01	0330									X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Mary Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Ref 1A 3728	7.5.01 1130	R Thorey	7.5.01 1130
R Thorey	7-5-01 1130	FED EX	
Fed Ex	7.6.01 1025	D. Mund	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) *ICP Metals - 6010A (TAL)* {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium {Thorium-232}, Americium-241, Carbon-14, Neptunium-237, Nickel-63, Strontium-89,90 – Total Sr, Technetium-99, Total Uranium, Tritium-H3, Isotopic Uranium~~

RT 7.5.01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=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	B01-058-6	Page 1 of 1
Collector Thomas G./Watson D.	**Company Contact** Todd, M.E. **Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W	**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC-96034	**Field Logbook No.** EL-1518 **COA** B20TW1A44C	**Method of Shipment** DSV 07-02-01 ~~Government Vehicle~~/Fed EX	
Shipped To ~~Severn Trent Incorporated~~ RT 7.5.01 RECRA	**Offsite Property No.** A0010311	**Bill of Lading/Air Bill No.** 425.7954 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mR/hr

Special Handling and/or Storage
Samples stored in Ref.# 1A at the 3728
Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Delete None	None 7.5.01	None 7.5.01		
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
				No. of Container(s)	1	1	1	1	1	1	1	1		
				Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
					See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. OT 7/2/01	See item (5) in Special Instructions.	Activity Scan		
3 B125X6	SOIL	7/2/01	0330		X	X	X	X	X		X	X	Tie to ~~B12635~~ B12637 RT 7.5.01	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Ref 1A 3728	7.5.01 1130	R Thorek	7-5-01 1130
R Thorek	7-5-01 1130	FED EX	
FED EX	7.6.01 10:25	D. Johnson	7.6.01 10:25

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-229}; Americium-241; Carbon-14; Neptunium-237, Nickel-63; Strontium-89,90 -- Total Sr, Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~
RT 7.5.01

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=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	B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Data Turnaround: 45 Days
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX
Shipped To: ~~BHI/RIDCA Federal Express~~ BT 7/2/01 Incent Recra	Offsite Property No.: A 40311		Bill of Lading/Air Bill No.: 4255 7954 5579

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish sample on 7/5/01 for shipment.

RT 7-5-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.			
B12600	SOIL	07-02-01	2345	X	X	X	X		X		TIETO	B12637 B12638 B12639

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728	7-5-01 1130	R Thorek	7-5-01 1130
R Thorek	7-5-01 1130		
Fed Ex	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196

(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045

(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D

~~(4) ICP Metals - 6010A (TAL) {Aluminum, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~

~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}, Isotopic Plutonium, Isotopic Thorium {Thorium-232}, Americium-241, Carbon-14, Neptunium-237, Nickel-63, Strontium-89,90 -- Total Sr, Technetium-99, Total Uranium, Tritium - H3, Isotopic Uranium~~

RT 7-5-01

Matrix *

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

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

BHLEF-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-19	Page 1 of 1
Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N / **Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W		**SAF No.** B01-058	**Air Quality** ☐
Ice Chest No. ERC 96-034	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA	**Offsite Property No.** AH0311		**Bill of Lading/Air Bill No.** 42387984 - 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive BACKGROUNDS COUNTS ON SPLIT SPOON <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1		1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DTW 07-02-01	See item (5) in Special Instructions. GT 7/3/01	VOA 8260A TCL			
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**							
B125Y9	SOIL	07-02-01	2345	X	X	X	X		X			TF TO B12601	B12601 S.C
~~B12601~~ RT 7.5.01	~~WATER~~	~~07-02-01~~	~~2346~~							R RT 7.5.01		B12603
B12601	WATER	07-02-01	2345							X		

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0200 7/3/01	Ref IB 3728	0200 7/3/01
Ref IB 3728	1130 7.5.01	RT Thorez	1130 7.5.01
RT Thorez	1130 7-5-01		
Glen Ex	7.6.01 1025	D. Smith	7.6.01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D DSW 07-02-01
~~(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155), Gamma Spec. Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - HB; Isotopic Uranium~~

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/5/01.
Collector not available to relinquish samples on 7/5/01 for shipment RT 7.5.01

Matrix *
S=Soil
SD=Sediment
SL=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: 7-6-01 / 10:25

SDG#: 0107L239

Work Order Number: _____ SAF# B01-058

Shipping Container ID: ERC96-034 Chain of Custody # B01-058-20 = 5 - 19

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.4 °C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 20
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Thygal / LVLI Date: 7-6-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-058 H1413

RFW LOT # :0107

CLIENT ID	RFW #	MTX	PREP #	COLLECTN DATE	REC	EXT/PREP	ANALYSIS
B125X5	001	S	01LVX217	07/02/01	07/06/01	N/A	07/09/01
B125X6	003	S	01LVX217	07/02/01	07/06/01	N/A	07/09/01
B125Y9	005	S	01LVX219	07/02/01	07/06/01	N/A	07/10/01
B125Y9	005 MS	S	01LVX219	07/02/01	07/06/01	N/A	07/10/01
B125Y9	005 MSD	S	01LVX219	07/02/01	07/06/01	N/A	07/10/01
LAB QC:							
VBLKHS	MB1	S	01LVX217	N/A	N/A	N/A	07/09/01
VBLKHT	MB1	S	01LVX219	N/A	N/A	N/A	07/09/01
VBLKHT	MB1 BS	S	01LVX219	N/A	N/A	N/A	07/10/01

gw 07-31-01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-058
RFW #: 0107L239
SDG/SAF #: H1413/B01-058

W.O. #: 11343-606-001-9999-00
Date Received: 07-06-2001

GC/MS VOLATILE

Three (3) soil samples were collected on 07-02-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 07-09,10-2001.

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

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

2. The samples were analyzed within required holding time.

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

4. All surrogate recoveries were within EPA QC limits.

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

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

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

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

8/2/01
Date

som\group\data\voa\tnu-hanford\0107-239.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 • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 07/29/01 22:19

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: 11343606001 Page: 1a

	Cust ID:	B125X5	B125X6	B125Y9	B125Y9	B125Y9	VBLKHS
Sample Information	RFW#:	001	003	005	005 MS	005 MSD	01LVX217-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.01	0.926	1.06	1.04	0.962	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	104 %	100 %	91 %	102 %	89 %	99 %
	Bromofluorobenzene	114 %	115 %	109 %	119 %	102 %	107 %
	1,2-Dichloroethane-d4	102 %	93 %	93 %	104 %	92 %	95 %
Chloromethane		11 U	10 U	12 U	12 U	11 U	10 U
Bromomethane		11 U	10 U	12 U	12 U	11 U	10 U
Vinyl Chloride		11 U	10 U	12 U	12 U	11 U	10 U
Chloroethane		11 U	10 U	12 U	12 U	11 U	10 U
Methylene Chloride		24 B	13 B	15 B	15 B	12 B	5 J
Acetone		11 U	10 U	12 U	12 U	11 U	10 U
Carbon Disulfide		6 U	5 U	6 U	6 U	6 U	5 U
1,1-Dichloroethene		6 U	5 U	6 U	92 %	83 %	5 U
1,1-Dichloroethane		6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	6 U	6 U	6 U	5 U
Chloroform		6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloroethane		6 U	5 U	6 U	6 U	6 U	5 U
2-Butanone		11 U	10 U	12 U	12 U	11 U	10 U
1,1,1-Trichloroethane		6 U	5 U	6 U	6 U	6 U	5 U
Carbon Tetrachloride		6 U	5 U	6 U	6 U	6 U	5 U
Bromodichloromethane		6 U	5 U	6 U	6 U	6 U	5 U
1,2-Dichloropropane		6 U	5 U	6 U	6 U	6 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	6 U	6 U	6 U	5 U
Trichloroethene		6 U	5 U	6 U	101 %	90 %	5 U
Dibromochloromethane		6 U	5 U	6 U	6 U	6 U	5 U
1,1,2-Trichloroethane		6 U	5 U	6 U	6 U	6 U	5 U
Benzene		6 U	5 U	6 U	106 %	95 %	5 U
Trans-1,3-Dichloropropene		6 U	5 U	6 U	6 U	6 U	5 U
Bromoform		6 U	5 U	6 U	6 U	6 U	5 U
4-Methyl-2-pentanone		11 U	10 U	12 U	12 U	11 U	10 U
2-Hexanone		11 U	10 U	12 U	12 U	11 U	10 U
Tetrachloroethene		6 U	5 U	6 U	6 U	6 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	6 U	6 U	6 U	5 U
Toluene		6 U	5 U	6 U	103 %	92 %	5 U

*= Outside of EPA CLP QC limits.

7.30.01

RFW Batch Number: 0107L239 Client: TNUHANFORD B01-058 H1413 Work Order: 11343606001 Page: 1b

Cust ID:	B125X5	B125X6	B125Y9	B125Y9	B125Y9	VBLKHS
RFW#:	001	003	005	005 MS	005 MSD	01LVX217-MB1
Chlorobenzene	6 U	5 U	6 U	103 %	91 %	5 U
Ethylbenzene	6 U	5 U	6 U	6 U	6 U	5 U
Styrene	6 U	5 U	6 U	6 U	6 U	5 U
Xylene (total)	6 U	5 U	6 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 07/29/01 22:19

RFW Batch Number: **0107L239** Client: **TNUHANFORD B01-058 H1413** Work Order: 11343606001 Page: 2a

		Cust ID:	**VBLKHT**		**VBLKHT BS**	
Sample Information		RFW#:	**01LVX219-MB1**		**01LVX219-MB1**	
		Matrix:	SOIL		SOIL	
		D.F.:	1.00		1.00	
		Units:	ug/Kg		ug/Kg	
	Toluene-d8		99	%	99	%
Surrogate Recovery	Bromofluorobenzene		112	%	114	%
	1,2-Dichloroethane-d4		99	%	101	%
Chloromethane			10	U	10	U
Bromomethane			10	U	10	U
Vinyl Chloride			10	U	10	U
Chloroethane			10	U	10	U
Methylene Chloride			10		12	B
Acetone			10	U	10	U
Carbon Disulfide			5	U	5	U
1,1-Dichloroethene			5	U	96	%
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	103	%
Dibromochloromethane			5	U	5	U
1,1,2-Trichloroethane			5	U	5	U
Benzene			5	U	108	%
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	105	%

*= Outside of EPA CLP QC limits.

Cust ID: VBLKHT VBLKHT BS

RFW#: 01LVX219-MB1 01LVX219-MB1

Chlorobenzene	5	U	102	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

0107L239

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) Grabs BGA From Mrt Dig Perform Wet

Client: TNU-Hanford B01-058

Est. Final Proj. Sampling Date:

Project #: 11343-6006-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spcl Del: Std TAT: 30 day

Date Rec'd: 7-6-01 Date Due: 8-5-01

		A	B	C	D	E
Refrigerator #		1	5	5	5	5
#/Type Container	Liquid	1pg				
	Solid	1pg	1pg	1pg	1pg	1pg
Volume	Liquid	40	0			
	Solid	60	250	120	60	250
Preservatives		—	—	—		

ANALYSES REQUESTED → ORGANIC: TCL VOA; BNA; Pest/PCB; Herb. INORG: TCLP Metal; CN; Hex Chrome; HC Anions

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 HW	8260 SX			ODRO		Met (1)		ICP/6	Inorg (1)
001	B125X5			S	7/6/01	0330	X	X			X		X		X	X
002	B125Y8 TL 7-10-01			W			X									
003	B125X6			S			X	X			X		X		X	X
004	B12600			S		2345	X(120)	X(500ml)			X	TL 7-10-01	X(500ml)		X	X(11Hg)
005	B125Y9			S			X(120)	X(500ml)			X		X(500ml)		X	X(11Hg)
006	B12601 TL 7-10-01			W			X									

Special Instructions: SOF B01-058

Run Matrix QC TL 7-10-01

Met(1): Cd, Cr, Cu, Ni, Ag, Bi, Pb, Hg

Inorg(1): ICCl, ICFl, ICNO3, ICNO2, ICPO4, ICSO4, INH3N, IN3N2, ICNTO, IOCT, IPH

DATE/REVISIONS:

Cr+6 1. #004+005: Metals + Cr+6 Sharr volume

7-10-01 2. #002, 006 Relogged to 0107L245-001 002

1 3. #004 - All analyses cancelled

7-11-01 4. Bi cancelled

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 423579545579

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp. 3.4 °C

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

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	7/6/01	1005

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-5	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W		SAF No.: B01-058		
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: ~~Government Vehicle~~/Fed EX (DW02-02-01)		
Shipped To: RT 7.5.01 RCRA ~~Severn Trent Incorporated~~	Offsite Property No.: A 010311		Bill of Lading/Air Bill No.: 42357954 - 5579		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive COUNTS BACKGROUND ON SPLIT SPOON

DOSE < 0.5 mR/hr

Special Handling and/or Storage

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.

Collector not available to relinquish samples on 7/5/01 for shipment. RT 7.5.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	~~None~~ Delete	None	None		Cool 4°C
Type of Container	aG	aG	aG	aG	aG	G				aG
No. of Container(s)	1	1	1	1	1	1				1
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		40mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DT 7/24/01	See item (5) in Special Instructions.	Activity Scan	Tie to	VOA - 8260A (TCL)

Sample No.	Matrix *	Sample Date	Sample Time										
B125X5	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~	B12637
B125Y8 (TRIP BLANK)	WATER	7/2/01	0330										X

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Mary Thomas	7/2/01 0830	Ref 1A 3728	7/2/01 0830
Ref 1A 3728	7.5.01 1130	R.K. Thorsen	7.5.01 1130
R.K. Thorsen	7-5-01 1130	FED EX	
FED EX	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium-H3; Isotopic Uranium~~

RT 7.5.01

Matrix *: S=Soil; SD=Sediment; SO=Solid; SL=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	B01-058-6	Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631	**Project Coordinator** TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** T-26/200 W		**SAF No.** B01-058	**Air Quality** ☐	
Ice Chest No. ERC-96034	**Field Logbook No.** EL-1518	**COA** B20TW1A44C	**Method of Shipment** ~~Government Vehicle~~/Fed EX DSN 07-02-01		
Shipped To ~~Severn Trent Incorporated~~ RT 7.5.01 RECRA	**Offsite Property No.** A010311		**Bill of Lading/Air Bill No.** 4235795455579		

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive COUNTS ON SPLIT SPOON BACKGROUND DOSE < 0.5 mR/hr

Special Handling and/or Storage
Samples stored in Ref.# 1A at the 3728 Shipping Facility on 7/2/01.
Collector not available to relinquish samples on 7/5/01 for shipment. RT 7-6-01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	~~Delete~~ None	RT None 7.5.01	RT None 7.5.01		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. OT 7/2/01	See item (5) in Special Instructions.	Activity Scan	Tie to	

Sample No.	Matrix *	Sample Date	Sample Time										
B125X6	SOIL	7/2/01	0330	X	X	X	X	X		X	X	~~B12635~~ RT 7.5.01 B12637	

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0830 7/2/01	Ref 1A 3728	0830 7/2/01
Ref 1A 3728	7.5.01 1130	R Thorek	7-5-01 1130
R Thorek	7-5-01 1180	FED EX	
FED EX	7.6.01 10:25	D. Johnson	7.6.01 10:25

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV)
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on {Radium-226, Radium-228}, Isotopic Plutonium, Isotopic Thorium {Thorium-228}, Americium-241, Carbon-14, Neptunium-237, Nickel-63, Strontium-89,90 -- Total Sr, Technetium-99, Total Uranium, Tritium - H3, Isotopic Uranium~~
RT 7.5.01

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=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	B01-058-20	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: EIC 96-034	Field Logbook No.: EL-1518 — COA: B20TW1A44C	Method of Shipment: Fed EX	
Shipped To: BT 7/2/01 ~~TMA/Hanford Sewerly Tocant~~ ReCra	Offsite Property No.: A 40311	Bill of Lading/Air Bill No.: 4235 7954 5579	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUND COUNTS ON SPLIT SPOON < 0.5 mr/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01. Collector not available to relinquish sample on 7/5/01 for shipment.

RT 7-5-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.			
B12600	SOIL	07-02-01	2345	X	X	X	X		X		TIE TO	B12637 B12638 B12639

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas / Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728	7-5-01 1130	R Thorek	7-5-01 1130
R Thorek	7-5-01 1130	[illegible]	
Fed Ex	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D
~~(4) ICP Metals - 6010A (TAL) {Aluminum, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-230}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

RT 7-5-01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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

BHLEF011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-19	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: T-26/200 W		SAF No.: B01-058		
Ice Chest No.: ERC 96-034	Field Logbook No.: EL-1518	COA: B20TW1A44C	Method of Shipment: Fed EX		
Shipped To: TMA/RECRA	Offsite Property No.: APO311		Bill of Lading/Air Bill No.: 4238984 - 5579		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive BACKGROUNDS COUNTS ON SPLIT SPOON <0.5 mR/hr DOSE

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	Cool/4?			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	500mL	1000mL	120mL	500mL	500mL	1000mL	40mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions. DTW 07-02-01	See item (5) in Special Instructions. SJT 7/3/01	VOA 8260A TCL			

Sample No.	Matrix *	Sample Date	Sample Time										
B125Y9	SOIL	07-02-01	2345	X	X	X	X		X			TF TO	B125Y5.0 B125Y
~~B12601~~ RT 7.5.01	~~WATER~~	~~07-02-01~~	~~2345~~							RT 7.5.01			B12687
B12601	WATER	07-02-01	2345							X			

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	7/3/01 0200	Ref 1B 3728	7/3/01 0200
Ref 1B 3728	7.5.01 1130	RT Thomas	7.5.01 1130
RT Thomas	7-5-01 1130	FEDEX	
FEDEX	7-6-01 1025	D. Smith	7-6-01 1025

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; *ICP Metals - 6010A* (Add-on) {Bismuth, Lead}; Mercury - 7470 - (CV); Chromium Hex - 7196
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA – 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D DJW 07-02-01
~~(4) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}~~
~~(5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}, Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 7/3/01.
Collector not available to relinquish samples on 7/5/01 for shipment RT 7.5.01

Matrix *

S=Soil
SD=Sediment
SO=Solid
SL=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)

ORIGINAL DAyes

SDR # B01-080
Revision #: 0
Date Initiated: 07/09/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12600
Matrix: Soil
Collection Date: 07/02/01

Issue Background:

Class: ☐ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☒ Sample Management Direction

Type: Mis-shipment of Sample

Description: Sample Shipped to Incorrect Laboratory

Disposition:

Description: The listed sample was incorrectly shipped to the Lionville and Eberline laboratories by ERC sample shipping personnel. The sample had been intended as a split sample and should have been directed to the Severn Trent laboratories. All analyses for this sample have been cancelled. The 200 Area Source Characterization project will determine another sampling interval for a split sample.

Justification: Documentation of this sample shipping error is needed to explain cancellation of analyses (see SDR B01-081) and collection of additional split sample material.

Approval Signatures:

S. J. Trent — 7/16/01
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 7/20/01
Task Manager (Print/Sign Name) — Date

Original - Dayes

SDR # B01-081
Revision #: 0
Date Initiated: 07/09/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 – Soil

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12600
Matrix: Soil
Collection Date: 07/02/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Cancellation of Analyses

Description: All Analyses Cancelled Due to Sample Shipping Error

Disposition:

Description: ***The listed sample was incorrectly shipped to the Lionville and Eberline*** **laboratories by ERC sample shipping personnel. The sample had been intended as a split sample and should have been directed to the Severn Trent laboratories. All analyses for this sample have been subsequently cancelled.**

Justification: Because the sample was not sent to the split laboratory, no analytical work should be performed on this sample by Eberline or Lionville laboratories. The 200 Area Source Characterization project will determine another sampling interval for a split sample.

Approval Signatures:

S. J. Trent — 7/16/01
Project Coordinator (Print/Sign Name) — **Date**

M. E. Todd — 7/20/01
Task Manager (Print/Sign Name) — **Date**

ORIGINAL ' Daynes

SDR # B01-082
Revision #: 0
Date Initiated: 07/09/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 – Soil

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12600
Matrix: Soil
Collection Date: 07/02/01

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: Sample Shipping Error Results in Loss of Split Sample

Disposition:

Description: The listed sample was incorrectly shipped to the Lionville and Eberline laboratories by ERC sample shipping personnel. The sample had been intended as a split sample and should have been directed to the Severn Trent laboratories. All analyses for this sample have been subsequently cancelled (see SDR B01-080 and B01-081). The 200 Area Source Characterization project will determine another sampling interval for a split sample.

Justification: Although the identified split sample was lost, no data loss occurred because another sampling interval will be identified for split laboratory sampling.

Approval Signatures:

S. J. Trent — 7/16/01
Project Coordinator (Print/Sign Name) — **Date**

M. E. Todd — 7/20/01
Task Manager (Print/Sign Name) — **Date**

ORIGINAL Dayes

SDR # B01-087
Revision #: 0
Date Initiated: 07/10/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 – Soil

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 6
ID Numbers: B125X3, B125X5, B125X6, B125X7, B125Y3, B125Y9
Matrix: Soil
Collection Date: 06/25/01 – 07/09/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: Laboratory Instructed to Not Report Bismuth Results

Disposition:

Description: For the listed samples, bismuth was incorrectly identified as a constituent to report from the 6010A metals analysis. The laboratory was subsequently instructed to not report bismuth results for the listed samples. The SAF/FSR has been revised to remove bismuth from the standard 6010A TAL analysis list for this project.

Justification: Bismuth is not a contaminant of concern for characterization.

Approval Signatures:

S. J. Trent — 7/16/01
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 7/20/01
Task Manager (Print/Sign Name) — Date