0052309

DEC 1999 RECEIVED

Thermo Nutech
W.O. No. N9-08-143-7184

Bechtel Hanford Inc.
SDG H0502

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0502 is composed of eight 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 documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via facsimile on October 8, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.4 Total/Isotopic Uranium Analyses

No problems were encountered during the course of the total uranium analyses. Isotopic uranium analysis based on the total uranium results was ordered for sample B0W5K5. The sample was batched with other isotopic uranium analyses requested for samples from SAF B99-078 for QC purposes. No problems were encountered with the analyses.

2.5 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.6 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.7 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.8 Technetium-99 Analyses

No problems were encountered during the course of the analyses though a recount was taken on the LCS sample.

2.9 Tritium Analyses

No problems were encountered during the course of the analyses.

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

SAMPLE SUMMARY

SDG 7184
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W5K4	GP-14 <15'bgs 3'-4'	SOLID		N908143-01	B99-078		08/23/99 08:10
B0W5K5	GP-14 <15'bgs 5.5'-6.5'	SOLID		N908143-02	B99-078		08/23/99 08:26
B0W5K6	GP-14 <15'bgs 8'-9'	SOLID		N908143-03	B99-078		08/23/99 08:46
B0W5K7	GP-14 <15'bgs 10.5'-11.5	SOLID		N908143-04	B99-078		08/23/99 08:56
B0W5K8	GP-14 <15'bgs 13'-14'	SOLID		N908143-05	B99-078		08/23/99 09:11
B0W5K9	GP-14 <15'bgs 14'-15'	SOLID		N908143-06	B99-078		08/23/99 09:28
B0W5L0	GP-14 <15'bgs 15'-16'	SOLID		N908143-07	B99-078		08/23/99 09:42
B0W5L2	GP-14 <15'bgs 24'-25'	SOLID		N908143-08	B99-078		08/23/99 10:25
Method Blank		SOLID		N908132-09	B99-078		
Method Blank		SOLID		N908143-10	B99-078		
Lab Control Sample		SOLID		N908132-08	B99-078		
Lab Control Sample		SOLID		N908143-09	B99-078		
Duplicate (N908143-01)	GP-14 <15'bgs 3'-4'	SOLID		N908143-11	B99-078		08/23/99 08:10
Duplicate (N908143-02)	GP-14 <15'bgs 5.5'-6.5'	SOLID		N908143-13	B99-078		08/23/99 08:26
Duplicate (N908143-07)	GP-14 <15'bgs 15'-16'	SOLID		N908143-12	B99-078		08/23/99 09:42

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

SDG 7184
Contact Kevin C. Johnson

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7182		Method Blank	SOLID					N908132-09	7182-009
		Lab Control Sample	SOLID					N908132-08	7182-008
7184		B0W5K4	SOLID	93.6				N908143-01	7184-001
		B0W5K5	SOLID	79.5				N908143-02	7184-002
		B0W5K6	SOLID	94.5				N908143-03	7184-003
		B0W5K7	SOLID	88.7				N908143-04	7184-004
		B0W5K8	SOLID	92.3				N908143-05	7184-005
		B0W5K9	SOLID	91.7				N908143-06	7184-006
		B0W5L0	SOLID	93.7				N908143-07	7184-007
		B0W5L2	SOLID	94.3				N908143-08	7184-008
		Method Blank	SOLID					N908143-10	7184-010
		Lab Control Sample	SOLID					N908143-09	7184-009
		Duplicate (N908143-01)	SOLID	93.6				N908143-11	7184-011
		Duplicate (N908143-02)	SOLID	79.5				N908143-13	7184-013
		Duplicate (N908143-07)	SOLID	93.7				N908143-12	7184-012

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/08/99

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SAMPLE DELIVERY GROUP H0502

SDG 7184
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

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	6893-108	5.0	8			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-108	5.0	8			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-108	5.0	8			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6893-101	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-108	10.0	8			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-108	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-108	15.0	8			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-108	9.0	8			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-108	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-108	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 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

WORK SUMMARY

SDG 7184
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W5K4			N908143-01	7184-001	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 3'-4'		SOLID	08/23/99	7184-001	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-001	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-001	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-001	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-001	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5K5			N908143-02	7184-002	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 5.5'-6.5'		SOLID	08/23/99	7184-002	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-002	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-002	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-002	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-002	U		10/02/99	10/08/99	NJV	Uranium, Isotopic in Soil
				7184-002	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5K6			N908143-03	7184-003	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 8'-9'		SOLID	08/23/99	7184-003	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-003	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-003	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-003	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-003	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5K7			N908143-04	7184-004	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 10.5'-11.5		SOLID	08/23/99	7184-004	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-004	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-004	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-004	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-004	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5K8			N908143-05	7184-005	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 13'-14'		SOLID	08/23/99	7184-005	GAM		09/29/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-005	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-005	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-005	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-005	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

SDG 7184
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W5K9			N908143-06	7184-006	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 14'-15'		SOLID	08/23/99	7184-006	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-006	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-006	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-006	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-006	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5L0			N908143-07	7184-007	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 15'-16'		SOLID	08/23/99	7184-007	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-007	H		09/29/99	10/08/99	NJV	Tritium in Soil
				7184-007	NI_L		09/27/99	10/08/99	NJV	Nickel 63 in Soil
				7184-007	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-007	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-007	TC		10/01/99	10/08/99	NJV	Technetium 99 in Soil
				7184-007	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-007	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
B0W5L2			N908143-08	7184-008	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 24'-25'		SOLID	08/23/99	7184-008	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-008	H		09/29/99	10/08/99	NJV	Tritium in Soil
				7184-008	NI_L		09/27/99	10/08/99	NJV	Nickel 63 in Soil
				7184-008	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-008	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-008	TC		10/04/99	10/08/99	NJV	Technetium 99 in Soil
				7184-008	TH		10/04/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-008	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
Method Blank			N908132-09	7182-009	U		10/01/99	10/08/99	NJV	Uranium, Isotopic in Soil
		SOLID								
	B99-078									

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

SDG 7184
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			N908143-10	7184-010	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
		SOLID		7184-010	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-010	H		09/29/99	10/08/99	NJV	Tritium in Soil
				7184-010	NI_L		09/27/99	10/08/99	NJV	Nickel 63 in Soil
				7184-010	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-010	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-010	TC		10/02/99	10/08/99	NJV	Technetium 99 in Soil
				7184-010	TH		10/05/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-010	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
Lab Control Sample			N908132-08	7182-008	U		10/01/99	10/08/99	NJV	Uranium, Isotopic in Soil
		SOLID								
	B99-078									
Lab Control Sample			N908143-09	7184-009	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
		SOLID		7184-009	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-009	H		09/29/99	10/08/99	NJV	Tritium in Soil
				7184-009	NI_L		09/27/99	10/08/99	NJV	Nickel 63 in Soil
				7184-009	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-009	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-009	TC		10/06/99	10/08/99	NJV	Technetium 99 in Soil
				7184-009	TH		10/05/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-009	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
Duplicate (N908143-01)			N908143-11	7184-011	AM		10/01/99	10/08/99	NJV	Americium 241 in Soil
GP-14 <15'bgs 3'-4'		SOLID	08/23/99	7184-011	GAM		10/04/99	10/08/99	NJV	Gamma Scan
	B99-078			7184-011	PU		10/04/99	10/08/99	NJV	Plutonium, Isotopic in Solids
				7184-011	SR		09/27/99	10/08/99	NJV	Total Strontium in Soil
				7184-011	TH		10/05/99	10/08/99	NJV	Thorium, Isotopic in Soil
				7184-011	U_T		09/17/99	10/08/99	NJV	Uranium, Total in Soil
Duplicate (N908143-02)			N908143-13	7184-013	U		10/07/99	10/08/99	NJV	Uranium, Isotopic in Soil
GP-14 <15'bgs 5.5'-6.5'		SOLID	08/23/99							
	B99-078									
Duplicate (N908143-07)			N908143-12	7184-012	H		09/29/99	10/08/99	NJV	Tritium in Soil
GP-14 <15'bgs 15'-16'		SOLID	08/23/99	7184-012	NI_L		09/27/99	10/08/99	NJV	Nickel 63 in Soil
	B99-078			7184-012	TC		10/01/99	10/08/99	NJV	Technetium 99 in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

SDG 7184
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

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	8			1	1	1	11
GAM	B99-078	Gamma Scan	GAMMAHI	8			1	1	1	11
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
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	8			1	1	1	11
SR	B99-078	Total Strontium in Soil	SRTOTAL	8			1	1	1	11
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	8			1	1	1	11
U	B99-078	Uranium, Isotopic in Soil	UPLATE	1			1	1	1	4
U_T	B99-078	Uranium, Total in Soil	UKPA	8			1	1	1	11
TOTALS				55			10	10	10	85

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Version Ver 1.0
Form DVD-CWS
Version 3.06
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908132-09 Method Blank

METHOD BLANK

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908132-09	Client sample id	Method Blank
Dept sample id	7182-009	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	N.A.			400		H
Technetium 99	14133-76-7	N.A.			15		TC
Neptunium 237	13994-20-2	N.A.					NP
Uranium 233/234	U-233/234	0.006	0.017	0.027	1.0	U	U
Uranium 235	15117-96-1	0.007	0.007	0.026	1.0	U	U
Uranium 238	U-238	0	0.006	0.022	1.0	U	U
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		U_T
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Nickel 63	13981-37-8	N.A.			30		NI_L
Americium 241	14596-10-2	N.A.			1.0		AM
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

BLANK, cont.

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908132-09	Client sample id	Method Blank
Dept sample id	7182-009	Material/Matrix	SOLID
		SAF No	B99-078

QC-BLANK 31692

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

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SAMPLE DELIVERY GROUP H0502

N908143-10 Method Blank

METHOD BLANK

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908143-10	Client sample id	Method Blank
Dept sample id	7184-010	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	-0.013	0.043	0.074	400	U	H
Technetium 99	14133-76-7	0.059	0.25	0.51	15	U	TC
Total Uranium (ug/g)	7440-61-1	-0.002	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	-0.006	0.019	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.003	0.019	0.039	1.0	U	PU
Nickel 63	13981-37-8	-0.338	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0.009	0.025	0.042	1.0	U	AM
Total Strontium	SR-RAD	-0.016	0.13	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.021	0.086	0.17	1.0	U	TH
Thorium 230	14269-63-7	-0.139	0.086	0.19	1.0	U	TH
Thorium 232	TH-232	-0.011	0.021	0.082	1.0	U	TH
Potassium 40	13966-00-2	U		0.097		U	GAM
Cobalt 60	10198-40-0	U		0.006	0.050	U	GAM
Cesium 137	10045-97-3	U		0.007	0.10	U	GAM
Europium 152	14683-23-9	U		0.020	0.10	U	GAM
Europium 154	15585-10-1	U		0.023	0.10	U	GAM
Europium 155	14391-16-3	U		0.014	0.10	U	GAM
Radium 226	13982-63-3	U		0.014	0.10	U	GAM
Radium 228	15262-20-1	U		0.042	0.20	U	GAM
Thorium 228	14274-82-9	U		0.020		U	GAM
Thorium 232	TH-232	U		0.042		U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Uranium 235	15117-96-1	U		0.027		U	GAM

200 Area source chctzn-200-CW-1 OU

QC-BLANK 31732

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908132-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7184
Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0502
Case no TRB-SBB-207925

Lab sample id N908132-08
Dept sample id 7182-008

Client sample id Lab Control Sample
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	N.A.			400		H					80-120
Technetium 99	N.A.			15		TC					80-120
Neptunium 237	N.A.					NP					
Uranium 233/234	4.57	0.34	0.16	1.0		U	4.64	0.19	98	85-115	80-120
Uranium 235	3.90	0.30	0.027	1.0		U	3.77	0.15	103	85-115	80-120
Uranium 238	4.99	0.36	0.15	1.0		U	5.04	0.20	99	86-114	80-120
Total Uranium (ug/g)	N.A.			1.0		U_T					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	N.A.			30		NI_L					
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 230	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

200 Area source chctzn-200-CW-1 OU

QC-LCS 31691

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-09 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7184 Client/Case no Hanford SDG-H0502
Contact Kevin C. Johnson Case no TRB-SBB-207925

Lab sample id N908143-09 Client sample id Lab Control Sample
Dept sample id 7184-009 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	5.29	0.13	0.075	400	J	H	5.37	0.21	99	84-116	80-120
Technetium 99	64.5	1.8	0.45	15		TC	67.1	2.7	96	84-116	80-120
Total Uranium (ug/g)	46.8	5.3	0.066	1.0		U_T	41.2	1.6	114	75-125	80-120
Plutonium 238	11.7	0.83	0.033	1.0		PU	12.5	0.50	94	86-114	80-120
Plutonium 239/240	12.6	0.88	0.026	1.0		PU	13.2	0.53	95	86-114	80-120
Nickel 63	173	3.8	2.2	30		NI_L	167	6.7	104	83-117	
Americium 241	9.09	0.55	0.036	1.0		AM	9.58	0.38	95	87-113	80-120
Total Strontium	13.7	0.45	0.20	1.0		SR	12.5	0.50	110	82-118	
Thorium 230	31.2	1.9	0.19	1.0		TH	28.0	1.1	111	86-114	
Cobalt 60	0.433	0.048	0.028	0.050		GAM	0.430	0.017	101	71-129	80-120
Cesium 137	0.464	0.044	0.037	0.10		GAM	0.464	0.019	100	73-127	80-120

200 Area source chctzn-200-CW-1 OU

QC-LCS 31731

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-11 B0W5K4

DUPLICATE

SDG	7184			Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908143-11	Lab sample id	N908143-01	Client sample id	B0W5K4
Dept sample id	7184-011	Dept sample id	7184-001	Location/Matrix	GP-14 <15'bgs 3'-4' SOLID
		Received		Collected	08/23/99 08:10
% solids	93.6	% solids	93.6	Custody/SAF No	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
Total Uranium (ug/g)	0.382	0.042	0.007	1.0	J	U_T	0.354	0.038	0.007	J	8	30	
Plutonium 238	-0.003	0.013	0.031	1.0	U	PU	0.040	0.030	0.048	U	-		
Plutonium 239/240	0.013	0.019	0.031	1.0	U	PU	0.045	0.030	0.038	J	110	184	
Americium 241	0.018	0.025	0.044	1.0	U	AM	-0.008	0.024	0.054	U	-		
Total Strontium	0.039	0.10	0.14	1.0	U	SR	0.029	0.11	0.15	U	-		
Thorium 228	0.620	0.17	0.14	1.0	J	TH	0.658	0.16	0.15	J	6	56	
Thorium 230	0.450	0.19	0.19	1.0	J	TH	0.272	0.15	0.21	J	49	101	
Thorium 232	0.575	0.17	0.10	1.0	J	TH	0.501	0.13	0.099	J	14	61	
Potassium 40	16.2	0.70	0.27			GAM	16.3	1.9	0.28		1	37	
Cobalt 60	U		0.027	0.050	U	GAM	U		0.025	U	-		
Cesium 137	U		0.032	0.10	U	GAM	U		0.025	U	-		
Europium 152	U		0.075	0.10	U	GAM	U		0.062	U	-		
Europium 154	U		0.10	0.10	U	GAM	U		0.085	U	-		
Europium 155	U		0.11	0.10	U	GAM	U		0.058	U	-		
Radium 226	0.724	0.062	0.057	0.10		GAM	U		0.086	U	158	56	
Radium 228	1.06	0.15	0.14	0.20		GAM	U		0.18	U	142	69	
Thorium 228	0.813	0.044	0.042			GAM	0.332	0.27	0.028		84	80	
Thorium 232	1.06	0.15	0.14			GAM	U		0.18	U	142	69	
Americium 241	U		0.28		U	GAM	U		0.038	U	-		
Uranium 238	U		3.9		U	GAM	U		3.1	U	-		
Uranium 235	U		0.14		U	GAM	U		0.094	U	-		

200 Area source chctzn-200-CW-1 OU

QC-DUP#1 31733

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-13 B0W5K5

DUPLICATE

SDG	7184			Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908143-13	Lab sample id	N908143-02	Client sample id	B0W5K5
Dept sample id	7184-013	Dept sample id	7184-002	Location/Matrix	GP-14 <15'bgs 5.5'-6.5' SOLID
		Received		Collected	08/23/99 08:26
% solids	79.5	% solids	79.5	Custody/SAF No	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
Uranium 233/234	0.720	0.17	0.060	1.0	J	U	0.762	0.091	0.026	J	6	40	
Uranium 235	0.038	0.038	0.073	1.0	U	U	0.051	0.023	0.022	J	29	150	
Uranium 238	0.775	0.17	0.060	1.0	J	U	0.713	0.091	0.026	J	8	40	

200 Area source chctzn-200-CW-1 OU

QC-DUP#2 31955

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-12

B0W5L0

DUPLICATE

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N908143-12	Lab sample id	N908143-07
Dept sample id	7184-012	Dept sample id	7184-007
		Received	
% solids	93.7	% solids	93.7
Client sample id	B0W5L0		
Location/Matrix	GP-14 <15'bgs 15'-16' SOLID		
Collected	08/23/99 09:42		
Custody/SAF No	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 PROT TOT LIMIT
Tritium	0.033	0.045	0.075	400	U	H	-0.010	0.043	0.074	U	-	
Technetium 99	-0.004	0.22	0.59	15	U	TC	0.209	0.36	0.71	U	-	
Nickel 63	0.755	1.8	3.0	30	U	NI_L	-0.337	1.8	3.1	U	-	

200 Area source chctzn-200-CW-1 OU

QC-DUP#7 31734

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/08/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-01 B0W5K4

DATA SHEET

SDG	7184	Client/Case no	Hanford	SDG-H0502	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908143-01	Client sample id	B0W5K4		
Dept sample id	7184-001	Location/Matrix	GP-14 <15'bgs 3'-4'	SOLID	
Received		Collected	08/23/99 08:10		
% solids	93.6	Custody/SAF No		B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.354	0.038	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.040	0.030	0.048	1.0	U	PU
Plutonium 239/240	PU-239/240	0.045	0.030	0.038	1.0	J	PU
Americium 241	14596-10-2	-0.008	0.024	0.054	1.0	U	AM
Total Strontium	SR-RAD	0.029	0.11	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.658	0.16	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.272	0.15	0.21	1.0	J	TH
Thorium 232	TH-232	0.501	0.13	0.099	1.0	J	TH
Potassium 40	13966-00-2	16.3	1.9	0.28			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	U		0.025	0.10	U	GAM
Europium 152	14683-23-9	U		0.062	0.10	U	GAM
Europium 154	15585-10-1	U		0.085	0.10	U	GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM
Radium 226	13982-63-3	U		0.086	0.10	U	GAM
Radium 228	15262-20-1	U		0.18	0.20	U	GAM
Thorium 228	14274-82-9	0.332	0.27	0.028			GAM
Thorium 232	TH-232	U		0.18		U	GAM
Americium 241	14596-10-2	U		0.038		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Uranium 235	15117-96-1	U		0.094		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-02 B0W5K5

DATA SHEET

SDG	7184	Client/Case no	Hanford	SDG-H0502	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908143-02	Client sample id	B0W5K5		
Dept sample id	7184-002	Location/Matrix	GP-14 <15'bgs 5.5'-6.5'	SOLID	
Received		Collected	08/23/99 08:26		
% solids	79.5	Custody/SAF No		B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.762	0.091	0.026	1.0	J	U
Uranium 235	15117-96-1	0.051	0.023	0.022	1.0	J	U
Uranium 238	U-238	0.713	0.091	0.026	1.0	J	U
Total Uranium (ug/g)	7440-61-1	1.29	0.14	0.007	1.0		U_T
Plutonium 238	13981-16-3	0	0.012	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.018	0.039	1.0	U	PU
Americium 241	14596-10-2	0.024	0.024	0.034	1.0	U	AM
Total Strontium	SR-RAD	0.072	0.11	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.840	0.17	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.800	0.20	0.20	1.0	J	TH
Thorium 232	TH-232	0.822	0.17	0.058	1.0	J	TH
Potassium 40	13966-00-2	19.6	1.0	0.53			GAM
Cobalt 60	10198-40-0	U		0.052	0.050	U	GAM
Cesium 137	10045-97-3	U		0.046	0.10	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.092	0.10	U	GAM
Radium 226	13982-63-3	0.939	0.095	0.085	0.10		GAM
Radium 228	15262-20-1	0.950	0.24	0.24	0.20		GAM
Thorium 228	14274-82-9	1.18	0.054	0.049			GAM
Thorium 232	TH-232	0.950	0.24	0.24			GAM
Americium 241	14596-10-2	U		0.060		U	GAM
Uranium 238	U-238	U		5.9		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-03 B0W5K6

DATA SHEET

SDG	7184	Client/Case no	Hanford	SDG-H0502	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908143-03	Client sample id	B0W5K6		
Dept sample id	7184-003	Location/Matrix	GP-14 <15'bgs 8'-9'	SOLID	
Received		Collected	08/23/99 08:46		
% solids	94.5	Custody/SAF No		B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.398	0.043	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.011	0.027	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.017	0.027	1.0	U	PU
Americium 241	14596-10-2	-0.009	0.018	0.050	1.0	U	AM
Total Strontium	SR-RAD	-0.040	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.436	0.18	0.26	1.0	J	TH
Thorium 230	14269-63-7	0.337	0.16	0.22	1.0	J	TH
Thorium 232	TH-232	0.394	0.12	0.091	1.0	J	TH
Potassium 40	13966-00-2	13.4	0.80	0.41			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 137	10045-97-3	0.073	0.040	0.046	0.10	J	GAM
Europium 152	14683-23-9	U		0.098	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.657	0.074	0.069	0.10		GAM
Radium 228	15262-20-1	0.761	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.798	0.047	0.045			GAM
Thorium 232	TH-232	0.761	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.15		U	GAM
Uranium 238	U-238	U		4.9		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-04 B0W5K7

DATA SHEET

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908143-04	Client sample id	B0W5K7
Dept sample id	7184-004	Location/Matrix	GP-14 <15'bgs 10.5'-11.5 SOLID
Received		Collected	08/23/99 08:56
% solids	88.7	Custody/SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.624	0.067	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.013	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.003	0.013	0.036	1.0	U	PU
Americium 241	14596-10-2	0.009	0.023	0.036	1.0	U	AM
Total Strontium	SR-RAD	-0.008	0.14	0.18	1.0	U	SR
Thorium 228	14274-82-9	1.06	0.29	0.23	1.0		TH
Thorium 230	14269-63-7	1.22	0.32	0.23	1.0		TH
Thorium 232	TH-232	0.798	0.23	0.12	1.0	J	TH
Potassium 40	13966-00-2	15.6	0.51	0.23			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.024	0.020	0.025	0.10	U	GAM
Europium 152	14683-23-9	U		0.053	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM
Radium 226	13982-63-3	0.690	0.046	0.041	0.10		GAM
Radium 228	15262-20-1	0.981	0.10	0.092	0.20		GAM
Thorium 228	14274-82-9	0.882	0.032	0.028			GAM
Thorium 232	TH-232	0.981	0.10	0.092			GAM
Americium 241	14596-10-2	U		0.072		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Uranium 235	15117-96-1	U		0.084		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-05 B0W5K8

DATA SHEET

SDG	7184	Client/Case no	Hanford	SDG-H0502	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908143-05	Client sample id	B0W5K8		
Dept sample id	7184-005	Location/Matrix	GP-14 <15'bgs 13'-14'	SOLID	
Received		Collected	08/23/99 09:11		
% solids	92.3	Custody/SAF No		B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.783	0.085	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.009	0.018	0.028	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.012	0.018	0.045	1.0	U	PU
Americium 241	14596-10-2	0.008	0.024	0.049	1.0	U	AM
Total Strontium	SR-RAD	-0.005	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.424	0.22	0.28	1.0	J	TH
Thorium 230	14269-63-7	0.570	0.26	0.25	1.0	J	TH
Thorium 232	TH-232	0.515	0.22	0.14	1.0	J	TH
Potassium 40	13966-00-2	18.2	7.7	0.38			GAM
Cobalt 60	10198-40-0	U		0.047	0.050	U	GAM
Cesium 137	10045-97-3	U		0.052	0.10	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	U		0.14	0.10	U	GAM
Radium 228	15262-20-1	U		0.30	0.20	U	GAM
Thorium 228	14274-82-9	U		0.11		U	GAM
Thorium 232	TH-232	U		0.30		U	GAM
Americium 241	14596-10-2	U		0.056		U	GAM
Uranium 238	U-238	U		6.5		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-06 B0W5K9

DATA SHEET

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908143-06	Client sample id	B0W5K9
Dept sample id	7184-006	Location/Matrix	GP-14 <15'bgs 14'-15' SOLID
Received		Collected	08/23/99 09:28
% solids	91.7	Custody/SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.674	0.073	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.007	0.013	0.031	1.0	U	PU
Plutonium 239/240	PU-239/240	0.007	0.020	0.036	1.0	U	PU
Americium 241	14596-10-2	0.012	0.018	0.034	1.0	U	AM
Total Strontium	SR-RAD	-0.012	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.466	0.24	0.28	1.0	J	TH
Thorium 230	14269-63-7	0.963	0.31	0.26	1.0	J	TH
Thorium 232	TH-232	0.481	0.21	0.16	1.0	J	TH
Potassium 40	13966-00-2	14.6	0.70	0.37			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.032	0.10	U	GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.654	0.074	0.069	0.10		GAM
Radium 228	15262-20-1	0.824	0.14	0.15	0.20		GAM
Thorium 228	14274-82-9	0.801	0.044	0.043			GAM
Thorium 232	TH-232	0.824	0.14	0.15			GAM
Americium 241	14596-10-2	U		0.28		U	GAM
Uranium 238	U-238	U		4.2		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-07 B0W5L0

DATA SHEET

SDG	7184	Client/Case no	Hanford	SDG-H0502	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908143-07	Client sample id	B0W5L0		
Dept sample id	7184-007	Location/Matrix	GP-14 <15'bgs 15'-16'	SOLID	
Received		Collected	08/23/99 09:42		
% solids	93.7	Custody/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	-0.010	0.043	0.074	400	U	H
Technetium 99	14133-76-7	0.209	0.36	0.71	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.738	0.080	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.018	0.027	0.069	1.0	U	PU
Plutonium 239/240	PU-239/240	0.009	0.036	0.065	1.0	U	PU
Nickel 63	13981-37-8	-0.337	1.8	3.1	30	U	NI_L
Americium 241	14596-10-2	0.011	0.022	0.034	1.0	U	AM
Total Strontium	SR-RAD	-0.005	0.11	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.525	0.22	0.21	1.0	J	TH
Thorium 230	14269-63-7	0.416	0.22	0.21	1.0	J	TH
Thorium 232	TH-232	0.308	0.15	0.12	1.0	J	TH
Potassium 40	13966-00-2	12.4	1.9	0.21			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Europium 152	14683-23-9	U		0.059	0.10	U	GAM
Europium 154	15585-10-1	U		0.076	0.10	U	GAM
Europium 155	14391-16-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	U		0.075	0.10	U	GAM
Radium 228	15262-20-1	U		0.16	0.20	U	GAM
Thorium 228	14274-82-9	U		0.063		U	GAM
Thorium 232	TH-232	U		0.16		U	GAM
Americium 241	14596-10-2	U		0.033		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.087		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

N908143-08 B0W5L2

DATA SHEET

SDG	7184	Client/Case no	Hanford SDG-H0502
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908143-08	Client sample id	B0W5L2
Dept sample id	7184-008	Location/Matrix	GP-14 <15'bgs 24'-25' SOLID
Received		Collected	08/23/99 10:25
% solids	94.3	Custody/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	-0.004	0.043	0.073	400	U	H
Technetium 99	14133-76-7	0.179	0.46	0.93	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.652	0.070	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.013	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.013	0.037	1.0	U	PU
Nickel 63	13981-37-8	-0.075	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0	0.020	0.037	1.0	U	AM
Total Strontium	SR-RAD	-0.002	0.10	0.14	1.0	U	SR
Thorium 228	14274-82-9	0.604	0.19	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.510	0.21	0.22	1.0	J	TH
Thorium 232	TH-232	0.537	0.16	0.10	1.0	J	TH
Potassium 40	13966-00-2	11.5	0.77	0.38			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Europium 152	14683-23-9	U		0.072	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.065	0.10	U	GAM
Radium 226	13982-63-3	0.443	0.069	0.067	0.10		GAM
Radium 228	15262-20-1	0.538	0.14	0.15	0.20		GAM
Thorium 228	14274-82-9	0.745	0.055	0.050			GAM
Thorium 232	TH-232	0.538	0.14	0.15			GAM
Americium 241	14596-10-2	U		0.041		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test AM Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-108						
B0W5K4	N908143-01			7184-001	U	
B0W5K5	N908143-02			7184-002	U	
B0W5K6	N908143-03			7184-003	U	
B0W5K7	N908143-04			7184-004	U	
B0W5K8	N908143-05			7184-005	U	
B0W5K9	N908143-06			7184-006	U	
B0W5L0	N908143-07			7184-007	U	
B0W5L2	N908143-08			7184-008	U	
BLK (QC ID=31732)	N908143-10			7184-010	U	
LCS (QC ID=31731)	N908143-09			7184-009	ok	
Duplicate (N908143-01)	N908143-11			7184-011	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	

200 Area source chctzn-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 6893-108	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.108												
B0W5K4	N908143-01			0.054	0.500			64		946			39	10/01/99	10/01	SS-011
B0W5K5	N908143-02			0.034	0.500			83		946			39	10/01/99	10/01	SS-012
B0W5K6	N908143-03			0.050	0.500			56		942			39	10/01/99	10/01	SS-013
B0W5K7	N908143-04			0.036	0.500			86		942			39	10/01/99	10/01	SS-014
B0W5K8	N908143-05			0.049	0.500			64		928			39	10/01/99	10/01	SS-057
B0W5K9	N908143-06			0.034	0.500			81		924			39	10/01/99	10/01	SS-060
B0W5L0	N908143-07			0.034	0.500			88		924			39	10/01/99	10/01	SS-061
B0W5L2	N908143-08			0.037	0.500			74		924			39	10/01/99	10/01	SS-062
BLK (QC ID=31732)	N908143-10			0.042	0.500			82		893				10/01/99	10/01	SS-064
LCS (QC ID=31731)	N908143-09			0.036	0.500			96		893				10/01/99	10/01	SS-063
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.044	0.500			84		893			39	10/01/99	10/01	SS-065
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test AM	Matrix SOLID
SDG 7184	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0502	

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	0.041	±	0.015
FOR 11 SAMPLES	YIELD	78	±	24

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test PU Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-108								
B0W5K4	N908143-01			7184-001	U		0.045	J
B0W5K5	N908143-02			7184-002	U		U	
B0W5K6	N908143-03			7184-003	U		U	
B0W5K7	N908143-04			7184-004	U		U	
B0W5K8	N908143-05			7184-005	U		U	
B0W5K9	N908143-06			7184-006	U		U	
B0W5L0	N908143-07			7184-007	U		U	
B0W5L2	N908143-08			7184-008	U		U	
BLK (QC ID=31732)	N908143-10			7184-010	U		U	
LCS (QC ID=31731)	N908143-09			7184-009	ok		ok	
Duplicate (N908143-01)	N908143-11			7184-011	-	U	ok	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area source chctzn-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 6893-108	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.108												
B0W5K4	N908143-01			0.048	0.500			55		884			42	10/02/99	10/04	SS-001
B0W5K5	N908143-02			0.039	0.500			83		932			42	10/02/99	10/04	SS-006
B0W5K6	N908143-03			0.027	0.500			92		932			42	10/02/99	10/04	SS-008
B0W5K7	N908143-04			0.036	0.500			79		863			42	10/02/99	10/04	SS-055
B0W5K8	N908143-05			0.045	0.500			85		929			42	10/02/99	10/04	SS-010
B0W5K9	N908143-06			0.036	0.500			81		929			42	10/02/99	10/04	SS-011
B0W5L0	N908143-07			0.069	0.500			57		929			42	10/02/99	10/04	SS-012
B0W5L2	N908143-08			0.037	0.500			79		925			42	10/02/99	10/04	SS-013
BLK (QC ID=31732)	N908143-10			0.045	0.500			81		925				10/02/99	10/04	SS-014
LCS (QC ID=31731)	N908143-09			0.033	0.500			80		863				10/02/99	10/04	SS-056
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.031	0.500			81		925			42	10/02/99	10/04	SS-015
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test	PU
Matrix	SOLID
SDG	7184
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TR8-SBB-207925
Case no	SDG-H0502

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	0.041	±	0.023
FOR 11 SAMPLES	YIELD	78	±	23

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test TH Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-108							
B0W5K4	N908143-01			7184-001	0.658 J	0.272 J	0.501 J
B0W5K5	N908143-02			7184-002	0.840 J	0.800 J	0.822 J
B0W5K6	N908143-03			7184-003	0.436 J	0.337 J	0.394 J
B0W5K7	N908143-04			7184-004	1.06	1.22	0.798 J
B0W5K8	N908143-05			7184-005	0.424 J	0.570 J	0.515 J
B0W5K9	N908143-06			7184-006	0.466 J	0.963 J	0.481 J
B0W5L0	N908143-07			7184-007	0.525 J	0.416 J	0.308 J
B0W5L2	N908143-08			7184-008	0.604 J	0.510 J	0.537 J
BLK (QC ID=31732)	N908143-10			7184-010	U	U	U
LCS (QC ID=31731)	N908143-09			7184-009		ok	
Duplicate (N908143-01)	N908143-11			7184-011	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area source chctzn-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 6893-108	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.108											
B0W5K4	N908143-01			0.21	0.200			92		878			42	10/04/99	10/04	SS-032
B0W5K5	N908143-02			0.20	0.200			94		865			42	10/04/99	10/04	SS-035
B0W5K6	N908143-03			0.26	0.200			81		866			42	10/04/99	10/04	SS-040
B0W5K7	N908143-04			0.23	0.200			93		401			42	10/04/99	10/04	SS-047
B0W5K8	N908143-05			0.28	0.200			80		401			42	10/04/99	10/04	SS-048
B0W5K9	N908143-06			0.28	0.200			85		401			42	10/04/99	10/04	SS-049
B0W5L0	N908143-07			0.21	0.200			96		401			42	10/04/99	10/04	SS-050
B0W5L2	N908143-08			0.22	0.200			95		508			42	10/04/99	10/04	SS-027
BLK (QC ID=31732)	N908143-10			0.19	0.200			89		606				10/04/99	10/05	SS-029
LCS (QC ID=31731)	N908143-09			0.19	0.200			74		606				10/04/99	10/05	SS-027
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.19	0.200			95		606			43	10/04/99	10/05	SS-031
Nominal values and limits from method				1.0	0.200			20-105		200			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test	TH
Matrix	SOLID
SDG	7184
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0502

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	0.22	±	0.069
FOR 11 SAMPLES	YIELD	89	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test U	Matrix SOLID
SDG 7184	
Contact Kevin C. Johnson	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0502	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6893-101											
B0W5K5	N908143-02			7184-002	0.762 J	0.051 J	0.713 J	107	19	7	3
BLK (QC ID=31692)	N908132-09			7182-009	U	U	U				
LCS (QC ID=31691)	N908132-08			7182-008	ok	ok	ok				
Duplicate (N908143-02)	N908143-13			7184-013	ok J	ok U	ok J	93	30	5	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area source chctzn-200-CW-1 OU								Averages 100		6	

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 6893-101 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.101																
B0W5K5	N908143-02			0.026	1.00			94		537			40	10/01/99	10/02	SS-035
BLK (QC ID=31692)	N908132-09			0.027	1.00			76		537				10/01/99	10/01	SS-034
LCS (QC ID=31691)	N908132-08			0.16	1.00			74		537				10/01/99	10/01	SS-033
Duplicate (N908143-02) (QC ID=31955)	N908143-13			0.073	1.00			91		165			45	10/03/99	10/07	SS-048
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

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

AVERAGES ± 2 SD	MDA	0.072	± 0.13
FOR 4 SAMPLES	YIELD	84	± 20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test	SR
Matrix	SOLID
SDG	7184
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6893-108						
B0W5K4	N908143-01			7184-001	U	
B0W5K5	N908143-02			7184-002	U	
B0W5K6	N908143-03			7184-003	U	
B0W5K7	N908143-04			7184-004	U	
B0W5K8	N908143-05			7184-005	U	
B0W5K9	N908143-06			7184-006	U	
B0W5L0	N908143-07			7184-007	U	
B0W5L2	N908143-08			7184-008	U	
BLK (QC ID=31732)	N908143-10			7184-010	U	
LCS (QC ID=31731)	N908143-09			7184-009	ok	
Duplicate (N908143-01)	N908143-11			7184-011	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	

200 Area source chctzn-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 6893-108	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.108															
B0W5K4	N908143-01			0.15	1.00			92		400			35	09/27/99	09/27	GRB-229
B0W5K5	N908143-02			0.15	1.00			83		400			35	09/27/99	09/27	GRB-230
B0W5K6	N908143-03			0.16	1.00			86		400			35	09/27/99	09/27	GRB-231
B0W5K7	N908143-04			0.18	1.00			84		400			35	09/27/99	09/27	GRB-225
B0W5K8	N908143-05			0.16	1.00			88		400			35	09/27/99	09/27	GRB-227
B0W5K9	N908143-06			0.16	1.00			82		400			35	09/27/99	09/27	GRB-228
B0W5L0	N908143-07			0.16	1.00			85		400			35	09/27/99	09/27	GRB-221
B0W5L2	N908143-08			0.14	1.00			91		400			35	09/27/99	09/27	GRB-222
BLK (QC ID=31732)	N908143-10			0.17	1.00			79		400				09/27/99	09/27	GRB-223
LCS (QC ID=31731)	N908143-09			0.20	1.00			80		400				09/27/99	09/27	GRB-230
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.14	1.00			89		400			35	09/27/99	09/27	GRB-224
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test SR	Matrix SOLID
SDG 7184	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0502	

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	0.16	±	0.035
FOR 11 SAMPLES	YIELD	85	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test TC Matrix SOLID	Client Hanford
SDG 7184	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0502

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-108						
B0W5L0	N908143-07			7184-007	U	
B0W5L2	N908143-08			7184-008	U	
BLK (QC ID=31732)	N908143-10			7184-010	U	
LCS (QC ID=31731)	N908143-09			7184-009	ok	
Duplicate (N908143-07)	N908143-12			7184-012	-	U

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

200 Area source chctzn-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 6893-108 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.108																
B0W5L0	N908143-07			0.71	1.01			84		101			39	09/28/99	10/01	GRB-210
B0W5L2	N908143-08			0.93	1.06			36		101			42	09/28/99	10/04	GRB-223
BLK (QC ID=31732)	N908143-10			0.51	1.04			66		101				09/28/99	10/02	GRB-207
LCS (QC ID=31731)	N908143-09			0.45	1.04			71		115				09/28/99	10/06	GRB-227
Duplicate (N908143-07) (QC ID=31733)	N908143-12			0.59	1.00			60		101			39	09/28/99	10/01	GRB-232
Nominal values and limits from method				15	1.04			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 FOR 5 SAMPLES				
MDA	0.64	±	0.38
YIELD	63	±	35

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test GAM Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-108						
B0W5K4	N908143-01			7184-001	U	U
B0W5K5	N908143-02			7184-002	U	U
B0W5K6	N908143-03			7184-003	U	0.073 J
B0W5K7	N908143-04			7184-004	U	U
B0W5K8	N908143-05			7184-005	U	U
B0W5K9	N908143-06			7184-006	U	U
B0W5L0	N908143-07			7184-007	U	U
B0W5L2	N908143-08			7184-008	U	U
BLK (QC ID=31732)	N908143-10			7184-010	U	U
LCS (QC ID=31731)	N908143-09			7184-009	ok	ok
Duplicate (N908143-01)	N908143-11			7184-011	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200 Area source chctzn-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 6893-108	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.108															
B0W5K4	N908143-01			0.059	656					214			42	09/16/99	10/04	MB,07,00
B0W5K5	N908143-02			0.15	663					203			42	09/16/99	10/04	02,01,00
B0W5K6	N908143-03			0.11	655					203			42	09/16/99	10/04	02,03,00
B0W5K7	N908143-04			0.065	718					203			42	09/16/99	10/04	02,04,00
B0W5K8	N908143-05			0.11	170					432			37	09/16/99	09/29	JR,07,00
B0W5K9	N908143-06			0.089	646					202			42	09/16/99	10/04	MB,05,00
B0W5L0	N908143-07			0.055	663					202			42	09/16/99	10/04	MB,07,00
B0W5L2	N908143-08			0.11	708					215			42	09/16/99	10/04	02,01,00
BLK (QC ID=31732)	N908143-10			0.015	610					215				09/16/99	10/04	01,04,00
LCS (QC ID=31731)	N908143-09			0.028	610					215				09/16/99	10/04	01,03,00
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.085	656					215			42	09/16/99	10/04	MB,05,00
Nominal values and limits from method				0.050	610					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test GAM Matrix SOLID	Client Hanford
SDG 7184	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0502

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

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

AVERAGES ± 2 SD	MDA	0.080 ± 0.080
FOR 11 SAMPLES	YIELD	____ ± ____

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test U T Matrix SOLID	Client Hanford
SDG 7184	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0502

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-108					
B0W5K4	N908143-01			7184-001	0.354 J
B0W5K5	N908143-02			7184-002	1.29
B0W5K6	N908143-03			7184-003	0.398 J
B0W5K7	N908143-04			7184-004	0.624 J
B0W5K8	N908143-05			7184-005	0.783 J
B0W5K9	N908143-06			7184-006	0.674 J
B0W5L0	N908143-07			7184-007	0.738 J
B0W5L2	N908143-08			7184-008	0.652 J
BLK (QC ID=31732)	N908143-10			7184-010	U
LCS (QC ID=31731)	N908143-09			7184-009	ok
Duplicate (N908143-01)	N908143-11			7184-011	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area source chctzn-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 6893-108 2σ prep error 9.0 % Reference Lab Notebook 6893 pg.108																
B0W5K4	N908143-01			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5K5	N908143-02			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5K6	N908143-03			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5K7	N908143-04			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5K8	N908143-05			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5K9	N908143-06			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5L0	N908143-07			0.007	0.0500								25	09/17/99	09/17	KPA-001
B0W5L2	N908143-08			0.007	0.0500								25	09/17/99	09/17	KPA-001
BLK (QC ID=31732)	N908143-10			0.007	0.0500									09/17/99	09/17	KPA-001
LCS (QC ID=31731)	N908143-09			0.066	0.0500									09/17/99	09/17	KPA-001
Duplicate (N908143-01) (QC ID=31733)	N908143-11			0.007	0.0500								25	09/17/99	09/17	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test U T	Matrix SOLID
SDG 7184	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0502	

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	MDA	0.012	± 0.036
FOR 11 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test H Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-108						
B0W5L0	N908143-07			7184-007	U	
B0W5L2	N908143-08			7184-008	U	
BLK (QC ID=31732)	N908143-10			7184-010	U	
LCS (QC ID=31731)	N908143-09			7184-009	ok	J
Duplicate (N908143-07)	N908143-12			7184-012	-	U

Nominal values and limits from method RDLs (pCi/g) 400
200 Area source chctzn-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 6893-108 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.108																
B0W5L0	N908143-07			0.074	20.5			100		120			37	09/28/99	09/29	LSC-007
B0W5L2	N908143-08			0.073	20.0			100		120			37	09/28/99	09/29	LSC-007
BLK (QC ID=31732)	N908143-10			0.074	20.3			100		120				09/28/99	09/29	LSC-007
LCS (QC ID=31731)	N908143-09			0.075	20.3			100		120				09/28/99	09/29	LSC-007
Duplicate (N908143-07) (QC ID=31733)	N908143-12			0.075	20.2			100		120			37	09/28/99	09/29	LSC-007
Nominal values and limits from method				400	20.3					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 0.074 ± 0.002
FOR 5 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0502

Test NI L Matrix SOLID
SDG 7184
Contact Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-108						
B0W5L0	N908143-07			7184-007	U	
B0W5L2	N908143-08			7184-008	U	
BLK (QC ID=31732)	N908143-10			7184-010	U	
LCS (QC ID=31731)	N908143-09			7184-009	ok	
Duplicate (N908143-07)	N908143-12			7184-012	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 Area source chctzn-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 6893-108	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.108											
B0W5L0	N908143-07			3.1	0.500			69		100			35	09/26/99	09/27	LSC-004
B0W5L2	N908143-08			2.2	0.500			94		100			35	09/26/99	09/27	LSC-004
BLK (QC ID=31732)	N908143-10			2.2	0.500			94		100				09/26/99	09/27	LSC-004
LCS (QC ID=31731)	N908143-09			2.2	0.500			95		100				09/26/99	09/27	LSC-004
Duplicate (N908143-07) (QC ID=31733)	N908143-12			3.0	0.500			71		100			35	09/26/99	09/27	LSC-004
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 FOR 5 SAMPLES
MDA 2.5 ± 0.93
YIELD 85 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/08/99

SDG 7184
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/08/99

SDG 7184
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/08/99

SDG 7184
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/08/99

SDG 7184
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0502

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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GUIDE, cont.

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Case no SDG-H0502

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

Lab id TMANC
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GUIDE, cont.

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Contract TRB-SBB-207925
Case no SDG-H0502

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
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SDG 7184
Contact Kevin C. Johnson

REPORT GUIDE

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Contract TRB-SBB-207925
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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG-H0502

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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GUIDE, cont.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

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Contract TRB-SBB-207925
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 3'-4'	SAF No. B99-078	
Ice Chest No. SML555	Field Logbook No. EL1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-23-99	Offsite Property No. A990226	Bill of Lading/Air Bill No. 9235 7952 8624	
		COA B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K4	Soil	8-23-99	0810	X						X	B0W5L8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Befer IB	Date/Time 8/23/99 13:00
Relinquished By Bef IB	Date/Time 8-24-99/1200	Received By Doug Bowers Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-24-99/1200	Received By FedEx	Date/Time 8-24-99
Relinquished By FedEx	Date/Time 8-25-99 9:00	Received By TNV M. Goldenberg	Date/Time 9:00 8-25-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241} | Strontium-89,90 -- Total Sr | Total Uranium {Uranium} | Isotopic Plutonium | Isotopic Thorium {Thorium-232} | Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: SML 555	Field Logbook No.: EL 7511	Method of Shipment: Federal Express	
Shipped To: TMA/REORA SB 8-23-99	Offsite Property No.: A990226	Bill of Lading/Air Bill No.: 9235 7952 8624	
		COA: B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W5K5 / Soil / 8-23-99 / 0826	X						X	B0W5L8		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	Brent Porter	8/23/99 13:00
Received By	Peter JB	8/23/99 13:00
Relinquished By	RJB	8-24-99/1200
Received By	Doug Bowers	8-24-99/1200
Relinquished By	Doug Bowers	8-24-99/1200
Received By	Fed Ex	8-25-99
Relinquished By	FedEx	8-25-99 9:00
Received By	TNW McGoldenberg	8-25-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector Brent Porter	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-14 <15' bgs 8' - 9'		SAF No. B99-078
Ice Chest No. SML555	Field Logbook No. EL1511		Method of Shipment Federal Express
Shipped To TMA/REORA 8-23-99	Offsite Property No. A990226		Bill of Lading/Air Bill No. 4235 7952 8624

Price Code 8N

Data Turnaround 45 Days

COA B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation			None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container			aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)			1	1	1	1	1	1	1			
Volume			60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS			Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL) TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time									
B0W5K6	Soil	8-23-99	0846	X°						X°	B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Befer IB	Date/Time 8/23/99 13:00
Relinquished By RPIB	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time 8-24-99
Relinquished By FedEx	Date/Time 9:00 8-25-99	Received By TNV M. Goldenberg	Date/Time 9:00 8-25-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 10.5'-11.5'	SAF No. B99-078	
Ice Chest No. SML555	Field Logbook No. EL 1511	Method of Shipment Federal Express	
Shipped To TMA/~~RECRA~~ DTD 8-27-99	Offsite Property No. A990226	Bill of Lading/Air Bill No. 4235 7952 8624	
		COA B200W1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K7	Soil	8-23-99	0856	X						X	B0W5L8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Peter IB	Date/Time: 8/23/99 13:00
Relinquished By: Peter IB	Date/Time: 8-24-99/1200	Received By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time: 8-24-99
Relinquished By: FedEx	Date/Time: 8-25-99 9:00	Received By: TNU M. Goldenberg	Date/Time: 8-25-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 17 1/4'	SAF No.: B99-078	
Ice Chest No.: SML555	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-23-99 TMA	Offsite Property No.: A990276	Bill of Lading/Air Bill No.: 8-24-99 4735 7952 8624	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W5K8 / Soil / 8-23-99 / 0911	X*						X*	B0W5L8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Keter IB	Date/Time: 8/23/99 13:00
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time: 8-24-99
Relinquished By: FedEx	Date/Time: 8-25-99 9:00	Received By: TNV M. Goldenberg	Date/Time: 8-25-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241} {Strontium-89,90 – Total Sr} Total Uranium {Uranium} {Isotopic Plutonium} {Isotopic Thorium {Thorium-232}} Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 1

Collector Brent Porter	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-14 <15' bgs 14' 15'		SAF No. B99-078	Data Turnaround 45 Days
Ice Chest No. SML 555	Field Logbook No. EL 1511		Method of Shipment Federal Express	
Shipped To ~~TMA/RECRA~~ TMA KJB 8-23-99	Offsite Property No. A990226		Bill of Lading/Air Bill No. 4235 7952 8624	
			COA B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K9	Soil	8-23-99	0928	X		~~B0W5K8~~ 8-23-99		X	B0W5K8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Refer 1B	Date/Time 8/23/99
Relinquished By Ref 1B	Date/Time 8.24.99/1200	Received By Doug Bowers	Date/Time 8.24.99/1200
Relinquished By Doug Bowers	Date/Time 8.24.99/1200	Received By Ref	Date/Time 8.24.99 Fed Ex
Relinquished By FedEx 8-25-99	Date/Time 9:00	Received By TNV McGoldenberg	Date/Time 8-25-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector Brent Porter	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-14 >15' bgs 15-16ft		SAF No. B99-078
Ice Chest No. SML 555	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To ~~TMA/RECRA~~ TMA BPP 8/23/99	Offsite Property No. A990226		Bill of Lading/Air Bill No. 4235 7952 8624 ~~B20CW1-67IC~~ 8-23-99
			COA B20CW1 67IC

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942	X*	X*	X*	X*						X*
								B0W5L8					

CHAIN OF POSSESSION

Sign/Print Names			
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Peter IB	Date/Time 8/23/99 13:00
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time 8-24-99
Relinquished By FedEx 8-25-99	Date/Time 9:00	Received By TNW M. Goldenberg	Date/Time 8-25-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector Brent Porter	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 GP-14 >15' bgs 24'-25'		SAF No. B99-078		
Ice Chest No. SML 555	Field Logbook No. EL151		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-23-99	Offsite Property No. A990226		Bill of Lading/Air Bill No. 4233 7952 8624		
			COA B20CW1 67/C		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - 113	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025	X	X	X	X						X
											B0D5L8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 19:00	Received By Refer IB	Date/Time 8/23/99 13:00
Relinquished By Ref IB	Date/Time 8-24-99 1200	Received By Doug Bowers	Date/Time 8-24-99 1200
Relinquished By Doug Bowers	Date/Time 8-24-99 1200	Received By Fed Ex	Date/Time 8-24-99
Relinquished By Fed EX 9:00	Date/Time 8-25-99	Received By TNW M. Goldenberg 9:00	Date/Time 8-25-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 8-25-99 9:00

CoC No. B99-078-21, 22, 23, 24, 25, 26, 27, 29

Container I.D. No. _____ Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [✓] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [ ] No [✓] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 8
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 8-25-99 Time: 9:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

SDR # B00-009
Revision #: 0
Date Initiated: 10/05/99

SAMPLE DISPOSITION RECORD

SAF: B99-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 4
ID Numbers: B0W694, B0W5K5, B0W5P7, B0W681
Matrix: Soil
Collection Date: 08/19/99 - 08/25/99

Issue Background:

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

Type: Other

Description: Complete Isotopic Uranium Analysis

Disposition:

Description: Although isotopic uranium was requested on the listed samples, the laboratory had been instructed to not perform the analysis until specifically directed to do so by ERC Sample Management. The 200-CW-1 Characterization project has determined that isotopic uranium should be run on the listed samples.

Justification: Per pervious arrangements with ERC Sample Management, Isotopic uranium analyses will be requested by the project on a case-by-case basis when total uranium concentration is above detection.

Approval Signatures:

S. J. Trent 10/11/99
Project Coordinator (Print/Sign Name) Date

M. E. Todd
Task Manager (Print/Sign Name) Date

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

OCT 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L863
SDG/SAF#: H0502/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 08-25-99

DIESEL RANGE ORGANICS

The set of samples consisted of eight (8) soil samples collected on 08-23-99.

The samples and their associated QC samples were prepared on 08-31-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-15,16-99. 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. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-30-99
Date

R:\SHARE\LC\GCSCAN\08-906d.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 13 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: 09/16/99 12:19

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W5L0	B0W5L0	B0W5L0	B0W5L2	B0W5K4	B0W5K5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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	93 %	85 %	92 %	79 %	46 %	92 %
Diesel Range Organics		4.3 U	80 %	83 %	4.2 U	4.2 U	4.7 U

	Cust ID:	B0W5K6	B0W5K7	B0W5K8	B0W5K9	BLK	BLK BS
Sample Information	RFW#:	005	006	007	008	99LE1061-MB1	99LE1061-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	76 %	74 %	88 %	66 %	44 %	61 %
Diesel Range Organics		4.1 U	4.5 U	4.7 U	4.2 U	4.0 U	55 %

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.

9/24/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0	001	S	99LE1061	08/23/99	08/31/99	09/15/99
B0W5L0	001 MS	S	99LE1061	08/23/99	08/31/99	09/15/99
B0W5L0	001 MSD	S	99LE1061	08/23/99	08/31/99	09/15/99
B0W5L2	002	S	99LE1061	08/23/99	08/31/99	09/15/99
B0W5K4	003	S	99LE1061	08/23/99	08/31/99	09/16/99
B0W5K5	004	S	99LE1061	08/23/99	08/31/99	09/16/99
B0W5K6	005	S	99LE1061	08/23/99	08/31/99	09/16/99
B0W5K7	006	S	99LE1061	08/23/99	08/31/99	09/16/99
B0W5K8	007	S	99LE1061	08/23/99	08/31/99	09/16/99
B0W5K9	008	S	99LE1061	08/23/99	08/31/99	09/16/99

LAB QC:

BLK	MB1	S	99LE1061	N/A	08/31/99	09/15/99
BLK	MB1 BS	S	99LE1061	N/A	08/31/99	09/15/99

RECRA LabNet Use Only: 99081863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6-1					6		6	6						
#/Type Container	Liquid																
	Solid	1g	1g-1					1g		1g	1g						
Volume	Liquid																
	Solid	250	500-1			w/VOA	w/BNA	500		250	1000						
Preservatives																	
ANALYSES REQUESTED →		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	02 24H	02 25H	02 08B		02 SSC	02 RD		02 METD		1PH	02 ANIONS
001	BOWSL0			S	8/23/99	0942	X	X	X		X	X		X		X	X
2	L2					1025											
3	K4					0810											
4	K5					0826											
5	K6					0846											
6	K7					0856											
7	K8					0911											
8	K9					0928											

Run Matrix QC

Special Instructions:
DAF# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1.) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
Ang (1.) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
* 5. 4235795286 57 - 3.2°C
6. 35 - 3.1°C

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. 3.6 C

Relinquished by	Received by	Date	Time
FedEx	Jenson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235795286 46

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector Brent Porter	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 GP-14 >15' bgs 15-16 ft	SAF No. B99-078	
Ice Chest No. ~~B0W~~ 8-24-99 SML 297	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To ~~TMA/RECRA~~ RECRA B 8-27-99	Offsite Property No. A990297	Bill of Lading/Air Bill No. 4235 7952 8657 ~~B20CW1-6716~~ B 8-23-99	
		COA B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Refer JB	Date/Time 8/23/99 13:00
Relinquished By Ref. JB	Date/Time 8-24-99/1200	Received By Doug Bowers Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Jecley	Date/Time	Received By Janson 8/25/99 0930	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 24-251	SAF No.: B99-078	
Ice Chest No.: SML-297	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ RECRA TJB 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8657	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {i-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: RcF JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedey	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 3'~4'		SAF No. B99-078		
Ice Chest No. ERC 96-030	Field Logbook No. EL1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA RJB 8-23-99	Offsite Property No. A990227		Bill of Lading/Air Bill No. 4235 7952 8635		
			COA B20CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
3 B0W5K4	Soil	8-23-99	0810		X	X	X	X	X	B0W5K8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Refer TB	Date/Time 8/23/99 13:00
Relinquished By Ref TB	Date/Time 8-24-99 / 1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Fedex	Date/Time	Received By Johnson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 5.5'-6.5'	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-27 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8635	
		COA: B2OCW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None				
	Type of Container	aG	aG	aG	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1	1	1				
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions				

Sample No.	Matrix *	Sample Date	Sample Time										
X B0W5K5	Soil	8-23-99	0826		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 1300	Received By: Refer IB	Date/Time: 8/23/99 1300
Relinquished By: Ref IB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedley	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL/F 11	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8635	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
5 B0W5K6	Soil	8-23-99	0846		X	X	X	X	X		B0W5K8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Peter JB	Date/Time: 8/23/99 13:00
Relinquished By: Peter JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time:	Received By: Jenson 8/25/99 0930	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 10.5-11.5		SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511		Method of Shipment: Federal Express	
Shipped To: TMA/RECRA BJD 8-23-99	Offsite Property No.: A 990227		Bill of Lading/Air Bill No.: 4235 7952 8646	
			COA: D20 CW1 6715	

011

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K7	Soil	8-23-99	0856		X	X	X	X	X		B0W5L8		

6

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Peter JB / Brent Porter	Date/Time: 8/23/99 13:00
Relinquished By: DCFJB	Date/Time: 8-24-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Janson	Date/Time: 8/25/99 0932

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 13'-14'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA 8-23-99	Offsite Property No.: 4990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (HCL VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (HCL) TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K8	Soil	8-23-99	0911		X	X	X	X	X		B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: R.F. JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedel	Date/Time:	Received By: Jansen	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 14'-15'		SAF No.: B99-078
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA DTB 8-27-99	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8646 0
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (I-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K9	Soil	8-23-99	0928		X	X	X	X	X	B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: R.P. JB	Date/Time: 8-24-99/1200	Received By: Doug Bamen	Date/Time: 8-24-99/1200
Relinquished By: Doug Bamen	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Declee	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

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# : 9908L863
SDG/SAF #: H0502/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-25-99

SEMIVOLATILE

Eight (8) soil samples were collected on 08-23-99.

The samples and their associated QC samples were extracted on 09-02-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-21-99.

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 temperatures upon receipt have 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. A spectral search was conducted for the compound Butylated Hydroxytoluene; this compound was not identified in the samples.

OCT 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\gorup\data\bna\tnu08863.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 18 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

Report Date: 09/28/99 17:09

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W5L0		B0W5L2		B0W5K4		B0W5K5		B0W5K6		B0W5K7	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	82	%	78	%	90	%	92	%	83	%	75	%
	2-Fluorobiphenyl	75	%	78	%	81	%	81	%	81	%	68	%
	Terphenyl-d14	80	%	77	%	86	%	94	%	85	%	72	%
	Phenol-d5	64	%	65	%	67	%	70	%	67	%	62	%
	2-Fluorophenol	61	%	61	%	64	%	69	%	66	%	58	%
	2,4,6-Tribromophenol	72	%	69	%	74	%	77	%	69	%	58	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	350	U	350	U	410	U	350	U	380	U
bis(2-Chloroethyl)ether		360	U	350	U	350	U	410	U	350	U	380	U
2-Chlorophenol		360	U	350	U	350	U	410	U	350	U	380	U
1,3-Dichlorobenzene		360	U	350	U	350	U	410	U	350	U	380	U
1,4-Dichlorobenzene		360	U	350	U	350	U	410	U	350	U	380	U
1,2-Dichlorobenzene		360	U	350	U	350	U	410	U	350	U	380	U
2-Methylphenol		360	U	350	U	350	U	410	U	350	U	380	U
2,2'-oxybis(1-Chloropropane)		360	U	350	U	350	U	410	U	350	U	380	U
4-Methylphenol		360	U	350	U	350	U	410	U	350	U	380	U
N-Nitroso-di-n-propylamine		360	U	350	U	350	U	410	U	350	U	380	U
Hexachloroethane		360	U	350	U	350	U	410	U	350	U	380	U
Nitrobenzene		360	U	350	U	350	U	410	U	350	U	380	U
Isophorone		360	U	350	U	350	U	410	U	350	U	380	U
2-Nitrophenol		360	U	350	U	350	U	410	U	350	U	380	U
2,4-Dimethylphenol		360	U	350	U	350	U	410	U	350	U	380	U
bis(2-Chloroethoxy)methane		360	U	350	U	350	U	410	U	350	U	380	U
2,4-Dichlorophenol		360	U	350	U	350	U	410	U	350	U	380	U
1,2,4-Trichlorobenzene		360	U	350	U	350	U	410	U	350	U	380	U
Naphthalene		360	U	350	U	350	U	410	U	350	U	380	U
4-Chloroaniline		360	U	350	U	350	U	410	U	350	U	380	U
Hexachlorobutadiene		360	U	350	U	350	U	410	U	350	U	380	U
4-Chloro-3-methylphenol		360	U	350	U	350	U	410	U	350	U	380	U
2-Methylnaphthalene		360	U	350	U	350	U	410	U	350	U	380	U
Hexachlorocyclopentadiene		360	U	350	U	350	U	410	U	350	U	380	U
2,4,6-Trichlorophenol		360	U	350	U	350	U	410	U	350	U	380	U
2,4,5-Trichlorophenol		890	U	870	U	880	U	1000	U	870	U	940	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L863 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0W5L0		B0W5L2		B0W5K4		B0W5K5		B0W5K6		B0W5K7	
RFW#:	001		002		003		004		005		006	
2-Chloronaphthalene	360	U	350	U	350	U	410	U	350	U	380	U
2-Nitroaniline	890	U	870	U	880	U	1000	U	870	U	940	U
Dimethylphthalate	360	U	350	U	350	U	410	U	350	U	380	U
Acenaphthylene	360	U	350	U	350	U	410	U	350	U	380	U
2,6-Dinitrotoluene	360	U	350	U	350	U	410	U	350	U	380	U
3-Nitroaniline	890	U	870	U	880	U	1000	U	870	U	940	U
Acenaphthene	360	U	350	U	350	U	410	U	350	U	380	U
2,4-Dinitrophenol	890	U	870	U	880	U	1000	U	870	U	940	U
4-Nitrophenol	890	U	870	U	880	U	1000	U	870	U	940	U
Dibenzofuran	360	U	350	U	350	U	410	U	350	U	380	U
2,4-Dinitrotoluene	360	U	350	U	350	U	410	U	350	U	380	U
Diethylphthalate	360	U	350	U	66	J	88	J	64	J	67	J
4-Chlorophenyl-phenylether	360	U	350	U	350	U	410	U	350	U	380	U
Fluorene	360	U	350	U	350	U	410	U	350	U	380	U
4-Nitroaniline	890	U	870	U	880	U	1000	U	870	U	940	U
4,6-Dinitro-2-methylphenol	890	U	870	U	880	U	1000	U	870	U	940	U
N-Nitrosodiphenylamine (1)	360	U	350	U	350	U	410	U	350	U	380	U
4-Bromophenyl-phenylether	360	U	350	U	350	U	410	U	350	U	380	U
Hexachlorobenzene	360	U	350	U	350	U	410	U	350	U	380	U
Pentachlorophenol	890	U	870	U	880	U	1000	U	870	U	940	U
Phenanthrene	360	U	350	U	350	U	410	U	350	U	380	U
Anthracene	360	U	350	U	350	U	410	U	350	U	380	U
Carbazole	360	U	350	U	350	U	410	U	350	U	380	U
Di-n-butylphthalate	480		320	J	1300		1500		1100		1200	
Fluoranthene	360	U	350	U	350	U	410	U	350	U	380	U
Pyrene	360	U	350	U	350	U	410	U	350	U	380	U
Butylbenzylphthalate	140	J	160	J	350	U	33	J	38	J	160	J
3,3'-Dichlorobenzidine	360	U	350	U	350	U	410	U	350	U	380	U
Benzo(a)anthracene	360	U	350	U	350	U	410	U	350	U	380	U
Chrysene	360	U	350	U	350	U	410	U	350	U	380	U
bis(2-Ethylhexyl)phthalate	360	U	350	U	350	U	410	U	350	U	380	U
Di-n-octyl phthalate	360	U	350	U	350	U	410	U	350	U	380	U
Benzo(b)fluoranthene	360	U	350	U	350	U	410	U	350	U	380	U
Benzo(k)fluoranthene	360	U	350	U	350	U	410	U	350	U	380	U
Benzo(a)pyrene	360	U	350	U	350	U	410	U	350	U	380	U
Indeno(1,2,3-cd)pyrene	360	U	350	U	350	U	410	U	350	U	380	U
Dibenz(a,h)anthracene	360	U	350	U	350	U	410	U	350	U	380	U
Benzo(g,h,i)perylene	360	U	350	U	350	U	410	U	350	U	380	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/28/99 17:09

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W5K8		B0W5K9		B0W5K9		B0W5K9		SBLKCB		SBLKCB BS	
Sample Information	RFW#:	007		008		008 MS		008 MSD		99LE1076-MB1		99LE1076-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	79	%	80	%	81	%	83	%	100	%	92	%
	2-Fluorobiphenyl	78	%	76	%	72	%	75	%	97	%	92	%
	Terphenyl-d14	80	%	79	%	76	%	78	%	109	%	103	%
	Phenol-d5	66	%	67	%	63	%	63	%	89	%	77	%
	2-Fluorophenol	65	%	65	%	66	%	66	%	82	%	77	%
	2,4,6-Tribromophenol	64	%	63	%	68	%	67	%	91	%	82	%
			fl		fl		fl		fl		fl		fl
Phenol		390	U	360	U	58	%	59	%	330	U	79	%
bis(2-Chloroethyl)ether		390	U	360	U	360	U	360	U	330	U	330	U
2-Chlorophenol		390	U	360	U	66	%	64	%	330	U	80	%
1,3-Dichlorobenzene		390	U	360	U	360	U	360	U	330	U	330	U
1,4-Dichlorobenzene		390	U	360	U	73	%	75	%	330	U	92	%
1,2-Dichlorobenzene		390	U	360	U	360	U	360	U	330	U	330	U
2-Methylphenol		390	U	360	U	360	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		390	U	360	U	360	U	360	U	330	U	330	U
4-Methylphenol		390	U	360	U	360	U	360	U	330	U	330	U
N-Nitroso-di-n-propylamine		390	U	360	U	103	%	100	%	330	U	97	%
Hexachloroethane		390	U	360	U	360	U	360	U	330	U	330	U
Nitrobenzene		390	U	360	U	360	U	360	U	330	U	330	U
Isophorone		390	U	360	U	360	U	360	U	330	U	330	U
2-Nitrophenol		390	U	360	U	360	U	360	U	330	U	330	U
2,4-Dimethylphenol		390	U	360	U	360	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		390	U	360	U	360	U	360	U	330	U	330	U
2,4-Dichlorophenol		390	U	360	U	360	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		390	U	360	U	79	%	77	%	330	U	97	%
Naphthalene		390	U	360	U	360	U	360	U	330	U	330	U
4-Chloroaniline		390	U	360	U	360	U	360	U	330	U	330	U
Hexachlorobutadiene		390	U	360	U	360	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		390	U	360	U	66	%	66	%	330	U	79	%
2-Methylnaphthalene		390	U	360	U	360	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		390	U	360	U	360	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		390	U	360	U	360	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		980	U	890	U	890	U	890	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W5K8		B0W5K9		B0W5K9		B0W5K9		SBLKCB		SBLKCB BS	
RFW#:	007		008		008 MS		008 MSD		99LE1076-MB1		99LE1076-MB1	
2-Chloronaphthalene	390	U	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	980	U	890	U	890	U	890	U	840	U	840	U
Dimethylphthalate	390	U	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	390	U	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	390	U	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	980	U	890	U	890	U	890	U	840	U	840	U
Acenaphthene	390	U	360	U	70	%	74	%	330	U	99	%
2,4-Dinitrophenol	980	U	890	U	890	U	890	U	840	U	840	U
4-Nitrophenol	980	U	890	U	42	%	41	%	840	U	80	%
Dibenzofuran	390	U	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	390	U	360	U	76	%	78	%	330	U	98 *	%
Diethylphthalate	57	J	50	J	46	J	74	J	330	U	330	U
4-Chlorophenyl-phenylether	390	U	360	U	360	U	360	U	330	U	330	U
Fluorene	390	U	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	980	U	890	U	890	U	890	U	840	U	840	U
4,6-Dinitro-2-methylphenol	980	U	890	U	890	U	890	U	840	U	840	U
N-Nitrosodiphenylamine (1)	390	U	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	390	U	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	390	U	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	980	U	890	U	57	%	58	%	840	U	87	%
Phenanthrene	390	U	360	U	360	U	360	U	330	U	330	U
Anthracene	390	U	360	U	360	U	360	U	330	U	330	U
Carbazole	390	U	360	U	360	U	360	U	330	U	330	U
Di-n-butylphthalate	1800		1500		1300		1700		330	U	330	U
Fluoranthene	390	U	360	U	360	U	360	U	330	U	330	U
Pyrene	390	U	360	U	74	%	78	%	330	U	108	%
Butylbenzylphthalate	390	U	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	390	U	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	390	U	360	U	360	U	360	U	330	U	330	U
Chrysene	390	U	360	U	360	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	390	U	360	U	360	U	360	U	330	U	330	U
Di-n-octyl phthalate	390	U	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	390	U	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	390	U	360	U	360	U	360	U	330	U	330	U
Benzo(a)pyrene	390	U	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	390	U	360	U	360	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	390	U	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	390	U	360	U	360	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5L0

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A092106

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 7 decanted: (Y/N)__ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ADIPATE	23.70	200	J
2.	UNKNOWN	24.35	100	J
3.	PHTHALATE	25.20	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5L2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092107

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	23.05	100	J
2.	ADIPATE	23.71	800	J
3.	UNKNOWN	24.23	100	J
4.	UNKNOWN	24.35	100	J
5.	PHTHALATE	25.20	300	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092108

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

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	18.18	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092109

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 18 decanted: (Y/N) __ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

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	18.18	100	J

FORM 1 SV-TIC 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092110

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/21/99

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	18.18	90	J

FORM 1 SV-TIC 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092111

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 12 decanted: (Y/N) __ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

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	18.18	90	J
2.	ADIPATE	23.70	90	J
3.	PHTHALATE	25.20	200	J
4.	UNKNOWN	27.68	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092112

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 15 decanted: (Y/N)__ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

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	18.18	100	J

FORM 1 SV-TIC 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W5K9

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-008

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092113

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: 7 decanted: (Y/N) Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

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	8.36	80	J
2.	UNKNOWN	18.18	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCB

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1076-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092105

Level: (low/med) LOW Date Received: 09/02/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/02/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/21/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

FORM 1 SV-TIC 3/90

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0	001	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5L2	002	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K4	003	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K5	004	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K6	005	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K7	006	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K8	007	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K9	008	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K9	008 MS	S	99LE1076	08/23/99	09/02/99	09/21/99
B0W5K9	008 MSD	S	99LE1076	08/23/99	09/02/99	09/21/99

LAB QC:

SBLKCB	MB1	S	99LE1076	N/A	09/02/99	09/21/99
SBLKCB	MB1 BS	S	99LE1076	N/A	09/02/99	09/21/99

RECRA LabNet Use Only
99081863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6-1					6		6	6					
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1					500		250	1000					
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	w/VOA	w/BNA		INORG: Metal	CN						

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025H	0008		0646C	0DRO		Metal		1PH	Ang					
001	BOWSL0			S	8/23/99	0942	X	X	X		X	X		X		X	X					
2	L2					1025																
3	K4					0810																
4	K5					0826																
5	K6					0846																
6	K7					0856																
7	K8					0911																
8	K9					0928																

Run matrix QC

Special Instructions:
saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
Ang (1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
* 5. 4235795286 57 - 3.2°C
6. 35 - 3.1°C

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. 3.6 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235795286 46

Relinquished by	Received by	Date	Time
FedEx	Jackson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L863
SDG/SAF #: H0502/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-25-99

GC/MS VOLATILE

Eight (8) soil samples were collected on 08-23-99.

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 09-06-99.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. A non-target compound was detected in sample B0W5K7.
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 and Acetone at levels less than 4x the CRQL.

OCT 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\group\data\ voa\tnu08863.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 17 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: 09/27/99 03:42

RFW Batch Number: 9908L863 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1a

	Cust ID:	B0W5L0		B0W5L2		B0W5K4		B0W5K5		B0W5K6		B0W5K7	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.909		0.943		1.00		0.980		1.04		0.926	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	96	%	93	%	97	%	98	%	98	%	97	%
	Bromofluorobenzene	95	%	94	%	95	%	95	%	93	%	93	%
	1,2-Dichloroethane-d4	80	%	83	%	86	%	90	%	93	%	88	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	11	U	12	U	11	U	10	U
Bromomethane		10	U	10	U	11	U	12	U	11	U	10	U
Vinyl Chloride		10	U	10	U	11	U	12	U	11	U	10	U
Chloroethane		10	U	10	U	11	U	12	U	11	U	10	U
Methylene Chloride		9	B	8	B	12	B	14	B	12	B	11	B
Acetone		10	U	10	U	7	JB	8	JB	11	U	6	JB
Carbon Disulfide		5	U	5	U	6	U	6	U	6	U	5	U
1,1-Dichloroethene		5	U	5	U	6	U	6	U	6	U	5	U
1,1-Dichloroethane		5	U	5	U	6	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	6	U	6	U	6	U	5	U
Chloroform		5	U	5	U	6	U	6	U	6	U	5	U
1,2-Dichloroethane		5	U	5	U	6	U	6	U	6	U	5	U
2-Butanone		10	U	10	U	11	U	12	U	11	U	10	U
1,1,1-Trichloroethane		5	U	5	U	6	U	6	U	6	U	5	U
Carbon Tetrachloride		5	U	5	U	6	U	6	U	6	U	5	U
Bromodichloromethane		5	U	5	U	6	U	6	U	6	U	5	U
1,2-Dichloropropane		5	U	5	U	6	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	6	U	6	U	6	U	5	U
Trichloroethene		5	U	5	U	6	U	6	U	6	U	5	U
Dibromochloromethane		5	U	5	U	6	U	6	U	6	U	5	U
1,1,2-Trichloroethane		5	U	5	U	6	U	6	U	6	U	5	U
Benzene		5	U	5	U	6	U	6	U	6	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	6	U	6	U	6	U	5	U
Bromoform		5	U	5	U	6	U	6	U	6	U	5	U
4-Methyl-2-pentanone		10	U	10	U	11	U	12	U	11	U	10	U
2-Hexanone		10	U	10	U	11	U	12	U	11	U	10	U
Tetrachloroethene		5	U	5	U	6	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	6	U	6	U	6	U	5	U
Toluene		5	U	5	U	6	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

09-28-99

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0W5L0	B0W5L2	B0W5K4	B0W5K5	B0W5K6	B0W5K7
RFW#:	001	002	003	004	005	006
Chlorobenzene	5 U	5 U	6 U	6 U	6 U	5 U
Ethylbenzene	5 U	5 U	6 U	6 U	6 U	5 U
Styrene	5 U	5 U	6 U	6 U	6 U	5 U
Xylene (total)	5 U	5 U	6 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

JW 7-28-99

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/27/99 03:42

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W5K7		B0W5K7		B0W5K8		B0W5K9		VBLKPL		VBLKPL BS	
Sample Information	RFW#:	006 MS		006 MSD		007		008		99LVH343-MB1		99LVH343-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		0.962		0.962		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	92	%	100	%	97	%	97	%	95	%	93	%
	Bromofluorobenzene	91	%	94	%	93	%	92	%	96	%	91	%
	1,2-Dichloroethane-d4	96	%	96	%	89	%	88	%	81	%	94	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	11	U	11	U	10	U	10	U
Bromomethane		11	U	11	U	11	U	11	U	10	U	10	U
Vinyl Chloride		11	U	11	U	11	U	11	U	10	U	10	U
Chloroethane		11	U	11	U	11	U	11	U	10	U	10	U
Methylene Chloride		18	B	19	B	12	B	12	B	7		16	B
Acetone		8	JB	8	JB	11	U	11	U	2	J	5	JB
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		101	%	111	%	6	U	6	U	5	U	104	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		11	U	11	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		96	%	99	%	6	U	6	U	5	U	95	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		102	%	104	%	6	U	6	U	5	U	100	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U	10	U	10	U
2-Hexanone		11	U	11	U	11	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		101	%	106	%	6	U	6	U	5	U	100	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0W5K7	B0W5K7	B0W5K8	B0W5K9	VBLKPL	VBLKPL BS
RFW#:	006 MS	006 MSD	007	008	99LVH343-MB1	99LVH343-MB1
Chlorobenzene	100 %	103 %	6 U	6 U	5 U	99 %
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5L0

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-001

Sample wt/vol: 5.50 (g/mL) G Lab File ID: h090606

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 7 Date Analyzed: 09/06/99

Column: (pack/cap) CAP Dilution Factor: 0.909

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5L2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-002

Sample wt/vol: 5.30 (g/mL) G Lab File ID: h090607

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 4 Date Analyzed: 09/06/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K4

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-003

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h090608

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 5 Date Analyzed: 09/06/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K5

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-004

Sample wt/vol: 5.10 (g/mL) G Lab File ID: h090609

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 18 Date Analyzed: 09/06/99

Column: (pack/cap) CAP Dilution Factor: 0.980

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K6

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-005

Sample wt/vol: 4.80 (g/mL) G Lab File ID: h090610

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 4 Date Analyzed: 09/06/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-006

Sample wt/vol: 5.40 (g/mL) G Lab File ID: h090611

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 12 Date Analyzed: 09/06/99

Column: (pack/cap) CAP Dilution Factor: 0.926

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	20.593	30	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K8

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-007

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h090612

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 15 Date Analyzed: 09/06/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W5K9

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L863-008

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h090613

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: not dec. 7 Date Analyzed: 09/06/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0	001	S	99LVH343	08/23/99	N/A	09/06/99
B0W5L2	002	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K4	003	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K5	004	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K6	005	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K7	006	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K7	006 MS	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K7	006 MSD	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K8	007	S	99LVH343	08/23/99	N/A	09/06/99
B0W5K9	008	S	99LVH343	08/23/99	N/A	09/06/99

LAB QC:

VBLKPL	MB1	S	99LVH343	N/A	N/A	09/06/99
VBLKPL	MB1 BS	S	99LVH343	N/A	N/A	09/06/99

09-28-99

RECRA LabNet Use Only
9908L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6-1					6		6	6					
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1			w/VOA	w/BNA	500		250	1000					
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN							
RECRA LabNet Use Only		8260H	8270H	8081B		8015C	8080	Met-D		1PH	Ang-D					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260H	8270H	8081B		8015C	8080		Met-D		1PH	Ang-D				
001	BOWSLØ			S	8/23/99	0942	X	X	X		X	X		X		X	X				
2	L2					1025															
3	K4					0810															
4	K5					0826															
5	K6					0846															
6	K7					0856															
7	K8					0911															
8	K9					0928															

Run matrix QC

Special Instructions:
DAF# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
3. Ang = IN3N2, ICCL, ICFL, ICNO2, ICNO3
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. * 4235795286 57 - 3.2°C
6. 35 - 3.1°C

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. 3.6 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795286 46

Relinquished by	Received by	Date	Time
FedEx	Jenson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

OCT 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9908L863
SDG/SAF#: H0502/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 08-25-99

PCB

The set of samples consisted of eight (8) soil samples collected on 08-23-99.

The samples and their associated QC samples were extracted on 09-03-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-11-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have 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. Five (5) of twenty-six (26) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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.
10. Sample B0W5K5 was re-analyzed per client request to confirm high surrogates.

for J. Michael Taylor
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-27-99
Date

pef\r:\group\data\pest\08L-863.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 16 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 Philadelphia **Sample Discrepancy Report (SDR)** SDR #: [illegible]

Initiator: B Paste
Date: 9/14/99
Client: TNU Hanford HO

RFW Batch: 9908L863
Samples: -004 B0W5K5
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Soil
Prep Batch: 99LE1028

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Sample 004 appears to have been double surrogated with TCX recovery of 172% + DCB recovery of 184%. The sample was <RL for all compounds. (Sample ID: B0W5K5)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description: Note in Narrative & report re-run to confirm high surrogates.

4. Project Manager Instructions...signature/date: [signature] 9/15/99

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
✓ Client Contacted:
Date/Person Kevin Johnson 9/15/99
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 9/15/99

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
__	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/18/99 10:15

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

	Cust ID:	B0W5L0	B0W5L0	B0W5L0	B0W5L2	B0W5K4	B0W5K5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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	105 %	105 %	120 * %	105 %	88 %	172 * %
	Decachlorobiphenyl	102 %	106 %	117 %	104 %	91 %	184 * %
Aroclor-1016		36 U	36 U	36 U	34 U	34 U	40 U
Aroclor-1221		72 U	71 U	71 U	69 U	69 U	80 U
Aroclor-1232		36 U	36 U	36 U	34 U	34 U	40 U
Aroclor-1242		36 U	36 U	36 U	34 U	34 U	40 U
Aroclor-1248		36 U	36 U	36 U	34 U	34 U	40 U
Aroclor-1254		36 U	82 %	105 %	34 U	34 U	40 U
Aroclor-1260		36 U	36 U	36 U	34 U	34 U	40 U

	Cust ID:	B0W5K5	B0W5K6	B0W5K7	B0W5K8	B0W5K9	PBLKTW
Sample Information	RFW#:	004 RE	005	006	007	008	99LE1078-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	188 * %	88 %	102 %	105 %	115 %	100 %
	Decachlorobiphenyl	230 * %	96 %	106 %	101 %	111 %	103 %
Aroclor-1016		40 U	35 U	37 U	39 U	35 U	33 U
Aroclor-1221		80 U	69 U	75 U	78 U	70 U	67 U
Aroclor-1232		40 U	35 U	37 U	39 U	35 U	33 U
Aroclor-1242		40 U	35 U	37 U	39 U	35 U	33 U
Aroclor-1248		40 U	35 U	37 U	39 U	35 U	33 U
Aroclor-1254		40 U	35 U	37 U	39 U	35 U	33 U
Aroclor-1260		40 U	35 U	37 U	39 U	35 U	33 U

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

MD 9-20-99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/18/99 10:15

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2

900

Cust ID: **PBLKTW BS**

Sample Information	RFW#:	**99LE1078-MB1**
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate:	Tetrachloro-m-xylene	92	%
	Decachlorobiphenyl	95	%

Aroclor-1016	33	U
Aroclor-1221	67	U
Aroclor-1232	33	U
Aroclor-1242	33	U
Aroclor-1248	33	U
Aroclor-1254	89	%
Aroclor-1260	33	U

JW 09-20-99

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: 08/25/99 RFW LOT # :9908L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0	001	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5L0	001 MS	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5L0	001 MSD	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5L2	002	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K4	003	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K5	004	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K5	004 A1	S		08/23/99	09/03/99	09/16/99
B0W5K6	005	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K7	006	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K8	007	S	99LE1078	08/23/99	09/03/99	09/11/99
B0W5K9	008	S	99LE1078	08/23/99	09/03/99	09/11/99

LAB QC:

PBLKTW	MB1	S	99LE1078	N/A	09/03/99	09/11/99
PBLKTW	MB1 BS	S	99LE1078	N/A	09/03/99	09/11/99

AW 09-20-99

RECRA LabNet Use Only

99081863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6-1					6		6	6					
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1					500		250	1000					
Preservatives																
ANALYSES REQUESTED → ORGANIC: VOA					w/VOA											
ORGANIC: BNA						w/BNA										
ORGANIC: Pest/PCB																
ORGANIC: Herb																
INORG: Metal																
INORG: 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	8021 24H	8021 25H	8260B		8260C	8080		Meta		1PH	Ang				
001	BOWSLO			S	8/23/99	0942	X	X	X		X	X		X		X	X				
2	L2					1025															
3	K4					0810															
4	K5					0826															
5	K6					0846															
6	K7					0856															
7	K8					0911															
8	K9					0928															
							Run matrix QC														

RECRA LabNet Use Only

Special Instructions:
saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1.) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
Ang (1.) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
* 5. 4235795286 57 - 3.2°C
6. ⊥ 35 - 3.1°C

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. 3.6 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795286 46

Relinquished by	Received by	Date	Time
FedEx	Jenson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector Brent Porter	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 GP-14 >15' bgs 15-16 ft		SAF No. B99-078		
Ice Chest No. ~~B0W-8-27-99~~ SML 297	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To ~~TMA/RCRA~~ RECRA ~~8-27-99~~	Offsite Property No. A990297		Bill of Lading/Air Bill No. ~~B20GW1-6716~~ 4235 7952 8657 ~~8-23-99~~		
			COA B20GW1-6716		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Refer TB	Date/Time 8/23/99 13:00
Relinquished By Ref. TB	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Zeeley	Date/Time	Received By Jonson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 24-251		SAF No.: B99-078
Ice Chest No.: SML-297	Field Logbook No.: EL 1511		Method of Shipment: Federal Express
Shipped To: ~~TMA/RECRA~~ RECRA BJB 8-23-99	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8657
			COA: B20CW1 67/C

010

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Peter JB	Date/Time: 8/23/99 13:00
Relinquished By: BrF JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Zedey	Date/Time:	Received By: Jenson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 3'~4'		SAF No. B99-078
Ice Chest No. ERC 96-030	Field Logbook No. EL1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DJB 8-23-99	Offsite Property No. A990227		Bill of Lading/Air Bill No. 4235 7952 8635
			COA B20CW1 67JC

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
3 B0W5K4	Soil	8-23-99	0810		X	X	X	X	X	B0W5K8	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Brent Porter Date/Time 8/23/99 13:00	Received By Refer JB Date/Time 8/23/99 13:00	
Relinquished By Refer JB Date/Time 8-24-99 1200	Received By Doug Bowers Date/Time 8-24-99 1200	
Relinquished By Doug Bowers Date/Time 8-24-99 1200	Received By Fed Ex Date/Time	
Relinquished By Fedex Date/Time	Received By Johnson Date/Time 8/25/99 0930	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 5.5'-6.5'	SAF No. B99-078	
Ice Chest No. ERC 96-030	Field Logbook No. EL1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-23-99	Offsite Property No. A990227	Bill of Lading/Air Bill No. 4235 7952 8635	
		COA B200W1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
X B0W5K5	Soil	8-23-99	0826		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 1300	Received By: Peter IB	Date/Time: 8/23/99 1300
Relinquished By: Ref IB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedley	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 8'-9'		SAF No.: B99-078		
Ice Chest No.: ERC 96-030	Field Logbook No.: EL/T 11		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA ~~AZB~~ 8-23-99	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8635		
			COA: B20CW1 6716		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K6	Soil	8-23-99	0846		X	X	X	X	X		B0W5K8		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/23/99 13:00	Refe IB	8/23/99 13:00
Rof IB	8-24-99/1200	Doug Bowers / Doug Bowers	8-24-99/1200
Doug Bowers / Doug Bowers	8-24-99/1200	Fed Ex	
Jedley		Janson	8/25/99 0930

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 10.5-11.5	SAF No. B99-078	
Ice Chest No. ERC 96-017	Field Logbook No. EL 1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA BTD 8-23-99	Offsite Property No. A 990227	Bill of Lading/Air Bill No. 4235 7952 8646	
		COA D20 CW1 67K	

014

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K7	Soil	8-23-99	0856		X	X	X	X	X		B0W5K8		

6

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/23/99 13:00	Brent Porter	8/23/99 13:00
[illegible]	8-24-99/1200	Doug Bowers	8-24-99/1200
Doug Bowers	8-24-99/1200	Fed Ex	
Fedex		Janson	8/25/99 0932

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 13'-14'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA BBB-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60ml.	250ml.	250ml.	500ml.	500ml.	1000ml.	1000ml.			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
X B0W5K8	Soil	8-23-99	0911		X	X	X	X	X	B0W5K8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Peter JB	Date/Time: 8/23/99 13:00
Relinquished By: B.F. JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jeder	Date/Time:	Received By: Jansen	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 14'-15'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA RTB 8-27-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW2 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K9	Soil	8-23-99	0928		X	X	X	X	X	B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer TB	Date/Time: 8/23/99 13:00
Relinquished By: Ref TB	Date/Time: 8-24-99/1200	Received By: Doug Bamen	Date/Time: 8-24-99/1200
Relinquished By: Doug Bamen	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Declee	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}: Mercury - 7471 - (CV): Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}: Sulfides - 9030: Ammonia - 350.3: Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr: Total Uranium {Uranium}: Isotopic Plutonium: Isotopic Thorium {Thorium-232}: Americium-241

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 #: 9908L863
SDG/SAF#: H0502/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-25-99

GC SCAN

The set of samples consisted of eight (8) soil samples collected on 08-23-99.

The samples and their associated QC samples were prepared on 08-31-99 and 09-02-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-01,02,03-99.

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

1. The 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. Continuing calibration criteria (±15%) were exceeded for the continuing calibration verification standard analyzed prior to the sample extracts. Outlying standard(s) generally exhibited increased instrument response. However sample data were not impacted as target analytes were not detected in the associated samples analyzed immediately after such standard(s). A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

5. Surrogates were not used for this analysis.

6. All blank spike recoveries were within advisory control limits of 50%-150%.

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

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\08-863.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

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

GLOSSARY OF 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 Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 144052

Initiator: C Schnell
Date: 9/16/99
Client: TNU-Hanford

RFW Batch: 9908L821 9908L851 9908L850 9908L931 9908L826 9908L863
Samples: 99091006
Method: SW846/MCAWW/CLP/

Parameter: OGCSC
Matrix:
Prep Batch: Multiple

1. Reason for SDR

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

b. General Discrepancy

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

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

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

CCV response somewhat erratic during sample analysis, most being high. In cases whereby instrument response decreased, the decrease did not exceed -20% Deviation.

2. Known or Probable Causes(s)

- Heavy analysis load combined with aqueous matrix contributes to reduced stability of instrument response compared to solvent type matrices.

3. Discussion and Proposed Action

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

Other Description:

- No positives found in any samples.
- The laboratory limit of ±15% Deviation is derived from common analyses and may not be applicable to extended runs of aqueous samples, where such criteria may not be readily achievable.

4. Project Manager Instructions...signature/date: Pilette G. Johnson 9/16/99

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

5. Final Action...signature/date: [illegible] 9/16/99

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator	__	__ Metals: Doughty
	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
I	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
4	X QA (file): Racioppi	__	__ Log-in: Toder
2	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:24

RFW Batch Number: **9908L863** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

004

	Cust ID:	B0W5L0	B0W5L0	B0W5L0	B0W5L2	B0W5K4	B0W5K5
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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		3.4 U	89 %	73 %	4.7 U	5.0 U	5.0 U
Ethanol		3.4 U	4.4 U	4.8 U	4.7 U	5.0 U	5.0 U

	Cust ID:	B0W5K6	B0W5K7	B0W5K8	B0W5K9	BLK	BLK BS
Sample Information	RFW#:	005	006	007	008	99LLC128-MB1	99LLC128-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	5.5 U	6.0 U	5.5 U	5.0 U	95 %
Ethanol		5.0 U	5.5 U	6.0 U	5.5 U	5.0 U	5.0 U

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.

09/16/99

005

	Cust ID:	BLK	BLK BS	BLK	BLK BS
Sample Information	RFW#:	99LLC133-MB1	99LLC133-MB1	99LLC129-MB1	99LLC129-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	95 %	5.0 U	95 %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U

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: 08/25/99 RFW LOT # :9908L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0	001	S	99LLC128	08/23/99	08/31/99	09/02/99
B0W5L0	001 MS	S	99LLC133	08/23/99	09/02/99	09/03/99
B0W5L0	001 MSD	S	99LLC133	08/23/99	09/02/99	09/03/99
B0W5L2	002	S	99LLC128	08/23/99	08/31/99	09/03/99
B0W5K4	003	S	99LLC128	08/23/99	08/31/99	09/03/99
B0W5K5	004	S	99LLC128	08/23/99	08/31/99	09/03/99
B0W5K6	005	S	99LLC128	08/23/99	08/31/99	09/03/99
B0W5K7	006	S	99LLC128	08/23/99	08/31/99	09/03/99
B0W5K8	007	S	99LLC129	08/23/99	08/31/99	09/03/99
B0W5K9	008	S	99LLC129	08/23/99	08/31/99	09/03/99

LAB QC:

BLK	MB1	S	99LLC128	N/A	08/31/99	09/01/99
BLK	MB1 BS	S	99LLC128	N/A	08/31/99	09/01/99
BLK	MB1	S	99LLC133	N/A	09/02/99	09/02/99
BLK	MB1 BS	S	99LLC133	N/A	09/02/99	09/03/99
BLK	MB1	S	99LLC129	N/A	08/31/99	09/03/99
BLK	MB1 BS	S	99LLC129	N/A	08/31/99	09/03/99

09/16/99

RECRA LabNet Use Only
9908L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6-1					6		6	6					007
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1		w/VOA	w/BNA		500		250	1000					
Preservatives																
ANALYSES REQUESTED →		ORGANIC						INORG								
		VOA	BNA	Pest/PCB	Herb			Metal	CN							
		RECRA LabNet Use Only														
		8260	8270	8081B		8015C	8015D	Met-D		1PH	Ang-D					

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	VOA	BNA	Pest/PCB	Herb				Met-D		1PH	Ang-D				
001	BOWSLO			S	8/23/99	0942	X	X	X		X	X		X		X	X				
2	L2					1025															
3	K4					0810															
4	K5					0826															
5	K6					0846															
6	K7					0856															
7	K8					0911															
8	K9					0928															
							Run Matrix QC														

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
Ang (1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
* 5. 4235795286 57 - 3.2°C
6. 35 - 3.1°C

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. 3.6 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235795286 46

Relinquished by	Received by	Date	Time
FedEx	Janson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector Brent Porter	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 GP-14 >15' bgs 15-16 ft		SAF No. B99-078	
Ice Chest No. ~~B0W~~ 8-24-99 SML 297	Field Logbook No. EL-1511		Method of Shipment Federal Express	
Shipped To ~~TMA/RECRA~~ RECRA 8-27-99	Offsite Property No. A990297		Bill of Lading/Air Bill No. 4235 7952 8657 ~~B20CW1-6716~~ 8-23-99	
			COA B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS													
			Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
			Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage			Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS				Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Ref. JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Janson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 24-251	SAF No.: B99-078	
Ice Chest No.: SML-297	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ RECRA BJB 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7852 8657	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Refer JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedey	Date/Time:	Received By: Jenson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 3'~4'		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8635
			COA: B20CW1 67JC

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K4	Soil	8-23-99	0810		X	X	X	X	X	B0W5K8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer TB	Date/Time: 8/23/99 13:00
Relinquished By: Ref TB	Date/Time: 8-24-99 1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Federal	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 5.5'-6.5'		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL151		Method of Shipment: Federal Express
Shipped To: TMA/RECRA 8-23-99	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8635
			COA: B2ocw1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W5K5 / Soil / 8-23-99 / 0826		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 1300	Received By: Refer IB	Date/Time: 8/23/99 1300
Relinquished By: Ref IB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jecley	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) [Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc]; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 [Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate]; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Strontium-89,90 -- Total Sr; Total Uranium [Uranium]; Isotopic Plutonium; Isotopic Thorium [Thorium-232]; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 8'-9'		SAF No. B99-078	
Ice Chest No. ERC 96-030	Field Logbook No. EL/T 11		Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-23-99	Offsite Property No. A990227		Bill of Lading/Air Bill No. 4235 7952 8635	
			COA B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
5 B0W5K6	Soil	8-27-99	0846		X	X	X	X	X		Bow548

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Peter JB	Date/Time 8/23/99 13:00
Relinquished By Rob JB	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Jeclep	Date/Time	Received By Johnson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 10.5-11.5		SAF No. B99-078
Ice Chest No. ERC 96-017	Field Logbook No. EL 1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 870 8-27-99	Offsite Property No. A 990227		Bill of Lading/Air Bill No. 4235 7952 8646
			COA D20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K7	Soil	8-23-99	0856		X	X	X	X	X		B0W5L8		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Brent Porter	Date/Time 8/23/99 13:00
Relinquished By ACFIB	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Jackel	Date/Time	Received By Jackson	Date/Time 8/25/99 0932

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 13-14'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA B7B8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60ml	250ml	250ml.	500ml.	500ml	1000ml.	1000ml			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (HCL) VOA 8260A (Add-On) [1-Propanol Ethanol]	pH (Soil) - 9045	Semi VOA - 8270A (HCL) TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) on Special Instructions	See item (2) on Special Instructions	See item (3) on Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K8	Soil	8-23-99	0911		X	X	X	X	X		B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: R of JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Federal	Date/Time:	Received By: Jackson	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 14'-15'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA RECRA DAB 8-27-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K9	Soil	8-23-99	0928		X	X	X	X	X	B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: R.P. JB	Date/Time: 8-24-99/1200	Received By: Doug Damerj Doug Damerj	Date/Time: 8-24-99/1200
Relinquished By: Doug Damerj Doug Damerj	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Declee	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

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

OCT 1999
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Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L863
SDG/SAF# : B99-078/H0502

W.O.# : 10985-001-001-9999-00
Date Received: 08-25-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 8 soil samples.

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

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

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

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

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

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

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

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

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

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 26 pages.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

mld/m08-863

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L863

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 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W5L0	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.9	MG/KG	0.30	1.0
		Barium, Total	75.3	MG/KG	0.03	1.0
		Beryllium, Total	0.69	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	7.1	MG/KG	0.07	1.0
		Copper, Total	16.4	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.7	MG/KG	0.11	1.0
		Lead, Total	3.9	MG/KG	0.19	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Vanadium, Total	51.3	MG/KG	0.06	1.0
		Zinc, Total	44.8	MG/KG	0.07	1.0
-002	B0W5L2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.6	MG/KG	0.25	1.0
		Barium, Total	63.0	MG/KG	0.02	1.0
		Beryllium, Total	0.74	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	5.2	MG/KG	0.06	1.0
		Copper, Total	16.2	MG/KG	0.09	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.1	MG/KG	0.09	1.0
		Lead, Total	3.3	MG/KG	0.16	1.0
		Selenium, Total	0.28 u	MG/KG	0.28	1.0
		Vanadium, Total	54.1	MG/KG	0.05	1.0
		Zinc, Total	40.6	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W5K4	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.4	MG/KG	0.27	1.0
		Barium, Total	77.2	MG/KG	0.02	1.0
		Beryllium, Total	0.63	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	10.4	MG/KG	0.07	1.0
		Copper, Total	12.0	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.1	MG/KG	0.1	1.0
		Lead, Total	5.0	MG/KG	0.17	1.0
		Selenium, Total	0.30 u	MG/KG	0.30	1.0
		Vanadium, Total	45.8	MG/KG	0.05	1.0
		Zinc, Total	40.0	MG/KG	0.07	1.0
-004	B0W5K5	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	33.8	MG/KG	0.33	1.0
		Barium, Total	129	MG/KG	0.03	1.0
		Beryllium, Total	0.91	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	15.7	MG/KG	0.08	1.0
		Copper, Total	22.7	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	15.1	MG/KG	0.12	1.0
		Lead, Total	12.3	MG/KG	0.21	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	55.2	MG/KG	0.06	1.0
		Zinc, Total	59.1	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W5K6	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.9	MG/KG	0.29	1.0
		Barium, Total	72.2	MG/KG	0.03	1.0
		Beryllium, Total	0.67	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	8.8	MG/KG	0.07	1.0
		Copper, Total	13.5	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.9	MG/KG	0.10	1.0
		Lead, Total	5.0	MG/KG	0.18	1.0
		Selenium, Total	0.32 u	MG/KG	0.32	1.0
		Vanadium, Total	62.0	MG/KG	0.05	1.0
		Zinc, Total	47.5	MG/KG	0.07	1.0
-006	B0W5K7	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	7.3	MG/KG	0.29	1.0
		Barium, Total	87.7	MG/KG	0.03	1.0
		Beryllium, Total	0.76	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	11.0	MG/KG	0.07	1.0
		Copper, Total	14.7	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.6	MG/KG	0.11	1.0
		Lead, Total	7.3	MG/KG	0.19	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
		Vanadium, Total	50.1	MG/KG	0.05	1.0
		Zinc, Total	46.8	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W5K8	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	9.6	MG/KG	0.32	1.0
		Barium, Total	89.5	MG/KG	0.03	1.0
		Beryllium, Total	0.91	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	10.2	MG/KG	0.08	1.0
		Copper, Total	17.2	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.9	MG/KG	0.12	1.0
		Lead, Total	6.7	MG/KG	0.20	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	63.9	MG/KG	0.06	1.0
		Zinc, Total	55.6	MG/KG	0.08	1.0
-008	B0W5K9	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	5.9	MG/KG	0.27	1.0
		Barium, Total	74.8	MG/KG	0.02	1.0
		Beryllium, Total	0.71	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	9.0	MG/KG	0.07	1.0
		Copper, Total	13.8	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	10.1	MG/KG	0.1	1.0
		Lead, Total	5.6	MG/KG	0.17	1.0
		Selenium, Total	0.32	MG/KG	0.30	1.0
		Vanadium, Total	52.2	MG/KG	0.05	1.0
		Zinc, Total	45.3	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0601-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	0.19	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	0.08 u	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
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.23	MG/KG	0.08	1.0
BLANK1	99C0254-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W5L0	Silver, Total	4.1	0.09u	4.4	93.2	1.0
		Arsenic, Total	171	2.9	176	95.8	1.0
		Barium, Total	238	75.3	176	92.8	1.0
		Beryllium, Total	4.9	0.69	4.4	95.7	1.0
		Cadmium, Total	4.1	0.03u	4.4	93.2	1.0
		Chromium, Total	23.4	7.1	17.6	92.6	1.0
		Copper, Total	35.2	16.4	22.0	85.5	1.0
		Mercury, Total	0.13	0.01u	0.13	99.3	1.0
		Nickel, Total	48.4	8.7	43.9	90.4	1.0
		Lead, Total	45.2	3.9	43.9	94.1	1.0
		Selenium, Total	165	0.34u	176	93.9	1.0
		Vanadium, Total	92.6	51.3	43.9	94.1	1.0
		Zinc, Total	83.1	44.8	43.9	87.2	1.0

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INORGANICS PRECISION REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W5L0	Silver, Total	0.09u	0.08u	NC	1.0
		Arsenic, Total	2.9	1.8	46.8	1.0
		Barium, Total	75.3	72.4	3.9	1.0
		Beryllium, Total	0.69	0.57	18.2	1.0
		Cadmium, Total	0.03u	0.02u	NC	1.0
		Chromium, Total	7.1	6.8	4.3	1.0
		Copper, Total	16.4	13.3	20.9	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Nickel, Total	8.7	7.2	18.9	1.0
		Lead, Total	3.9	4.0	2.5	1.0
		Selenium, Total	0.34u	0.29u	NC	1.0
		Vanadium, Total	51.3	50.2	2.2	1.0
		Zinc, Total	44.8	41.0	8.9	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0601-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Arsenic, LCS	974	1000	MG/KG	97.4
		Barium, LCS	503	500	MG/KG	100.5
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	50.5	50.0	MG/KG	101.0
		Copper, LCS	126	125	MG/KG	100.4
		Nickel, LCS	198	200	MG/KG	99.0
		Lead, LCS	245	250	MG/KG	98.0
		Selenium, LCS	948	1000	MG/KG	94.8
		Vanadium, LCS	257	250	MG/KG	102.9
		Zinc, LCS	97.1	100	MG/KG	97.1
LCS1	99C0254-LC1	Mercury, LCS	0.97	1.0	MG/KG	96.7

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0						
SILVER, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
SILVER, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
SILVER, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	001	S	99C0254	08/23/99	08/26/99	08/27/99
MERCURY, TOTAL	001 REP	S	99C0254	08/23/99	08/26/99	08/27/99
MERCURY, TOTAL	001 MS	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
NICKEL, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
NICKEL, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	001	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	001 REP	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	001 MS	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5L2						
SILVER, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	002	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	002	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K4						
SILVER, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	003	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	003	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K5						
SILVER, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	004	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	004	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K6						
SILVER, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	005	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	005	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K7						
SILVER, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	006	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K8						
SILVER, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	007	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	007	S	99L0601	08/23/99	09/01/99	09/07/99
B0W5K9						
SILVER, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
ARSENIC, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
BARIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
BERYLLIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
CADMIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
CHROMIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
COPPER, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
MERCURY, TOTAL	008	S	99C0254	08/23/99	08/26/99	08/27/99
NICKEL, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
LEAD, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
SELENIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
VANADIUM, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99
ZINC, TOTAL	008	S	99L0601	08/23/99	09/01/99	09/07/99

LAB QC:

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
SILVER, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
ARSENIC LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
ARSENIC, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
BARIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
BARIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
BERYLLIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
CADMIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
CADMIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
CHROMIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
CHROMIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
COPPER LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
COPPER, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
MERCURY LABORATORY	LC1 BS	S	99C0254	N/A	08/26/99	08/27/99
MERCURY, TOTAL	MB1	S	99C0254	N/A	08/26/99	08/27/99
NICKEL LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
NICKEL, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
LEAD LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
LEAD, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
SELENIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
SELENIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
VANADIUM LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
VANADIUM, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99
ZINC LABORATORY	LC1 BS	S	99L0601	N/A	09/01/99	09/03/99
ZINC, TOTAL	MB1	S	99L0601	N/A	09/01/99	09/03/99

RECRA LabNet Use Only
9908L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) 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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6	1					6		6	6				
#/Type Container	Liquid															
	Solid	1g	1g	1					1g		1g	1g				
Volume	Liquid															
	Solid	250	500	1					500		250	1000				
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	w/VOA	w/BNA		Metal	CN						

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	0PCB		OGCSC	ODRO		Met (1)		IPH	Ang (1)				
001	BØWSLØ			S	8/23/99	0942	X	X	X		X	X		X		X	X				
2	L2					1025															
3	K4					0810															
4	K5					0826															
5	K6					0846															
6	K7					0856															
7	K8					0911															
8	K9					0928															

Run Matrix QC

Special Instructions:
saf# B99-078
8/26/99 Hg added per client COC

COMPOSITE WASTE

018

OGCSC = ethanol propanol

DATE/REVISIONS:
Met (1.) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6, Hg
Ang (1) = 3. 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
* 5. 423579528657 - 3.2°C
6. 35 - 3.1°C

Relinquished by	Received by	Date	Time
FedEx	Janson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: *423579528646

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. 3.6 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 15-16 ft	SAF No.: B99-078	
Ice Chest No.: ~~B0W~~ 8-24-99 SML 297	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ RECRA 8-24-99	Offsite Property No.: A990297	Bill of Lading/Air Bill No.: ~~B200W1-6716~~ 4235 7952 8657 8-23-99	
		COA: B200W1-6716	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942					X	X	X	X	X	B0W5L0

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Ref. JB	Date/Time: 8-24-99 1200	Received By: Doug Bowers	Date/Time: 8-24-99 1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99 1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Jackson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 24-251	SAF No.: B99-078	
Ice Chest No.: SML-297	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ RECRA BJB 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7852 8657	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

SAMPLE ANALYSIS													
			Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
			Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
			No. of Container(s)	1	1	1	1	1	1	1	1	1	1
			Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
				Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025					X	X	X	X	X	B0W5L2

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: BrF JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedep	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

020

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 3'~4'	SAF No. B99-078	
Ice Chest No. ERC 96-030	Field Logbook No. EL1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA DJB 8-23-99	Offsite Property No. A990227	Bill of Lading/Air Bill No. 4235 7952 8635	
		COA B20CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time									
B0W5K4	Soil	8-23-99	0810		X	X	X	X	X	B0W5L8		

3

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer FB	Date/Time: 8/23/99 13:00
Relinquished By: Ref FB	Date/Time: 8-24-99 / 1200	Received By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fed ex	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

021

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 5.5'-6.5'	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8635	
		COA: B200W1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None				
	Type of Container	aG	aG	aG	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1	1	1				
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions				

Sample No.	Matrix *	Sample Date	Sample Time										
X B0W5K5	Soil	8-23-99	0826		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 1300	Received By: Refer IB	Date/Time: 8/23/99 1300
Relinquished By: Ref IB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedley	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

022

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 81-91	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL/F11	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA BS 8-27-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8635	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time									
B0W5K6	Soil	8-27-99	0846		X	X	X	X	X		B0W5K8	

5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Rede TB	Date/Time: 8/23/99 13:00
Relinquished By: Rod TB	Date/Time: 8-24-99/1200	Received By: Doug Bowers BS	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers BS	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedley	Date/Time:	Received By: Janson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 10.5-11.5		SAF No.: B99-078
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA 870 8-23-99	Offsite Property No.: A 990227		Bill of Lading/Air Bill No.: 4235 7952 8646
			COA: DAS CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (I-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W5K7 / Soil / 8-23-99 / 0856		X	X	X	X	X		B0W5LB		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter 8/23/99 13:00	Received By: Brent Porter 8/23/99 13:00		
Relinquished By: [illegible] 8-24-99/1200	Received By: Doug Bowers 8-24-99/1200		
Relinquished By: Doug Bowers 8-24-99/1200	Received By: Fed Ex		
Relinquished By: Fed Ex	Received By: Jackson 8/25/99 0932		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9

024

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 12-14'		SAF No.: B99-078
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA 8-23-99	Offsite Property No.: 4990227		Bill of Lading/Air Bill No.: 4235 7952 8646
			COA: B20CW1 6716

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60ml.	250ml	250ml.	500ml.	500ml	1000ml.	1000ml.			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (HCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	pH (Soil) - 9045	Semi-VOA - 8270A (HCL) TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K8	Soil	8-23-99	0911		X	X	X	X	X		B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Refer JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jeder	Date/Time:	Received By: Jonson	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

025

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 1

Collector Brent Porter	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 GP-14 <15' bgs 14'-15'	SAF No. B99-078	
Ice Chest No. ERC 96-017	Field Logbook No. EL 1511	Method of Shipment Federal Express	
Shipped To ~~TMA/RECRA~~ RECRA DJB 8-27-99	Offsite Property No. A990227	Bill of Lading/Air Bill No. 4235 7952 8646	
		COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K9	Soil	8-23-99	0928		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Peter IB	Date/Time 8/23/99 13:00
Relinquished By Peter IB	Date/Time 8-24-99/1200	Received By Doug Damers Doug Damers	Date/Time 8-24-99/1200
Relinquished By Doug Damers Doug Damers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Declee	Date/Time	Received By Johnson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

026

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

OCT 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L863
SDG# : H0502
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 08-25-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 8 soil samples.

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

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

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blanks were within 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% RPD control limit.

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

10. Matrix quality control analyses were not performed for Nitrate Nitrite. These analyses will be performed and data will be submitted as required by the client.

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-29-99
Date

njp\i08-863

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 27 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	__		✓ 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: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0 (mod)

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

Nitrate Nitrite EPA 353.2

Ammonia EPA 350.3

L-WI-034/B-06/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
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., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

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.

RFW 21-21L-034/D-06/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W5L0	% Solids	93.2		%	0.01	1.0
		Chloride by IC	65.8		MG/KG	2.7	2.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	22		MG/KG	1.3	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	290		MG/KG	13.4	10.0
		Nitrate Nitrite	5.5		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.5		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-002	B0W5L2	% Solids	95.6		%	0.01	1.0
		Chloride by IC	28.9		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	26		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	289		MG/KG	13.1	10.0
		Nitrate Nitrite	6.3		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	1.0	1.0
-003	B0W5K4	% Solids	94.8		%	0.01	1.0
		Chloride by IC	1.8		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	37		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	3.1		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	67.6		MG/KG	13.2	10.0
		Nitrate Nitrite	7.6		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078

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

RECRA LOT #: 9908L863

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W5K4	Sulfide	4.0		MG/KG	1.1	1.0
-004	B0W5K5	% Solids	81.9		%	0.01	1.0
		Chloride by IC	5.0		MG/KG	1.5	1.0
		Fluoride by IC	3.1	u	MG/KG	3.1	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	110		MG/KG	7.6	5.0
		Cyanide, Total	0.61	u	MG/KG	0.61	1.0
		Phosphate by IC	1.9		MG/KG	1.5	1.0
		Chromium VI	0.49	u	MG/KG	0.49	1.0
		Sulfate by IC	84.6		MG/KG	7.6	5.0
		Nitrate Nitrite	29.1		MG/KG	1.2	5.0
		Ammonia, as N	1.5	u	MG/KG	1.5	1.0
		pH	9.3		SOIL PH	0.01	1.0
		Sulfide	1.2	u	MG/KG	1.2	1.0
-005	B0W5K6	% Solids	96.0		%	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	44		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	3.2		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	7.7		MG/KG	1.3	1.0
		Nitrate Nitrite	8.9		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.5		SOIL PH	0.01	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-006	B0W5K7	% Solids	88.5		%	0.01	1.0
		Chloride by IC	4.6		MG/KG	1.4	1.0
		Fluoride by IC	2.8	u	MG/KG	2.8	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	120		MG/KG	7.1	5.0
		Cyanide, Total	0.56	u	MG/KG	0.56	1.0
		Phosphate by IC	2.1		MG/KG	1.4	1.0
		Chromium VI	0.45	u	MG/KG	0.45	1.0
		Sulfate by IC	86.2		MG/KG	7.1	5.0
		Nitrate Nitrite	26.5		MG/KG	1.1	5.0

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INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W5K7	Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.8		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-007	B0W5K8	% Solids	85.0		%	0.01	1.0
		Chloride by IC	6.3		MG/KG	1.5	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	65		MG/KG	5.9	4.0
		Cyanide, Total	0.59	u	MG/KG	0.59	1.0
		Phosphate by IC	2.3		MG/KG	1.5	1.0
		Chromium VI	0.47	u	MG/KG	0.47	1.0
		Sulfate by IC	168		MG/KG	5.9	4.0
		Nitrate Nitrite	18.8		MG/KG	1.2	5.0
		Ammonia, as N	1.5	u	MG/KG	1.5	1.0
		pH	9.5		SOIL PH	0.01	1.0
		Sulfide	4.2		MG/KG	1.2	1.0
-008	B0W5K9	% Solids	93.4		%	0.01	1.0
		Chloride by IC	5.8		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	140		MG/KG	6.7	5.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	3.1		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	82.0		MG/KG	5.4	4.0
		Nitrate Nitrite	26.2		MG/KG	1.1	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.8		SOIL PH	0.01	1.0
		Sulfide	4.1		MG/KG	1.1	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC076-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC098-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI058-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3044-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM034-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD039-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LIC077-MB1	Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD040-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0

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INORGANICS ACCURACY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W5L0	Cyanide, Total	4.7	0.54u	5.4	87.4	1.0
-003	B0W5K4	Chloride by IC	29.5	1.8	26.4	105.0	1.0
		Chloride by IC MSD	28.6	1.8	26.4	101.6	1.0
		Fluoride by IC	61.4	1.7	52.7	113.2	1.0
		Fluoride by IC MSD	61.2	1.7	52.7	112.7	1.0
		Nitrite by IC	28	1.3 u	26	104.9	1.0
		Nitrite by IC MSD	28	1.3 u	26	106.2	1.0
		Nitrate by IC	93	37	53	104.4	2.0
		Nitrate by IC MSD	95	37	53	108.5	2.0
		Phosphate by IC	31.5	3.1	26.4	107.9	1.0
		Phosphate by IC MSD	31.5	3.1	26.4	107.8	1.0
		Sulfate by IC	330	67.6	264	99.4	10.0
		Sulfate by IC MSD	325	67.6	264	97.8	10.0
		Ammonia, as N	105	1.3 u	99.5	105.0	1.0
		Ammonia, as N MSD	110	1.3 u	104	105.0	1.0
-007	B0W5K8	Soluble Chromium VI	4.6	0.02	4.7	98.3	1.0
		Insoluble Chromium VI	1330	0.02	1180	113.4	100
-008	B0W5K9	Sulfide	366	4.1	406	89.1	1.0
		Sulfide MSD	371	4.2	406	90.3	1.0
BLANK10	99LIC076-MB1	Chloride by IC	24.1	1.2 u	25.0	96.3	1.0
		Fluoride by IC	52.3	2.5 u	50.0	104.6	1.0
		Nitrite by IC	24	1.2 u	25	97.3	1.0
		Nitrate by IC	25	1.2 u	25	98.1	1.0
		Phosphate by IC	25.5	1.2 u	25.0	102.0	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.1	1.0
BLANK10	99LVI058-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.7	1.0
		Insoluble Chromium VI	1160	0.40u	1160	100	100
BLANK10	99LN3044-MB1	Nitrate Nitrite	5.0	0.20u	5.0	100.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.6	1.0
BLANK10	99LAM034-MB1	Ammonia, as N	53.2	1.2 u	50.0	106.5	1.0
		Ammonia, as N MSD	51.8	1.2 u	50.0	103.5	1.0
BLANK10	99LSD039-MB1	Sulfide	9.3	1.0 u	10.0	93.0	1.0
BLANK10	99LIC077-MB1	Sulfate by IC	24.3	1.2 u	25.0	97.2	1.0

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INORGANICS ACCURACY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	99LSD040-MB1	Sulfide	9.3	1.0 u	9.9	93.9	1.0
		Sulfide MSD	9.2	1.0 u	9.9	92.9	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-003	B0W5K4	Chloride by IC	105.0	101.6	3.3
		Fluoride by IC	113.2	112.7	0.43
		Nitrite by IC	104.9	106.2	1.3
		Nitrate by IC	104.4	108.5	3.9
		Phosphate by IC	107.9	107.8	0.13
		Sulfate by IC	99.4	97.8	1.7
		Ammonia, as N	105.0	105.0	0.00
-008	B0W5K9	Sulfide	89.1	90.3	1.4
BLANK10	99LN3044-MB1	Nitrate Nitrite	100.4	100.6	0.20
BLANK10	99LAM034-MB1	Ammonia, as N	106.5	103.5	2.9
BLANK10	99LSD040-MB1	Sulfide	93.9	92.9	1.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W5L0	Cyanide, Total	0.54u	0.54u	NC	1.0
		pH	8.5	8.5	0.1	1.0
-003REP	B0W5K4	Chloride by IC	1.8	1.8	1.4	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	37	37	0.043	1.0
		Phosphate by IC	3.1	3.1	2.6	1.0
		Sulfate by IC	67.6	69.0	2.0	10.0
		Ammonia, as N	1.3 u	1.4	NC	1.0
-007REP	B0W5K8	Chromium VI	0.47u	0.47u	NC	1.0
-008REP	B0W5K9	% Solids	93.4	93.2	0.29	1.0
		Sulfide	4.1	4.2	1.8	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC098-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	91.8
LCS2	99LC098-LC2	Cyanide, Total LCS	8.7	10	MG/KG	87.4

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W5L0						
% SOLIDS	001	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	001	S	99LC098	08/23/99	09/03/99	09/03/99
TOTAL CYANIDE	001 REP	S	99LC098	08/23/99	09/03/99	09/03/99
TOTAL CYANIDE	001 MS	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	001	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	001	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	001	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	001	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	001	S	99LPH093	08/23/99	08/31/99	08/31/99
PH	001 REP	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	001	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5L2						
% SOLIDS	002	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	002	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	002	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	002	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	002	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	002	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	002	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	002	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K4						
% SOLIDS	003	S	99L%S117	08/23/99	08/26/99	08/27/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	003	S	99LIC076	08/23/99	09/13/99	09/13/99
CHLORIDE BY IC	003 REP	S	99LIC076	08/23/99	09/13/99	09/13/99
CHLORIDE BY IC	003 MS	S	99LIC076	08/23/99	09/13/99	09/13/99
CHLORIDE BY IC	003 MSD	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	003	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	003 REP	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	003 MS	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	003 MSD	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	003	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	003 REP	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	003 MS	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	003 MSD	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	003	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	003 REP	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	003 MS	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	003 MSD	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	003	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	003	S	99LIC076	08/23/99	09/13/99	09/13/99
PHOSPHATE BY IC	003 REP	S	99LIC076	08/23/99	09/13/99	09/13/99
PHOSPHATE BY IC	003 MS	S	99LIC076	08/23/99	09/13/99	09/13/99
PHOSPHATE BY IC	003 MSD	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	003	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	003	S	99LIC077	08/23/99	09/16/99	09/16/99
SULFATE BY IC	003 REP	S	99LIC077	08/23/99	09/16/99	09/16/99
SULFATE BY IC	003 MS	S	99LIC077	08/23/99	09/16/99	09/16/99
SULFATE BY IC	003 MSD	S	99LIC077	08/23/99	09/16/99	09/16/99
NITRATE NITRITE	003	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	003	S	99LAM034	08/23/99	09/14/99	09/14/99
AMMONIA	003 REP	S	99LAM034	08/23/99	09/14/99	09/14/99
AMMONIA	003 MS	S	99LAM034	08/23/99	09/14/99	09/14/99
AMMONIA	003 MSD	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	003	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	003	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K5						
% SOLIDS	004	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	004	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	004	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	004	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	004	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	004	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	004	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	004	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K6						
% SOLIDS	005	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	005	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	005	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	005	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	005	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	005	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	005	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	005	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K7						
% SOLIDS	006	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	006	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	006	S	99LVI058	08/23/99	08/27/99	08/27/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	006	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	006	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	006	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	006	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	006	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K8						
% SOLIDS	007	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	007	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	007	S	99LVI058	08/23/99	08/27/99	08/27/99
CHROMIUM VI	007 REP	S	99LVI058	08/23/99	08/27/99	08/27/99
CHROMIUM VI	007 MS	S	99LVI058	08/23/99	08/27/99	08/27/99
CHROMIUM VI	007 MSD	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	007	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	007	S	99LN3044	08/23/99	09/08/99	09/09/99
AMMONIA	007	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	007	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	007	S	99LSD039	08/23/99	08/29/99	08/29/99
B0W5K9						
% SOLIDS	008	S	99L%S117	08/23/99	08/26/99	08/27/99
% SOLIDS	008 REP	S	99L%S117	08/23/99	08/26/99	08/27/99
CHLORIDE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
FLUORIDE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRITE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
TOTAL CYANIDE	008	S	99LC098	08/23/99	09/03/99	09/03/99
PHOSPHATE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
CHROMIUM VI	008	S	99LVI058	08/23/99	08/27/99	08/27/99
SULFATE BY IC	008	S	99LIC076	08/23/99	09/13/99	09/13/99
NITRATE NITRITE	008	S	99LN3044	08/23/99	09/08/99	09/09/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AMMONIA	008	S	99LAM034	08/23/99	09/14/99	09/14/99
PH	008	S	99LPH093	08/23/99	08/31/99	08/31/99
SULFIDE	008	S	99LSD039	08/23/99	08/29/99	08/29/99
SULFIDE	008 REP	S	99LSD039	08/23/99	08/29/99	08/29/99
SULFIDE	008 MS	S	99LSD039	08/23/99	08/29/99	08/29/99
SULFIDE	008 MSD	S	99LSD040	08/23/99	08/30/99	08/30/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
CHLORIDE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
FLUORIDE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
FLUORIDE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
NITRITE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
NITRITE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
NITRATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
NITRATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
TOTAL CYANIDE	LC1 L	S	99LC098	N/A	09/03/99	09/03/99
TOTAL CYANIDE	LC2 L	S	99LC098	N/A	09/03/99	09/03/99
TOTAL CYANIDE	MB1	S	99LC098	N/A	09/03/99	09/03/99
PHOSPHATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
PHOSPHATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
CHROMIUM VI	MB1	S	99LVI058	N/A	08/27/99	08/27/99
CHROMIUM VI	MB1 BS	S	99LVI058	N/A	08/27/99	08/27/99
CHROMIUM VI	MB1 BSD	S	99LVI058	N/A	08/27/99	08/27/99
SULFATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
SULFATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
NITRATE NITRITE	MB1	S	99LN3044	N/A	09/08/99	09/09/99
NITRATE NITRITE	MB1 BS	S	99LN3044	N/A	09/08/99	09/09/99
NITRATE NITRITE	MB1 BSD	S	99LN3044	N/A	09/08/99	09/09/99
AMMONIA	MB1	S	99LAM034	N/A	09/14/99	09/14/99
AMMONIA	MB1 BS	S	99LAM034	N/A	09/14/99	09/14/99
AMMONIA	MB1 BSD	S	99LAM034	N/A	09/14/99	09/14/99
SULFIDE	MB1	S	99LSD039	N/A	08/29/99	08/29/99
SULFIDE	MB1 BS	S	99LSD039	N/A	08/29/99	08/29/99
SULFATE BY IC	MB1	S	99LIC077	N/A	09/16/99	09/16/99
SULFATE BY IC	MB1 BS	S	99LIC077	N/A	09/16/99	09/16/99
SULFIDE	MB1	S	99LSD040	N/A	08/30/99	08/30/99

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

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	MB1 BS	S	99LSD040	N/A	08/30/99	08/30/99
SULFIDE	MB1 BSD	S	99LSD040	N/A	08/30/99	08/30/99

RECRA LabNet Use Only
9908L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

019

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: 8/25/99 Date Due: 9/24/99
Account #:

Refrigerator #		1	6	1					6		6	6				
#/Type Container	Liquid															
	Solid	1g	1g	1					1g		1g	1g				
Volume	Liquid															
	Solid	250	500	1					500		250	1000				
Preservatives																
ANALYSES REQUESTED →		ORGANIC				W/VOA	W/BNA		INORG							
		VOA	BNA	Pest/PCB	Herb				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	0624H	0625H	OPCB		OGCSC	ODRO		Met①		IPH	Ang①				
001	BØW5LØ			S	8/23/99	0942	X	X	X		X	X		X		X	X				
2	L2					1025															
3	K4					0810															
4	K5					0826															
5	K6					0846															
6	K7					0856															
7	K8					0911															
8	K9					0928															

RECRA LabNet Use Only

Run Matrix QC

Special Instructions:
saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6
Ang ① = 3. 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
* 5. 423579528657 - 3.2°C } cooler temp
6. 35 - 3.1°C

Relinquished by	Received by	Date	Time
FedEx	Janson	8/25/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*423579528646

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. 3.6 C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-27	Page 1 of 1

Collector Brent Porter	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 GP-14 >15' bgs 15-16 ft	SAF No. B99-078	
Ice Chest No. ~~B0W~~ 8-27-99 SML 297	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To ~~TMA/RECRA~~ RECRA 8-27-99	Offsite Property No. A990297	Bill of Lading/Air Bill No. 4235 7952 8657 ~~B20CW1-6716~~ 8-23-99	
		COA B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L0	Soil	8-23-99	0942					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Ref. JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Janson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-29	Page 1 of 1

Collector: Brent Porter	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: GP-14 >15' bgs 24-251	SAF No.: B99-078	
Ice Chest No.: SML-297	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA/RECRA~~ RECRA TJB 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7852 8657	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5L2	Soil	8-23-99	1025					X	X	X	X	X	B0W5L8

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer TB	Date/Time: 8/23/99 13:00
Relinquished By: RCF TB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Jedey	Date/Time:	Received By: Jenson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-21	Page 1 of 1

Collector Brent Porter	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-14 <15' bgs 3'~4'		SAF No. B99-078	Data Turnaround 45 Days
Ice Chest No. ERC 96-030	Field Logbook No. EL1511		Method of Shipment Federal Express	
Shipped To TMA/RECRA DJB 8-23-99	Offsite Property No. A990227		Bill of Lading/Air Bill No. 4235 7952 8635	
			COA B20CW1 67JC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K4	Soil	8-23-99	0810		X	X	X	X	X	B0W5K8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 13:00	Received By Peter JB	Date/Time 8/23/99 13:00
Relinquished By Peter JB	Date/Time 8-24-99 1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Jedey	Date/Time	Received By Johnson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-22	Page 1 of 1

Collector Brent Porter	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location GP-14 <15' bgs 5.5'-6.5'		SAF No. B99-078
Ice Chest No. ERC 96-030	Field Logbook No. EL151)		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-30 8-23-99	Offsite Property No. A990227		Bill of Lading/Air Bill No. 4235 7952 8635
			COA Bacon 67C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	See item (3) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K5	Soil	8-23-99	0826		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/23/99 1300	Received By Refer IB	Date/Time 8/23/99 1300
Relinquished By Refer IB	Date/Time 8-24-99/1200	Received By Doug Bowers	Date/Time 8-24-99/1200
Relinquished By Doug Bowers	Date/Time 8-24-99/1200	Received By Fed Ex	Date/Time
Relinquished By Jedley	Date/Time	Received By Johnson	Date/Time 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-23	Page 1 of 1

Collector: Brent Porter	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: GP-14 <15' bgs 81-91	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL/F11	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-23-99	Offsite Property No.: A990227	Bill of Lading/Air Bill No.: 4235 7952 8635	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W5K6	Soil	8-23-99	0846		X	X	X	X	X		B0W5K8

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

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/23/99 13:00	Rafe JB	8/23/99 13:00
Rafe JB	8-24-99/1200	Doug Bowers	8-24-99/1200
Doug Bowers	8-24-99/1200	Fed Ex	
		Jackson	8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-24	Page 1 of 1

025

Collector Brent Porter	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 GP-14 <15' bgs 10.5-11.5		SAF No. B99-078	
Ice Chest No. ERC 96-017	Field Logbook No. EL 1511		Method of Shipment Federal Express	
Shipped To TMA/RECRA BJD 8-23-99	Offsite Property No. A 990227		Bill of Lading/Air Bill No. 4235 7952 8646	
			COA D20 CW1 67K	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K7	Soil	8-23-99	0856		X	X	X	X	X		B0W5L8		

6

CHAIN OF POSSESSION — Sign/Print Names: Refer JB

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/23/99 13:00	~~Brent Porter~~	8/23/99 13:00
RCFIB	8-24-99/1200	Doug Bowers Doug Bowers	8-24-99/1200
Doug Bowers Doug Bowers	8-24-99/1200	Fed Ex	
Fedex		Jackson	8/25/99 0932

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-25	Page 1 of 20

Collector: Brent Porter	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: GP-14 <15' bgs 13'-14'	SAF No.: B99-078	
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA 8-23-99	Offsite Property No.: 4990227	Bill of Lading/Air Bill No.: 4235 7952 8646	
		COA: B20CW1 6716	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250ml	250mL	500mL	500ml	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (HCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol]	pH (Soil) - 9045	Semi-VOA - 8270A (HCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) on Special Instructions	See item (2) on Special Instructions	See item (3) on Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time									
B0W5K8	Soil	8-23-99	0911		X	X	X	X	X		B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Refer JB	Date/Time: 8-24-99/1200	Received By: Doug Bowers	Date/Time: 8-24-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Federal	Date/Time:	Received By: Jenson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-26	Page 1 of 2

Collector: Brent Porter	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: GP-14 <15' bgs 14'-15'		SAF No.: B99-078
Ice Chest No.: ERC 96-017	Field Logbook No.: EL 1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA BTB 8-27-99	Offsite Property No.: A990227		Bill of Lading/Air Bill No.: 4235 7952 8646
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS													
			Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
			Type of Container	aG	aG	aG	aG	aG	aG	aG			
			No. of Container(s)	1	1	1	1	1	1	1			
			Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
				Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time										
B0W5K9	Soil	8-23-99	0928		X	X	X	X	X	B0W5L8			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/23/99 13:00	Received By: Refer JB	Date/Time: 8/23/99 13:00
Relinquished By: Ref JB	Date/Time: 8-24-99/1200	Received By: Doug Bamen	Date/Time: 8-24-99/1200
Relinquished By: Doug Bamen	Date/Time: 8-24-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Declee	Date/Time:	Received By: Johnson	Date/Time: 8/25/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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