1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0655 was composed of two solid (soil) samples designated under SAF No. B00-006 with a Project Designation of: 200 Area Source Characterization 200-CS-1 Operable Unit.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. Partial results were transmitted to BHI via facsimile on February 7, 2000.

RECEIVED
APR 11 2000
EDMC

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses.

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Total Uranium Analyses

No problems were encountered during the course of the analyses. The total uranium results were reported to BHI on December 29, 1999 via facsimile.

2.4 Isotopic Uranium Analyses

BHI requested isotopic uranium analysis be performed on sample B0X0B0 (7301-02) on December 29, 1999. No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Americium-241 Analyses

The method blank was reworked in chemistry due to a low yield (10%). The reworked method blank had a yield of 23%. The reworked Am method blank data is reported in this report. No other problems were encountered during the course of the analyses.

2.7 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

SAMPLE SUMMARY

SDG 7301
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0X099	200 West	SOLID		N911223-01	B00-006	B00-006-09	11/19/99 11:05
B0X0B0	200 West	SOLID		N911223-02	B00-006	B00-006-09	11/19/99 11:15
Method Blank		SOLID		N911223-04	B00-006		
Method Blank		SOLID		N911223-07	B00-006		
Method Blank		SOLID		N911223-12	B00-006		
Lab Control Sample		SOLID		N911223-03	B00-006		
Lab Control Sample		SOLID		N911223-06	B00-006		
Lab Control Sample		SOLID		N911223-11	B00-006		
Duplicate (N911223-01)	200 West	SOLID		N911223-05	B00-006		11/19/99 11:05
Duplicate (N911223-01)	200 West	SOLID		N911223-08	B00-006		11/19/99 11:05
Duplicate (N911223-01)	200 West	SOLID		N911223-13	B00-006		11/19/99 11:05
Duplicate (N911223-02)	200 West	SOLID		N911223-10	B00-006		11/19/99 11:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

SDG 7301
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRB-SRB-207925
Case no SDG H0655

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
7301	B00-006-09	B0X099	SOLID	95.2			11/23/99	4	N911223-01	7301-001
		B0X0B0	SOLID	95.0			11/23/99	4	N911223-02	7301-002
		Method Blank	SOLID						N911223-04	7301-004
		Method Blank	SOLID						N911223-07	7301-007
		Method Blank	SOLID						N911223-12	7301-012
		Lab Control Sample	SOLID						N911223-03	7301-003
		Lab Control Sample	SOLID						N911223-06	7301-006
		Lab Control Sample	SOLID						N911223-11	7301-011
		Duplicate (N911223-01)	SOLID				11/23/99	4	N911223-05	7301-005
		Duplicate (N911223-01)	SOLID				11/23/99	4	N911223-08	7301-008
		Duplicate (N911223-01)	SOLID				11/23/99	4	N911223-13	7301-013
		Duplicate (N911223-02)	SOLID				11/23/99	4	N911223-10	7301-010

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

SDG 7301
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SPB-207925
Case no SDG H0655

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	6909-119	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6909-119	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6909-119	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6909-119	10.0	2			1	1	1/1		
Gas Proportional Counting												
80A	SOLID	Gross Alpha in Soil	6909-119	20.0	2			1	1	1/1		
80B	SOLID	Gross Beta in Soil	6909-119	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6909-119	15.0	2			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6909-119	9.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

WORK SUMMARY

SDG 7301
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0X099			N911223-01	7301-001	80A/80		01/24/00	02/07/00	MCM	Gross Alpha in Soil
200 West		SOLID	11/19/99	7301-001	80B/80		01/24/00	02/07/00	MCM	Gross Beta in Soil
B00-006-09	B00-006		11/23/99	7301-001	AM	A1	02/11/00	02/15/00	MCM	Americium 241 in Soil
				7301-001	GAM		01/31/00	02/07/00	MCM	Gamma Scan
				7301-001	PU		01/20/00	02/07/00	MCM	Plutonium, Isotopic in Solids
				7301-001	SR		01/20/00	02/07/00	MCM	Total Strontium in Soil
				7301-001	U_T		12/03/99	12/29/99	MCM	Uranium, Total in Soil
B0X0B0			N911223-02	7301-002	80A/80		01/24/00	02/07/00	MCM	Gross Alpha in Soil
200 West		SOLID	11/19/99	7301-002	80B/80		01/24/00	02/07/00	MCM	Gross Beta in Soil
B00-006-09	B00-006		11/23/99	7301-002	AM	A1	02/11/00	02/15/00	MCM	Americium 241 in Soil
				7301-002	GAM		01/31/00	02/07/00	MCM	Gamma Scan
				7301-002	PU		01/20/00	02/07/00	MCM	Plutonium, Isotopic in Solids
				7301-002	SR		01/20/00	02/07/00	MCM	Total Strontium in Soil
				7301-002	U		02/10/00	02/15/00	MCM	Uranium, Isotopic in Soil
				7301-002	U_T		12/03/99	12/29/99	MCM	Uranium, Total in Soil
Method Blank			N911223-04	7301-004	80A/80		01/24/00	02/07/00	MCM	Gross Alpha in Soil
		SOLID		7301-004	80B/80		01/24/00	02/07/00	MCM	Gross Beta in Soil
	B00-006			7301-004	GAM		02/01/00	02/07/00	MCM	Gamma Scan
				7301-004	PU		01/21/00	02/07/00	MCM	Plutonium, Isotopic in Solids
				7301-004	SR		01/20/00	02/07/00	MCM	Total Strontium in Soil
				7301-004	U		02/08/00	02/15/00	MCM	Uranium, Isotopic in Soil
Method Blank			N911223-07	7301-007	U_T		12/03/99	12/29/99	MCM	Uranium, Total in Soil
		SOLID								
	B00-006									
Method Blank			N911223-12	7301-012	AM		02/11/00	02/15/00	MCM	Americium 241 in Soil
		SOLID								
	B00-006									
Lab Control Sample			N911223-03	7301-003	80A/80		01/24/00	02/07/00	MCM	Gross Alpha in Soil
		SOLID		7301-003	80B/80		01/24/00	02/07/00	MCM	Gross Beta in Soil
	B00-006			7301-003	GAM		02/01/00	02/07/00	MCM	Gamma Scan
				7301-003	PU		01/20/00	02/07/00	MCM	Plutonium, Isotopic in Solids
				7301-003	SR		01/20/00	02/07/00	MCM	Total Strontium in Soil
				7301-003	U		02/10/00	02/15/00	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

SDG 7301
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N911223-06	7301-006	U_T		12/03/99	12/29/99	MCM	Uranium, Total in Soil
		SOLID								
	B00-006									
Lab Control Sample			N911223-11	7301-011	AM		02/11/00	02/15/00	MCM	Americium 241 in Soil
		SOLID								
	B00-006									
Duplicate (N911223-01)			N911223-05	7301-005	80A/80		01/24/00	02/07/00	MCM	Gross Alpha in Soil
200 West		SOLID	11/19/99	7301-005	80B/80		01/24/00	02/07/00	MCM	Gross Beta in Soil
	B00-006		11/23/99	7301-005	GAM		02/01/00	02/07/00	MCM	Gamma Scan
				7301-005	PU		01/20/00	02/07/00	MCM	Plutonium, Isotopic in Solids
				7301-005	SR		01/20/00	02/07/00	MCM	Total Strontium in Soil
Duplicate (N911223-01)			N911223-08	7301-008	U_T		12/03/99	12/29/99	MCM	Uranium, Total in Soil
200 West		SOLID	11/19/99							
	B00-006		11/23/99							
Duplicate (N911223-01)			N911223-13	7301-013	AM		02/11/00	02/15/00	MCM	Americium 241 in Soil
200 West		SOLID	11/19/99							
	B00-006		11/23/99							
Duplicate (N911223-02)			N911223-10	7301-010	U		02/08/00	02/15/00	MCM	Uranium, Isotopic in Soil
200 West		SOLID	11/19/99							
	B00-006		11/23/99							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

SDG 7301
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B00-006	Gross Alpha in Soil	EPA900.0	2			1	1	1	5
80B/80	B00-006	Gross Beta in Soil	EPA900.0	2			1	1	1	5
AM	B00-006	Americium 241 in Soil	AM/CMPLATE	2			1	1	1	5
GAM	B00-006	Gamma Scan	GAMMAHI	2			1	1	1	5
PU	B00-006	Plutonium, Isotopic in Solids	PUPLATE	2			1	1	1	5
SR	B00-006	Total Strontium in Soil	SRTOTAL	2			1	1	1	5
U	B00-006	Uranium, Isotopic in Soil	UPLATE	1			1	1	1	4
U_T	B00-006	Uranium, Total in Soil	UKPA	2			1	1	1	5
TOTALS				15			8	8	8	39

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-04 Method Blank

METHOD BLANK

SDG	7301	Client/Case no	Hanford	SDG H0655	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N911223-04	Client sample id	Method Blank		
Dept sample id	7301-004	Material/Matrix		SOLID	
		SAF No	B00-006		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.177	1.7	3.7	10	U	80A
Gross Beta	12587-47-2	-1.61	3.7	6.4	15	U	80B
Uranium 233	U-233/234	0	0.034	0.081	1.0	U	U
Uranium 235	15117-96-1	0.010	0.021	0.079	1.0	U	U
Uranium 238	U-238	0	0.017	0.065	1.0	U	U
Plutonium 238	13981-16-3	0.003	0.021	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	0.005	0.021	0.039	1.0	U	PU
Total Strontium	SR-RAD	-0.077	0.18	0.23	1.0	U	SR
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.081	0.050	U	GAM
Cesium 137	10045-97-3	U		0.072	0.10	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.17	0.10	U	GAM
Radium 226	13982-63-3	U		0.14	0.10	U	GAM
Radium 228	15262-20-1	U		0.42	0.20	U	GAM
Thorium 228	14274-82-9	U		0.097		U	GAM
Thorium 232	TH-232	U		0.42		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM
Uranium 238	U-238	U		8.4		U	GAM
Uranium 235	15117-96-1	U		0.24		U	GAM

200 Area Source Chara. - 200-CS-1 OU

QC-BLANK 33128

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-07 Method Blank

METHOD BLANK

SDG	7301	Client/Case no	Hanford	SDG H0655	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N911223-07	Client sample id	Method Blank		
Dept sample id	7301-007	Material/Matrix		SOLID	
		SAF No	B00-006		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	-0.009	0.002	0.004	1.0	U	U_T

200 Area Source Chara. - 200-CS-1 OU

QC-BLANK 32598

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-12

Method Blank

METHOD BLANK

SDG	7301	Client/Case no	Hanford	SDG H0655	
Contact	Melissa C. Mannion	Contract	TRB-SRB-207925		
Lab sample id	N911223-12	Client sample id	Method Blank		
Dept sample id	7301-012	Material/Matrix		SOLID	
		SAF No	B00-006		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	0.010	0.021	0.026	1.0	U	AM

200 Area Source Chara. - 200-CS-1 OU

QC-BLANK #33390

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7301

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0655

Case no TRB-SBB-207925

Lab sample id N911223-03

Dept sample id 7301-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B00-006

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	159	14	3.6	10		80A	215	8.6	74	75-125	70-130
Gross Beta	236	11	5.9	15		80B	247	9.9	96	77-123	70-130
Uranium 233	4.70	0.54	0.26	1.0		U	4.83	0.19	97	81-119	80-120
Uranium 235	3.71	0.46	0.068	1.0		U	3.92	0.16	95	80-120	80-120
Uranium 238	5.12	0.58	0.24	1.0		U	5.24	0.21	98	81-119	80-120
Plutonium 238	11.7	0.81	0.041	1.0		PU	12.5	0.50	94	87-113	80-120
Plutonium 239/240	12.5	0.86	0.041	1.0		PU	13.2	0.53	95	86-114	80-120
Total Strontium	13.0	0.76	0.26	1.0		SR	12.4	0.50	105	81-119	80-120
Cobalt 60	4.20	0.28	0.14	0.050		GAM	4.65	0.19	90	77-123	80-120
Cesium 137	5.51	0.28	0.19	0.10		GAM	5.70	0.23	97	76-124	80-120

200 Area Source Chara. - 200-CS-1 OU

QC-LCS 33127

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-06

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7301

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0655

Case no TRB-SBB-207925

Lab sample id N911223-06

Dept sample id 7301-006

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B00-006

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	30.4	3.6	0.043	1.0		U_T	33.0	1.3	92	79-121	80-120

200 Area Source Chara. - 200-CS-1 OU

QC-LCS 32597

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-11

Lab Control Sample

LAB CONTROL SAMPLE

SDG	7301	Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion	Case no	TRB-SBR-207925
Lab sample id	N911223-11	Client sample id	Lab Control Sample
Dept sample id	7301-011	Material/Matrix	SOLID
		SAF No	B00-006

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
Americium 241	8.27	0.50	0.028	1.0		AM	9.58	0.38	86	88-112	80-120

200 Area Source Chara. - 200-CS-1 OU

QC-LCS #33389

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-LCS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-05 B0X099

DUPLICATE

SDG	7301	Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N911223-05	Lab sample id	N911223-01
Dept sample id	7301-005	Dept sample id	7301-001
		Received	11/23/99
		% solids	95.2
		Client sample id	B0X099
		Location/Matrix	200 West SOLID
		Collected	11/19/99 11:05
		Custody/SAF No	B00-006-09 B00-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	5.70	3.2	3.9	10	J	80A	3.93	2.6	3.1	J	37	136
Gross Beta	15.5	4.2	5.6	15		80B	12.8	4.4	6.3	J	19	72
Plutonium 238	0.014	0.019	0.035	1.0	U	PU	0	0.014	0.033	U	-	
Plutonium 239/240	0.009	0.019	0.035	1.0	U	PU	0.014	0.021	0.033	U	-	
Total Strontium	0.003	0.14	0.18	1.0	U	SR	-0.057	0.11	0.16	U	-	
Potassium 40	12.0	1.5	1.1			GAM	13.7	1.6	0.96		13	41
Cobalt 60	U		0.11	0.050	U	GAM	U		0.12	U	-	
Cesium 137	U		0.088	0.10	U	GAM	U		0.084	U	-	
Europium 152	U		0.19	0.10	U	GAM	U		0.18	U	-	
Europium 154	U		0.33	0.10	U	GAM	U		0.29	U	-	
Europium 155	U		0.12	0.10	U	GAM	U		0.11	U	-	
Radium 226	0.490	0.17	0.16	0.10		GAM	0.589	0.17	0.15		18	74
Radium 228	0.536	0.32	0.34	0.20		GAM	0.536	0.34	0.36		0	134
Thorium 228	0.804	0.13	0.12			GAM	0.870	0.12	0.11		8	45
Thorium 232	0.536	0.32	0.34			GAM	0.536	0.34	0.36		0	134
Americium 241	U		0.070		U	GAM	U		0.064	U	-	
Uranium 238	U		11		U	GAM	U		11	U	-	
Uranium 235	U		0.20		U	GAM	U		0.19	U	-	

200 Area Source Chara. - 200-CS-1 OU

QC-DUP#1 33129

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-08 B0X099

DUPLICATE

SDG	7301			Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N911223-08	Lab sample id	N911223-01	Client sample id	B0X099
Dept sample id	7301-008	Dept sample id	7301-001	Location/Matrix	200 West SOLID
		Received	11/23/99	Collected	11/19/99 11:05
		% solids	95.2	Custody/SAF No	B00-006-09 B00-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.466	0.053	0.004	1.0	J	U_T	0.460	0.052	0.004	J	1	31	

200 Area Source Chara. - 200-CS-1 OU

QC-DUP#1 32599

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-13 B0X099

DUPLICATE

SDG 7301		Client/Case no Hanford	SDG H0655
Contact Melissa C. Mannion		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N911223-13	Lab sample id N911223-01	Client sample id B0X099	
Dept sample id 7301-013	Dept sample id 7301-001	Location/Matrix 200 West	SOLID
	Received 11/23/99	Collected 11/19/99 11:05	
	% solids 95.2	Custody/SAF No B00-006-09	B00-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Americium 241	0	0.015	0.035	1.0	U	AM	0.004	0.022	0.045	U	-		

200 Area Source Chara. - 200-CS-1 OU

QC-DUP#1A1 33391

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-10 B0X0B0

DUPLICATE

SDG	7301	Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion	Case no	TRB-SPB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N911223-10	Lab sample id	N911223-02
Dept sample id	7301-010	Dept sample id	7301-002
		Received	11/23/99
		% solids	95.0
		Client sample id	B0X0B0
		Location/Matrix	200 West SOLID
		Collected	11/19/99 11:15
		Custody/SAF No	B00-006-09 B00-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Uranium 233	0.371	0.11	0.060	1.0	J	U	0.407	0.13	0.069	J	9	67	
Uranium 235	0.019	0.019	0.073	1.0	U	U	0.055	0.044	0.084	U	-		
Uranium 238	0.395	0.12	0.060	1.0	J	U	0.434	0.13	0.069	J	9	65	

200 Area Source Chara. - 200-CS-1 OU

QC-DUP#2 33385

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-01 B0X099

DATA SHEET

SDG	7301	Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N911223-01	Client sample id	B0X099
Dept sample id	7301-001	Location/Matrix	200 West SOLID
Received	11/23/99	Collected	11/19/99 11:05
% solids	95.2	Custody/SAF No	B00-006-09 B00-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.93	2.6	3.1	10	J	80A
Gross Beta	12587-47-2	12.8	4.4	6.3	15	J	80B
Total Uranium (ug/g)	7440-61-1	0.460	0.052	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.014	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.014	0.021	0.033	1.0	U	PU
Americium 241	14596-10-2	0.004	0.022	0.045	1.0	U	AM
Total Strontium	SR-RAD	-0.057	0.11	0.16	1.0	U	SR
Potassium 40	13966-00-2	13.7	1.6	0.96			GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Cesium 137	10045-97-3	U		0.084	0.10	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.589	0.17	0.15	0.10		GAM
Radium 228	15262-20-1	0.536	0.34	0.36	0.20		GAM
Thorium 228	14274-82-9	0.870	0.12	0.11			GAM
Thorium 232	TH-232	0.536	0.34	0.36			GAM
Americium 241	14596-10-2	U		0.064		U	GAM
Uranium 238	U-238	U		11		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

200 Area Source Chara. - 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

N911223-02 B0X0B0

DATA SHEET

SDG	7301	Client/Case no	Hanford SDG H0655
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N911223-02	Client sample id	B0X0B0
Dept sample id	7301-002	Location/Matrix	200 West SOLID
Received	11/23/99	Collected	11/19/99 11:15
% solids	95.0	Custody/SAF No	B00-006-09 B00-006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.20	3.2	3.2	10	J	80A
Gross Beta	12587-47-2	14.4	4.8	7.0	15	J	80B
Uranium 233	U-233/234	0.407	0.13	0.069	1.0	J	U
Uranium 235	15117-96-1	0.055	0.044	0.084	1.0	U	U
Uranium 238	U-238	0.434	0.13	0.069	1.0	J	U
Total Uranium (ug/g)	7440-61-1	2.14	0.27	0.004	1.0		U_T
Plutonium 238	13981-16-3	0	0.009	0.036	1.0	U	PU
Plutonium 239/240	PU-239/240	0.009	0.019	0.035	1.0	U	PU
Americium 241	14596-10-2	0.025	0.025	0.032	1.0	U	AM
Total Strontium	SR-RAD	-0.052	0.12	0.17	1.0	U	SR
Potassium 40	13966-00-2	12.4	1.3	0.78			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Cesium 137	10045-97-3	U		0.062	0.10	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Radium 226	13982-63-3	0.396	0.13	0.13	0.10		GAM
Radium 228	15262-20-1	0.829	0.26	0.24	0.20		GAM
Thorium 228	14274-82-9	0.637	0.076	0.082			GAM
Thorium 232	TH-232	0.829	0.26	0.24			GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Uranium 238	U-238	U		7.7		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM

200 Area Source Chara. - 200-CS-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test AM Matrix SOLID
SDG 7301
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6909-119						
B0X099	N911223-01		A1	7301-001	U	
B0X0B0	N911223-02		A1	7301-002	U	
BLK (QC ID=33390)	N911223-12			7301-012	U	
LCS (QC ID=33389)	N911223-11			7301-011	LOW	
Duplicate (N911223-01)	N911223-13			7301-013	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source Chara. - 200-CS-1 OU

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 6909-119	2σ prep error 5.0 %			Reference Lab Notebook 6909 pg. 119												
B0X099	N911223-01		A1	0.045	0.500			76		875			84	02/07/00	02/11	SS-013
B0X0B0	N911223-02		A1	0.032	0.500			64		875			84	02/07/00	02/11	SS-014
BLK (QC ID=33390)	N911223-12			0.026	0.500			83		875				02/07/00	02/11	SS-015
LCS (QC ID=33389)	N911223-11			0.028	0.500			89		1001				02/07/00	02/11	SS-065
Duplicate (N911223-01) (QC ID=33391)	N911223-13			0.035	0.500			75		875			84	02/07/00	02/11	SS-016
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD MDA 0.033 ± 0.015
FOR 5 SAMPLES YIELD 77 ± 19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test	PU
Matrix	SOLID
SDG	7301
Contact	Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6909-119								
B0X099	N911223-01			7301-001	U		U	
B0X0B0	N911223-02			7301-002	U		U	
BLK (QC ID=33128)	N911223-04			7301-004	U		U	
LCS (QC ID=33127)	N911223-03			7301-003	ok		ok	
Duplicate (N911223-01)	N911223-05			7301-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source Chara. - 200-CS-1 OU								

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 6909-119	2σ prep error 5.0 %				Reference Lab Notebook 6909 pg. 119											
B0X099	N911223-01			0.033	0.500			83		840			62	01/19/00	01/20	SS-005
B0X0B0	N911223-02			0.036	0.500			62		840			62	01/19/00	01/20	SS-006
BLK (QC ID=33128)	N911223-04			0.039	0.500			89		1009				01/19/00	01/21	SS-057
LCS (QC ID=33127)	N911223-03			0.041	0.500			90		793				01/19/00	01/20	SS-057
Duplicate (N911223-01) (QC ID=33129)	N911223-05			0.035	0.500			64		840			62	01/19/00	01/20	SS-009
Nominal values and limits from method				1.0	0.200			20-105		50	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.037	± 0.006
FOR 5 SAMPLES	YIELD	78	± 27

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test U	Matrix SOLID
SDG 7301	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SRB-207925	
Case no SDG H0655	

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 6909-119											
B0X0B0	N911223-02			7301-002	0.407 J	U	0.434 J	94	41	13	11
BLK (QC ID=33128)	N911223-04			7301-004	U	U	U				
LCS (QC ID=33127)	N911223-03			7301-003	ok	ok	ok				
Duplicate (N911223-02)	N911223-10			7301-010	ok J	- U	ok J	94	40	5	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area Source Chara. - 200-CS-1 OU							Averages	94		9	

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 6909-119	2σ prep error 5.0 %			Reference Lab Notebook 6909 pg. 119												
B0X0B0	N911223-02			0.084	1.00			89		156			83	02/07/00	02/10	SS-027
BLK (QC ID=33128)	N911223-04			0.081	1.00			89		151				02/07/00	02/08	SS-031
LCS (QC ID=33127)	N911223-03			0.26	1.00			104		156				02/07/00	02/10	SS-029
Duplicate (N911223-02) (QC ID=33385)	N911223-10			0.073	1.00			96		151			81	02/07/00	02/08	SS-032
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.12	± 0.18
FOR 4 SAMPLES	YIELD	94	± 14

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test SR Matrix SOLID
SDG 7301
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6909-119						
B0X099	N911223-01			7301-001	U	
B0X0B0	N911223-02			7301-002	U	
BLK (QC ID=33128)	N911223-04			7301-004	U	
LCS (QC ID=33127)	N911223-03			7301-003	ok	
Duplicate (N911223-01)	N911223-05			7301-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source Chara. - 200-CS-1 OU						

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 6909-119	2σ prep error 10.0 % Reference Lab Notebook 6909 pg. 119															
B0X099	N911223-01			0.16	1.00			97		400			62	01/18/00	01/20	GRB-222
B0X0B0	N911223-02			0.17	1.00			97		400			62	01/18/00	01/20	GRB-223
BLK (QC ID=33128)	N911223-04			0.23	1.00			79		400				01/18/00	01/20	GRB-225
LCS (QC ID=33127)	N911223-03			0.26	1.00			88		400				01/18/00	01/20	GRB-224
Duplicate (N911223-01) (QC ID=33129)	N911223-05			0.18	1.00			92		400			62	01/18/00	01/20	GRB-227
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES	REFERENCE	SRTOTAL
	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.20	±	0.086
	YIELD	91	±	15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test 80A Matrix SOLID
SDG 7301
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6909-119						
B0X099	N911223-01	80		7301-001	3.93	J
B0X0B0	N911223-02	80		7301-002	7.20	J
BLK (QC ID=33128)	N911223-04	80		7301-004	U	
LCS (QC ID=33127)	N911223-03	80		7301-003	LOW	
Duplicate (N911223-01)	N911223-05	80		7301-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 10
200 Area Source Chara. - 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-119 2σ prep error 20.0 % Reference Lab Notebook 6909 pg. 119																
B0X099	N911223-01	80		3.1	0.100			36		100			66	01/19/00	01/24	GRB-111
B0X0B0	N911223-02	80		3.2	0.100			36		100			66	01/19/00	01/24	GRB-112
BLK (QC ID=33128)	N911223-04	80		3.7	0.100			38		100				01/19/00	01/24	GRB-114
LCS (QC ID=33127)	N911223-03	80		3.6	0.100			40		100				01/19/00	01/24	GRB-113
Duplicate (N911223-01) (QC ID=33129)	N911223-05	80		3.9	0.100			36		100			66	01/19/00	01/24	GRB-115
Nominal values and limits from method				10	0.100			5-250		100			180			

PROCEDURES	REFERENCE	EPA900.0
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.5 ± 0.68
RESIDUE 37 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test 80B Matrix SOLID
SDG 7301
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 6909-119						
B0X099	N911223-01	80		7301-001	12.8	J
B0X0B0	N911223-02	80		7301-002	14.4	J
BLK (QC ID=33128)	N911223-04	80		7301-004	U	
LCS (QC ID=33127)	N911223-03	80		7301-003	ok	
Duplicate (N911223-01)	N911223-05	80		7301-005	ok	

Nominal values and limits from method RDLs (pCi/g) 15
200 Area Source Chara. - 200-CS-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-119 2σ prep error 15.0 % Reference Lab Notebook 6909 pg. 119																
B0X099	N911223-01	80		6.3	0.100			36		100			66	01/19/00	01/24	GRB-111
B0X0B0	N911223-02	80		7.0	0.100			36		100			66	01/19/00	01/24	GRB-112
BLK (QC ID=33128)	N911223-04	80		6.4	0.100			38		100				01/19/00	01/24	GRB-114
LCS (QC ID=33127)	N911223-03	80		5.9	0.100			40		100				01/19/00	01/24	GRB-113
Duplicate (N911223-01) (QC ID=33129)	N911223-05	80		5.6	0.100			36		100			66	01/19/00	01/24	GRB-115
Nominal values and limits from method				15	0.100			5-250		100			180			

PROCEDURES	REFERENCE	EPA900.0
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 6.2 ± 1.1
RESIDUE 37 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test GAM Matrix SOLID	Client Hanford
SDG 7301	Contract TRB-SBB-207925
Contact Melissa C. Mannion	Case no SDG H0655

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6909-119								
B0X099	N911223-01			7301-001	U		U	
B0X0B0	N911223-02			7301-002	U		U	
BLK (QC ID=33128)	N911223-04			7301-004	U		U	
LCS (QC ID=33127)	N911223-03			7301-003	ok		ok	
Duplicate (N911223-01)	N911223-05			7301-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source Chara. - 200-CS-1 OU								

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 6909-119	2σ prep error 15.0 %				Reference Lab Notebook 6909 pg. 119											
B0X099	N911223-01			0.26	54.7					605			73	01/06/00	01/31	PD,01,00
B0X0B0	N911223-02			0.17	64.4					605			73	01/06/00	01/31	PD,03,00
BLK (QC ID=33128)	N911223-04			0.14	54.0					419				01/06/00	02/01	PD,03,00
LCS (QC ID=33127)	N911223-03			0.14	54.0					419				01/06/00	02/01	PD,01,00
Duplicate (N911223-01) (QC ID=33129)	N911223-05			0.28	54.7					566			74	01/06/00	02/01	PD,01,00
Nominal values and limits from method				0.050	50.0					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD	MDA 0.20	± 0.13
FOR 5 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	02/15/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0655

Test U T Matrix SOLID
SDG 7301
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0655

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium	
Preparation batch 6909-119						
B0X099	N911223-01			7301-001	0.460	J
B0X0B0	N911223-02			7301-002	2.14	
BLK (QC ID=32598)	N911223-07			7301-007	U	
LCS (QC ID=32597)	N911223-06			7301-006	ok	
Duplicate (N911223-01)	N911223-08			7301-008	ok	J
Nominal values and limits from method				RDLs (ug/g)	1.0	
200 Area Source Chara. - 200-CS-1 OU						

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 6909-119	2σ prep error 9.0 %			Reference Lab Notebook 6909 pg. 119												
B0X099	N911223-01			0.004	0.0500								14	12/03/99	12/03	KPA-001
B0X0B0	N911223-02			0.004	0.0500								14	12/03/99	12/03	KPA-001
BLK (QC ID=32598)	N911223-07			0.004	0.0500									12/03/99	12/03	KPA-001
LCS (QC ID=32597)	N911223-06			0.043	0.0500									12/03/99	12/03	KPA-001
Duplicate (N911223-01) (QC ID=32599)	N911223-08			0.004	0.0500								14	12/03/99	12/03	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UKPA
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.012 ± 0.035
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/15/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ~~SML438~~ ERC 99034 RT 11.22.99	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~ R.F. 11.19.99	Offsite Property No.: ~~A000045~~ A000044 RT 11.22.99		Bill of Lading/Air Bill No.: 4235795362 ~~2162~~ 2167 RT 11.22

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
	Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
	No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS		Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions.	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions. A	See item (3) in Special Instructions. B	Neptunium-237, Nickel-63 C	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082

Sample No.	Matrix *	Sample Date	Sample Time									
B0X099	Soil	11-19-99	1105	X	X	X				X	X	X
B0X0B0	Soil	11-19-99	1115	X	X	X				X	X	X
										✓	✓	✓

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1700	Received By	Date/Time 1700
R.Fahlberg/R.F. Hilberg	11-19-99	Ref. 2-C	11-19-99
Relinquished By	Date/Time	Received By	Date/Time
Ref 2 C	11.22.99 0900	R. Thoren	11.22.99 0900
Relinquished By	Date/Time	Received By	Date/Time
R. Thoren	11.22.99/1430	FED EX	11-22-99
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	11-23-99 10:00	[illegible]	11-23-99
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium; Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228)

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89/90 - Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Tho)

CANCEL Th, TC, H, Np, Ni
Add Am
Tie to B0X069 per JHK.

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

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

BHI-EE-011 (10/99)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 11-23-99 10:00

CoC No. BGO-006-09

Container I.D. No. SML-498 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: 3 (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 [signature] Date: 11-23-99 Time: 10:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Form SCP-01.2, 11-06-98

"50 years of quality nuclear services"

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

FEB 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-006
RFW# : 9911L846
SDG/SAF# : H0655/B00-006

W.O.# : 10985-001-001-9999-00
Date Received: 11-24-99

METALS CASE NARRATIVE

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

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

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

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

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

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

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

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

9. All laboratory control samples (LCS) were within the laboratory 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. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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 15 pages.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-31-00
Date

jjw/m11-846

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9911L846

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X6010B	__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]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__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	X6010B		__200.7				__99
Zinc	X6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/31/00

CLIENT: TNU-HANFORD B00-006 RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0X099	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.0	MG/KG	0.29	1.0
		Barium, Total	97.4	MG/KG	0.02	1.0
		Beryllium, Total	0.34	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	9.4	MG/KG	0.08	1.0
		Copper, Total	12.6	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.2	MG/KG	0.11	1.0
		Lead, Total	4.2	MG/KG	0.23	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Vanadium, Total	63.7	MG/KG	0.07	1.0
		Zinc, Total	42.7	MG/KG	0.05	1.0
-002	B0X0B0	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.1	MG/KG	0.28	1.0
		Barium, Total	87.0	MG/KG	0.02	1.0
		Beryllium, Total	0.28	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	7.9	MG/KG	0.07	1.0
		Copper, Total	11.3	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.3	MG/KG	0.10	1.0
		Lead, Total	3.9	MG/KG	0.21	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Vanadium, Total	53.9	MG/KG	0.06	1.0
		Zinc, Total	36.5	MG/KG	0.05	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099						
SILVER, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
SILVER, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
SILVER, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
ARSENIC, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
ARSENIC, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
ARSENIC, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
BARIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
BARIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
BARIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
BERYLLIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/14/00
BERYLLIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/14/00
BERYLLIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/14/00
CADMIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
CADMIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
CADMIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
CHROMIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
CHROMIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
CHROMIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
COPPER, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
COPPER, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
COPPER, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
MERCURY, TOTAL	001	S	99C0383	11/19/99	12/13/99	12/14/99
MERCURY, TOTAL	001 REP	S	99C0383	11/19/99	12/13/99	12/14/99
MERCURY, TOTAL	001 MS	S	99C0383	11/19/99	12/13/99	12/14/99
NICKEL, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
NICKEL, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
NICKEL, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
LEAD, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
LEAD, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
LEAD, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
SELENIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
SELENIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
SELENIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
VANADIUM, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
VANADIUM, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
ZINC, TOTAL	001	S	99L0876	11/19/99	01/10/00	01/12/00
ZINC, TOTAL	001 REP	S	99L0876	11/19/99	01/10/00	01/12/00
ZINC, TOTAL	001 MS	S	99L0876	11/19/99	01/10/00	01/12/00
B0X0B0						
SILVER, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
ARSENIC, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
BARIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
BERYLLIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/14/00
CADMIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
CHROMIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
COPPER, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
MERCURY, TOTAL	002	S	99C0383	11/19/99	12/13/99	12/14/99
NICKEL, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
LEAD, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
SELENIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
VANADIUM, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00
ZINC, TOTAL	002	S	99L0876	11/19/99	01/10/00	01/12/00

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
SILVER, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
ARSENIC LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
ARSENIC, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
BARIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
BARIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
BERYLLIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/14/00
BERYLLIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/14/00
CADMIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
CADMIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
CHROMIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
CHROMIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
COPPER LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
COPPER, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
MERCURY LABORATORY	LC1 BS	S	99C0383	N/A	12/13/99	12/14/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	MB1	S	99C0383	N/A	12/13/99	12/14/99
NICKEL LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
NICKEL, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
LEAD LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
LEAD, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
SELENIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
SELENIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
VANADIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
VANADIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
ZINC LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
ZINC, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3					3				
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG	1G				1MET	1MET	1ag			
Volume	Liquid															
	Solid	60	120			250	60			w/ Ext	200	1000	250			
Preservatives		—	—			—	—				—	—				
ANALYSES REQUESTED		ORGANIC				(1)	pH		INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		8024X 8015C	8025X 8270	8082		Met(1)	1PH			1CNTO	1Met5T	1SULF	Ang(1)			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024X 8015C	8025X 8270	8082		Met(1)	1PH			1CNTO	1Met5T	1SULF	Ang(1)			
001	BOX 099			S	11/9/99	1105	1	1	1		1	1			✓			✓			
002	1 0B0			1	1	1115	1	1	1		1	1			✓			✓			
003	1 0C0			1	1	1105									⊗	⊗	⊗	⊗			
																		11/29/99			

Special Instructions:

Saf # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
Ang(1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # 5448 6605
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.0 °C

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

NOTES: 4235.7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. Johnson	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ERC 99 023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RF 11.19.99	Offsite Property No.: A000046	Bill of Lading/Air Bill No.: 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions.	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0X099	Soil	11-19-99	1105				X	X	X				X
2	B0X0B0	soil	11.19.99	1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg / R.Fahlberg	1700 11.19.99	Ref 1-C	1700 11.19.99
Ruth C	11.22.99/0900	R. Thoren	11.22.99/0900
R. Thoren	11.22.99/1450	FED EX	
FED EX	11.24.99/1325	D. Finter	11.24.99/1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228)

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Tho

Tie to B0X069

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

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

BHI-EE-011 (10/99)

9911L846 / 2.1°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 2 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ERC99023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RF 11.19.99	Offsite Property No.: A0000046	Bill of Lading/Air Bill No.: 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B0X099	Soil	11.19.99	1105	X									
B0K0B0	Soil	11.19.99	1115	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	11.19.99 1700	Raf 2-C	11.19.99 1700
Raf 2-C	11.22.99 0900	R. Thoren	11.22.99 0900
R. Thoren	11.22.99 1430	FED EX	
FED EX	11.24.99 1325	[illegible]	11.24.99 1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

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

BHI-EE-011 (10/99)

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

FEB 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-006
RFW# : 9911L846
SDG# : H0655
SAF# : B00-006

W.O. # : 10985-001-001-9999-00
Date Received: 11-24-99

INORGANIC CASE NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of Ammonia, Sulfide and Total Cyanide.

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

5. The method blanks were within method criteria.

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

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

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

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

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-24-00
Date

njp\i11-846

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 15 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Soilids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3	
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)
Oxygne Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Prpearation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate Nitrite **Method:** EPA 353.2

Other: Ammonia **Method** EPA 350.3

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } EPA 300.0

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/27/99

CLIENT: TNU-HANFORD B00-006

RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0X099	% Solids	88.9		%	0.01	1.0
		Chloride by IC	1.4	u	MG/KG	1.4	1.0
		Fluoride by IC	2.8	u	MG/KG	2.8	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	5.4		MG/KG	1.4	1.0
		Cyanide, Total	0.56	u	MG/KG	0.56	1.0
		Phosphate by IC	1.5		MG/KG	1.4	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Sulfate by IC	3.4		MG/KG	1.4	1.0
		Nitrate Nitrite	1.1		MG/KG	0.24	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.7		SOIL PH	0.01	1.0
		Sulfide	4.3		MG/KG	2.2	1.0
-002	B0X0B0	% Solids	92.4		%	0.01	1.0
		Chloride by IC	2.3		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	4.0		MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	3.0		MG/KG	1.4	1.0
		Nitrate Nitrite	0.73		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.01	1.0
		Sulfide	4.1		MG/KG	2.2	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/27/99

CLIENT: TNU-HANFORD B00-006

RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC106-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	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LC129B-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI086-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3A62-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAMA47-MB1	Ammonia, as N	25.0	u	MG/KG	25.0	1.0
BLANK10	99LSDB73-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/27/99

CLIENT: TNU-HANFORD B00-006

RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0X099	Chloride by IC	29.6	1.1	28.1	101.3	1.0
		Fluoride by IC	64.6	0.0	56.2	114.8	1.0
		Nitrite by IC	27	1.4 u	28	94.8	1.0
		Nitrate by IC	33	5.4	28	99.3	1.0
		Cyanide, Total	5.5	0.56u	5.6	97.6	1.0
		Phosphate by IC	29.4	1.5	28.1	99.3	1.0
		Sulfate by IC	30.8	3.4	28.1	97.2	1.0
		Nitrate Nitrite	7.2	1.1	6.3	96.6	1.0
		Sulfide	401	4.3	400	99.3	1.0
-002	BCX0B0	Soluble Chromium VI	4.5	0.43u	4.3	107.1	1.0
		Insoluble Chromium VI	1160	0.43u	1180	98.9	100
		Ammonia, as N	103	1.3 u	105	98.2	1.0
BLANK10	99LIC106-MB1	Chloride by IC	23.3	1.2 u	25.0	93.3	1.0
		Fluoride by IC	52.0	2.5 u	50.0	104.0	1.0
		Nitrite by IC	24	1.2 u	25	94.9	1.0
		Nitrate by IC	25	1.2 u	25	99.2	1.0
		Phosphate by IC	25.4	1.2 u	25.0	101.8	1.0
		Sulfate by IC	23.4	1.2 u	25.0	93.5	1.0
BLANK10	99LVI086-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.4	1.0
		Insoluble Chromium VI	1130	0.40u	1160	97.0	100
BLANK10	99LN3A62-MB1	Nitrate Nitrite	4.7	0.20u	5.0	94.6	1.0
BLANK10	99LAMA47-MB1	Ammonia, as N	918	25.0 u	1000	91.8	1.0
		Ammonia, as N MSD	1010	25.0 u	1000	101.2	1.0
BLANK10	99LSDB73-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0
		Sulfide MSD	9.2	2.0 u	10.0	92.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/27/99

CLIENT: TNU-HANFORD B00-006 RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LAMA47-MB1	Ammonia, as N	91.8	101.2	9.8
BLANK10	99LSDB73-MB1	Sulfide	93.0	92.0	1.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/27/99

CLIENT: TNU-HANFORD B00-006

RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0X099	Chloride by IC	1.4 u	1.4 u	NC	1.0
		Fluoride by IC	2.8 u	2.8 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	5.4	6.4	17.0	1.0
		Cyanide, Total	0.56u	0.56u	NC	1.0
		Phosphate by IC	1.5	1.4 u	NC	1.0
		Sulfate by IC	3.4	3.2	5.2	1.0
		Nitrate Nitrite	1.1	1.1	5.0	1.0
		pH	8.7	8.7	0.2	1.0
		Sulfide	4.3	4.2	2.5	1.0
-002REP	B0X0B0	Chromium VI	0.43u	0.43u	NC	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/27/99

CLIENT: TNU-HANFORD B00-006 RECRA LOT #: 9911L846

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC129B-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	96.2
LCS20	99LC129B-LC2	Cyanide, Total LCS	9.8	10	MG/KG	97.9

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099						
% SOLIDS	001	S	99L%S159	11/19/99	12/02/99	12/03/99
CHLORIDE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
CHLORIDE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
CHLORIDE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
FLUORIDE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
FLUORIDE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
FLUORIDE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRITE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRITE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRITE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
TOTAL CYANIDE	001	S	99LC129B	11/19/99	12/02/99	12/04/99
TOTAL CYANIDE	001 REP	S	99LC129B	11/19/99	12/02/99	12/04/99
TOTAL CYANIDE	001 MS	S	99LC129B	11/19/99	12/02/99	12/04/99
PHOSPHATE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
PHOSPHATE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
PHOSPHATE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
CHROMIUM VI	001	S	99LVI086	11/19/99	12/05/99	12/05/99
SULFATE BY IC	001	S	99LIC106	11/19/99	12/07/99	12/07/99
SULFATE BY IC	001 REP	S	99LIC106	11/19/99	12/07/99	12/07/99
SULFATE BY IC	001 MS	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE NITRITE	001	S	99LN3A62	11/19/99	12/17/99	12/17/99
NITRATE NITRITE	001 REP	S	99LN3A62	11/19/99	12/17/99	12/17/99
NITRATE NITRITE	001 MS	S	99LN3A62	11/19/99	12/17/99	12/17/99
AMMONIA	001	S	99LAMA47	11/19/99	12/21/99	12/22/99
PH	001	S	99LPH129	11/19/99	12/01/99	12/01/99
PH	001 REP	S	99LPH129	11/19/99	12/01/99	12/01/99
SULFIDE	001	S	99LSDB73	11/19/99	12/05/99	12/05/99
SULFIDE	001 REP	S	99LSDB73	11/19/99	12/05/99	12/05/99
SULFIDE	001 MS	S	99LSDB73	11/19/99	12/05/99	12/05/99
B0X0B0						
% SOLIDS	002	S	99L%S159	11/19/99	12/02/99	12/03/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
FLUORIDE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRITE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
TOTAL CYANIDE	002	S	99LC129B	11/19/99	12/02/99	12/04/99
PHOSPHATE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
CHROMIUM VI	002	S	99LVI086	11/19/99	12/05/99	12/05/99
CHROMIUM VI	002 REP	S	99LVI086	11/19/99	12/05/99	12/05/99
CHROMIUM VI	002 MS	S	99LVI086	11/19/99	12/05/99	12/05/99
CHROMIUM VI	002 MSD	S	99LVI086	11/19/99	12/05/99	12/05/99
SULFATE BY IC	002	S	99LIC106	11/19/99	12/07/99	12/07/99
NITRATE NITRITE	002	S	99LN3A62	11/19/99	12/17/99	12/17/99
AMMONIA	002	S	99LAMA47	11/19/99	12/21/99	12/22/99
AMMONIA	002 REP	S	99LAMA47	11/19/99	12/21/99	12/22/99
AMMONIA	002 MS	S	99LAMA47	11/19/99	12/21/99	12/22/99
PH	002	S	99LPH129	11/19/99	12/01/99	12/01/99
SULFIDE	002	S	99LSDB73	11/19/99	12/05/99	12/05/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
CHLORIDE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99
FLUORIDE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
FLUORIDE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99
NITRITE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
NITRITE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99
NITRATE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
NITRATE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99
TOTAL CYANIDE	LC1 L	S	99LC129B	N/A	12/02/99	12/04/99
TOTAL CYANIDE	LC2 L	S	99LC129B	N/A	12/02/99	12/04/99
TOTAL CYANIDE	MB1	S	99LC129B	N/A	12/02/99	12/04/99
PHOSPHATE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
PHOSPHATE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99
CHROMIUM VI	MB1	S	99LVI086	N/A	12/05/99	12/05/99
CHROMIUM VI	MB1 BS	S	99LVI086	N/A	12/05/99	12/05/99
CHROMIUM VI	MB1 BSD	S	99LVI086	N/A	12/05/99	12/05/99
SULFATE BY IC	MB1	S	99LIC106	N/A	12/07/99	12/07/99
SULFATE BY IC	MB1 BS	S	99LIC106	N/A	12/07/99	12/07/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	MB1	S	99LN3A62	N/A	12/17/99	12/17/99
NITRATE NITRITE	MB1 BS	S	99LN3A62	N/A	12/17/99	12/17/99
AMMONIA	MB1	S	99LAMA47	N/A	12/21/99	12/22/99
AMMONIA	MB1 BS	S	99LAMA47	N/A	12/21/99	12/22/99
AMMONIA	MB1 BSD	S	99LAMA47	N/A	12/21/99	12/22/99
SULFIDE	MB1	S	99LSDB73	N/A	12/05/99	12/05/99
SULFIDE	MB1 BS	S	99LSDB73	N/A	12/05/99	12/05/99
SULFIDE	MB1 BSD	S	99LSDB73	N/A	12/05/99	12/05/99

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 days

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3						3				
#/Type Container	Liquid																
	Solid	1AG	1AG	1		1AG	1G					1MET	1MET	1g			
Volume	Liquid																
	Solid	60	120	1		250	60					200	1000	250			
Preservatives		—	—			—	—					—	—				
ANALYSES REQUESTED →		ORGANIC				(1)	pH		INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
RECRA LabNet Use Only		8024X 8015C	8025X 8DRO	8PCB		Met①	1PH			1CN TO		1%MST	1SUB	Ang①			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil	001	BOX 099			S	11/19/99	1105	1	1	1		1	1			✓			✓	
SE - Sediment	002	080					1115	1	1	1		1	1			✓			✓	
SO - Solid	003	0C0					1105													
SL - Sludge																				
W - Water																				
O - Oil																				
A - Air																				
DS - Drum Solids																				
DL - Drum Liquids																				
L - EP/TCLP Leachate																				
WI - Wipe																				
X - Other																				
F - Fish																				

11/29/99

Special Instructions:

Saf # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
Ang① = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # 5448604
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 2.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235.7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. Smith	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality: ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ERC 99 023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA/RECRA~~ RF 11-19-99	Offsite Property No.: A000046	Bill of Lading/Air Bill No.: 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions	See item (3) in Special Instructions	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082
Sample No. / Matrix * / Sample Date / Sample Time										
B0X099 / Soil / 11-19-99 / 1105				X	X	X				X
B0X030 / soil / 11-19-99 / 1115				X	X	X				X

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By: R. Fahlberg / R. Fahlberg 11-19-99 Date/Time 1700	Received By: Ref 2-C 11-19-99 Date/Time 1700
Relinquished By: Ruth 2-C 11-22-99/0900	Received By: R. Thoren 11-22-99/0900
Relinquished By: R. Thoren 11-22-99/1430	Received By: FED EX
Relinquished By: FED EX 11-24-99/1325	Received By: [illegible] 11-24-99/1325
Relinquished By: Date/Time	Received By: Date/Time
Relinquished By: Date/Time	Received By: Date/Time

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228}
(3) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-228}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Tho

Tie to B0X069

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

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

BHI-EE-011 (10/99)

9911L846 /2.1°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 2 of 2

Collector R Fahlberg	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location 200 West		SAF No. B00-006	Air Quality ☐
Ice Chest No. ERC99023	Field Logbook No. EL 1435	COA B20CS1671C	Method of Shipment Fed Ex	
Shipped To ~~TMA~~/RECRA RF 11.19.99	Offsite Property No. A0000046		Bill of Lading/Air Bill No. 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C										
	Type of Container	aG										
	No. of Container(s)	1										
Special Handling and/or Storage	Volume	250mL										
SAMPLE ANALYSIS		See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B0X099	Soil	11-19-99	1105	X									
B0K0B0	Soil	11.19.99	1115	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1700	Received By	Date/Time 1700
R. Fahlberg / R. Fahlberg	11-19-99	Raf 2-C	11-19-99
Relinquished By	Date/Time	Received By	Date/Time
Raf 2-C	11.22.99/0900	R. Thoren	11.22.99/0900
Relinquished By	Date/Time	Received By	Date/Time
R. Thoren	11.22.99/1430	FED EX	
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	11.24.99/1325	D. Smith	11.24.99/1325
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-006
RFW #: 9911L846
SDG/SAF #: H0655/B00-006

W.O. #: 10985-001-001-9999-00
Date Received: 11-24-99

GC/MS VOLATILE

Two (2) soil samples were collected on 11-19-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for the client specified Volatile target compounds on 12-02,03-99.

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 required holding time for analysis was met.
3. A non-target compound was detected in sample B0X0B0.
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 and the target compound 2-Hexanone at levels less than the CRQL.

FEB 2000
RECEIVED
Data
Log In

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

02-11-00
Date

som\group\data\voa\tnu-hanford-11-846.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 15 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (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.

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 02/02/00 15:26

RFW Batch Number: **9911L846** Client: **TNU-HANFORD B00-006** Work Order: 10985001001 Page: 1a

	Cust ID:	B0X099		B0X099		B0X099		B0X0B0		VBLKJD		VBLKJD BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		99LVH619-MB1		99LVH619-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.04		1.02		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	99	%	98	%	104	%	94	%	98	%	98	%
	Bromofluorobenzene	86	%	86	%	94	%	76	%	90	%	89	%
	1,2-Dichloroethane-d4	93	%	93	%	100	%	91	%	90	%	92	%
Chloromethane		12	U	11	U	11	U	11	U	10	U	10	U
Bromomethane		12	U	11	U	11	U	11	U	10	U	10	U
Vinyl Chloride		12	U	11	U	11	U	11	U	10	U	10	U
Chloroethane		12	U	11	U	11	U	11	U	10	U	10	U
Methylene Chloride		8	B	7	B	8	B	10	B	7		7	B
Acetone		12	U	11	U	7	J	6	J	10	U	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	75	%	80	%	6	U	5	U	75	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		12	U	11	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	93	%	98	%	6	U	5	U	91	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		6	U	98	%	104	%	6	U	5	U	95	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		12	U	11	U	11	U	11	U	10	U	10	U
2-Hexanone		12	U	11	U	11	U	11	U	2	J	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		6	U	105	%	110	%	6	U	5	U	102	%

*= Outside of EPA CLP QC limits.

JW 02-02-00

RFW Batch Number: 9911L846 Client: TNU-HANFORD B00-006 Work Order: 10985001001 Page: 1b

Cust ID:	B0X099	B0X099	B0X099	B0X0B0	VBLKJD	VBLKJD BS
RFW#:	001	001 MS	001 MSD	002	99LVH619-MB1	99LVH619-MB1
Chlorobenzene	6 U	103 %	110 %	6 U	5 U	102 %
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

05

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0X099

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9911L846-001

Sample wt/vol: 4.80 (g/mL) G Lab File ID: h120210

Level: (low/med) LOW Date Received: 11/24/99

% Moisture: not dec. 11 Date Analyzed: 12/02/99

Column: (pack/cap) CAP Dilution Factor: 1.04

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0X0B0

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9911L846-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h120313

Level: (low/med) LOW Date Received: 11/24/99

% Moisture: not dec. 8 Date Analyzed: 12/03/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 3789853	BENZOIC ACID, 2-[(TRIMETHYLS	25.378	8	NJ

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099	001	S	99LVH619	11/19/99	N/A	12/02/99
B0X099	001 MS	S	99LVH619	11/19/99	N/A	12/02/99
B0X099	001 MSD	S	99LVH619	11/19/99	N/A	12/02/99
B0X0B0	002	S	99LVH621	11/19/99	N/A	12/03/99

LAB QC:

VBLKJD	MB1	S	99LVH619	N/A	N/A	12/02/99
VBLKJD	MB1 BS	S	99LVH619	N/A	N/A	12/02/99
VBLKJB	MB1	S	99LVH621	N/A	N/A	12/03/99
VBLKJB	MB1 BS	S	99LVH621	N/A	N/A	12/03/99

N 02-03-00

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-00C

Est. Final Proj. Sampling Date:

Project #: 10485-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: SPEC Del: std TAT: 30 day

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3						3			
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG	1G				1MET	1MET	1g			
Volume	Liquid															
	Solid	60	120			250	60			w/ Ent	240	1000	250			
Preservatives		—	—			—	—				—	—				
ANALYSES REQUESTED	ORGANIC: VOA								INORG: Metal							
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	(1)															
	pH															
	INORG: CN															

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024X 8015C	8025X 8DRO	PCB		Met①	1PH		1CN TO	1PCNST	1SULB	Ang①
001	BOX 099			S	11/19/99	1105	1	1	1		1	1		✓			✓
002	1 0B0				1	1115	1	1	1		1	1		✓			✓
003	1 0C0			1	1	1105								⊗	⊗	⊗	⊗
																11/29/99	

Special Instructions:

Saf # B00-00C

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
Ang① = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICP04, ICS04, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # 5448604
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.0 °C

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

NOTES:
4235.7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. Smith	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West		SAF No.: B00-006
Ice Chest No.: ERC 99 023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RF 11-19-99	Offsite Property No.: A000046		Bill of Lading/Air Bill No.: 42357953 2134

Price Code: 8N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions.	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082
B0X099	Soil	11-19-99	1105				X	X	X				X
B0X030	soil	11-19-99	1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1200 11-19-99	RF	1700 11-19-99
R. Thoren	11-22-99/0900	R. Thoren	11-22-99/0900
R. Thoren	11-22-99/1430	FED EX	
FED EX	11-24-99/1325	D. Smith	11-24-99/1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228}

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-228}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Tho

Tie to B0X069

Matrix *

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

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

BHI-EE-011 (10/99)

9911L846 / 2.1°

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West		SAF No.: B00-006
Ice Chest No.: ERC99023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RF 11.19.99	Offsite Property No.: A0000046		Bill of Lading/Air Bill No.: 42357953 2134

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B0X099	Soil	11.19.99	1105	X									
B0K0B0	Soil	11.19.99	1115	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	11.19.99 1700	Raf 2-C	11.19.99 1700
Raf 2-C	11.22.99 0900	R. Thoren	11.22.99 0900
R. Thoren / R. Thoren	11.22.99 1430	FED EX	
FED EX	11.24.99 1325	[illegible]	11.24.99 1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Reera LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-006
RFW #: 9911L846
SDG/SAF #: H0655/B00-006

W.O.#: 10985-001-001-9999-00
Date Received: 11-24-99

SEMIVOLATILE

Two (2) soil samples were collected on 11-19-99.

The samples and their associated QC samples were extracted on 12-02-99 and analyzed according to criteria set forth in Reera OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 12-21,23,24-99.

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. Non-target compounds were detected in the samples.

3. The required holding times for extraction and analysis were met.

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 samples were spectrally searched for Butylated Hydroxytoluene and Tributylphosphate; however, they were not identified in the samples.

FEB 2000
RECEIVED
Data
Log In

Pv

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

02-16-00
Date

som\group\data\bna\tnu11-846.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.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

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

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

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

mmz\10-94\gloss.bna

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.

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 01/16/00 16:38

RFW Batch Number: 9911L846 Client: TNU-HANFORD B00-006 Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0X099		B0X099		B0X099		B0X0B0		SBLKHN		SBLKHN BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		99LE1465-MB1		99LE1465-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	75	%	70	%	72	%	77	%	78	%	53	%
	2-Fluorobiphenyl	74	%	69	%	72	%	73	%	80	%	55	%
	Terphenyl-d14	78	%	71	%	80	%	76	%	78	%	65	%
	Phenol-d5	76	%	70	%	73	%	71	%	78	%	53	%
	2-Fluorophenol	75	%	69	%	72	%	80	%	79	%	51	%
	2,4,6-Tribromophenol	73	%	80	%	85	%	61	%	81	%	46	%
Phenol		370	U	68	%	71	%	360	U	330	U	53	%
bis(2-Chloroethyl)ether		370	U	370	U	370	U	360	U	330	U	330	U
2-Chlorophenol		370	U	71	%	74	%	360	U	330	U	55	%
1,3-Dichlorobenzene		370	U	370	U	370	U	360	U	330	U	330	U
1,4-Dichlorobenzene		370	U	68	%	70	%	360	U	330	U	54	%
1,2-Dichlorobenzene		370	U	370	U	370	U	360	U	330	U	330	U
2-Methylphenol		370	U	370	U	370	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	360	U	330	U	330	U
4-Methylphenol		370	U	370	U	370	U	360	U	330	U	330	U
N-Nitroso-di-n-propylamine		370	U	81	%	81	%	360	U	330	U	66	%
Hexachloroethane		370	U	370	U	370	U	360	U	330	U	330	U
Nitrobenzene		370	U	370	U	370	U	360	U	330	U	330	U
Isophorone		370	U	370	U	370	U	360	U	330	U	330	U
2-Nitrophenol		370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dimethylphenol		370	U	370	U	370	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dichlorophenol		370	U	370	U	370	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	71	%	73	%	360	U	330	U	56	%
Naphthalene		370	U	370	U	370	U	360	U	330	U	330	U
4-Chloroaniline		370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorobutadiene		370	U	370	U	370	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	62	%	64	%	360	U	330	U	46	%
2-Methylnaphthalene		370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		940	U	940	U	940	U	900	U	840	U	840	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9911L846 Client: TNU-HANFORD B00-006 Work Order: 10985001001 Page: 1b

05

Cust ID:	B0X099		B0X099		B0X099		B0X0B0		SBLKHN		SBLKHN BS	
RFW#:	001		001 MS		001 MSD		002		99LE1465-MB1		99LE1465-MB1	
2-Chloronaphthalene	370	U	370	U	370	U	360	U	330	U	330	U
2-Nitroaniline	940	U	940	U	940	U	900	U	840	U	840	U
Dimethylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
Acenaphthylene	370	U	370	U	370	U	360	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	370	U	360	U	330	U	330	U
3-Nitroaniline	940	U	940	U	940	U	900	U	840	U	840	U
Acenaphthene	370	U	74	%	74	%	360	U	330	U	58	%
2,4-Dinitrophenol	940	U	940	U	940	U	900	U	840	U	840	U
4-Nitrophenol	940	U	59	%	57	%	900	U	840	U	31	%
Dibenzofuran	370	U	370	U	370	U	360	U	330	U	330	U
2,4-Dinitrotoluene	370	U	64	%	66	%	360	U	330	U	50	%
Diethylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	360	U	330	U	330	U
Fluorene	370	U	370	U	370	U	360	U	330	U	330	U
4-Nitroaniline	940	U	940	U	940	U	900	U	840	U	840	U
4,6-Dinitro-2-methylphenol	940	U	940	U	940	U	900	U	840	U	840	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	360	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	370	U	360	U	330	U	330	U
Pentachlorophenol	940	U	76	%	83	%	900	U	840	U	51	%
Phenanthrene	370	U	370	U	370	U	360	U	330	U	330	U
Anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Carbazole	370	U	370	U	370	U	360	U	330	U	330	U
Di-n-butylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
Fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Pyrene	370	U	70	%	79	%	360	U	330	U	66	%
Butylbenzylphthalate	370	U	370	U	370	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Chrysene	370	U	370	U	370	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	370	U	370	U	360	U	330	U	330	U
Di-n-octyl phthalate	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	370	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	370	U	370	U	370	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0X099

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B00-006

Matrix: (soil/water) SOIL Lab Sample ID: 99111846-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A122115

Level: (low/med) LOW Date Received: 11/24/99

% Moisture: 11 decanted: (Y/N) __ Date Extracted: 12/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 12/21/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.01	100	JAB
2.	ALDOL CONDENSATE	8.57	90	JAB
3.	ALDOL CONDENSATE	9.35	90	JAB
4.	HEXADECANOIC ACID	21.27	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

E0X0B0

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B00-006

Matrix: (soil/water) SOIL Lab Sample ID: 9911L846-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D122222

Level: (low/med) LOW Date Received: 11/24/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 12/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 12/23/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.88	90	JAB
2.	HEXADECANOIC ACID	20.70	200	JB
3.	UNKNOWN	23.73	100	J
4.	UNKNOWN	26.25	90	JB

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099	001	S	99LE1465	11/19/99	12/02/99	12/21/99
B0X099	001 MS	S	99LE1465	11/19/99	12/02/99	12/21/99
B0X099	001 MSD	S	99LE1465	11/19/99	12/02/99	12/21/99
B0X0B0	002	S	99LE1465	11/19/99	12/02/99	12/23/99

LAB QC:

SBLKHN	MB1	S	99LE1465	N/A	12/02/99	12/21/99
SBLKHN	MB1 BS	S	99LE1465	N/A	12/02/99	12/24/99

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3							3			
#/Type Container	Liquid																
	Solid	1AG	1AG	1		1AG	1G				1MET	1MET	1q				
Volume	Liquid																
	Solid	60	120	1		250	60				240	1000	350				
Preservatives		—	—			—	—				—	—					
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb		(1)	pH		INORG: Metal	CN							
RECRA LabNet Use Only		C624X	OSCSC	C625X	ODRO	PCB		Met①	1PH			1CNTO	1MNST	1SUB	Ana①		

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	C624X	OSCSC	C625X	ODRO	PCB		Met①	1PH			1CNTO	1MNST	1SUB	Ana①		
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate Wt - Wipe X - Other F - Fish	001	BOX 099			S	11/19/99	1105	1	1	1				1	1			✓			✓		
	002	1 OBO			1	1	1115	1	1	1				1	1			✓			✓		
	003	1 OCO			1	1	1105											⊗	⊗	⊗	⊗		
																				11/29/99			

Special Instructions:

Saf # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
Ana① = 3. IN3N2, ICCL, ICFC, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 5448604
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 2.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235.7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. [illegible]	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality: ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ERC 99 023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RF 11.19.99	Offsite Property No.: A000046	Bill of Lading/Air Bill No.: 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions	See item (3) in Special Instructions	Neptunium-237, Nickel-63	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082
Sample No. / Matrix * / Sample Date / Sample Time										
B0X099 / Soil / 11-19-99 / 1105				X	X	X				X
B0X030 / soil / 11.19.99 / 1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	11.19.99 1700	Ref J-C	11.19.99 1700
Ruth J. C	11.22.99/0900	R. Thoren	11.22.99/0900
R. Thoren	11.22.99/1430	FED EX	
FED EX	11.24.99/1325	Dynatrol	11.24.99/1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228)
(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 – Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Tho

Tie to B0X069

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

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

BHI-EE-011 (10/99)

9911L846 / 2.1°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 2 of 2

Collector R Fahlberg	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location 200 West		SAF No. B00-006
Ice Chest No. ERC 99 023	Field Logbook No. EL 1435	COA B20CS167IC	Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA RF 11.19.99	Offsite Property No. A0000046		Bill of Lading/Air Bill No. 42357953 2134

Price Code 8N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C											
Type of Container	aG											
No. of Container(s)	1											
Volume	250mL											
SAMPLE ANALYSIS	See item (1) in Special Instructions.											

Sample No.	Matrix *	Sample Date	Sample Time										
B0X099	Soil	11-19-99	1105	X									
B0K0B0	Soil	11-19-99	1115	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Fahlberg / R. Fahlberg	Date/Time 1700 11-19-99	Received By Raf 2-C	Date/Time 1700 11-19-99
Relinquished By Raf 2-C	Date/Time 11-22-99/0900	Received By R. Thoren	Date/Time 11-22-99/0900
Relinquished By R. Thoren	Date/Time 11-22-99/1430	Received By FED EX	Date/Time
Relinquished By FED EX	Date/Time 11-24-99/1325	Received By D. Smith	Date/Time 11-24-99/1325
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

Matrix *

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

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

BHI-EE-011 (10/99)

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-006
RFW #: 9911L846
SDG/SAF#: H0655/B00-006

W.O. #: #: 10985-001-001-9999-00
Date Received: 11-24-99

GC SCAN

Two (2) soil samples were collected on 11-19-99.

The samples and their associated QC samples were prepared on 12-02-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and 1-Propanol on 12-02-99.

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 required holding time for analysis was met.
3. All initial calibrations associated with this data set were within acceptance criteria.
4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
5. Surrogates were not used for this analysis.
6. All blank spike recoveries were within advisory control limits of 50%-150%.
7. All matrix spike recoveries were within advisory control limits of 50%-150%.

FEB 2000
RECEIVED
Data
Log In

12-21-99
Date

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

r:\share\le\pescan\11-846.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 7 pages.

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

GLOSSARY OF OGCSC 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 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 12/17/99 13:44

RFW Batch Number: **9911L846** Client: **TNU-HANFORD B00-006** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0X099	B0X099	B0X099	B0X0B0	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LLC182-MB1	99LLC182-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	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	78 %	93 %	4.8 U	5.0 U	85 %
Ethanol		5.0 U	5.5 U	5.5 U	4.8 U	5.0 U	5.0 U

12/17/99

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

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099	001	S	99LLC182	11/19/99	12/02/99	12/02/99
B0X099	001 MS	S	99LLC182	11/19/99	12/02/99	12/02/99
B0X099	001 MSD	S	99LLC182	11/19/99	12/02/99	12/02/99
B0X0B0	002	S	99LLC182	11/19/99	12/02/99	12/02/99
LAB QC:						
BLK	MB1	S	99LLC182	N/A	12/02/99	12/02/99
BLK	MB1 BS	S	99LLC182	N/A	12/02/99	12/02/99

12-20-99

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU-HANFORD B00-006

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 11/24/99 Date Due 12/24/99

Account #

Refrigerator #		1	3	3		3	3						3				
#/Type Container	Liquid																
	Solid	1AG	1AG			1AG	1G					1MET	1MET	1g			
Volume	Liquid																
	Solid	60	120			250	60					200	1000	250			
Preservatives		—	—			—	—					—	—				
ANALYSES REQUESTED	ORGANIC VOA	ORGANIC BNA	ORGANIC Pest/PCB	ORGANIC Herb	(1)	pH		INORG Metal	INORG CN								
RECRA LabNet Use Only	8024X 8015C	8025X 8DRO	8082		Met①	1PH			ICNTO	1PO4ST	1SO4B	Ana①					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024X 8015C	8025X 8DRO	8082		Met①	1PH			ICNTO	1PO4ST	1SO4B	Ana①				
S - Soil	001	BOX 099			S	11/19/99	1105	1	1	1		1	1			✓			✓				
SE - Sediment	002	1 0B0			1	1	1115	1	1	1		1	1			✓			✓				
SO - Solid	003	1 0C0			1	1	1105									⊘	⊘	⊘	⊘				
SL - Sludge																		11/29/99					
W - Water																							
O - Oil																							
A - Air																							
DS - Drum Solids																							
DL - Drum Liquids																							
L - EP/TCLP Leachate																							
WI - Wipe																							
X - Other																							
F - Fish																							

Special Instructions:

SAF # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
Ana① = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.0 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235:7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. [illegible]	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

003

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-006-09	Page 1 of 2
ollector R Fahlberg	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Air Quality ☐
roject Designation 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location 200 West		SAF No. B00-006	Data Turnaround 45 Days
ce Chest No. ERC 99 023	Field Logbook No. EL 1435	COA B20CS1671C	Method of Shipment Fed Ex	
hipped To ~~TMA~~/RECRA RF 11-19-99	Offsite Property No. A000046		Bill of Lading/Air Bill No. 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions	See item (3) in Special Instructions	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082
B0X099	Soil	11-19-99	1105				X	X	X				X
B0X0B0	soil	11-19-99	1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg / R.Fahlberg	11-19-99 1700	R.F. Z-C	11-19-99 1700
R.F. Z.C	11-22-99 0900	R. Thoren	11-22-99 0900
R. Thoren	11-22-99 1430	FED EX	
FED EX	11-24-99 1325	D. Johnson	11-24-99 1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228}

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-228}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Tho

Tie to B0X069

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

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

BHI-EE-011 (10/99)

9911L846 / 2.1°

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

lector R Fahlberg	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
ject Designation 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location 200 West		SAF No. B00-006
Chest No. ERC99023	Field Logbook No. EL 1435	COA B20CS1671C	Method of Shipment Fed Ex
ipped To TMA/RECRA RF 11.19.99	Offsite Property No. A0000046		Bill of Lading/Air Bill No. 42357953 2134

Price Code 8N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	250mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
30X099	Soil	11.19.99	1105	X									
B0K030	Soil	11.19.99	1115	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1700	Received By	Date/Time 1700
R. Fahlberg / R Fahlberg	11.19.99	R. F. R. C.	11.19.99
Relinquished By	Date/Time	Received By R. Thoren	Date/Time
R. F. R. C.	11.22.99 / 0900	R. Thoren	11.22.99 / 0900
Relinquished By R. Thoren	Date/Time	Received By	Date/Time
R. Thoren	11.22.99 / 1430	FED EX	
Relinquished By	Date/Time	Received By	Date/Time
FED EX	11.24.99 / 1325	[illegible]	11.24.99 / 1325
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

Matrix *

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

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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-006
RFW#: 9911L846
SDG/SAF#: H0655/B00-006

W.O.#: 10985-001-001-9999-00
Date Received: 11-24-99

PCB

The set of samples consisted of two (2) soil samples collected on 11-19-99.

The samples and their associated QC samples were extracted on 12-02-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 12-10,11-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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 has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-10-00
Date

pef:\\group\data\pest\11L-846.pcb

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 8 pages.

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

Recra LabNet Philadelphia

GLOSSARY OF PESTICIDE/PCB 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 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 12/29/99 12:57

RFW Batch Number: **9911L846** Client: **TNU-HANFORD B00-006** Work Order: 10985001001 Page: 1

	Cust ID:	B0X099	B0X0B0	B0X0B0	B0X0B0	PBLKBC	PBLKBC BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	99LE1463-MB1	99LE1463-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:	Tetrachloro-m-xylene	72 %	88 %	82 %	75 %	98 %	100 %
	Decachlorobiphenyl	85 %	78 %	90 %	86 %	109 %	106 %
Aroclor-1016		49 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1221		99 U	72 U	72 U	72 U	65 U	67 U
Aroclor-1232		49 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1242		49 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1248		49 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1254		49 U	36 U	87 %	101 %	33 U	97 %
Aroclor-1260		49 U	36 U	36 U	36 U	33 U	33 U

01-05-00

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

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099	001	S	99LE1463	11/19/99	12/02/99	12/11/99
B0X0B0	002	S	99LE1463	11/19/99	12/02/99	12/11/99
B0X0B0	002 MS	S	99LE1463	11/19/99	12/02/99	12/11/99
B0X0B0	002 MSD	S	99LE1463	11/19/99	12/02/99	12/11/99
LAB QC:						
PBLKBC	MB1	S	99LE1463	N/A	12/02/99	12/10/99
PBLKBC	MB1 BS	S	99LE1463	N/A	12/02/99	12/10/99

01-05-00

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: SPEC Del: std TAT: 30 days

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3							3			
#/Type Container	Liquid																
	Solid	1AG	1AG			1AG	1G					1MET	1MET	1g			
Volume	Liquid																
	Solid	60	120			250	60					250	1000	250			
Preservatives		—	—			—	—					—	—				
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb	(1)	pH		INORG: Metal	CN								
RECRA LabNet Use Only	8024X 8015C	8025X 8015D	8082		Met(1)	1PH			1CN/TO			1PCMST	1SUB	Ang(1)			

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	(1)	pH		Metal	CN							
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	B07 099			S	11/19/99	1105	1	1	1		1	1			✓			✓				
	002	1 080			1	1	1115	1	1	1		1	1			✓			✓				
	003	1 000			1	1	1105									~~✓~~	~~✓~~	~~✓~~	~~✓~~				
																		11/29/99					

Special Instructions:

Saf # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Hg,
2. Cu, Ni, V, Zn, Hg, ICR6
Ang(1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 5448 6804
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 2.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235-7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. [illegible]	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West	SAF No.: B00-006	
Ice Chest No.: ERC 99 023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RF 11-19-99	Offsite Property No.: A000046	Bill of Lading/Air Bill No.: 42357953 2134	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol}	See item (2) in Special Instructions	See item (3) in Special Instructions	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D, PCBs - 8082

Sample No.	Matrix *	Sample Date	Sample Time										
B0X099	Soil	11-19-99	1105				X	X	X				X
B0X030	soil	11-19-99	1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	11-19-99 1700	R. F. Z-C	11-19-99 1700
R. Z-C	11-22-99/0900	R. Thoren	11-22-99/0900
R. Thoren	11-22-99/1430	FED EX	
FED EX	11-24-99/1325	D. Finnell	11-24-99/1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63,Tech-99,Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228}
(3) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241, Radium-228}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Tho

Tie to B0X069

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

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

BHI EE-011 (10/99)

9911L846 / 2.1°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B00-006-09
Collector: R Fahlberg	Company Contact: C Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location: 200 West		SAF No.: B00-006
Ice Chest No.: ERC99023	Field Logbook No.: EL 1435	COA: B20CS1671C	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RF 11.19.99	Offsite Property No.: A0000046		Bill of Lading/Air Bill No.: 42357953 2134

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	aG										
No. of Container(s)	1										
Volume	250mL										

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.									
B0X099	Soil	11-19-99	1105	X									
B0X030	Soil	11-19-99	1115	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	11-19-99 1700	R. Cearlock	11-19-99 1700
R. Cearlock	11-22-99 0900	R. Thoren	11-22-99 0900
R. Thoren	11-22-99 1430	FED EX	
FED EX	11-24-99 1325	D. Smith	11-24-99 1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

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

BHI EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-006
RFW# : 9911L846
SDG/SAF#: H0655/B00-006

W.O #: 10985-001-001-9999-00
Date Received: 11-24-99

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 11-19-99.

The samples and their associated QC samples were prepared on 12-02-99 and analyzed according to Recra OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 12-23-99. 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.

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. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

FEB 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-04-00
Date

R:\group\hplc\narr\dro\11-846d.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 7 pages.

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

GLOSSARY OF DIESEL 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 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.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 12/27/99 13:28

RFW Batch Number: **9911L846** Client: **TNU-HANFORD B00-006** Work Order: **10985-001-001-9999-00**

003

	Cust ID:	B0X099	B0X099	B0X099	B0X0B0	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LE1462-MB1	99LE1462-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	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	67 %	83 %	78 %	65 %	72 %	71 %
Diesel Range Organics		4.5 U	94 %	87 %	4.3 U	4.0 U	75 %

12/27/99 -

12/28/99

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

Recra LabNet - Lionville Laboratory
DRO ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-006

DATE RECEIVED: 11/24/99 RFW LOT # :9911L846

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0X099	001	S	99LE1462	11/19/99	12/02/99	12/23/99
B0X099	001 MS	S	99LE1462	11/19/99	12/02/99	12/23/99
B0X099	001 MSD	S	99LE1462	11/19/99	12/02/99	12/23/99
B0X0B0	002	S	99LE1462	11/19/99	12/02/99	12/23/99

LAB QC:

BLK	MB1	S	99LE1462	N/A	12/02/99	12/23/99
BLK	MB1 BS	S	99LE1462	N/A	12/02/99	12/23/99

12/28/99 [illegible]

RECRA LabNet Use Only

9911L846

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B00-006

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 days

Date Rec'd: 11/24/99 Date Due: 12/24/99

Account #:

Refrigerator #		1	3	3		3	3						3			
#/Type Container	Liquid															
	Solid	1AG	1AG			1AG	1G				1MET	1MET	1qt			
Volume	Liquid															
	Solid	60	120			250	60				200	1000	250			
Preservatives		—	—			—	—					—	—			
ANALYSES REQUESTED	ORGANIC: VOA								INORG: Metal	CN						
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	(1)															
	pH															

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	CB24X OSCSC	CB25X ODRO	OPCB		Met①	IPH			ICNTO	ICMST	ISULB	Ana①
001	BOX 099			S	11/19/99	1105	1	1	1		1	1			✓			✓
002	1 OBO			1	1	1115	1	1	1		1	1			✓			✓
003	1 OCO			1	1	1105									~~✓~~	~~✓~~	~~✓~~	~~✓~~

11/29/99

Special Instructions:

saf # B00-006

COMPOSITE WASTE

DATE/REVISIONS:

Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICRG
Ana① = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N
11/29/99 5. 003 shipped to TNU for
6. analysis

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 5448 6 6
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 2.0 °C

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

NOTES: 4235.7953 2134

Relinquished by	Received by	Date	Time
FEDEX	D. Lynn	11/24/99	1325

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-006-09	Page 1 of 2

Collector R Fahlberg	Company Contact C Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 200 Area Source Characterization 200-CS-1 Operable Unit	Sampling Location 200 West		SAF No. B00-006
Ice Chest No. ERC 99 023	Field Logbook No. EL 1435	COA B20CS1671C	Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA RF 11.19.99	Offsite Property No. A000046		Bill of Lading/Air Bill No. 42357953 2134

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	None	None	Cool 4C
Type of Container	aG	aG	aG	aG	G/P	aG	aG	aG	aG	aG
No. of Container(s)	0	0	0	0	1	1	1	1	1	1
Volume	60mL	60mL	60mL	250mL	60g	60mL	60mL	60mL	60mL	120mL
SAMPLE ANALYSIS	Isotopic Uranium	Technetium-99	Tritium - H3	See item (1) in Special Instructions	pH (Soil) - 9045	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol)	See item (2) in Special Instructions	See item (3) in Special Instructions	Neptunium-237; Nickel-63	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0X099	Soil	11-19-99	1105				X	X	X				X
2	B0X030	soil	11.19.99	1115				X	X	X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	11.19.99 1700	R. F. Z-C	11.19.99 1700
R. Z-C	11.22.99/0900	R. Thoren	11.22.99/0900
R. Thoren	11.22.99/1430	FED EX	
FED EX	11.24.99/1325	D. Trinter	11.24.99/1325

SPECIAL INSTRUCTIONS

See Chain of Custody Comments on SAF B00-006. Out of Neptunium Bottle Also Analyze for Nickel-63, Tech-99, Tritium and Iso-Uranium. Out of N02/N03 Bottle Also Analyze For ICP Metals.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-228)
(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Radium-228); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Tho

Tie to B0X069

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

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

BHI-EE-011 (10/99)

9911L846 /2.1°

ORIGINAL Dayges

SDR # B00-025
Revision #: 0
Date Initiated: 11/22/99

SAMPLE DISPOSITION RECORD

SAF: B00-006
OU: 200-CS-1
Project ID: 200-CS-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CS-1 OU

Laboratory: TMA/RECRA

Task Manager: C. S. Cearlock

Sampling Information:
Number of Samples: 1
ID Numbers: B0X099, B0X0B0
Matrix: Soil
Collection Date: 11/19/99

Issue Background:

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

Type: Cancellation of Analyses

Description: Incorrect Analyses Requested

Disposition:

Description: For the listed samples the 200-CS-1 characterization project requested that the following analyses be cancelled:

Isotopic Th, Tc-99, H-3, Np-237, Ni-63, VOA, SVOA, PCB, WTPH-D, Sulfides, Ammonia, Total Cyanide, and Mercury.

Justification: Chains of custody for the listed samples requested analyses not required by the project.

Approval Signatures:

S. J. Trent — 11/29/99
Project Coordinator (Print/Sign Name) — Date

C. S. Cearlock
Task Manager (Print/Sign Name) — Date

ORIGINAL Dayes

SDR # B00-026
Revision #: 0
Date Initiated: 11/22/99

SAMPLE DISPOSITION RECORD

SAF: B00-006
OU: 200-CS-1
Project ID: 200-CS-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CS-1 OU

Laboratory: TMA/RECRA

Task Manager: C. S. Cearlock

Sampling Information:
Number of Samples: 1
ID Numbers: B0X099, B0X0B0
Matrix: Soil
Collection Date: 11/19/99

Issue Background:

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

Type: Addition of Analyses

Description: Addition of Am-241 Analysis

Disposition:

Description: The chain of custody for the listed samples did not request Am-241 by Alpha spectrometry.

Justification: Am-241 by Alpha spectrometry is a data quality objective analytical requirement for the 200-CS-1 OU characterization project.

Approval Signatures:

S. J. Trent 11/29/99
Project Coordinator (Print/Sign Name) Date

C. S. Cearlock
Task Manager (Print/Sign Name) Date