H0539-TMA/RECRA

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Thermo Nutech
W.O. No. N9-09-157-7216

Bechtel Hanford Inc.
SDG H0539

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0539 is composed of two solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the TNU Sample Receipt Checklist. Results were faxed to BHI on November 4, 1999 (Technetium, Gamma Scan, Total Uranium and Tritium), November 12, 1999 (Americium-241, Neptunium-237, Isotopic Plutonium, Isotopic Thorium and Total Strontium) and November 15, 1999 (Nickel-63).

2.0 ANALYSIS NOTES

2.1 Gamma Scan 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. A recount was performed on the QC blank.

2.3 Americium-241 Analyses

No problems were encountered during the course of the analyses.

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2.4 Neptunium-237 Analyses

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 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses. Positive Tc99 activity greater than the sample MDA but less than the RDL was detected in the QC blank.

2.8 Total and Isotopic Uranium Analyses

Isotopic Uranium was to be ordered by BHI after reviewing data from the Total Uranium testing. No Isotopic Uranium analysis was requested. No problems were encountered during the course of the analyses.

2.9 Tritium Analyses

No problems were encountered during the course of the analyses.

2.10 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

SAMPLE SUMMARY

SDG 7216
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WBT1	200 B pond (B8758) >15'	SOLID		N909157-01	B99-078	B99-078-122	09/20/99 09:50
B0WBT2	200 B pond (B8758) >15'	SOLID		N909157-02	B99-078	B99-078-122	09/20/99 11:40
Method Blank		SOLID		N909137-04	B99-078		
Lab Control Sample		SOLID		N909137-03	B99-078		
Duplicate (N909157-01)	200 B pond (B8758) >15'	SOLID		N909157-05	B99-078		09/20/99 09:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/15/99

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SAMPLE DELIVERY GROUP H0539

QC SUMMARY

SDG 7216
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

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
7214		Method Blank	SOLID						N909137-04	7214-004
		Lab Control Sample	SOLID						N909137-03	7214-003
7216	B99-078-122	B0WBT1	SOLID	95.7			09/22/99	2	N909157-01	7216-001
		B0WBT2	SOLID	95.5			09/22/99	2	N909157-02	7216-002
		Duplicate (N909157-01)	SOLID	95.7			09/22/99	2	N909157-05	7216-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/15/99

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SAMPLE DELIVERY GROUP H0539

SDG 7216
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

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	6904-018	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	6904-018	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-018	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-018	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-018	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-018	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-018	15.0	2			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-018	9.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-018	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6904-018	10.0	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 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

WORK SUMMARY

SDG 7216
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WBT1			N909157-01	7216-001	AM		11/10/99	11/12/99	NJV	Americium 241 in Soil
200 B pond (B8758) >15'		SOLID	09/20/99	7216-001	GAM		10/28/99	11/04/99	NJV	Gamma Scan
B99-078-122	B99-078		09/22/99	7216-001	H		10/28/99	11/04/99	NJV	Tritium in Soil
				7216-001	NI_L		11/11/99	11/15/99	NJV	Nickel 63 in Soil
				7216-001	NP		11/06/99	11/12/99	NJV	Neptunium in Soil
				7216-001	PU		11/10/99	11/12/99	NJV	Plutonium, Isotopic in Solids
				7216-001	SR		11/06/99	11/12/99	NJV	Total Strontium in Soil
				7216-001	TC		10/26/99	11/04/99	NJV	Technetium 99 in Soil
				7216-001	TH		11/02/99	11/12/99	NJV	Thorium, Isotopic in Soil
				7216-001	U_T		10/20/99	11/04/99	NJV	Uranium, Total in Soil
B0WBT2			N909157-02	7216-002	AM		11/10/99	11/12/99	NJV	Americium 241 in Soil
200 B pond (B8758) >15'		SOLID	09/20/99	7216-002	GAM		10/28/99	11/04/99	NJV	Gamma Scan
B99-078-122	B99-078		09/22/99	7216-002	H		10/27/99	11/04/99	NJV	Tritium in Soil
				7216-002	NI_L		11/11/99	11/15/99	NJV	Nickel 63 in Soil
				7216-002	NP		11/06/99	11/12/99	NJV	Neptunium in Soil
				7216-002	PU		11/10/99	11/12/99	NJV	Plutonium, Isotopic in Solids
				7216-002	SR		11/06/99	11/12/99	NJV	Total Strontium in Soil
				7216-002	TC		10/25/99	11/04/99	NJV	Technetium 99 in Soil
				7216-002	TH		11/02/99	11/12/99	NJV	Thorium, Isotopic in Soil
				7216-002	U_T		10/20/99	11/04/99	NJV	Uranium, Total in Soil
Method Blank			N909137-04	7214-004	AM		11/10/99	11/12/99	NJV	Americium 241 in Soil
		SOLID		7214-004	GAM		10/27/99	11/03/99	NJV	Gamma Scan
	B99-078			7214-004	H		10/28/99	11/03/99	NJV	Tritium in Soil
				7214-004	NI_L		11/11/99	11/15/99	NJV	Nickel 63 in Soil
				7214-004	NP		11/08/99	11/12/99	NJV	Neptunium in Soil
				7214-004	PU		11/10/99	11/12/99	NJV	Plutonium, Isotopic in Solids
				7214-004	SR		11/10/99	11/12/99	NJV	Total Strontium in Soil
				7214-004	TC		10/27/99	11/03/99	NJV	Technetium 99 in Soil
				7214-004	TH		11/02/99	11/12/99	NJV	Thorium, Isotopic in Soil
				7214-004	U_T		10/18/99	11/03/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/15/99

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SAMPLE DELIVERY GROUP H0539

SDG 7216
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N909137-03	7214-003	AM		11/10/99	11/12/99	NJV	Americium 241 in Soil
		SOLID		7214-003	GAM		10/27/99	11/03/99	NJV	Gamma Scan
	B99-078			7214-003	H		10/27/99	11/03/99	NJV	Tritium in Soil
				7214-003	NI_L		11/11/99	11/15/99	NJV	Nickel 63 in Soil
				7214-003	NP		11/08/99	11/12/99	NJV	Neptunium in Soil
				7214-003	PU		11/10/99	11/12/99	NJV	Plutonium, Isotopic in Solids
				7214-003	SR		11/06/99	11/12/99	NJV	Total Strontium in Soil
				7214-003	TC		10/25/99	11/03/99	NJV	Technetium 99 in Soil
				7214-003	TH		11/02/99	11/12/99	NJV	Thorium, Isotopic in Soil
				7214-003	U_T		10/18/99	11/03/99	NJV	Uranium, Total in Soil
Duplicate (N909157-01)			N909157-05	7216-005	AM		11/10/99	11/12/99	NJV	Americium 241 in Soil
200 B pond (B8758) >15'		SOLID	09/20/99	7216-005	GAM		10/29/99	11/04/99	NJV	Gamma Scan
	B99-078		09/22/99	7216-005	H		10/27/99	11/04/99	NJV	Tritium in Soil
				7216-005	NI_L		11/11/99	11/15/99	NJV	Nickel 63 in Soil
				7216-005	NP		11/06/99	11/12/99	NJV	Neptunium in Soil
				7216-005	PU		11/09/99	11/12/99	NJV	Plutonium, Isotopic in Solids
				7216-005	SR		11/06/99	11/12/99	NJV	Total Strontium in Soil
				7216-005	TC		10/26/99	11/04/99	NJV	Technetium 99 in Soil
				7216-005	TH		11/02/99	11/12/99	NJV	Thorium, Isotopic in Soil
				7216-005	U_T		10/20/99	11/04/99	NJV	Uranium, Total in Soil

Lab id TMANC
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Version Ver 1.0
Form DVD-CWS
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SAMPLE DELIVERY GROUP H0539

SDG 7216
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	2			1	1	1	5
GAM	B99-078	Gamma Scan	GAMMAHI	2			1	1	1	5
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
NP	B99-078	Neptunium in Soil	NP237PLATE	2			1	1	1	5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	2			1	1	1	5
SR	B99-078	Total Strontium in Soil	SRTOTAL	2			1	1	1	5
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	2			1	1	1	5
U_T	B99-078	Uranium, Total in Soil	UKPA	2			1	1	1	5
TOTALS				20			10	10	10	50

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SAMPLE DELIVERY GROUP H0539

N909137-04

Method Blank

METHOD BLANK

SDG 7216 Client/Case no Hanford SDG H0539
Contact Kevin C. Johnson Contract TRB-SBB-207925

Lab sample id N909137-04 Client sample id Method Blank
Dept sample id 7214-004 Material/Matrix SOLID
SAF No B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.024	0.050	0.084	400	U	H
Technetium 99	14133-76-7	1.50	0.22	0.48	15	J	TC
Neptunium 237	13994-20-2	0.021	0.028	0.021			NP
Total Uranium (ug/g)	7440-61-1	-0.001	0.002	0.005	1.0	U	U_T
Plutonium 238	13981-16-3	-0.013	0.10	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.025	0.076	0.16	1.0	U	PU
Nickel 63	13981-37-8	0.520	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.004	0.016	0.030	1.0	U	AM
Total Strontium	SR-RAD	-0.111	0.13	0.19	1.0	U	SR
Thorium 228	14274-82-9	-0.027	0.054	0.12	1.0	U	TH
Thorium 230	14269-63-7	-0.013	0.080	0.15	1.0	U	TH
Thorium 232	TH-232	0.013	0.027	0.051	1.0	U	TH
Potassium 40	13966-00-2	U		0.66		U	GAM
Cobalt 60	10198-40-0	U		0.042	0.050	U	GAM
Cesium 137	10045-97-3	U		0.044	0.10	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.091	0.10	U	GAM
Radium 226	13982-63-3	U		0.076	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Thorium 228	14274-82-9	U		0.054		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Americium 241	14596-10-2	U		0.098		U	GAM
Uranium 238	U-238	U		4.3		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32094

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

N909137-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7216 Client/Case no Hanford SDG H0539

Contact Kevin C. Johnson Case no TRB-SBB-207925

Lab sample id N909137-03 Client sample id Lab Control Sample

Dept sample id 7214-003 Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	4.89	0.15	0.084	400	J	H	4.84	0.19	101	83-117	80-120
Technetium 99	52.0	1.8	0.47	15	B	TC	54.1	2.2	96	84-116	80-120
Neptunium 237	11.0	0.65	0.049			NP	11.9	0.48	92	88-112	
Total Uranium (ug/g)	34.8	4.1	0.049	1.0		U_T	41.2	1.6	84	80-120	80-120
Plutonium 238	9.48	0.88	0.053	1.0		PU	10.0	0.40	95	84-116	80-120
Plutonium 239/240	9.93	0.92	0.043	1.0		PU	10.6	0.42	94	84-116	80-120
Nickel 63	132	3.5	1.9	30		NI_L	134	5.4	99	84-116	
Americium 241	10.4	0.77	0.047	1.0		AM	10.5	0.42	99	85-115	80-120
Total Strontium	13.6	0.41	0.17	1.0		SR	12.4	0.50	110	82-118	
Thorium 230	22.5	1.1	0.16	1.0		TH	20.4	0.82	110	87-113	
Cobalt 60	1.36	0.066	0.029	0.050		GAM	1.49	0.060	91	78-122	80-120
Cesium 137	1.44	0.056	0.035	0.10		GAM	1.54	0.062	94	77-123	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32093

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

N909157-05 B0WBT1

DUPLICATE

SDG	7216	Client/Case no	Hanford SDG H0539
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N909157-05	Lab sample id	N909157-01
Dept sample id	7216-005	Dept sample id	7216-001
		Received	09/22/99
% solids	95.7	% solids	95.7
Client sample id	B0WBT1		
Location/Matrix	200 B pond (B8758) >15' SOLID		
Collected	09/20/99 09:50		
Custody/SAF No	B99-078-122 B99-078		

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
Tritium	-0.002	0.051	0.086	400	U	H	-0.008	0.051	0.087	U	-		
Technetium 99	1.42	0.21	0.44	15	JB	TC	1.33	0.27	0.67	JB	7	43	
Neptunium 237	0.013	0.026	0.053		U	NP	0	0.015	0.035	U	-		
Total Uranium (ug/g)	0.420	0.049	0.005	1.0	J	U_T	0.427	0.049	0.005	J	2	31	
Plutonium 238	0	0.61		1.0	U	PU	0.009	0.053	0.098	U	-		
Plutonium 239/240	0	0.61		1.0	U	PU	0	0.035	0.098	U	-		
Nickel 63	0.506	1.2	1.9	30	U	NI_L	0.346	1.2	2.0	U	-		
Americium 241	-0.007	0.021	0.043	1.0	U	AM	0.025	0.033	0.055	U	-		
Total Strontium	0.006	0.11	0.16	1.0	U	SR	-0.009	0.11	0.15	U	-		
Thorium 228	0.629	0.14	0.11	1.0	J	TH	0.717	0.14	0.089	J	13	45	
Thorium 230	0.589	0.15	0.14	1.0	J	TH	0.592	0.15	0.14	J	1	55	
Thorium 232	0.527	0.11	0.048	1.0	J	TH	0.567	0.12	0.047	J	7	46	
Potassium 40	10.9	1.3	0.79			GAM	9.60	1.6	1.2		13	44	
Cobalt 60	U		0.085	0.050	U	GAM	U		0.099	U	-		
Cesium 137	U		0.057	0.10	U	GAM	U		0.081	U	-		
Europium 152	U		0.17	0.10	U	GAM	U		0.17	U	-		
Europium 154	U		0.24	0.10	U	GAM	U		0.28	U	-		
Europium 155	U		0.16	0.10	U	GAM	U		0.11	U	-		
Radium 226	0.462	0.14	0.15	0.10		GAM	0.534	0.14	0.13		14	68	
Radium 228	0.377	0.32	0.34	0.20		GAM	0.668	0.35	0.40		56	140	
Thorium 228	0.522	0.082	0.080			GAM	0.555	0.075	0.075		6	44	
Thorium 232	0.377	0.32	0.34			GAM	0.668	0.35	0.40		56	140	
Americium 241	U		0.20		U	GAM	U		0.081	U	-		
Uranium 238	U		8.1		U	GAM	U		12	U	-		
Uranium 235	U		0.22		U	GAM	U		0.21	U	-		

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/15/99

DUPLICATE, cont.

SDG 7216		Client/Case no Hanford	SDG H0539
Contact Kevin C. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N909157-05	Lab sample id N909157-01	Client sample id B0WBT1	
Dept sample id 7216-005	Dept sample id 7216-001	Location/Matrix 200 B pond (B8758) >15'	SOLID
	Received 09/22/99	Collected 09/20/99 09:50	
% solids 95.7	% solids 95.7	Custody/SAF No B99-078-122	B99-078

QC-DUP#1 32221

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

N909157-01 B0WBT1

DATA SHEET

SDG	7216	Client/Case no	Hanford SDG H0539
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909157-01	Client sample id	B0WBT1
Dept sample id	7216-001	Location/Matrix	200 B pond (B8758) >15' SOLID
Received	09/22/99	Collected	09/20/99 09:50
% solids	95.7	Custody/SAF No	B99-078-122 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.008	0.051	0.087	400	U	H
Technetium 99	14133-76-7	1.33	0.27	0.67	15	JB	TC
Neptunium 237	13994-20-2	0	0.015	0.035		U	NP
Total Uranium (ug/g)	7440-61-1	0.427	0.049	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.009	0.053	0.098	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.035	0.098	1.0	U	PU
Nickel 63	13981-37-8	0.346	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.025	0.033	0.055	1.0	U	AM
Total Strontium	SR-RAD	-0.009	0.11	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.717	0.14	0.089	1.0	J	TH
Thorium 230	14269-63-7	0.592	0.15	0.14	1.0	J	TH
Thorium 232	TH-232	0.567	0.12	0.047	1.0	J	TH
Potassium 40	13966-00-2	9.60	1.6	1.2			GAM
Cobalt 60	10198-40-0	U		0.099	0.050	U	GAM
Cesium 137	10045-97-3	U		0.081	0.10	U	GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.28	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.534	0.14	0.13	0.10		GAM
Radium 228	15262-20-1	0.668	0.35	0.40	0.20		GAM
Thorium 228	14274-82-9	0.555	0.075	0.075			GAM
Thorium 232	TH-232	0.668	0.35	0.40			GAM
Americium 241	14596-10-2	U		0.081		U	GAM
Uranium 238	U-238	U		12		U	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

N909157-02 B0WBT2

DATA SHEET

SDG	7216	Client/Case no	Hanford SDG H0539
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909157-02	Client sample id	B0WBT2
Dept sample id	7216-002	Location/Matrix	200 B pond (B8758) >15' SOLID
Received	09/22/99	Collected	09/20/99 11:40
% solids	95.5	Custody/SAF No	B99-078-122 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.047	0.053	0.087	400	U	H
Technetium 99	14133-76-7	1.46	0.47	0.50	15	JB	TC
Neptunium 237	13994-20-2	0.009	0.018	0.035		U	NP
Total Uranium (ug/g)	7440-61-1	0.370	0.042	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.015	0.029	0.081	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.029	0.081	1.0	U	PU
Nickel 63	13981-37-8	0.216	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.010	0.021	0.033	1.0	U	AM
Total Strontium	SR-RAD	0.053	0.094	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.415	0.13	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.394	0.13	0.15	1.0	J	TH
Thorium 232	TH-232	0.432	0.10	0.049	1.0	J	TH
Potassium 40	13966-00-2	12.1	1.4	0.75			GAM
Cobalt 60	10198-40-0	U		0.078	0.050	U	GAM
Cesium 137	10045-97-3	U		0.064	0.10	U	GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Radium 226	13982-63-3	0.439	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	0.513	0.26	0.28	0.20		GAM
Thorium 228	14274-82-9	0.529	0.076	0.075			GAM
Thorium 232	TH-232	0.513	0.26	0.28			GAM
Americium 241	14596-10-2	U		0.19		U	GAM
Uranium 238	U-238	U		8.7		U	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test AM	Matrix SOLID
SDG 7216	
Contact Kevin C. Johnson	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0539	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	U	
B0WBT2	N909157-02			7216-002	U	
BLK (QC ID=32094)	N909137-04			7214-004	U	
LCS (QC ID=32093)	N909137-03			7214-003	ok	
Duplicate (N909157-01)	N909157-05			7216-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source chrctztn-200-CW-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 6904-018 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 018																
B0WBT1	N909157-01			0.055	0.500			74		760			51	11/08/99	11/10	SS-057
B0WBT2	N909157-02			0.033	0.500			90		765			51	11/08/99	11/10	SS-059
BLK (QC ID=32094)	N909137-04			0.030	0.500			78		793				11/08/99	11/10	SS-016
LCS (QC ID=32093)	N909137-03			0.047	0.500			73		793				11/08/99	11/10	SS-015
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.043	0.500			86		765			51	11/08/99	11/10	SS-060
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	0.042	± 0.020
FOR 5 SAMPLES	YIELD	80	± 15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test NP Matrix SOLID
SDG 7216
Contact Kevin C. Johnson

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 6904-018					
B0WBT1	N909157-01			7216-001	U
B0WBT2	N909157-02			7216-002	U
BLK (QC ID=32094)	N909137-04			7214-004	0.021
LCS (QC ID=32093)	N909137-03			7214-003	ok
Duplicate (N909157-01)	N909157-05			7216-005	- U

Nominal values and limits from method RDLs (pCi/g)
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 018											
B0WBT1	N909157-01			0.035	0.500			56		200			47	11/03/99	11/06	BETA
B0WBT2	N909157-02			0.035	0.500			45		200			47	11/03/99	11/06	BETA
BLK (QC ID=32094)	N909137-04			0.021	0.500			30		200				11/03/99	11/08	BETA
LCS (QC ID=32093)	N909137-03			0.049	0.500			39		200				11/03/99	11/08	BETA
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.053	0.500			63		200			47	11/03/99	11/06	BETA
Nominal values and limits from method					0.500			20-105		100						

PROCEDURES	REFERENCE	NP237PLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-930	Neptunium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.039	± 0.026
FOR 5 SAMPLES	YIELD	47	± 26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test PU Matrix SOLID
SDG 7216
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6904-018								
B0WBT1	N909157-01			7216-001	U		U	
B0WBT2	N909157-02			7216-002	U		U	
BLK (QC ID=32094)	N909137-04			7214-004	U		U	
LCS (QC ID=32093)	N909137-03			7214-003	ok		ok	
Duplicate (N909157-01)	N909157-05			7216-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 018											
B0WBT1	N909157-01			0.098	0.500			35		760			51	11/09/99	11/10	SS-058
B0WBT2	N909157-02			0.081	0.500			41		795			51	11/09/99	11/10	SS-012
BLK (QC ID=32094)	N909137-04			0.19	0.500			24		795				11/09/99	11/10	SS-009
LCS (QC ID=32093)	N909137-03			0.053	0.500			53		760				11/09/99	11/10	SS-055
Duplicate (N909157-01) (QC ID=32221)	N909157-05				0.500			46		22			50	11/09/99	11/09	SS-027
Nominal values and limits from method				1.0	0.500			20-105		10	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	0.11	± 0.12
FOR 5 SAMPLES	YIELD	40	± 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test TH Matrix SOLID	Client Hanford
SDG 7216	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG H0539

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-018							
B0WBT1	N909157-01			7216-001	0.717 J	0.592 J	0.567 J
B0WBT2	N909157-02			7216-002	0.415 J	0.394 J	0.432 J
BLK (QC ID=32094)	N909137-04			7214-004	U	U	U
LCS (QC ID=32093)	N909137-03			7214-003		ok	
Duplicate (N909157-01)	N909157-05			7216-005	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 018											
B0WBT1	N909157-01			0.14	0.250			99		784			43	11/01/99	11/02	SS-035
B0WBT2	N909157-02			0.15	0.250			96		784			43	11/01/99	11/02	SS-036
BLK (QC ID=32094)	N909137-04			0.15	0.250			87		783				11/01/99	11/02	SS-032
LCS (QC ID=32093)	N909137-03			0.16	0.250			86		783				11/01/99	11/02	SS-031
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.14	0.250			95		772			43	11/01/99	11/02	SS-044
Nominal values and limits from method				1.0	0.250			20-105		200			180			

PROCEDURES	REFERENCE	THPLATE
	EP-000	Data Entry and Document Preparation, rev 0
	EP-001	Q.C. Preparation, rev 0
	EP-003	Tracing, rev 0
	EP-008	Heavy Elements Electroplating, rev 0
	EP-070	Soil Dissolution, rev 0
	RP-901	Thorium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA 0.15	± 0.017
FOR 5 SAMPLES	YIELD 93	± 12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test SR	Matrix SOLID
SDG 7216	
Contact Kevin C. Johnson	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0539	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	U	
B0WBT2	N909157-02			7216-002	U	
BLK (QC ID=32094)	N909137-04			7214-004	U	
LCS (QC ID=32093)	N909137-03			7214-003	ok	
Duplicate (N909157-01)	N909157-05			7216-005	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 018															
B0WBT1	N909157-01			0.15	1.00			92		400			47	11/05/99	11/06	GRB-222
B0WBT2	N909157-02			0.16	1.00			84		200			47	11/05/99	11/06	GRB-219
BLK (QC ID=32094)	N909137-04			0.19	1.00			74		400				11/05/99	11/10	GRB-220
LCS (QC ID=32093)	N909137-03			0.17	1.00			81		400				11/05/99	11/06	GRB-219
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.16	1.00			84		400			47	11/05/99	11/06	GRB-224
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	MDA	0.17	±	0.030
FOR 5 SAMPLES	YIELD	83	±	13

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test TC	Matrix SOLID
SDG 7216	
Contact Kevin C. Johnson	

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0539	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	1.33	J
B0WBT2	N909157-02			7216-002	1.46	J
BLK (QC ID=32094)	N909137-04			7214-004	1.50	J
LCS (QC ID=32093)	N909137-03			7214-003	ok	
Duplicate (N909157-01)	N909157-05			7216-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 15

200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 018											
B0WBT1	N909157-01			0.67	1.02			51		101			36	10/21/99	10/26	GRB-220
B0WBT2	N909157-02			0.50	1.02			66		101			35	10/21/99	10/25	GRB-224
BLK (QC ID=32094)	N909137-04			0.48	1.01			71		101				10/21/99	10/27	GRB-230
LCS (QC ID=32093)	N909137-03			0.47	1.01			73		101				10/21/99	10/25	GRB-220
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.44	1.02			76		101			36	10/21/99	10/26	GRB-222
Nominal values and limits from method				15	1.02			20-105		50			180			

PROCEDURES	REFERENCE	TC99TRLSC
	EP-060	Soil Preparation, rev 0
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD	MDA	0.51	±	0.18
FOR 5 SAMPLES	YIELD	67	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test GAM Matrix SOLID	
SDG 7216	
Contact Kevin C. Johnson	

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SPB-207925	
Case no SDG H0539	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6904-018								
B0WBT1	N909157-01			7216-001	U		U	
B0WBT2	N909157-02			7216-002	U		U	
BLK (QC ID=32094)	N909137-04			7214-004	U		U	
LCS (QC ID=32093)	N909137-03			7214-003	ok		ok	
Duplicate (N909157-01)	N909157-05			7216-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 018															
B0WBT1	N909157-01			0.25	69.7					408			38	10/11/99	10/28	PD,01,00
B0WBT2	N909157-02			0.19	79.5					408			38	10/11/99	10/28	PD,03,00
BLK (QC ID=32094)	N909137-04			0.082	167					402				10/08/99	10/27	JR,03,00
LCS (QC ID=32093)	N909137-03			0.029	167					454				10/08/99	10/27	JR,04,00
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.18	69.7					439			39	10/11/99	10/29	PD,03,00
Nominal values and limits from method				0.050	74.0					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	0.15	± 0.18
FOR 5 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test U T Matrix SOLID
SDG 7216
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0539

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	0.427	J
B0WBT2	N909157-02			7216-002	0.370	J
BLK (QC ID=32094)	N909137-04			7214-004	U	
LCS (QC ID=32093)	N909137-03			7214-003	ok	
Duplicate (N909157-01)	N909157-05			7216-005	ok	J
Nominal values and limits from method				RDLs (ug/g)	1.0	
200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 018												
B0WBT1	N909157-01			0.005	0.0500								30	10/20/99	10/20	KPA-001
B0WBT2	N909157-02			0.005	0.0500								30	10/20/99	10/20	KPA-001
BLK (QC ID=32094)	N909137-04			0.005	0.0500									10/18/99	10/18	KPA-001
LCS (QC ID=32093)	N909137-03			0.049	0.0500									10/18/99	10/18	KPA-001
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.005	0.0500								30	10/20/99	10/20	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 0.014 ± 0.039
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test H	Matrix SOLID
SDG 7216	
Contact Kevin C. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0539	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	U	
B0WBT2	N909157-02			7216-002	U	
BLK (QC ID=32094)	N909137-04			7214-004	U	
LCS (QC ID=32093)	N909137-03			7214-003	ok	J
Duplicate (N909157-01)	N909157-05			7216-005	-	U

Nominal values and limits from method *RDLs (pCi/g)* *400*

200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 018															
B0WBT1	N909157-01			0.087	20.2			100		120			38	10/27/99	10/28	LSC-005
B0WBT2	N909157-02			0.087	20.1			100		120			37	10/27/99	10/27	LSC-005
BLK (QC ID=32094)	N909137-04			0.084	20.3			100		120				10/27/99	10/28	LSC-005
LCS (QC ID=32093)	N909137-03			0.084	20.3			100		120				10/27/99	10/27	LSC-005
Duplicate (N909157-01) (QC ID=32221)	N909157-05			0.086	20.5			100		120			37	10/27/99	10/27	LSC-005
Nominal values and limits from method				400	20.1					25			180			

PROCEDURES	REFERENCE	EPA906.0
	EP-060	Soil Preparation, rev 0
	EP-211	Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD	MDA 0.086 ± 0.003
FOR 5 SAMPLES	YIELD 100 ± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0539

Test	NI L
Matrix	SOLID
SDG	7216
Contact	Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0539

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-018						
B0WBT1	N909157-01			7216-001	U	
B0WBT2	N909157-02			7216-002	U	
BLK (QC ID=32094)	N909137-04			7214-004	U	
LCS (QC ID=32093)	N909137-03			7214-003	ok	
Duplicate (N909157-01)	N909157-05			7216-005	-	U

Nominal values and limits from method RDLs (pCi/g) 30

200 Area Source chrctztn-200-CW-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 6904-018	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 018											
B0WBT1	N909157-01			2.0	0.500			90		100			52	11/10/99	11/11	LSC-005
B0WBT2	N909157-02			2.0	0.500			90		100			52	11/10/99	11/11	LSC-005
BLK (QC ID=32094)	N909137-04			2.0	0.500			92		100				11/10/99	11/11	LSC-005
LCS (QC ID=32093)	N909137-03			1.9	0.500			95		100				11/10/99	11/11	LSC-005
Duplicate (N909157-01) (QC ID=32221)	N909157-05			1.9	0.500			93		100			52	11/10/99	11/11	LSC-005
Nominal values and limits from method				30	0.500					10			180			

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD	MDA	2.0	± 0.11
FOR 5 SAMPLES	YIELD	92	± 4

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/15/99

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L157
SDG/SAF #: H0539/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-22-99

GC/MS VOLATILE

Two (2) soil samples were collected on 09-20-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-30-99.

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

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blank contained the common laboratory contaminants Methylene Chloride, Acetone and the target compound 2-Butanone at levels less than the CRQL.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

JAN 2000
RECEIVED
Data
Log In

11-02-99
Date

som\group\data\voa\tnu09157.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 08 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: 10/28/99 17:13

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0WBT2		B0WBT1		B0WBT1		B0WBT1		VBLKRY		VBLKRY BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		99LVN320-MB1		99LVN320-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.04		1.02		0.980		0.962		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	106	%	110	%	104	%	106	%	104	%	104	%
	Bromofluorobenzene	96	%	97	%	90	%	91	%	94	%	94	%
	1,2-Dichloroethane-d4	106	%	106	%	106	%	110	%	102	%	104	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	10	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	10	U	10	U
Methylene Chloride		6	B	6	B	6	B	6	B	3	J	2	BJ
Acetone		3	BJ	5	BJ	5	JB	5	BJ	1	J	10	U
Carbon Disulfide		6	U	6	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		6	U	6	U	83	%	86	%	5	U	83	%
1,1-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	5	U	5	U
Chloroform		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
2-Butanone		11	U	11	U	2	JB	10	U	1	J	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Trichloroethene		6	U	6	U	100	%	100	%	5	U	96	%
Dibromochloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Benzene		6	U	6	U	102	%	106	%	5	U	100	%
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Bromoform		6	U	6	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	10	U	10	U
Tetrachloroethene		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Toluene		6	U	6	U	109	%	110	%	5	U	105	%

*= Outside of EPA CLP QC limits.

10/28/99

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WBT2	B0WBT1	B0WBT1	B0WBT1	VBLKRY	VBLKRY BS
RFW#:	001	002	002 MS	002 MSD	99LVN320-MB1	99LVN320-MB1
Chlorobenzene	6 U	6 U	103 %	104 %	5 U	102 %
Ethylbenzene	6 U	6 U	5 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

50

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2	001	S	99LVN320	09/20/99	N/A	09/30/99
B0WBT1	002	S	99LVN320	09/20/99	N/A	09/30/99
B0WBT1	002 MS	S	99LVN320	09/20/99	N/A	09/30/99
B0WBT1	002 MSD	S	99LVN320	09/20/99	N/A	09/30/99

LAB QC:

VBLKRY	MB1	S	99LVN320	N/A	N/A	09/30/99
VBLKRY	MB1 BS	S	99LVN320	N/A	N/A	09/30/99

10-28-99

RECRA LabNet Use Only

9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

Client: TNU-Hanford B99-078

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: 9.22.99 Date Due: 10/22/99

Account #:

Refrigerator #		1	6	6					6							
#/Type Container	Liquid															
	Solid	1oz	1oz						1oz							
Volume	Liquid	0	0													
	Solid	60	250						500							
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb	TPH			Metal	CN						

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGZ4H OGCSC	OGZ5H ODRO	OPCB		TPH 8/22/99			Metal	IONTO INH3N	ISFD IPH	IN3N2	IOCL ICSO4	IONO2 IONO3 NOCA		
S - Soil	001	BOW BT2			S	9/20/99	1140	X	X	X		X			X	✓	✓	✓	✓	✓		
SE - Sediment	002	BOW BT1			⊥	⊥	0950	X	X	X		X			X	✓	✓	✓	✓	✓		
SO - Solid																						
SL - Sludge																						
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, ICR6, Hg

9/23/99 3. tests added per client COC

4. OGCSC = 1-propanol, ethanol

5.

6. Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

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. 3.2 °C

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

NOTES:

*4235 7952 9610

Relinquished by	Received by	Date	Time
FedEx	D. Johnson	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-122

Collector. Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'	SAF No.: B99-078	
Ice Chest No.: SML 510	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ RECRA BD 9-20-99	Offsite Property No.: A990263	Bill of Lading/Air Bill No.: 4235 7952 ~~9-20~~ 9-21-99 CT 9610	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0WBT2	Soil	9-20-99	1140	X	X		X			BOWCP1			
2	B0WBT~~1~~1 BD 9-20-99	Soil	9-20-99	0950	X	X		X			BOWCP1			
	B0WBT~~4~~3	Soil												
	B0WBT5 BD 9-20-99	Soil												

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	9-20-99/1600	R.F. IB	9-20-99/1600
Ref IB	9.21.99 0830	C Trice	9.21.99 0830
C Trice	9.21.99 1400	FEDEX	9-21.99 1400
Fed Ex	9.22.99/0945	D Smith	9.22.99/0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L157
SDG/SAF #: H0539/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-22-99

SEMIVOLATILE

Two (2) soil samples were collected on 09-20-99.

The samples and their associated QC samples were extracted on 10-04-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-05-99.

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. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. The samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

JAN 2000
RECEIVED
Data
Log In

11-15-99
Date

som\gorup\data\bna\tnu10157.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 11 pages.

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

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

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 10/27/99 16:15 Page: 1a

	Cust ID:	B0WBT2		B0WBT2		B0WBT2		B0WBT1		SBLKDQ		SBLKDQ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		99LE1196-MB1		99LE1196-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	91	%	85	%	78	%	77	%	78	%	92	%
	2-Fluorobiphenyl	80	%	79	%	66	%	73	%	78	%	94	%
	Terphenyl-d14	83	%	83	%	72	%	74	%	92	%	104	%
	Phenol-d5	82	%	72	%	69	%	60	%	81	%	94	%
	2-Fluorophenol	68	%	66	%	64	%	56	%	77	%	92	%
	2,4,6-Tribromophenol	66	%	64	%	57	%	50	%	75	%	96	%
Phenol		350	U	67	%	68	%	350	U	330	U	90	%
bis(2-Chloroethyl)ether		350	U	350	U	350	U	350	U	330	U	330	U
2-Chlorophenol		350	U	60	%	58	%	350	U	330	U	90	%
1,3-Dichlorobenzene		350	U	350	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	67	%	57	%	350	U	330	U	89	%
1,2-Dichlorobenzene		350	U	350	U	350	U	350	U	330	U	330	U
2-Methylphenol		350	U	350	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	350	U	330	U	330	U
4-Methylphenol		350	U	350	U	350	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	85	%	89	%	350	U	330	U	99	%
Hexachloroethane		350	U	350	U	350	U	350	U	330	U	330	U
Nitrobenzene		350	U	350	U	350	U	350	U	330	U	330	U
Isophorone		350	U	350	U	350	U	350	U	330	U	330	U
2-Nitrophenol		350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		350	U	350	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		350	U	350	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	84	%	72	%	350	U	330	U	93	%
Naphthalene		350	U	350	U	350	U	350	U	330	U	330	U
4-Chloroaniline		350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		350	U	350	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	78	%	66	%	350	U	330	U	92	%
2-Methylnaphthalene		350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		870	U	870	U	870	U	870	U	840	U	840	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9909L157 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WBT2		B0WBT2		B0WBT2		B0WBT1		SBLKDQ		SBLKDQ BS	
RFW#:	001		001 MS		001 MSD		002		99LE1196-MB1		99LE1196-MB1	
2-Chloronaphthalene	350	U	350	U	350	U	350	U	330	U	330	U
2-Nitroaniline	870	U	870	U	870	U	870	U	840	U	840	U
Dimethylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
Acenaphthylene	350	U	350	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	350	U	350	U	350	U	330	U	330	U
3-Nitroaniline	870	U	870	U	870	U	870	U	840	U	840	U
Acenaphthene	350	U	74	%	64	%	350	U	330	U	97	%
2,4-Dinitrophenol	870	U	870	U	870	U	870	U	840	U	840	U
4-Nitrophenol	870	U	78	%	65	%	870	U	840	U	87	%
Dibenzofuran	350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	89	%	75	%	350	U	330	U	98 *	%
Diethylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	330	U	330	U
Fluorene	350	U	350	U	350	U	350	U	330	U	330	U
4-Nitroaniline	870	U	870	U	870	U	870	U	840	U	840	U
4,6-Dinitro-2-methylphenol	870	U	870	U	870	U	870	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	330	U	330	U
Pentachlorophenol	870	U	72	%	63	%	870	U	840	U	94	%
Phenanthrene	350	U	350	U	350	U	350	U	330	U	330	U
Anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Carbazole	350	U	350	U	350	U	350	U	330	U	330	U
Di-n-butylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
Fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Pyrene	350	U	93	%	80	%	350	U	330	U	104	%
Butylbenzylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Chrysene	350	U	350	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	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.

B0WBT2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L157-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A100503

Level: (low/med) LOW Date Received: 09/22/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/04/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/05/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.24	90	JB
2.	UNKNOWN	7.57	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBT1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L157-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A100506

Level: (low/med) LOW Date Received: 09/22/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/04/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/05/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.23	70	JB
2.	UNKNOWN	23.76	200	J
3.	UNKNOWN	25.15	90	J
4.	UNKNOWN	25.29	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKDQ

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1196-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D100505

Level: (low/med) LOW Date Received: 10/04/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/04/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/05/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.48	80	J

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2	001	S	99LE1196	09/20/99	10/04/99	10/05/99
B0WBT2	001 MS	S	99LE1196	09/20/99	10/04/99	10/05/99
B0WBT2	001 MSD	S	99LE1196	09/20/99	10/04/99	10/05/99
B0WBT1	002	S	99LE1196	09/20/99	10/04/99	10/05/99

LAB QC:

SBLKDQ	MB1	S	99LE1196	N/A	10/04/99	10/05/99
SBLKDQ	MB1 BS	S	99LE1196	N/A	10/04/99	10/05/99

RECRA LabNet Use Only
9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

Client: TNU-Hanford B99-078
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: 9.22.99 Date Due: 10/22/99
Account #:

Refrigerator #		1	6	6					6							
#/Type Container	Liquid															
	Solid	1 jar	1 jar						1 jar							
Volume	Liquid	0	0													
	Solid	60	250						500							
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb	TPH			Metal	CN						

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	OG24H OGCSC	OG25H OGRO	OPCB		TPH 8/22/99			Metal	ICAUTO INH3N	ISFD IPH	IN3N2	ICAL ICFL ICSUA	ICNOC ICNO3 NO2A
001	BOWBT2			S	9/20/99	1140	X	X	X		X			X	✓	✓	✓	✓	✓
002	BOWBT1			⊥	⊥	0950	X	X	X		X			X	✓	✓	✓	✓	✓

Special Instructions:

saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, ICR6, Hg
9/23/99 3. tests added per client COC
4. OGCSC = 1-propanol, ethanol
5.
6. Run Matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # *
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 3.2 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235 7952 9610

Relinquished by	Received by	Date	Time
FedEx	D. Smith	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-122 Page 1 of 1

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond (B8758) >15'		**SAF No.** B99-078
Ice Chest No. SML 510	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To ~~TMA/RECRA~~ RECRA 870 9-20-99	**Offsite Property No.** A990263		**Bill of Lading/Air Bill No.** 4235 7952 9-20 9-21-99 ct 9610
			COA B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	**Volume**	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBT2	Soil	9-20-99	1140	X	X		X			BOWCA1			
B0WBT~~3~~1	Soil	9-20-99	0950	X	X		X			BOWCA1			
B0WBT~~4~~3	Soil												
B0WBT5	Soil												

~~B20 9-20-99~~

~~B20 9-20-99~~

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 9-20-99/1600	Received By R.F. IB	Date/Time 9-20-99/1600
Relinquished By Rof IB	Date/Time 9.21.99 0830	Received By Chris	Date/Time 9.21.99 0830
Relinquished By Chris	Date/Time 9.21.99 1400	Received By FEDEX	Date/Time 9.21.99 1400
Relinquished By Fed Ex	Date/Time 9.22.99/0945	Received By	Date/Time 9.22.99/0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L157
SDG/SAF#: H0539/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-22-99

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 09-20-99.

The samples and their associated QC samples were prepared on 10-04-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-08,09-99. 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

JAN 2000
RECEIVED
Data
Log In

10-15-99
Date

R:\SHARE\LC\GCSCAN\09-157d.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 6 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: 10/13/99 07:04

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00**

	Cust ID:	B0WBT2	B0WBT2	B0WBT2	B0WBT1	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LE1192-MB1	99LE1192-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	85 %	114 %	123 %	115 %	96 %	98 %
Diesel Range Organics		4.2 U	96 %	102 %	4.2 U	4.0 U	84 %

10/13/99

10/14/99

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 B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2	001	S	99LE1192	09/20/99	10/04/99	10/08/99
B0WBT2	001 MS	S	99LE1192	09/20/99	10/04/99	10/08/99
B0WBT2	001 MSD	S	99LE1192	09/20/99	10/04/99	10/09/99
B0WBT1	002	S	99LE1192	09/20/99	10/04/99	10/09/99
LAB QC:						
BLK	MB1	S	99LE1192	N/A	10/04/99	10/08/99
BLK	MB1 BS	S	99LE1192	N/A	10/04/99	10/08/99

RECRA LabNet Use Only
9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

RECRA LabNet

Client: TNU-Hanford B99-078

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: 9.22.99 Date Due: 10/22/99

Account #:

Refrigerator #		1	6	6					6							8
#/Type Container	Liquid															
	Solid	1oz	1oz						1oz							
Volume	Liquid	0	0													
	Solid	60	250						500							
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	~~Pest~~ PCB	Herb	TPH			INORG: Metal	CN						

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MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB		TPH 8/22/99			Metal	IC NO2 IN NH3 N	ISFD IPH	IN3 N3	IC OCL IC SO4	IC NO2 IC NO3		
S - Soil	001	BOW BT2			S	9/20/99	1140	X	X	X		X			X	✓	✓	✓	✓	✓		
SE - Sediment	002	BOW BT1			⊥	⊥	0950	X	X	X		X			X	✓	✓	✓	✓	✓		
SO - Solid																						
SL - Sludge																						
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, ICR6, Hg

9/23/99 3. tests added per client COC

4. OGCSC = 1-propanol, ethanol

5.

6. Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

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. 3.2 °C

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

NOTES:

*4235 7952 9610

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-122 Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: SML 510	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA/RECRA~~ RECRA B20 9-20-99	Offsite Property No.: A990263		Bill of Lading/Air Bill No.: 4235 7952 ~~9-20~~ 9-21-99 CT 9610
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBT2	Soil	9-20-99	1140	X	X		X			BOWCA1			
B0WBT1	Soil	9-20-99	0950	X	X		X			BOWCA1			
B0WBT3	Soil												
B0WBT5	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-20-99/1600	Received By: R.F. IB	Date/Time: 9-20-99/1600
Relinquished By: Rel IB	Date/Time: 9.21.99 0830	Received By: Chris	Date/Time: 9.21.99 0830
Relinquished By: Chris	Date/Time: 9.21.99 1400	Received By: FEDEX	Date/Time: 9-21.99 1400
Relinquished By: Fed Ex	Date/Time: 9.22.99/0945	Received By: [signature]	Date/Time: 9.22.99/0945
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9909L157
SDG/SAF#: H0539/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-22-99

PCB

The set of samples consisted of two (2) soil samples collected on 09-20-99.

The samples and their associated QC samples were extracted on 09-28-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-02,03-99. 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 samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
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.

JAN 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-20-99
Date

pef\r:\group\data\pest\09L-157.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 7 pages.

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

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: 10/16/99 14:14

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0WBT2	B0WBT2	B0WBT2	B0WBT1	PBLKVJ	PBLKVJ BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LE1173-MB1	99LE1173-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	100 %	102 %	100 %	102 %	110 %	108 %
	Decachlorobiphenyl	96 %	97 %	95 %	97 %	103 %	104 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		34 U	34 U	35 U	35 U	33 U	33 U
Aroclor-1221		68 U	69 U	69 U	70 U	67 U	67 U
Aroclor-1232		34 U	34 U	35 U	35 U	33 U	33 U
Aroclor-1242		34 U	34 U	35 U	35 U	33 U	33 U
Aroclor-1248		34 U	34 U	35 U	35 U	33 U	33 U
Aroclor-1254		34 U	76 %	79 %	35 U	33 U	87 %
Aroclor-1260		34 U	34 U	35 U	35 U	33 U	33 U

10-18-99

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 B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2	001	S	99LE1173	09/20/99	09/28/99	10/03/99
B0WBT2	001 MS	S	99LE1173	09/20/99	09/28/99	10/03/99
B0WBT2	001 MSD	S	99LE1173	09/20/99	09/28/99	10/03/99
B0WBT1	002	S	99LE1173	09/20/99	09/28/99	10/03/99

LAB QC:

PBLKVJ	MB1	S	99LE1173	N/A	09/28/99	10/02/99
PBLKVJ	MB1 BS	S	99LE1173	N/A	09/28/99	10/02/99

AW 10-18-99

RECRA LabNet Use Only

9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

RECRA LabNet

Client TNU-Hanford B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Appel Del std TAT 30 day

Date Rec'd 9.22.99 Date Due 10/22/99

Account #

Refrigerator #		1	6	6					6							
#/Type Container	Liquid															
	Solid	1oz	1oz			1			1oz					1		
Volume	Liquid	0	0						0							
	Solid	60	250			1			500					1		
Preservatives																

ANALYSES REQUESTED →

	ORGANIC							INORG								
	VOA	BNA	~~Pest~~ PCB	Herb	TPH			Metal	CN							
	OGC24H OGCSO	OGC25H OGRO	OPCB		X			X	✓	✓	✓	✓	✓			
	X	X	X		X			X	✓	✓	✓	✓	✓			

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
001	BOWBT2			S	9/20/99	1140
002	BOWBT1			⊥	⊥	0950

Special Instructions:

Safety B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, ICR6, Hg
9/23/99 3. tests added per client COC
4. OGCSC = 1-propanol, ethanol
5.
6. Run Matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # *
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. 3.2 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235 7952 9610

Relinquished by	Received by	Date	Time
FedEx	[signature]	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-122

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond (B8758) >15'		SAF No. B99-078
Ice Chest No. SML 510	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To ~~TMA/BECRA~~ BECRA 9-20-99	Offsite Property No. A990263		Bill of Lading/Air Bill No. 4235 7952 9-21-99 CT 9-20 9610
			COA B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	Cool 4C	None	Cool 4C						
	Type of Container	aG	aG	aG	aG						
Special Handling and/or Storage	No. of Container(s)	1	1	1	1						
	Volume	60mL	250mL	250mL	500mL						
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBT2	Soil	9-20-99	1140	X	X		X			BOWCA1			
B0WBT~~2~~1	Soil	9-20-99	0950	X	X		X			BOWCA1			
B0WBT~~4~~3	Soil												
B0WBT5	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	9-20-99/1600	R-F 1B	9-20-99/1600
Relinquished By	Date/Time	Received By	Date/Time
Ref 1B	9.21.99 0830	C Trice	9.21.99 0830
Relinquished By	Date/Time	Received By	Date/Time
C Trice	9.21.99 1400	FEDEX	9.21.99 1400
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	9.22.99/0945	D Smith	9.22.99/0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9909L157
SDG/SAF#: H0539/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-22-99

GC SCAN

The set of samples consisted of two (2) soil samples collected on 09-20-99.

The samples and their associated QC samples were prepared on 09-23-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-24-99.

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 samples were packaged and stored as specified in the method protocol; 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. The blank spike recovery was within advisory control limits of 50%-150%.

7. All matrix spike recoveries were within the advisory control limits of 50%-150%.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

JAN 2000
RECEIVED
Data
Log In

10-15-99
Date

r:\share\lc\gcscan\09-157.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 6 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: 10/04/99 12:55

RFW Batch Number: **9909L157** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WBT2	B0WBT2	B0WBT2	B0WBT1	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LLC143-MB1	99LLC143-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		4.4 U	101 %	100 %	5.0 U	5.0 U	89 %
Ethanol		4.4 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

10/4/99

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 B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2	001	S	99LLC143	09/20/99	09/23/99	09/24/99
B0WBT2	001 MS	S	99LLC143	09/20/99	09/23/99	09/24/99
B0WBT2	001 MSD	S	99LLC143	09/20/99	09/23/99	09/24/99
B0WBT1	002	S	99LLC143	09/20/99	09/23/99	09/24/99
LAB QC:						
BLK	MB1	S	99LLC143	N/A	09/23/99	09/24/99
BLK	MB1 BS	S	99LLC143	N/A	09/23/99	09/24/99

10/14/99

RECRA LabNet Use Only: 9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

RECRA LabNet

Client: TNU-Hanford B99-078
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: 9.22.99 Date Due: 10/22/99
Account #:

Refrigerator #		1	6	6					6							
#/Type Container	Liquid															
	Solid	1qg	1qg						1qg							
Volume	Liquid	0														
	Solid	60	250						500							
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb	TPH			Metal	CN						

RECRA LabNet Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB		TPH			Metal	IONTO IONH3N	ISFD IPH	IN3N/9	IOCL IOSO4	IONO2 IONO3 IPO4		
	001	BOWBT2			S	9/20/99	1140	X	X	X		X			X	✓	✓	✓	✓	✓		
	002	BOWBT1			⊥	⊥	0950	X	X	X		X			X	✓	✓	✓	✓	✓		

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

Special Instructions:
Safety B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, ICR6, Hg
9/23/99 3. tests added per client COC
4. OGCSC = 1-propanol, ethanol
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
FedEx	[signature]	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # *
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. 3.2 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235795296 10

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-122	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'	SAF No.: B99-078	
Ice Chest No.: SML 510	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: ~~TMA/RECRA~~ RECRA 870 9-20-99	Offsite Property No.: A990263	Bill of Lading/Air Bill No.: 4235 7952 ~~9620~~ 9610 9-21-99 CT	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions							

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBT2	Soil	9-20-99	1140	X	X		X			DOWCA1			
B0WBT~~3~~1	Soil	9-20-99	0950	X	X		X			DOWCA1			
B0WBT~~4~~3	Soil												
B0WBT5	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers — Date/Time: Doug Bowers 9-20-99/1600	Received By: R-F 1B — Date/Time: 9-20-99/1600		
Relinquished By: Ref 1B — Date/Time: 9.21.99 0830	Received By: C Trice — Date/Time: 9.21.99 0830		
Relinquished By: C Trice — Date/Time: 9.21.99 1400	Received By: FEDEX — Date/Time: 9.21.99 1400		
Relinquished By: Fed Ex — Date/Time: 9.22.99/0945	Received By: [signature] — Date/Time: 9.22.99/0945		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium. . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-155); Gamma Spec - *Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium* (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

JAN 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L157
SDG/SAF# : H0539/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-22-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

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. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy 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 014 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WBT2	Antimony	100	99.4

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-157

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L157

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-03/98

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 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBT2	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	1.4	MG/KG	0.32	1.0
		Barium, Total	54.0	MG/KG	0.03	1.0
		Beryllium, Total	0.11	MG/KG	0.01	1.0
		Cadmium, Total	0.12	MG/KG	0.03	1.0
		Chromium, Total	10.7	MG/KG	0.08	1.0
		Copper, Total	14.0	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.1	MG/KG	0.12	1.0
		Lead, Total	2.8	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Thallium, Total	0.52 u	MG/KG	0.52	1.0
		Vanadium, Total	39.3	MG/KG	0.06	1.0
		Zinc, Total	31.6	MG/KG	0.08	1.0
-002	B0WBT1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.6	MG/KG	0.31	1.0
		Barium, Total	46.1	MG/KG	0.03	1.0
		Beryllium, Total	0.09	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	7.8	MG/KG	0.07	1.0
		Copper, Total	14.3	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.3	MG/KG	0.11	1.0
		Lead, Total	2.5	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	42.4	MG/KG	0.06	1.0
		Zinc, Total	30.4	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0674-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.05	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.10	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0290-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBT2	Silver, Total	4.1	0.1 u	4.4	93.2	1.0
		Arsenic, Total	164	1.4	177	91.8	1.0
		Barium, Total	216	54.0	177	91.7	1.0
		Beryllium, Total	4.2	0.11	4.4	92.9	1.0
		Cadmium, Total	4.2	0.12	4.4	92.6	1.0
		Chromium, Total	28.0	10.7	17.7	97.7	1.0
		Copper, Total	33.4	14.0	22.1	87.8	1.0
		Mercury, Total	0.18	0.02u	0.17	105.4	1.0
		Nickel, Total	58.0	11.1	44.3	105.9	1.0
		Lead, Total	43.2	2.8	44.3	91.2	1.0
		Antimony, Total	29.1	0.24u	44.3	65.7	1.0
		Selenium, Total	158	0.36u	177	89.1	1.0
		Thallium, Total	166	0.52u	177	93.9	1.0
		Vanadium, Total	83.9	39.3	44.3	100.7	1.0
		Zinc, Total	71.4	31.6	44.3	89.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBT2	Silver, Total	0.1 u	0.09u	NC	1.0
		Arsenic, Total	1.4	1.4	0.00	1.0
		Barium, Total	54.0	49.8	8.1	1.0
		Beryllium, Total	0.11	0.1	12.7	1.0
		Cadmium, Total	0.12	0.08	48.2	1.0
		Chromium, Total	10.7	7.5	35.2	1.0
		Copper, Total	14.0	11.7	17.9	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	11.1	7.2	42.6	1.0
		Lead, Total	2.8	2.4	15.4	1.0
		Antimony, Total	0.24u	0.23u	NC	1.0
		Selenium, Total	0.36u	0.34u	NC	1.0
		Thallium, Total	0.52u	0.49u	NC	1.0
		Vanadium, Total	39.3	38.5	2.1	1.0
		Zinc, Total	31.6	31.8	0.63	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0674-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Arsenic, LCS	952	1000	MG/KG	95.2
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	50.8	50.0	MG/KG	101.6
		Copper, LCS	126	125	MG/KG	100.7
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	292	300	MG/KG	97.2
		Selenium, LCS	921	1000	MG/KG	92.1
		Thallium, LCS	974	1000	MG/KG	97.4
		Vanadium, LCS	259	250	MG/KG	103.4
		Zinc, LCS	95.2	100	MG/KG	95.2
LCS1	99C0290-LC1	Mercury, LCS	1.0	1.0	MG/KG	102.5

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2						
SILVER, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
SILVER, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
SILVER, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
ARSENIC, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
BARIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
BARIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
BARIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
CADMIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
COPPER, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
COPPER, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
COPPER, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
MERCURY, TOTAL	001	S	99C0290	09/20/99	10/06/99	10/07/99
MERCURY, TOTAL	001 REP	S	99C0290	09/20/99	10/06/99	10/07/99
MERCURY, TOTAL	001 MS	S	99C0290	09/20/99	10/06/99	10/07/99
NICKEL, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
NICKEL, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
NICKEL, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
LEAD, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
LEAD, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
LEAD, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
SELENIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
SELENIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
THALLIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
VANADIUM, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
ZINC, TOTAL	001	S	99L0674	09/20/99	10/04/99	10/15/99
ZINC, TOTAL	001 REP	S	99L0674	09/20/99	10/04/99	10/15/99
ZINC, TOTAL	001 MS	S	99L0674	09/20/99	10/04/99	10/15/99
B0WBT1						
SILVER, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
ARSENIC, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
BARIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
CADMIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
CHROMIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
COPPER, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
MERCURY, TOTAL	002	S	99C0290	09/20/99	10/06/99	10/07/99
NICKEL, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
LEAD, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
ANTIMONY, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
SELENIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
THALLIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
VANADIUM, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99
ZINC, TOTAL	002	S	99L0674	09/20/99	10/04/99	10/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SILVER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BARIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BARIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
COPPER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
COPPER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
MERCURY LABORATORY	LC1 BS	S	99C0290	N/A	10/06/99	10/07/99
MERCURY, TOTAL	MB1	S	99C0290	N/A	10/06/99	10/07/99
NICKEL LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
NICKEL, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
LEAD LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
LEAD, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ZINC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ZINC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99

RECRA LabNet Use Only

9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~perrone~~ ~~wet~~ metals

Client TNU-Hanford B99-078

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 9.22.99 Date Due 10/22/99

Account #

Refrigerator #		1	6	6					6							
#/Type Container	Liquid															
	Solid	1aq	1aq						1aq							
Volume	Liquid	0	0													
	Solid	60	250						500							
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb	TPH			Metal	CN						
									RECRA LabNet Use Only							
		OGZ4H OGCSC	OGZ5H ODRO	OPCB			8/21/99		metals	ICNTO INH3N	ISFD IPH	IN3NJ2	IOCL ICFL ICSO4	ICNOC IONO3 NO04		

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	OGZ4H OGCSC	OGZ5H ODRO	OPCB			8/21/99		metals	ICNTO INH3N	ISFD IPH	IN3NJ2	IOCL ICFL ICSO4	ICNOC IONO3 NO04		
001	BOWBT2			S	9/20/99	1140	X	X	X			X		X	✓	✓	✓	✓	✓		
002	BOWBT1			⊥	⊥	0950	X	X	X			X		X	✓	✓	✓	✓	✓		

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

Safety # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Met = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, ICR6, Hg
9/23/99 3. tests added per client COC
4. OGCSC = 1-propanol, ethanol
5.
6. Run Matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___

Airbill # *

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. 3.2 °C

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

NOTES:

*4235 7952 9610

Relinquished by	Received by	Date	Time
FedEx	D. Smith	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

013

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-122	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: SML 510	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA/RECRA~~ RECRA 820 9-20-99	Offsite Property No.: A990263		Bill of Lading/Air Bill No.: 4235 7952 ~~9620~~ 9-21-99 CT 9610
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
Special Handling and/or Storage	No. of Container(s)	1	1	1	1							
	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
01 B0WBT2	Soil	9-20-99	1140	X	X		X			B0WCR1			
02 B0WBT~~3~~1 ~~820 9-20-99~~	Soil	9-20-99	0950	X	X		X			B0WCR1			
B0WBT~~4~~3	Soil												
B0WBT5 ~~820 9-20-99~~	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 9-20-99/1600	Received By: R.F. 1B	Date/Time: 9-20-99/1600
Relinquished By: Ref 1B	Date/Time: 9.21.99 0830	Received By: C Trice	Date/Time: 9.21.99 0830
Relinquished By: C Trice	Date/Time: 9.21.99 1400	Received By: FEDEX	Date/Time: 9-21.99 1400
Relinquished By: Fed Ex	Date/Time: 9.22.99/0945	Received By: [signature]	Date/Time: 9.22.99/0945
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241
(2) 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

COLLECTOR UNAVAILABLE TO SIGN COC
9909L157

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L157
SDG# : H0539
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 09-22-99

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 Sulfide analysis.

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) control limit.

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% RPD control limit.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-4-00
Date

JAN 2000
RECEIVED
Data
Entry

njp\i09-157

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 14 pages.

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	✓ D2216-86		__ 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

L-WI-034/B-06/99

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 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBT2	% Solids	95.8		%	0.01	1.0
		Chloride by IC	2.2		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	30.5		MG/KG	1.3	1.0
		Nitrate Nitrite	0.21	u	MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.8		SOIL PH	0.01	1.0
		Sulfide	3.8		MG/KG	1.0	1.0
-002	B0WBT1	% Solids	95.6		%	0.01	1.0
		Chloride by IC	2.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	71.0		MG/KG	2.6	2.0
		Nitrate Nitrite	0.21	u	MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.01	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC083-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
BLANK10	99LC110B-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI068-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LICA83-MB1	Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LAM050-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD050-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LSD051-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBT2	Chloride by IC	25.3	2.2	26.1	88.5	1.0
		Chloride by IC MSD	27.9	2.2	26.1	98.7	1.0
		Fluoride by IC	52.3	0.36	52.2	99.5	1.0
		Fluoride by IC MSD	56.5	0.36	52.2	107.5	1.0
		Nitrite by IC	24	1.3 u	26	91.3	1.0
		Nitrite by IC MSD	26	1.3 u	26	101.2	1.0
		Nitrate by IC	24	1.3 u	26	93.6	1.0
		Nitrate by IC MSD	26	1.3 u	26	101.5	1.0
		Cyanide, Total	5.1	0.52u	5.2	97.4	1.0
		Phosphate by IC	24.6	1.3 u	26.1	94.4	1.0
		Phosphate by IC MSD	27.0	1.3 u	26.1	103.4	1.0
		Sulfate by IC	55.2	30.5	26.1	94.4	1.0
		Sulfate by IC MSD	59.0	30.5	26.1	109.1	1.0
		Nitrate Nitrite	5.1	0.21u	5.0	103.2	1.0
		Ammonia, as N	102	1.3 u	103	98.5	1.0
-002	B0WBT1	Soluble Chromium VI	4.0	0.42u	4.2	97.5	1.0
		Insoluble Chromium VI	1120	0.42u	1180	95.3	100
		Sulfide	384	0.0	392	97.8	1.0
BLANK10	99LIC083-MB1	Chloride by IC	23.6	1.2 u	25.0	94.5	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	24	1.2 u	25	97.8	1.0
		Nitrate by IC	24	1.2 u	25	95.8	1.0
		Phosphate by IC	25.1	1.2 u	25.0	100.5	1.0
BLANK10	99LVI068-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.9	1.0
		Insoluble Chromium VI	1180	0.40u	1160	101.3	100
BLANK10	99LICA83-MB1	Sulfate by IC	23.5	1.2 u	25.0	93.9	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	5.0	0.20u	5.0	101.0	1.0
		Nitrate Nitrite MSD	5.1	0.20u	5.0	102.6	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.8	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	48.6	1.2 u	50.0	97.2	1.0
		Ammonia, as N MSD	51.0	1.2 u	50.0	102.0	1.0
BLANK10	99LAM050-MB1	Ammonia, as N	49.5	1.2 u	50.0	99.0	1.0
		Ammonia, as N MSD	50.2	1.2 u	50.0	100.5	1.0
BLANK10	99LSD050-MB1	Sulfide	9.3	1.0 u	9.9	93.9	1.0
		Sulfide MSD	9.5	1.0 u	9.9	96.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	99LSD051-MB1	Sulfide	9.4	1.0 u	10.0	94.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0WBT2	Chloride by IC	88.5	98.7	10.9
		Fluoride by IC	99.5	107.5	7.8
		Nitrite by IC	91.3	101.2	10.3
		Nitrate by IC	93.6	101.5	8.0
		Phosphate by IC	94.4	103.4	9.1
		Sulfate by IC	94.4	109.1	14.4
BLANK10	99LN3D47-MB1	Nitrate Nitrite	101.0	102.6	1.6
BLANK10	99LANA55-MB1	Nitrate Nitrite	98.4	100.8	2.4
BLANK10	99LAM038-MB1	Ammonia, as N	97.2	102.0	4.8
BLANK10	99LAM050-MB1	Ammonia, as N	99.0	100.5	1.5
BLANK10	99LSD050-MB1	Sulfide	93.9	96.0	2.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBT2	Chloride by IC	2.2	2.2	2.1	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	1.3 u	1.3 u	NC	1.0
		Cyanide, Total	0.52u	0.52u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	30.5	29.6	3.0	1.0
		Nitrate Nitrite	0.21u	0.21u	NC	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0
		pH	7.9	8.1	2.5	1.0
-002REP	B0WBT1	% Solids	95.6	92.8	3.0	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Sulfide	1.0 u	1.0 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L157

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC110B-LC1	Cyanide, Total LCS	2.3	2.0	MG/KG	116.0
LCS20	99LC110B-LC2	Cyanide, Total LCS	10	10	MG/KG	100.1

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT2						
% SOLIDS	001	S	99L%S125	09/20/99	09/22/99	09/23/99
CHLORIDE BY IC	001	S	99LIC083	09/20/99	10/04/99	10/04/99
CHLORIDE BY IC	001 REP	S	99LIC083	09/20/99	10/04/99	10/04/99
CHLORIDE BY IC	001 MS	S	99LIC083	09/20/99	10/04/99	10/04/99
CHLORIDE BY IC	001 MSD	S	99LIC083	09/20/99	10/04/99	10/04/99
FLUORIDE BY IC	001	S	99LIC083	09/20/99	10/04/99	10/04/99
FLUORIDE BY IC	001 REP	S	99LIC083	09/20/99	10/04/99	10/04/99
FLUORIDE BY IC	001 MS	S	99LIC083	09/20/99	10/04/99	10/04/99
FLUORIDE BY IC	001 MSD	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRITE BY IC	001	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRITE BY IC	001 REP	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRITE BY IC	001 MS	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRITE BY IC	001 MSD	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRATE BY IC	001	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRATE BY IC	001 REP	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRATE BY IC	001 MS	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRATE BY IC	001 MSD	S	99LIC083	09/20/99	10/04/99	10/04/99
TOTAL CYANIDE	001	S	99LC110B	09/20/99	09/30/99	10/04/99
TOTAL CYANIDE	001 REP	S	99LC110B	09/20/99	09/30/99	10/04/99
TOTAL CYANIDE	001 MS	S	99LC110B	09/20/99	09/30/99	10/04/99
PHOSPHATE BY IC	001	S	99LIC083	09/20/99	10/04/99	10/04/99
PHOSPHATE BY IC	001 REP	S	99LIC083	09/20/99	10/04/99	10/04/99
PHOSPHATE BY IC	001 MS	S	99LIC083	09/20/99	10/04/99	10/04/99
PHOSPHATE BY IC	001 MSD	S	99LIC083	09/20/99	10/04/99	10/04/99
CHROMIUM VI	001	S	99LVI068	09/20/99	10/05/99	10/05/99
SULFATE BY IC	001	S	99LICA83	09/20/99	10/04/99	10/04/99
SULFATE BY IC	001 REP	S	99LICA83	09/20/99	10/04/99	10/04/99
SULFATE BY IC	001 MS	S	99LICA83	09/20/99	10/04/99	10/04/99
SULFATE BY IC	001 MSD	S	99LICA83	09/20/99	10/04/99	10/04/99
NITRATE NITRITE	001	S	99LN3D47	09/20/99	09/30/99	10/01/99
NITRATE NITRITE	001 REP	S	99LANA55	09/20/99	11/17/99	11/18/99
NITRATE NITRITE	001 MS	S	99LANA55	09/20/99	11/17/99	11/18/99
AMMONIA	001	S	99LAM038	09/20/99	10/12/99	10/12/99
AMMONIA	001 REP	S	99LAM050	09/20/99	12/28/99	12/29/99
AMMONIA	001 MS	S	99LAM050	09/20/99	12/28/99	12/29/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	001	S	99LPH105	09/20/99	10/01/99	10/01/99
PH	001 REP	S	99LPH114	09/20/99	10/21/99	10/21/99
SULFIDE	001	S	99LSD050	09/20/99	09/28/99	09/28/99
B0WBT1						
% SOLIDS	002	S	99L%S125	09/20/99	09/22/99	09/23/99
% SOLIDS	002 REP	S	99L%S125	09/20/99	09/22/99	09/23/99
CHLORIDE BY IC	002	S	99LIC083	09/20/99	10/04/99	10/04/99
FLUORIDE BY IC	002	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRITE BY IC	002	S	99LIC083	09/20/99	10/04/99	10/04/99
NITRATE BY IC	002	S	99LIC083	09/20/99	10/04/99	10/04/99
TOTAL CYANIDE	002	S	99LC110B	09/20/99	09/30/99	10/04/99
PHOSPHATE BY IC	002	S	99LIC083	09/20/99	10/04/99	10/04/99
CHROMIUM VI	002	S	99LVI068	09/20/99	10/05/99	10/05/99
CHROMIUM VI	002 REP	S	99LVI068	09/20/99	10/05/99	10/05/99
CHROMIUM VI	002 MS	S	99LVI068	09/20/99	10/05/99	10/05/99
CHROMIUM VI	002 MSD	S	99LVI068	09/20/99	10/05/99	10/05/99
SULFATE BY IC	002	S	99LICA83	09/20/99	10/04/99	10/04/99
NITRATE NITRITE	002	S	99LN3D47	09/20/99	09/30/99	10/01/99
AMMONIA	002	S	99LAM038	09/20/99	10/12/99	10/12/99
PH	002	S	99LPH105	09/20/99	10/01/99	10/01/99
SULFIDE	002	S	99LSD050	09/20/99	09/28/99	09/28/99
SULFIDE	002 REP	S	99LSD050	09/20/99	09/28/99	09/28/99
SULFIDE	002 MS	S	99LSD051	09/20/99	09/29/99	09/30/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
CHLORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
TOTAL CYANIDE	LC1 L	S	99LC110B	N/A	09/30/99	10/04/99
TOTAL CYANIDE	LC2 L	S	99LC110B	N/A	09/30/99	10/04/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/22/99 RFW LOT # :9909L157

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	MB1	S	99LC110B	N/A	09/30/99	10/04/99
PHOSPHATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
PHOSPHATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
CHROMIUM VI	MB1	S	99LVI068	N/A	10/05/99	10/05/99
CHROMIUM VI	MB1 BS	S	99LVI068	N/A	10/05/99	10/05/99
CHROMIUM VI	MB1 BSD	S	99LVI068	N/A	10/05/99	10/05/99
SULFATE BY IC	MB1	S	99LICA83	N/A	10/04/99	10/04/99
SULFATE BY IC	MB1 BS	S	99LICA83	N/A	10/04/99	10/04/99
NITRATE NITRITE	MB1	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BS	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BSD	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BS	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BSD	S	99LANA55	N/A	11/17/99	11/18/99
AMMONIA	MB1	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BS	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BSD	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1	S	99LAM050	N/A	12/28/99	12/29/99
AMMONIA	MB1 BS	S	99LAM050	N/A	12/28/99	12/29/99
AMMONIA	MB1 BSD	S	99LAM050	N/A	12/28/99	12/29/99
SULFIDE	MB1	S	99LSD050	N/A	09/28/99	09/28/99
SULFIDE	MB1 BS	S	99LSD050	N/A	09/28/99	09/28/99
SULFIDE	MB1 BSD	S	99LSD050	N/A	09/28/99	09/28/99
SULFIDE	MB1	S	99LSD051	N/A	09/29/99	09/30/99
SULFIDE	MB1 BS	S	99LSD051	N/A	09/29/99	09/30/99

RECRA LabNet Use Only

9909L157

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) perrone wet metals

RECRA LabNet

Client: TNU-Hanford B99-078

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: 9.22.99 Date Due: 10/22/99

Account #:

Refrigerator #		1	6	6						6									
#/Type Container	Liquid																		
	Solid	1oz	1oz							1oz									
Volume	Liquid																		
	Solid	60	250							500									
Preservatives																			
ANALYSES REQUESTED		ORGANIC								INORG									
		VOA	BNA	~~Pest~~ PCB	Herb	TPH				Metal	CN								

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB		TPH	9/22/99		RECRA LabNet Use Only: Metals	IC NO TC	IC NH3N	IC SFD	IC PH	IC NO3 NO2	IC CL	IC SO4	IC NO3	IC PO4
S - Soil	001	BOWBT2			S	9/20/99	1140	X	X	X		X			X	✓	✓	✓	✓	✓	✓	✓		
SE - Sediment	002	BOWBT1			⊥	⊥	0950	X	X	X		X			X	✓	✓	✓	✓	✓	✓	✓		
SO - Solid																								
SL - Sludge																								
W - Water																								
O - Oil																								
A - Air																								
DS - Drum Solids																								
DL - Drum Liquids																								
L - EP/TCLP Leachate																								
WI - Wipe																								
X - Other																								
F - Fish																								

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, ICR6, Hg

9/23/99 3. tests added per client COC

4. OGCSC = 1-propanol, ethanol

5.

6. Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

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. 3.2 °C

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

NOTES: *4235 7952 9610

Relinquished by	Received by	Date	Time
FedEx	D. Smith	9/22/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		