H0503 - TMA/KECKA

0052312

DEC 1999

Thermo Nutech
W.O. No. N9-08-146-7185

Bechtel Hanford Inc.
SDG H0503

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0503 is composed of seven 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 11, 1999 with the exception of Tritium and Technetium-99, which was reported by fax on October 12, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analyses

No Isotopic Uranium analysis was requested for this SDG.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

OCT 1999 RECEIVED Data Log In

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.5 Total Uranium Analyses

No problems were encountered during the course of the analyses. No requests for isotopic uranium based on the total uranium results were received.

2.6 Isotopic Thorium Analyses

The relative percent difference in the original and duplicate results was 64%, greater than the 3σ total protocol limit of 57%. The method blank indicated the presence of Th230 at 0.048 cpm. No other problems were encountered during the course of the analyses. A recount was performed on sample B0W890 and a recalculation was performed on the LCS.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses though a recount was performed on sample BOW884.

2.8 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.9 Technetium-99 Analyses

No problems were encountered during the course of the analyses

2.10 Tritium Analyses

No problems were encountered during the course of the analyses

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

SAMPLE SUMMARY

SDG 7185
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W884	GP-13<15'bgs	SOLID		N908146-01	B99-078	B99-078-99	08/24/99 07:38
B0W885	GP-13<15'bgs	SOLID		N908146-02	B99-078	B99-078-99	08/24/99 07:56
B0W886	GP-13<15'bgs	SOLID		N908146-03	B99-078	B99-078-99	08/24/99 08:08
B0W887	GP-13<15'bgs	SOLID		N908146-04	B99-078	B99-078-99	08/24/99 08:26
B0W888	GP-13<15'bgs	SOLID		N908146-05	B99-078	B99-078-99	08/24/99 08:46
B0W890	GP-13<15'bgs	SOLID		N908146-06	B99-078	B99-078-100	08/24/99 09:04
B0W891	GP-13<15'bgs	SOLID		N908146-07	B99-078	B99-078-100	08/24/99 09:30
Method Blank		SOLID		N908146-09	B99-078		
Lab Control Sample		SOLID		N908146-08	B99-078		
Duplicate (N908146-01)	GP-13<15'bgs	SOLID		N908146-10	B99-078		08/24/99 07:38
Duplicate (N908146-06)	GP-13<15'bgs	SOLID		N908146-11	B99-078		08/24/99 09:04

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/12/99

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SAMPLE DELIVERY GROUP H0503

QC SUMMARY

SDG 7185
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7185	B99-078-100	B0W890	SOLID	91.1			08/26/99	2	N908146-06	7185-006
		B0W891	SOLID	92.9			08/26/99	2	N908146-07	7185-007
	B99-078-99	B0W884	SOLID	91.3			08/26/99	2	N908146-01	7185-001
		B0W885	SOLID	81.3			08/26/99	2	N908146-02	7185-002
		B0W886	SOLID	90.2			08/26/99	2	N908146-03	7185-003
		B0W887	SOLID	84.4			08/26/99	2	N908146-04	7185-004
		B0W888	SOLID	90.4			08/26/99	2	N908146-05	7185-005
		Method Blank	SOLID						N908146-09	7185-009
		Lab Control Sample	SOLID						N908146-08	7185-008
		Duplicate (N908146-01)	SOLID	91.3			08/26/99	2	N908146-10	7185-010
		Duplicate (N908146-06)	SOLID	91.1			08/26/99	2	N908146-11	7185-011

Lab id TMANC
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SAMPLE DELIVERY GROUP H0503

SDG 7185
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

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	6893-113	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-113	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-113	5.0	7			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-113	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-113	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-113	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-113	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-113	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-113	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 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

WORK SUMMARY

SDG 7185
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W884			N908146-01	7185-001	AM		10/10/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-001	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-99	B99-078		08/26/99	7185-001	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-001	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-001	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-001	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
B0W885			N908146-02	7185-002	AM		10/06/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-002	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-99	B99-078		08/26/99	7185-002	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-002	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-002	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-002	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
B0W886			N908146-03	7185-003	AM		10/06/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-003	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-99	B99-078		08/26/99	7185-003	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-003	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-003	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-003	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
B0W887			N908146-04	7185-004	AM		10/06/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-004	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-99	B99-078		08/26/99	7185-004	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-004	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-004	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-004	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
B0W888			N908146-05	7185-005	AM		10/08/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-005	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-99	B99-078		08/26/99	7185-005	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-005	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-005	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-005	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

SDG 7185
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W890			N908146-06	7185-006	AM		10/08/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-006	GAM		10/04/99	10/11/99	NJV	Gamma Scan
B99-078-100	B99-078		08/26/99	7185-006	H		09/28/99	10/11/99	NJV	Tritium in Soil
				7185-006	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
				7185-006	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-006	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-006	TC		10/06/99	10/12/99	NJV	Technetium 99 in Soil
				7185-006	TH		10/10/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-006	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
B0W891			N908146-07	7185-007	AM		10/08/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-007	GAM		10/05/99	10/11/99	NJV	Gamma Scan
B99-078-100	B99-078		08/26/99	7185-007	H		09/29/99	10/11/99	NJV	Tritium in Soil
				7185-007	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
				7185-007	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-007	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-007	TC		10/06/99	10/12/99	NJV	Technetium 99 in Soil
				7185-007	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-007	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
Method Blank			N908146-09	7185-009	AM		10/08/99	10/11/99	NJV	Americium 241 in Soil
		SOLID		7185-009	GAM		10/05/99	10/11/99	NJV	Gamma Scan
	B99-078			7185-009	H		09/29/99	10/11/99	NJV	Tritium in Soil
				7185-009	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
				7185-009	PU		10/01/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-009	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-009	TC		10/06/99	10/12/99	NJV	Technetium 99 in Soil
				7185-009	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-009	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
Lab Control Sample			N908146-08	7185-008	AM		10/10/99	10/11/99	NJV	Americium 241 in Soil
		SOLID		7185-008	GAM		10/05/99	10/11/99	NJV	Gamma Scan
	B99-078			7185-008	H		09/29/99	10/11/99	NJV	Tritium in Soil
				7185-008	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
				7185-008	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-008	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-008	TC		10/04/99	10/12/99	NJV	Technetium 99 in Soil
				7185-008	TH		10/10/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-008	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

SDG 7185
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N908146-01)			N908146-10	7185-010	AM		10/08/99	10/11/99	NJV	Americium 241 in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-010	GAM		10/05/99	10/11/99	NJV	Gamma Scan
	B99-078		08/26/99	7185-010	PU		09/30/99	10/11/99	NJV	Plutonium, Isotopic in Solids
				7185-010	SR		09/29/99	10/11/99	NJV	Total Strontium in Soil
				7185-010	TH		10/08/99	10/11/99	NJV	Thorium, Isotopic in Soil
				7185-010	U_T		09/17/99	10/11/99	NJV	Uranium, Total in Soil
Duplicate (N908146-06)			N908146-11	7185-011	H		09/29/99	10/11/99	NJV	Tritium in Soil
GP-13<15'bgs		SOLID	08/24/99	7185-011	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
	B99-078		08/26/99	7185-011	TC		10/05/99	10/12/99	NJV	Technetium 99 in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RB	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	7			1	1	1	10
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	1	10
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	7			1	1	1	10
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	1	10
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	1	10
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1	10
TOTALS				48			9	9	9	75

Lab id TMANC
Protocol Hanford
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SAMPLE DELIVERY GROUP H0503

N908146-09 Method Blank

METHOD BLANK

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-09	Client sample id	Method Blank
Dept sample id	7185-009	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	-0.040	0.052	0.091	400	U	H
Technetium 99	14133-76-7	0.216	0.30	0.41	15	U	TC
Total Uranium (ug/g)	7440-61-1	-0.001	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	-0.003	0.012	0.034	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.006	0.023	1.0	U	PU
Nickel 63	13981-37-8	-0.326	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	0	0.035	0.065	1.0	U	AM
Total Strontium	SR-RAD	-0.007	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	-0.045	0.075	0.16	1.0	U	TH
Thorium 230	14269-63-7	0.322	0.15	0.20	1.0	J	TH
Thorium 232	TH-232	0.052	0.045	0.057	1.0	U	TH
Potassium 40	13966-00-2	U		0.069		U	GAM
Cobalt 60	10198-40-0	U		0.006	0.050	U	GAM
Cesium 137	10045-97-3	U		0.005	0.10	U	GAM
Europium 152	14683-23-9	U		0.014	0.10	U	GAM
Europium 154	15585-10-1	U		0.015	0.10	U	GAM
Europium 155	14391-16-3	U		0.011	0.10	U	GAM
Radium 226	13982-63-3	U		0.012	0.10	U	GAM
Radium 228	15262-20-1	U		0.022	0.20	U	GAM
Thorium 228	14274-82-9	U		0.009		U	GAM
Thorium 232	TH-232	U		0.022		U	GAM
Americium 241	14596-10-2	U		0.013		U	GAM
Uranium 238	U-238	U		0.68		U	GAM
Uranium 235	15117-96-1	U		0.018		U	GAM

200 Area source chctzn-200-CW-1 OU

QC-BLANK 31751

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7185

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0503

Case no TRB-SBB-207925

Lab sample id N908146-08

Dept sample id 7185-008

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	5.44	0.29	0.19	400	J	H	5.78	0.23	94	83-117	80-120
Technetium 99	60.4	1.6	0.39	15		TC	63.5	2.5	95	84-116	80-120
Total Uranium (ug/g)	36.0	4.1	0.066	1.0		U_T	33.0	1.3	109	76-124	80-120
Plutonium 238	10.3	0.81	0.046	1.0		PU	11.3	0.45	91	86-114	80-120
Plutonium 239/240	11.1	0.86	0.046	1.0		PU	11.9	0.48	93	86-114	80-120
Nickel 63	146	3.6	2.3	30		NI_L	134	5.4	109	82-118	
Americium 241	7.89	0.79	0.092	1.0		AM	8.62	0.34	92	84-116	80-120
Total Strontium	12.0	0.43	0.21	1.0		SR	11.3	0.45	106	82-118	
Thorium 230	27.9	1.7	0.24	1.0	B	TH	25.5	1.0	109	86-114	
Cobalt 60	0.352	0.032	0.018	0.050		GAM	0.370	0.015	95	74-126	80-120
Cesium 137	0.380	0.031	0.027	0.10		GAM	0.381	0.015	100	74-126	80-120

200 Area source chctzn-200-CW-1 OU

QC-LCS 31750

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-10 B0W884

DUPLICATE

SDG 7185		Client/Case no Hanford	SDG-H0503
Contact Kevin C. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N908146-10	Lab sample id N908146-01	Client sample id B0W884	
Dept sample id 7185-010	Dept sample id 7185-001	Location/Matrix GP-13<15'bgs	SOLID
	Received 08/26/99	Collected 08/24/99 07:38	
% solids 91.3	% solids 91.3	Custody/SAF No B99-078-99	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)	0.416	0.045	0.007	1.0	J	U_T	0.410	0.044	0.007	J	1	30	
Plutonium 238	0.004	0.025	0.046	1.0	U	PU	0.004	0.025	0.051	U	-		
Plutonium 239/240	-0.008	0.017	0.046	1.0	U	PU	-0.004	0.017	0.046	U	-		
Americium 241	-0.007	0.037	0.070	1.0	U	AM	0.018	0.023	0.036	U	-		
Total Strontium	0.086	0.13	0.17	1.0	U	SR	0.031	0.15	0.20	U	-		
Thorium 228	0.212	0.13	0.17	1.0	J	TH	0.324	0.12	0.14	J	42	100	
Thorium 230	0.900	0.21	0.20	1.0	JB	TH	0.465	0.14	0.18	JB	64	57	
Thorium 232	0.250	0.094	0.096	1.0	J	TH	0.271	0.091	0.049	J	8	76	
Potassium 40	16.1	0.52	0.24			GAM	16.3	1.7	0.25		1	36	
Cobalt 60	U		0.022	0.050	U	GAM	U		0.022	U	-		
Cesium 137	U		0.024	0.10	U	GAM	0.035	0.026	0.028	J	37	183	
Europium 152	U		0.058	0.10	U	GAM	U		0.061	U	-		
Europium 154	U		0.079	0.10	U	GAM	U		0.083	U	-		
Europium 155	U		0.084	0.10	U	GAM	U		0.056	U	-		
Radium 226	0.750	0.049	0.045	0.10		GAM	U		0.083	U	160	54	
Radium 228	0.976	0.11	0.10	0.20		GAM	U		0.17	U	141	66	
Thorium 228	0.935	0.032	0.030			GAM	0.468	0.24	0.027		67	62	
Thorium 232	0.976	0.11	0.10			GAM	U		0.17	U	141	66	
Americium 241	U		0.21		U	GAM	U		0.037	U	-		
Uranium 238	U		2.9		U	GAM	U		2.9	U	-		
Uranium 235	U		0.10		U	GAM	U		0.091	U	-		

200 Area source chctzn-200-CW-1 OU

QC-DUP#1 31752

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-11 B0W890

DUPLICATE

SDG	7185			Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908146-11	Lab sample id	N908146-06	Client sample id	B0W890
Dept sample id	7185-011	Dept sample id	7185-006	Location/Matrix	GP-13<15'bgs SOLID
		Received	08/26/99	Collected	08/24/99 09:04
% solids	91.1	% solids	91.1	Custody/SAF No	B99-078-100 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	-0.020	0.053	0.090	400	U	H	0	0.054	0.091	U	-		
Technetium 99	0.278	0.26	0.38	15	U	TC	0.458	0.21	0.25	J	49	138	
Nickel 63	0.596	1.4	2.3	30	U	NI_L	0.900	1.4	2.3	U	-		

200 Area source chctzn-200-CW-1 OU

QC-DUP#6 31753

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-01 B0W884

DATA SHEET

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-01	Client sample id	B0W884
Dept sample id	7185-001	Location/Matrix	GP-13<15'bgs SOLID
Received	08/26/99	Collected	08/24/99 07:38
% solids	91.3	Custody/SAF No	B99-078-99 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	0.410	0.044	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.004	0.025	0.051	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.017	0.046	1.0	U	PU
Americium 241	14596-10-2	0.018	0.023	0.036	1.0	U	AM
Total Strontium	SR-RAD	0.031	0.15	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.324	0.12	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.465	0.14	0.18	1.0	JB	TH
Thorium 232	TH-232	0.271	0.091	0.049	1.0	J	TH
Potassium 40	13966-00-2	16.3	1.7	0.25			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.035	0.026	0.028	0.10	J	GAM
Europium 152	14683-23-9	U		0.061	0.10	U	GAM
Europium 154	15585-10-1	U		0.083	0.10	U	GAM
Europium 155	14391-16-3	U		0.056	0.10	U	GAM
Radium 226	13982-63-3	U		0.083	0.10	U	GAM
Radium 228	15262-20-1	U		0.17	0.20	U	GAM
Thorium 228	14274-82-9	0.468	0.24	0.027			GAM
Thorium 232	TH-232	U		0.17		U	GAM
Americium 241	14596-10-2	U		0.037		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.091		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-02 B0W885

DATA SHEET

SDG	7185	Client/Case no	Hanford	SDG-H0503	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908146-02	Client sample id	B0W885		
Dept sample id	7185-002	Location/Matrix	GP-13<15'bgs	SOLID	
Received	08/26/99	Collected	08/24/99 07:56		
% solids	81.3	Custody/SAF No	B99-078-99	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	1.13	0.12	0.007	1.0		U_T
Plutonium 238	13981-16-3	0	0.017	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.017	0.017	0.052	1.0	U	PU
Americium 241	14596-10-2	-0.004	0.033	0.069	1.0	U	AM
Total Strontium	SR-RAD	-0.032	0.14	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.273	0.11	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.434	0.15	0.19	1.0	JB	TH
Thorium 232	TH-232	0.238	0.084	0.054	1.0	J	TH
Potassium 40	13966-00-2	19.0	0.63	0.29			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Europium 152	14683-23-9	U		0.067	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.977	0.066	0.060	0.10		GAM
Radium 228	15262-20-1	1.37	0.15	0.14	0.20		GAM
Thorium 228	14274-82-9	1.21	0.036	0.032			GAM
Thorium 232	TH-232	1.37	0.15	0.14			GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Uranium 235	15117-96-1	U		0.091		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-03 B0W886

DATA SHEET

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-03	Client sample id	B0W886
Dept sample id	7185-003	Location/Matrix	GP-13<15'bgs SOLID
Received	08/26/99	Collected	08/24/99 08:08
% solids	90.2	Custody/SAF No	B99-078-99 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	0.869	0.094	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.009	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.017	0.026	0.053	1.0	U	PU
Americium 241	14596-10-2	-0.016	0.042	0.093	1.0	U	AM
Total Strontium	SR-RAD	0.041	0.13	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.202	0.11	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.558	0.17	0.19	1.0	JB	TH
Thorium 232	TH-232	0.287	0.11	0.074	1.0	J	TH
Potassium 40	13966-00-2	14.1	0.51	0.26			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.025	0.10	U	GAM
Europium 152	14683-23-9	U		0.059	0.10	U	GAM
Europium 154	15585-10-1	U		0.081	0.10	U	GAM
Europium 155	14391-16-3	U		0.086	0.10	U	GAM
Radium 226	13982-63-3	0.678	0.046	0.044	0.10		GAM
Radium 228	15262-20-1	0.847	0.12	0.12	0.20		GAM
Thorium 228	14274-82-9	0.865	0.030	0.028			GAM
Thorium 232	TH-232	0.847	0.12	0.12			GAM
Americium 241	14596-10-2	U		0.091		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Uranium 235	15117-96-1	U		0.090		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-04 B0W887

DATA SHEET

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-04	Client sample id	B0W887
Dept sample id	7185-004	Location/Matrix	GP-13<15'bgs SOLID
Received	08/26/99	Collected	08/24/99 08:26
% solids	84.4	Custody/SAF No	B99-078-99 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	0.920	0.099	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.018	0.044	1.0	U	PU
Plutonium 239/240	PU-239/240	0.005	0.009	0.035	1.0	U	PU
Americium 241	14596-10-2	0.013	0.034	0.061	1.0	U	AM
Total Strontium	SR-RAD	0.017	0.15	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.302	0.12	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.434	0.16	0.20	1.0	JB	TH
Thorium 232	TH-232	0.243	0.089	0.056	1.0	J	TH
Potassium 40	13966-00-2	17.3	0.37	0.16			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.055	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.790	0.036	0.031	0.10		GAM
Radium 228	15262-20-1	1.10	0.066	0.062	0.20		GAM
Thorium 228	14274-82-9	1.04	0.024	0.020			GAM
Thorium 232	TH-232	1.10	0.066	0.062			GAM
Americium 241	14596-10-2	U		0.052		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.059		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-05 B0W888

DATA SHEET

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-05	Client sample id	B0W888
Dept sample id	7185-005	Location/Matrix	GP-13<15'bgs SOLID
Received	08/26/99	Collected	08/24/99 08:46
% solids	90.4	Custody/SAF No	B99-078-99 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	0.827	0.089	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.008	0.017	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.017	0.032	1.0	U	PU
Americium 241	14596-10-2	0	0.013	0.032	1.0	U	AM
Total Strontium	SR-RAD	0.104	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.234	0.15	0.22	1.0	J	TH
Thorium 230	14269-63-7	0.033	0.12	0.21	1.0	U	TH
Thorium 232	TH-232	0.280	0.094	0.074	1.0	J	TH
Potassium 40	13966-00-2	15.6	0.45	0.21			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Europium 152	14683-23-9	U		0.048	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.068	0.10	U	GAM
Radium 226	13982-63-3	0.677	0.039	0.037	0.10		GAM
Radium 228	15262-20-1	0.934	0.077	0.075	0.20		GAM
Thorium 228	14274-82-9	0.856	0.028	0.027			GAM
Thorium 232	TH-232	0.934	0.077	0.075			GAM
Americium 241	14596-10-2	U		0.17		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.085		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-06 B0W890

DATA SHEET

SDG	7185	Client/Case no	Hanford	SDG-H0503	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908146-06	Client sample id	B0W890		
Dept sample id	7185-006	Location/Matrix	GP-13<15'bgs	SOLID	
Received	08/26/99	Collected	08/24/99 09:04		
% solids	91.1	Custody/SAF No	B99-078-100	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	0.054	0.091	400	U	H
Technetium 99	14133-76-7	0.458	0.21	0.25	15	J	TC
Total Uranium (ug/g)	7440-61-1	0.675	0.074	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.009	0.034	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.018	0.042	1.0	U	PU
Nickel 63	13981-37-8	0.900	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	0.018	0.021	0.034	1.0	U	AM
Total Strontium	SR-RAD	0.053	0.14	0.23	1.0	U	SR
Thorium 228	14274-82-9	0.356	0.12	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.283	0.13	0.19	1.0	JB	TH
Thorium 232	TH-232	0.204	0.092	0.095	1.0	J	TH
Potassium 40	13966-00-2	13.3	1.6	0.15			GAM
Cobalt 60	10198-40-0	U		0.014	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.10	U	GAM
Europium 152	14683-23-9	U		0.035	0.10	U	GAM
Europium 154	15585-10-1	U		0.045	0.10	U	GAM
Europium 155	14391-16-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	U		0.047	0.10	U	GAM
Radium 228	15262-20-1	U		0.097	0.20	U	GAM
Thorium 228	14274-82-9	0.245	0.23	0.015			GAM
Thorium 232	TH-232	U		0.097		U	GAM
Americium 241	14596-10-2	U		0.020		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.066		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

N908146-07 B0W891

DATA SHEET

SDG	7185	Client/Case no	Hanford SDG-H0503
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908146-07	Client sample id	B0W891
Dept sample id	7185-007	Location/Matrix	GP-13<15'bgs SOLID
Received	08/26/99	Collected	08/24/99 09:30
% solids	92.9	Custody/SAF No	B99-078-100 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.027	0.051	0.087	400	U	H
Technetium 99	14133-76-7	0.169	0.31	0.40	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.585	0.063	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.012	0.025	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	0.012	0.016	0.031	1.0	U	PU
Nickel 63	13981-37-8	0.535	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	0	0.026	0.050	1.0	U	AM
Total Strontium	SR-RAD	-0.103	0.34	0.29	1.0	U	SR
Thorium 228	14274-82-9	0.214	0.17	0.24	1.0	U	TH
Thorium 230	14269-63-7	0.439	0.19	0.22	1.0	JB	TH
Thorium 232	TH-232	0.297	0.12	0.091	1.0	J	TH
Potassium 40	13966-00-2	12.4	0.59	0.28			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.061	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Radium 226	13982-63-3	0.554	0.058	0.051	0.10		GAM
Radium 228	15262-20-1	0.716	0.12	0.12	0.20		GAM
Thorium 228	14274-82-9	0.668	0.034	0.032			GAM
Thorium 232	TH-232	0.716	0.12	0.12			GAM
Americium 241	14596-10-2	U		0.034		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.082		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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test AM Matrix SOLID	Client Hanford
SDG 7185	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0503

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-113						
B0W884	N908146-01			7185-001	U	
B0W885	N908146-02			7185-002	U	
B0W886	N908146-03			7185-003	U	
B0W887	N908146-04			7185-004	U	
B0W888	N908146-05			7185-005	U	
B0W890	N908146-06			7185-006	U	
B0W891	N908146-07			7185-007	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908146-01)	N908146-10			7185-010	-	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 6893-113 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.113																
B0W884	N908146-01			0.036	0.500			75		1085			47	10/06/99	10/10	SS-013
B0W885	N908146-02			0.069	0.500			87		661			43	10/06/99	10/06	SS-048
B0W886	N908146-03			0.093	0.500			68		661			43	10/06/99	10/06	SS-049
B0W887	N908146-04			0.061	0.500			85		661			43	10/06/99	10/06	SS-050
B0W888	N908146-05			0.032	0.500			82		851			45	10/06/99	10/08	SS-010
B0W890	N908146-06			0.034	0.500			80		851			45	10/06/99	10/08	SS-011
B0W891	N908146-07			0.050	0.500			87		851			45	10/06/99	10/08	SS-012
BLK (QC ID=31751)	N908146-09			0.065	0.500			85		785				10/06/99	10/08	SS-048
LCS (QC ID=31750)	N908146-08			0.092	0.500			32		1089				10/06/99	10/10	SS-057
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.070	0.500			82		785			45	10/06/99	10/08	SS-049
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 10/12/99	

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test	AM
Matrix	SOLID
SDG	7185
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0503

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	0.060	±	0.045
FOR 10 SAMPLES	YIELD	76	±	33

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test PU Matrix SOLID
SDG 7185
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-113								
B0W884	N908146-01			7185-001	U		U	
B0W885	N908146-02			7185-002	U		U	
B0W886	N908146-03			7185-003	U		U	
B0W887	N908146-04			7185-004	U		U	
B0W888	N908146-05			7185-005	U		U	
B0W890	N908146-06			7185-006	U		U	
B0W891	N908146-07			7185-007	U		U	
BLK (QC ID=31751)	N908146-09			7185-009	U		U	
LCS (QC ID=31750)	N908146-08			7185-008	ok		ok	
Duplicate (N908146-01)	N908146-10			7185-010	-	U	-	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 6893-113 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.113																
B0W884	N908146-01			0.051	0.500			90		644			37	09/30/99	09/30	SS-011
B0W885	N908146-02			0.052	0.500			88		644			37	09/30/99	09/30	SS-012
B0W886	N908146-03			0.053	0.500			89		644			37	09/30/99	09/30	SS-015
B0W887	N908146-04			0.044	0.500			83		626			37	09/30/99	09/30	SS-056
B0W888	N908146-05			0.032	0.500			86		626			37	09/30/99	09/30	SS-055
B0W890	N908146-06			0.042	0.500			85		626			37	09/30/99	09/30	SS-059
B0W891	N908146-07			0.045	0.500			88		626			37	09/30/99	09/30	SS-061
BLK (QC ID=31751)	N908146-09			0.034	0.500			83		942				09/30/99	10/01	SS-016
LCS (QC ID=31750)	N908146-08			0.046	0.500			96		593				09/30/99	09/30	SS-008
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.046	0.500			88		626			37	09/30/99	09/30	SS-062
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 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7185
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

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				
FOR 10 SAMPLES	MDA	0.044	±	0.014
	YIELD	88	±	8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/12/99

Test TH Matrix SOLID
SDG 7185
Contact Kevin C. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-113							
B0W884	N908146-01			7185-001	0.324 J	0.465 J	0.271 J
B0W885	N908146-02			7185-002	0.273 J	0.434 J	0.238 J
B0W886	N908146-03			7185-003	0.202 J	0.558 J	0.287 J
B0W887	N908146-04			7185-004	0.302 J	0.434 J	0.243 J
B0W888	N908146-05			7185-005	0.234 J	U	0.280 J
B0W890	N908146-06			7185-006	0.356 J	0.283 J	0.204 J
B0W891	N908146-07			7185-007	U	0.439 J	0.297 J
BLK (QC ID=31751)	N908146-09			7185-009	U	0.322 J	U
LCS (QC ID=31750)	N908146-08			7185-008		ok	
Duplicate (N908146-01)	N908146-10			7185-010	ok J	OUT 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 6893-113	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.113											
B0W884	N908146-01			0.18	0.200			82		1081			45	10/08/99	10/08	SS-034
B0W885	N908146-02			0.19	0.200			93		951			45	10/08/99	10/08	SS-035
B0W886	N908146-03			0.19	0.200			82		951			45	10/08/99	10/08	SS-036
B0W887	N908146-04			0.20	0.200			88		951			45	10/08/99	10/08	SS-038
B0W888	N908146-05			0.22	0.200			91		952			45	10/08/99	10/08	SS-040
B0W890	N908146-06			0.19	0.200			81		1086			47	10/08/99	10/10	SS-032
B0W891	N908146-07			0.24	0.200			52		949			45	10/08/99	10/08	SS-044
BLK (QC ID=31751)	N908146-09			0.20	0.200			88		892				10/08/99	10/08	SS-048
LCS (QC ID=31750)	N908146-08			0.24	0.200			41		1086				10/08/99	10/10	SS-033
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.20	0.200			84		892			45	10/08/99	10/08	SS-049
Nominal values and limits from method				1.0	0.250			20-105		200			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test	TH
Matrix	SOLID
SDG	7185
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0503

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	0.20	±	0.042
FOR 10 SAMPLES	YIELD	78	±	35

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test	SR
Matrix	SOLID
SDG	7185
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0503

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6893-113						
B0W884	N908146-01			7185-001	U	
B0W885	N908146-02			7185-002	U	
B0W886	N908146-03			7185-003	U	
B0W887	N908146-04			7185-004	U	
B0W888	N908146-05			7185-005	U	
B0W890	N908146-06			7185-006	U	
B0W891	N908146-07			7185-007	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908146-01)	N908146-10			7185-010	-	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 6893-113	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.113															
B0W884	N908146-01			0.20	1.00			83		400			36	09/29/99	09/29	GRB-201
B0W885	N908146-02			0.20	1.00			78		400			36	09/29/99	09/29	GRB-202
B0W886	N908146-03			0.17	1.00			91		400			36	09/29/99	09/29	GRB-203
B0W887	N908146-04			0.20	1.00			84		400			36	09/29/99	09/29	GRB-204
B0W888	N908146-05			0.16	1.00			98		400			36	09/29/99	09/29	GRB-207
B0W890	N908146-06			0.23	1.00			96		200			36	09/29/99	09/29	GRB-204
B0W891	N908146-07			0.29	1.00			94		400			36	09/29/99	09/29	GRB-210
BLK (QC ID=31751)	N908146-09			0.19	1.00			84		400				09/29/99	09/29	GRB-227
LCS (QC ID=31750)	N908146-08			0.21	1.00			81		400				09/29/99	09/29	GRB-225
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.17	1.00			91		400			36	09/29/99	09/29	GRB-228
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	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test SR Matrix SOLID	
SDG 7185	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0503	

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	0.20	±	0.075
FOR 10 SAMPLES	YIELD	88	±	14

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test TC	Matrix SOLID
SDG 7185	
Contact Kevin C. Johnson	

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0503	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-113						
B0W890	N908146-06			7185-006	0.458 J	
B0W891	N908146-07			7185-007	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908146-06)	N908146-11			7185-011	ok	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 6893-113	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.113															
B0W890	N908146-06			0.25	1.03			93		200			43	09/30/99	10/06	GRB-228
B0W891	N908146-07			0.40	1.03			89		101			43	09/30/99	10/06	GRB-229
BLK (QC ID=31751)	N908146-09			0.41	1.03			79		101				09/30/99	10/06	GRB-230
LCS (QC ID=31750)	N908146-08			0.39	1.03			87		101				09/30/99	10/04	GRB-202
Duplicate (N908146-06) (QC ID=31753)	N908146-11			0.38	1.03			89		101			42	09/30/99	10/05	GRB-203
Nominal values and limits from method				15	1.03			20-105		50			180			

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

AVERAGES ± 2 SD	MDA 0.37 ± 0.13
FOR 5 SAMPLES	YIELD 87 ± 10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test GAM	Matrix SOLID
SDG 7185	
Contact Kevin C. Johnson	

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0503	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6893-113								
B0W884	N908146-01			7185-001	U		0.035 J	
B0W885	N908146-02			7185-002	U		U	
B0W886	N908146-03			7185-003	U		U	
B0W887	N908146-04			7185-004	U		U	
B0W888	N908146-05			7185-005	U		U	
B0W890	N908146-06			7185-006	U		U	
B0W891	N908146-07			7185-007	U		U	
BLK (QC ID=31751)	N908146-09			7185-009	U		U	
LCS (QC ID=31750)	N908146-08			7185-008	ok		ok	
Duplicate (N908146-01)	N908146-10			7185-010	-	U	ok	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 6893-113	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.113															
B0W884	N908146-01			0.057	738					215			41	09/13/99	10/04	MB,07,00
B0W885	N908146-02			0.095	602					525			41	09/13/99	10/04	02,01,00
B0W886	N908146-03			0.065	700					525			41	09/13/99	10/04	02,03,00
B0W887	N908146-04			0.047	605					524			41	09/13/99	10/04	02,04,00
B0W888	N908146-05			0.057	652					524			41	09/13/99	10/04	MB,05,00
B0W890	N908146-06			0.032	748					524			41	09/13/99	10/04	MB,07,00
B0W891	N908146-07			0.085	696					334			42	09/13/99	10/05	02,01,00
BLK (QC ID=31751)	N908146-09			0.011	678					334				09/13/99	10/05	01,04,00
LCS (QC ID=31750)	N908146-08			0.018	678					334				09/13/99	10/05	01,03,00
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.067	738					334			42	09/13/99	10/05	MB,05,00
Nominal values and limits from method				0.050	678					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test GAM Matrix SOLID	Client Hanford
SDG 7185	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0503

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 0.053	± 0.054
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test U T Matrix SOLID
SDG 7185
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-113					
B0W884	N908146-01			7185-001	0.410 J
B0W885	N908146-02			7185-002	1.13
B0W886	N908146-03			7185-003	0.869 J
B0W887	N908146-04			7185-004	0.920 J
B0W888	N908146-05			7185-005	0.827 J
B0W890	N908146-06			7185-006	0.675 J
B0W891	N908146-07			7185-007	0.585 J
BLK (QC ID=31751)	N908146-09			7185-009	U
LCS (QC ID=31750)	N908146-08			7185-008	ok
Duplicate (N908146-01)	N908146-10			7185-010	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 6893-113	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.113												
B0W884	N908146-01			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W885	N908146-02			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W886	N908146-03			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W887	N908146-04			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W888	N908146-05			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W890	N908146-06			0.007	0.0500								24	09/17/99	09/17	KPA-001
B0W891	N908146-07			0.007	0.0500								24	09/17/99	09/17	KPA-001
BLK (QC ID=31751)	N908146-09			0.007	0.0500									09/17/99	09/17	KPA-001
LCS (QC ID=31750)	N908146-08			0.066	0.0500									09/17/99	09/17	KPA-001
Duplicate (N908146-01) (QC ID=31752)	N908146-10			0.007	0.0500								24	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 10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test U T	Matrix SOLID
SDG 7185	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0503	

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	0.013	±	0.037
FOR 10 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test H	Matrix SOLID
SDG 7185	
Contact Kevin C. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0503	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-113						
B0W890	N908146-06			7185-006	U	
B0W891	N908146-07			7185-007	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	J
Duplicate (N908146-06)	N908146-11			7185-011	-	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 6893-113	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.113															
B0W890	N908146-06			0.091	20.0			100		120			35	09/28/99	09/28	LSC-004
B0W891	N908146-07			0.087	20.8			100		120			36	09/28/99	09/29	LSC-004
BLK (QC ID=31751)	N908146-09			0.091	20.4			100		120				09/28/99	09/29	LSC-004
LCS (QC ID=31750)	N908146-08			0.19	20.4			100		27				09/28/99	09/29	LSC-004
Duplicate (N908146-06) (QC ID=31753)	N908146-11			0.090	20.3			100		120			36	09/28/99	09/29	LSC-004
Nominal values and limits from method				400	20.4					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	0.11	± 0.090
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/12/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0503

Test	NI L Matrix SOLID
SDG	7185
Contact	Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0503

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-113						
B0W890	N908146-06			7185-006	U	
B0W891	N908146-07			7185-007	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908146-06)	N908146-11			7185-011	-	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 6893-113	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.113											
B0W890	N908146-06			2.3	0.500			100		100			48	10/04/99	10/11	LSC-004
B0W891	N908146-07			2.3	0.500			100		100			48	10/04/99	10/11	LSC-004
BLK (QC ID=31751)	N908146-09			2.3	0.500			100		100				10/04/99	10/11	LSC-004
LCS (QC ID=31750)	N908146-08			2.3	0.500			100		100				10/04/99	10/11	LSC-004
Duplicate (N908146-06) (QC ID=31753)	N908146-11			2.3	0.500			100		100			48	10/04/99	10/11	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	MDA	2.3	± 0
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
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SDG 7185
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

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.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/12/99

SDG 7185
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0503

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.

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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG-H0503

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.

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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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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.

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GUIDE, cont.

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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.

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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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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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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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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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* 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.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 <15' bgs		SAF No.: B99-078
Ice Chest No.: SML 421	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RCRA 570 8-24-99	Offsite Property No.: A990 228		Bill of Lading/Air Bill No.: 4235 7952 8668
			COA: B20CW167/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									
B0W884	Soil	8-24-99	0738	X						X	3.5'-4.5'	
B0W885	Soil	8-24-99	0756	X						X	6'-7'	
B0W886	Soil	8-24-99	0808	X						X	8.5'-9.5'	
B0W887	Soil	8-24-99	0826	X						X	11'-12'	
B0W888	Soil	8-24-99	0846	X						X	14'-15'	

CHAIN OF POSSESSION — Sign/Print Name

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/24/99 13:00	Peter TB	8/24/99 13:00
Peter TB	8/25/99 11:00	D W. Shea	8/25/99 1100
D W Shea	8/25/99 1100	Fed ex	8-25-99
FedEx	8-26-99 9:00	TNV M. Goldenberg	8-26-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B00 D/R.
collector unavailable to sign COC

(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

use B0W528 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector Bowers/Porter/Nielson	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-13 >15' bgs		SAF No. B99-078
Ice Chest No. SML 421	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DTA 8-24-99	Offsite Property No. A990228		Bill of Lading/Air Bill No. 4235 7952 8668

Price Code 8N

Data Turnaround 45 Days

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 - 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										
B0W890 / 18.5'-19.5'	Soil	8-24-99	0904	X	X	X	X						X
B0W891 / 24'-25'	Soil	8-24-99	0930	X	X	X	X						X
~~B0W892~~	~~Soil~~												
~~B0W893~~	~~Soil~~	DTA 8-24-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Refer 1B	Date/Time: 8/24/99 13:00
Relinquished By: Refer 1B	Date/Time: 8/25/99 1100	Received By: D.W. Shea	Date/Time: 8/25/99 1100
Relinquished By: D.W. Shea	Date/Time: 8/25/99 1100	Received By: Fed Ex	Date/Time: 8-25-99
Relinquished By: FedEx	Date/Time: 8-26-99 9:00	Received By: TNV M. Goldenberg	Date/Time: 8-26-99 9:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

collector unavailable to sign COC

(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

use BOW5L8 as shipping criteria

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 8-26-99

CoC No. B99-078-99, 100

Container I.D. No. SML 921 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: 7
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: 8-26-99 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 _____

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L883
SDG/SAF#: H0503/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 08-26-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 08-24-99.

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 09-16,17-99. 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. One (1) of eleven (11) surrogate recoveries was outside acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. One (1) of two (2) matrix spike recoveries was outside acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

OCT 1999
RECEIVED
Data
Log In

R:\SHARE\LC\GCSCAN\08-883d.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

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

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP	=	Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 09/20/99 11:37

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0W884	B0W884	B0W884	B0W885	B0W886	B0W887
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	79 %	108 %	158 * %	75 %	75 %	98 %
Diesel Range Organics		4.4 U	82 %	147 * %	4.7 U	4.8 U	4.7 U

	Cust ID:	B0W888	B0W890	B0W891	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1062-MB1	99LE1062-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	80 %	71 %	80 %	69 %	73 %
Diesel Range Organics		4.4 U	4.4 U	4.3 U	4.0 U	72 %

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.

9/20/99 PK
9/24/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884	001	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W884	001 MS	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W884	001 MSD	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W885	002	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W886	003	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W887	004	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W888	005	S	99LE1062	08/24/99	08/31/99	09/16/99
B0W890	006	S	99LE1062	08/24/99	08/31/99	09/17/99
B0W891	007	S	99LE1062	08/24/99	08/31/99	09/17/99

LAB QC:

BLK	MB1	S	99LE1062	N/A	08/31/99	09/16/99
BLK	MB1 BS	S	99LE1062	N/A	08/31/99	09/16/99

9/24/99

RECRA LabNet Use Only

9908C8E3

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

005

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 109185-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
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	4oz					
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	0024H	0025H	OPCB		OGC	ODRO	Mut D		1PH	Ang D				
001	B0W884			S	8/24/99	0938	X	X	X		X	X	X		X	X				
2	85					0756														
3	86					0808														
4	87					0826														
5	88					0846														
6	90					0907														
7	91					0930														

Run matrix QC

Special Instructions:

Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Mut (1.) = Ag, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICR6
Ang (1.) = IN3N2, ICCL, ICF, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OGC9C = ethanol + propanol
* 6. 4235795286 79-4.0°C

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 4235795286 8
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 1.8 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A990229		Bill of Lading/Air Bill No.: 4235 7952 8680
			COA: B20CW167/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			
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) {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								
B0W884	Soil	8-24-99	0738		X	X	X	X	X		3.5'-4.5'
B0W885	Soil	8-24-99	0756		X	X	X	X	X		6'-7'
B0W886	Soil	8-24-99	0808		X	X	X	X	X		8.5'-9.5'
B0W887	Soil	8-24-99	0826		X	X	X	X	X		11'-12'
B0W888	Soil	8-24-99	0846		X	X	X	X	X		14'-15'

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 13:00
Relinquished By: REF ID	Date/Time: 82599 1100	Received By: SJGALE	Date/Time: 82599 1100
Relinquished By: SJGALE	Date/Time: 82599 1100	Received By: FED EX	Date/Time:
Relinquished By: Jeel	Date/Time:	Received By: Jonson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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.

use BOW528 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector Bowers/Porter/Nielson	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-13 >15' bgs		SAF No. B99-078
Ice Chest No. ERC 96 043	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA B70 8-24-99	Offsite Property No. A990229		Bill of Lading/Air Bill No. 4235 7952 8679
			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 - 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								
B0W890 / 18.5'-19.5'	Soil	8-24-99	0904					X	X	X	X	X	
B0W891 / 24'-25'	Soil	8-24-99	0930					X	X	X	X	X	
~~B0W892~~	~~Soil~~												
~~B0W893~~	~~Soil~~	B70 8-24-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Brent Porter	Date/Time 8/24/99 13:00	Received By Peter JB	Date/Time 8/24/99 13:00
Relinquished By PGF JB	Date/Time 8/25/99 11:00	Received By Catherine Sine	Date/Time 8/25/99 11:00
Relinquished By Catherine Sine	Date/Time 8/25/99 11:00	Received By FEDEX	Date/Time
Relinquished By Dell Leep	Date/Time	Received By Jenson for DN	Date/Time 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

use BOW5L8 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

4.0

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

ORIGINAL Dhyes

SDR # B99-059
Revision #: 0
Date Initiated: 09/09/99

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: 1
ID Numbers: B0W887
Matrix: Soil
Collection Date: 08/24/99

Issue Background:

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

Type: Analysis Holding Time Exceeded

Description: Reanalysis of Sample Completed One Day Past Analytical Holding Time

Disposition:

Description: The laboratory reanalyzed the listed sample due to high surrogate recovery (VOA analysis) on the first analytical run. The reanalysis was run one day past the analytical holding time for VOAs. The laboratory was requested by ERC Sample Management to report both results.

Justification: Although VOA data will be qualified for the listed sample, both analytical results will have utility to the project for evaluating VOA concentrations in the listed sample.

Approval Signatures:

S. J. Trent 9/13/99
Project Coordinator (Print/Sign Name) Date

M. E. Todd 9/13/99
Task Manager (Print/Sign Name) Date

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9908L883
SDG/SAF#: H0503/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-26-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 08-24-99.

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 09-02,03-99.

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

5. Surrogates were not used for this analysis.

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

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

OCT 1999
RECEIVED
Data
Log In

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\08-883.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 8 pages.

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GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:25

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W884	B0W885	B0W886	B0W886	B0W886	B0W887
Sample Information	RFW#:	001	002	003	003 MS	003 MSD	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		5.5 U	5.5 U	6.0 U	89 %	72 %	5.0 U
Ethanol		5.5 U	5.5 U	6.0 U	6.0 U	6.0 U	5.0 U

	Cust ID:	B0W888	B0W890	B0W891	BLK	BLK BS	BLK
Sample Information	RFW#:	005	006	007	99LLC129-MB1	99LLC129-MB1	99LLC133-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	5.0 U	4.2 U	5.0 U	95 %	5.0 U
Ethanol		5.0 U	5.0 U	4.2 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.

09/16/99

004

Cust ID: BLK BS

Sample Information

RFW#: 99LLC133-MB1
Matrix: SOIL
D.F.: 1.00
Units: mg/kg

n-Propyl Alcohol	95	%
Ethanol	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: 08/26/99 RFW LOT # :9908L883

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884	001	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W885	002	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W886	003	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W886	003 MS	S	99LLC133	08/24/99	09/02/99	09/03/99
B0W886	003 MSD	S	99LLC133	08/24/99	09/02/99	09/03/99
B0W887	004	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W888	005	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W890	006	S	99LLC129	08/24/99	08/31/99	09/03/99
B0W891	007	S	99LLC129	08/24/99	08/31/99	09/03/99

LAB QC:

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
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

9/13/99

RECRA LabNet Use Only: 99081883

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TWL-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 109185-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
Account #:

Refrigerator #		1	6-1					6		6	6						006
#/Type Container	Liquid																
	Solid	1qt	1qt-1					1qt		1qt	1qt						
Volume	Liquid																
	Solid	250	500-1					500		250	4oz						
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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0824H	0825H	0826B		0826C	0826O		metO		1PH	Ang O				
001	BØW884			S	8/24/99	0738	X	X	X		X	X		X		X	X				
2	85					0756															
3	86					0808															
4	87					0826															
5	88					0846															
6	90					0904															
7	91					0930															

Run matrix QC

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICR6
3. Ang = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OCOC = ethanol + propanol
6. * 42357952867 9-4.0°C

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 42357952867 9
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. 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0980

Relinquished by	Received by	Date	Time
Original			
	Rewritten		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96 013 AND ERC96 043	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-24-99	Offsite Property No.: A990229	Bill of Lading/Air Bill No.: 4235 7952 8680	
		COA: B20CW167/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									
B0W884	Soil	8-24-99	0738		X	X	X	X	X		3.5'-4.5'	
B0W885	Soil	8-24-99	0756		X	X	X	X	X		6'-7'	
B0W886	Soil	8-24-99	0808		X	X	X	X	X		8.5'-9.5'	
B0W887	Soil	8-24-99	0826		X	X	X	X	X		11'-12'	
B0W888	Soil	8-24-99	0846		X	X	X	X	X		14'-15'	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 12:00
Relinquished By: REF JB	Date/Time: 82599 1100	Received By: SJGALE	Date/Time: 82599 1100
Relinquished By: SJGALE	Date/Time: 82599 1100	Received By: FED EX	Date/Time:
Relinquished By: Declare	Date/Time:	Received By: Janson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

use BOW528 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 >15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96 043	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA B70 8-24-99	Offsite Property No.: A990229	Bill of Lading/Air Bill No.: 4235 7952 8679	
		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
Special Handling and/or Storage	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										
B0W890 / 18.5'-19.5'	Soil / 8-24-99 / 0904					X	X	X	X	X	
B0W891 / 24'-25'	Soil / 8-24-99 / 0930					X	X	X	X	X	
~~B0W892~~	~~Soil~~										
~~B0W893~~	~~Soil~~ B70 8-24-99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 13:00
Relinquished By: NGF JB	Date/Time: 8/25/99 11:00	Received By: Catherine Sine	Date/Time: 8/25/99 11:00
Relinquished By: Catherine Sine	Date/Time: 8/25/99 11:00	Received By: FEDEX	Date/Time:
Relinquished By: Dedeel	Date/Time:	Received By: Jonson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

use BOW5L8 as shipping criteria

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

4.0

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# : 9908L883
SDG/SAF #: H0503/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-26-99

GC/MS VOLATILE

Seven (7) ~~water~~ soil samples were collected on 08-24-99. 9/30/99

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 09-02,08-99.

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 with the exception of sample B0W887 RE, which was analyzed outside of holding time (see item 4). A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. Non-target compounds were detected in the samples.

4. Two (2) of thirty-nine (39) surrogate recoveries were outside EPA QC limits. Sample B0W887 was reanalyzed on 09-08-99 and reported.

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

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

7. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL. The method blank 99LVN249-MB1 also contained the target compound Chloromethane at a level less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

OCT 1999
RECEIVED
Data
Log In

som\group\data\ voa\tmu08883.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 22 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 Philadelphia Sample Discrepancy Report (SDR) SDR #: 99VT127

Initiator: Michael Keppel RFW Batch: 9908L883 Parameter: 0624 HG
Date: 9/8/99 Samples: 004 Matrix: SOIL
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: _____

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)

Reanalysis of 004 completed 1 day out of hold, high Surrogate

2. Known or Probable Causes(s) Analyst oversight and heavy work load.

3. Discussion and Proposed Action Other Description: Note in narrative.

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

4. Project Manager Instructions...signature/date: [illegible] 9/8/99

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

5. Final Action...signature/date: [illegible] 09/27/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X 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: C. Stefanosky	__	__ Inorganic: Perrone
✓	X Project Mgr: O. Johnson	__	__ GC/LC: Rycklak/Schnell
✓	X Section Mgr: Siery/Wesson/Daniels	__	__ MS: LeMin/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-08/98

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 09/27/99 17:11

RFW Batch Number: 9908L883 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1a

	Cust ID:	B0W884	B0W884	B0W884	B0W885	B0W886	B0W887
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.06	1.04	1.09	1.04	1.04	1.04
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	107 %	106 %	103 %	112 %	108 %	114 %
	Bromofluorobenzene	93 %	93 %	91 %	102 %	97 %	106 %
	1,2-Dichloroethane-d4	108 %	113 %	111 %	116 %	107 %	127 * %
Chloromethane		12 U	11 U	12 U	13 U	13 U	12 U
Bromomethane		12 U	11 U	12 U	13 U	13 U	12 U
Vinyl Chloride		12 U	11 U	12 U	13 U	13 U	12 U
Chloroethane		12 U	11 U	12 U	13 U	13 U	12 U
Methylene Chloride		24 B	26 B	26 B	25 B	27 B	24 B
Acetone		2 JB	4 JB	4 JB	2 JB	4 JB	4 JB
Carbon Disulfide		6 U	6 U	6 U	6 U	6 U	6 U
1,1-Dichloroethene		6 U	111 %	111 %	6 U	6 U	6 U
1,1-Dichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	6 U	6 U	6 U
Chloroform		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
2-Butanone		12 U	11 U	12 U	2 J	2 J	2 J
1,1,1-Trichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Carbon Tetrachloride		6 U	6 U	6 U	6 U	6 U	6 U
Bromodichloromethane		6 U	6 U	6 U	6 U	6 U	6 U
1,2-Dichloropropane		6 U	6 U	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	6 U	6 U	6 U
Trichloroethene		6 U	112 %	114 %	6 U	6 U	6 U
Dibromochloromethane		6 U	6 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Benzene		6 U	119 %	120 %	6 U	6 U	6 U
Trans-1,3-Dichloropropene		6 U	6 U	6 U	6 U	6 U	6 U
Bromoform		6 U	6 U	6 U	6 U	6 U	6 U
4-Methyl-2-pentanone		12 U	11 U	12 U	13 U	13 U	12 U
2-Hexanone		12 U	11 U	12 U	13 U	13 U	12 U
Tetrachloroethene		6 U	6 U	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	6 U	6 U	6 U
Toluene		6 U	126 %	126 %	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0W884	B0W884	B0W884	B0W885	B0W886	B0W887
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	6 U	117 %	116 %	6 U	6 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 09/27/99 17:11

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W887	B0W888	B0W890	B0W891	VBLKPZ	VBLKPZ BS
Sample Information	RFW#:	004	005	006	007	99LVN249-MB1	99LVN249-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.00	0.962	0.962	1.00	1.00
	Units:	UG/KG REPREP	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	115 %	112 %	108 %	108 %	106 %	107 %
	Bromofluorobenzene	98 %	104 %	96 %	96 %	97 %	99 %
	1,2-Dichloroethane-d4	125 * %	113 %	109 %	106 %	104 %	107 %
Chloromethane		12 U	11 U	11 U	11 U	1 J	10 U
Bromomethane		12 U	11 U	11 U	11 U	10 U	10 U
Vinyl Chloride		12 U	11 U	11 U	11 U	10 U	10 U
Chloroethane		12 U	11 U	11 U	11 U	10 U	10 U
Methylene Chloride		15 B	22 B	20 B	20 B	8	8 B
Acetone		6 JB	3 JB	3 JB	3 JB	1 J	1 JB
Carbon Disulfide		6 U	6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	6 U	6 U	6 U	5 U	105 %
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		3 J	2 J	11 U	2 J	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	6 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	6 U	5 U	5 U
Trichloroethene		6 U	6 U	6 U	6 U	5 U	105 %
Dibromochloromethane		6 U	6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	6 U	5 U	5 U
Benzene		6 U	6 U	6 U	6 U	5 U	110 %
Trans-1,3-Dichloropropene		6 U	6 U	6 U	6 U	5 U	5 U
Bromoform		6 U	6 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone		12 U	11 U	11 U	11 U	10 U	10 U
2-Hexanone		12 U	11 U	11 U	11 U	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		6 U	6 U	6 U	6 U	5 U	115 %

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L883 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 2b

Cust ID:	B0W887	B0W888	B0W890	B0W891	VBLKPZ	VBLKPZ BS
RFW#:	004 REPREP	005	006	007	99LVN249-MB1	99LVN249-MB1
Chlorobenzene	6 U	6 U	6 U	6 U	5 U	109 %
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.

Cust ID: **VBLKQA**

Sample Information

RFW#: **99LVN266-MB1**
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate Recovery	Toluene-d8	111	%
	Bromofluorobenzene	87	%
	1,2-Dichloroethane-d4	100	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	8	
Acetone	1	J
Carbon Disulfide	5	U
1,1-Dichloroethene	5	U
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	5	U
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	5	U
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U
Toluene	5	U

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKQA**

RFW#: **99LVN266-MB1**

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

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W884

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-001

Sample wt/vol: 4.70 (g/mL) G Lab File ID: n090218

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 9 Date Analyzed: 09/02/99

Column: (pack/cap) CAP Dilution Factor: 1.06

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.100	9	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W885

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-002

Sample wt/vol: 4.80 (g/mL) G Lab File ID: n090221

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 18 Date Analyzed: 09/02/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.099	10	J

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W886

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-003

Sample wt/vol: 4.80 (g/mL) G Lab File ID: n090222

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 18 Date Analyzed: 09/02/99

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

Number TICs found: 0

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

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

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W887

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-004

Sample wt/vol: 4.80 (g/mL) G Lab File ID: n090223

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 16 Date Analyzed: 09/02/99

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

Number TICs found: 0

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

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

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W887RE

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-004

Sample wt/vol: 4.80 (g/mL) G Lab File ID: n090817

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 16 Date Analyzed: 09/08/99

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.				

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W888

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-005

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090224

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 10 Date Analyzed: 09/02/99

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.				

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W890

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-006

Sample wt/vol: 5.20 (g/mL) G Lab File ID: n090225

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 11 Date Analyzed: 09/02/99

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.				

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W891

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-007

Sample wt/vol: 5.20 (g/mL) G Lab File ID: n090226

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: not dec. 9 Date Analyzed: 09/02/99

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.				

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKPZ

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN249-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090216

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

% Moisture: not dec. 0 Date Analyzed: 09/02/99

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.				

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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKQA

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN266-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090805

Level: (low/med) LOW Date Received: 09/08/99

% Moisture: not dec. 0 Date Analyzed: 09/08/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75456	METHANE, CHLORODIFLUORO-	3.814	10	NJ

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884	001	S	99LVN249	08/24/99	N/A	09/02/99
B0W884	001 MS	S	99LVN249	08/24/99	N/A	09/02/99
B0W884	001 MSD	S	99LVN249	08/24/99	N/A	09/02/99
B0W885	002	S	99LVN249	08/24/99	N/A	09/02/99
B0W886	003	S	99LVN249	08/24/99	N/A	09/02/99
B0W887	004	S	99LVN249	08/24/99	N/A	09/02/99
B0W887	004 R1	S	99LVN266	08/24/99	N/A	09/08/99
B0W888	005	S	99LVN249	08/24/99	N/A	09/02/99
B0W890	006	S	99LVN249	08/24/99	N/A	09/02/99
B0W891	007	S	99LVN249	08/24/99	N/A	09/02/99

LAB QC:

VBLKPZ	MB1	S	99LVN249	N/A	N/A	09/02/99
VBLKPZ	MB1 BS	S	99LVN249	N/A	N/A	09/02/99
VBLKQA	MB1	S	99LVN266	N/A	N/A	09/08/99

RECRA LabNet Use Only: 99081883

Custody Transfer Record/Lab Work Request

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 109985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
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	4oz					
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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025H	0026B	0050C	0060		MetD		1PH	AngD				
001	B0W884			S	8/24/99	0738	X	X	X	X	X		X		X	X				
2	85					0756														
3	86					0808														
4	87					0826														
5	88					0846														
6	90					0904														
7	91					0930														

Run matrix QC

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICP6
3. AngD = IN3N2, ICCL, ICF, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OGC8C = ethanol + propanol
6. * 4235795286 79-4.0°C

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235795286 79
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 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0980

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# : 9908L883
SDG/SAF #: H0503/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-26-99

SEMIVOLATILE

Seven (7) soil samples were collected on 08-24-99.

The samples and their associated QC samples were extracted on 09-03-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-09,22-99.

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. All blank spike recoveries were within 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

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\gorup\data\bna\tnu08883.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 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: 09/29/99 16:26

RFW Batch Number: 9908L883 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1a

	Cust ID:	B0W884		B0W884		B0W884		B0W885		B0W886		B0W887	
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 Recovery	Nitrobenzene-d5	77	%	50	%	64	%	66	%	54	%	60	%
	2-Fluorobiphenyl	78	%	53	%	66	%	68	%	55	%	60	%
	Terphenyl-d14	88	%	58	%	73	%	78	%	62	%	73	%
	Phenol-d5	70	%	45	%	59	%	63	%	51	%	54	%
	2-Fluorophenol	65	%	44	%	56	%	59	%	49	%	51	%
	2,4,6-Tribromophenol	67	%	43	%	59	%	61	%	48	%	49	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	65	%	67	%	33	J	23	J	28	J
bis(2-Chloroethyl)ether		360	U	360	U	360	U	410	U	400	U	400	U
2-Chlorophenol		360	U	66	%	65	%	410	U	400	U	400	U
1,3-Dichlorobenzene		360	U	360	U	360	U	410	U	400	U	400	U
1,4-Dichlorobenzene		360	U	69	%	66	%	410	U	400	U	400	U
1,2-Dichlorobenzene		360	U	360	U	360	U	410	U	400	U	400	U
2-Methylphenol		360	U	360	U	360	U	410	U	400	U	400	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	410	U	400	U	400	U
4-Methylphenol		360	U	360	U	360	U	410	U	400	U	400	U
N-Nitroso-di-n-propylamine		360	U	85	%	85	%	410	U	400	U	400	U
Hexachloroethane		360	U	360	U	360	U	410	U	400	U	400	U
Nitrobenzene		360	U	360	U	360	U	410	U	400	U	400	U
Isophorone		360	U	360	U	360	U	410	U	400	U	400	U
2-Nitrophenol		360	U	360	U	360	U	410	U	400	U	400	U
2,4-Dimethylphenol		360	U	360	U	360	U	410	U	400	U	400	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	410	U	400	U	400	U
2,4-Dichlorophenol		360	U	360	U	360	U	410	U	400	U	400	U
1,2,4-Trichlorobenzene		360	U	72	%	70	%	410	U	400	U	400	U
Naphthalene		360	U	360	U	360	U	410	U	400	U	400	U
4-Chloroaniline		360	U	360	U	360	U	410	U	400	U	400	U
Hexachlorobutadiene		360	U	360	U	360	U	410	U	400	U	400	U
4-Chloro-3-methylphenol		360	U	63	%	65	%	410	U	400	U	400	U
2-Methylnaphthalene		360	U	360	U	360	U	410	U	400	U	400	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	410	U	400	U	400	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	410	U	400	U	400	U
2,4,5-Trichlorophenol		910	U	910	U	910	U	1000	U	1000	U	1000	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L883 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0W884		B0W884		B0W884		B0W885		B0W886		B0W887	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	410	U	400	U	400	U
2-Nitroaniline	910	U	910	U	910	U	1000	U	1000	U	1000	U
Dimethylphthalate	360	U	360	U	360	U	410	U	400	U	400	U
Acenaphthylene	360	U	360	U	360	U	410	U	400	U	400	U
2,6-Dinitrotoluene	360	U	360	U	360	U	410	U	400	U	400	U
3-Nitroaniline	910	U	910	U	910	U	1000	U	1000	U	1000	U
Acenaphthene	360	U	80	%	78	%	410	U	400	U	400	U
2,4-Dinitrophenol	910	U	910	U	910	U	1000	U	1000	U	1000	U
4-Nitrophenol	910	U	56	%	59	%	1000	U	1000	U	1000	U
Dibenzofuran	360	U	360	U	360	U	410	U	400	U	400	U
2,4-Dinitrotoluene	360	U	76	%	77	%	410	U	400	U	400	U
Diethylphthalate	360	U	360	U	360	U	410	U	400	U	400	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	410	U	400	U	400	U
Fluorene	360	U	360	U	360	U	410	U	400	U	400	U
4-Nitroaniline	910	U	910	U	910	U	1000	U	1000	U	1000	U
4,6-Dinitro-2-methylphenol	910	U	910	U	910	U	1000	U	1000	U	1000	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	410	U	400	U	400	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	410	U	400	U	400	U
Hexachlorobenzene	360	U	360	U	360	U	410	U	400	U	400	U
Pentachlorophenol	910	U	69	%	69	%	1000	U	1000	U	1000	U
Phenanthrene	360	U	360	U	360	U	410	U	400	U	400	U
Anthracene	360	U	360	U	360	U	410	U	400	U	400	U
Carbazole	360	U	360	U	360	U	410	U	400	U	400	U
Di-n-butylphthalate	360	U	360	U	360	U	410	U	400	U	400	U
Fluoranthene	360	U	360	U	360	U	410	U	400	U	400	U
Pyrene	360	U	87	%	85	%	410	U	400	U	400	U
Butylbenzylphthalate	360	U	360	U	360	U	410	U	400	U	400	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	410	U	400	U	400	U
Benzo(a)anthracene	360	U	360	U	360	U	410	U	400	U	400	U
Chrysene	360	U	360	U	360	U	410	U	400	U	400	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	410	U	400	U	400	U
Di-n-octyl phthalate	360	U	360	U	360	U	410	U	400	U	400	U
Benzo(b)fluoranthene	360	U	360	U	360	U	410	U	400	U	400	U
Benzo(k)fluoranthene	360	U	360	U	360	U	410	U	400	U	400	U
Benzo(a)pyrene	360	U	360	U	360	U	410	U	400	U	400	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	410	U	400	U	400	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	410	U	400	U	400	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	410	U	400	U	400	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: 09/29/99 16:26

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W888		B0W890		B0W891		SBLKCG		SBLKCG BS	
Sample Information	RFW#:	005		006		007		99LE1081-MB1		99LE1081-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	83	%	66	%	65	%	58	%	84	%
	2-Fluorobiphenyl	83	%	64	%	63	%	65	%	86	%
	Terphenyl-d14	87	%	72	%	73	%	68	%	96	%
	Phenol-d5	71	%	47	%	58	%	51	%	72	%
	2-Fluorophenol	71	%	46	%	53	%	58	%	79	%
	2,4,6-Tribromophenol	63	%	50	%	59	%	49	%	70	%
		fl		fl		fl		fl		fl	
Phenol		370	U	370	U	370	U	330	U	60	%
bis(2-Chloroethyl)ether		370	U	370	U	370	U	330	U	330	U
2-Chlorophenol		370	U	370	U	370	U	330	U	65	%
1,3-Dichlorobenzene		370	U	370	U	370	U	330	U	330	U
1,4-Dichlorobenzene		370	U	370	U	370	U	330	U	71	%
1,2-Dichlorobenzene		370	U	370	U	370	U	330	U	330	U
2-Methylphenol		370	U	370	U	370	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	330	U	330	U
4-Methylphenol		370	U	370	U	370	U	330	U	330	U
N-Nitroso-di-n-propylamine		370	U	370	U	370	U	330	U	78	%
Hexachloroethane		370	U	370	U	370	U	330	U	330	U
Nitrobenzene		370	U	370	U	370	U	330	U	330	U
Isophorone		370	U	370	U	370	U	330	U	330	U
2-Nitrophenol		370	U	370	U	370	U	330	U	330	U
2,4-Dimethylphenol		370	U	370	U	370	U	330	U	330	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	330	U	330	U
2,4-Dichlorophenol		370	U	370	U	370	U	330	U	330	U
1,2,4-Trichlorobenzene		370	U	370	U	370	U	330	U	75	%
Naphthalene		370	U	370	U	370	U	330	U	330	U
4-Chloroaniline		370	U	370	U	370	U	330	U	330	U
Hexachlorobutadiene		370	U	370	U	370	U	330	U	330	U
4-Chloro-3-methylphenol		370	U	370	U	370	U	330	U	62	%
2-Methylnaphthalene		370	U	370	U	370	U	330	U	330	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	330	U	330	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	330	U	330	U
2,4,5-Trichlorophenol		920	U	940	U	920	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W888		B0W890		B0W891		SBLKCG		SBLKCG BS	
RFW#:	005		006		007		99LE1081-MB1		99LE1081-MB1	
2-Chloronaphthalene	370	U	370	U	370	U	330	U	330	U
2-Nitroaniline	920	U	940	U	920	U	840	U	840	U
Dimethylphthalate	370	U	370	U	370	U	330	U	330	U
Acenaphthylene	370	U	370	U	370	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	370	U	330	U	330	U
3-Nitroaniline	920	U	940	U	920	U	840	U	840	U
Acenaphthene	370	U	370	U	370	U	330	U	74	%
2,4-Dinitrophenol	920	U	940	U	920	U	840	U	840	U
4-Nitrophenol	920	U	940	U	920	U	840	U	41	%
Dibenzofuran	370	U	370	U	370	U	330	U	330	U
2,4-Dinitrotoluene	370	U	370	U	370	U	330	U	69	%
Diethylphthalate	370	U	370	U	370	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	330	U	330	U
Fluorene	370	U	370	U	370	U	330	U	330	U
4-Nitroaniline	920	U	940	U	920	U	840	U	840	U
4,6-Dinitro-2-methylphenol	920	U	940	U	920	U	840	U	840	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	370	U	330	U	330	U
Pentachlorophenol	920	U	940	U	920	U	840	U	68	%
Phenanthrene	370	U	370	U	370	U	330	U	330	U
Anthracene	370	U	370	U	370	U	330	U	330	U
Carbazole	370	U	370	U	370	U	330	U	330	U
Di-n-butylphthalate	370	U	370	U	370	U	330	U	330	U
Fluoranthene	370	U	370	U	370	U	330	U	330	U
Pyrene	370	U	370	U	370	U	330	U	89	%
Butylbenzylphthalate	370	U	370	U	370	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	370	U	330	U	330	U
Chrysene	370	U	370	U	370	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	370	U	370	U	330	U	330	U
Di-n-octyl phthalate	370	U	370	U	370	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	370	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	370	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	370	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	330	U	330	U
Dibenz(a,h)anthracene	370	U	370	U	370	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	370	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.

B0W884

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092209

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 9 decanted: (Y/N) __ Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	300	JA
2.	ALDOL CONDENSATE	9.25	100	JA
3.	ALDOL CONDENSATE	10.02	100	JA
4.	UNKNOWN	20.34	100	JB
5.	ORGANIC ACID	21.77	200	J
6.	UNKNOWN	25.33	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W885

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092212

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 18 decanted: (Y/N) __ Date Extracted: 09/03/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/22/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	400	JA
2.	ALDOL CONDENSATE	9.25	200	JA
3.	ALDOL CONDENSATE	10.03	100	JA
4.	UNKNOWN	20.34	200	JB
5.	UNKNOWN	20.70	80	J
6.	ORGANIC ACID	21.77	200	J
7.	UNKNOWN	25.34	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W886

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092213

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 18 decanted: (Y/N) __ Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	300	JA
2.	ALDOL CONDENSATE	9.25	200	JA
3.	ALDOL CONDENSATE	10.02	100	JA
4.	UNKNOWN	20.34	100	JB
5.	ORGANIC ACID	21.77	100	J
6.	UNKNOWN	25.35	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W887

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092214

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 16 decanted: (Y/N) __ Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	400	JA
2.	ALDOL CONDENSATE	9.25	200	JA
3.	ALDOL CONDENSATE	10.02	100	JA
4.	UNKNOWN	20.34	200	JB
5.	UNKNOWN	20.70	100	J
6.	ORGANIC ACID	21.77	100	J
7.	UNKNOWN	25.35	600	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W888

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092215

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 10 decanted: (Y/N) __ Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 6 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	200	JA
2.	ALDOL CONDENSATE	9.25	100	JA
3.	ALDOL CONDENSATE	10.02	100	JA
4.	UNKNOWN	20.34	100	JB
5.	ORGANIC ACID	21.76	70	J
6.	UNKNOWN	25.37	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W890

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092207

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 11 decanted: (Y/N) Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.79	200	J
2.	UNKNOWN	19.58	200	JB
3.	UNKNOWN	19.95	100	J
4.	ORGANIC ACID	21.14	70	J
5.	UNKNOWN	24.33	500	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W891

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L883-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092208

Level: (low/med) LOW Date Received: 08/26/99

% Moisture: 9 decanted: (Y/N) Date Extracted: 09/03/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.80	200	J
2.	UNKNOWN	19.58	90	JB
3.	UNKNOWN	19.96	90	J
4.	UNKNOWN	24.33	300	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCG

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1081-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D090904

Level: (low/med) LOW Date Received: 09/03/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/03/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.07	80	J
2.	UNKNOWN	17.26	80	J
3.	UNKNOWN	22.53	100	J

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884	001	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W884	001 MS	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W884	001 MSD	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W885	002	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W886	003	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W887	004	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W888	005	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W890	006	S	99LE1081	08/24/99	09/03/99	09/22/99
B0W891	007	S	99LE1081	08/24/99	09/03/99	09/22/99

LAB QC:

SBLKCG	MB1	S	99LE1081	N/A	09/03/99	09/09/99
SBLKCG	MB1 BS	S	99LE1081	N/A	09/03/99	09/09/99

RECRA LabNet Use Only: 99081883

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 #: 109185-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/26/99 Date Due: 9/25/99
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	4oz					
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA							INORG: Metal								
	ORGANIC: BNA								CN							
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
RECRA LabNet Use Only		0024H	0025H	0026		0C5C	0D60		Mut0		1PH	Ang0				

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	0026		0C5C	0D60		Mut0		1PH	Ang0				
001	B0W884			S	8/24/99	0738	X	X	X		X	X		X		X	X				
2	85					0756															
3	86					0808															
4	87					0826															
5	88					0846															
6	90					0904															
7	91					0930															

Run matrix QC

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Mut (1.) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICR6
Ang (1.) = IN3N2, ICCL, ICF, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OCSC = ethanol + propanol
* 6. 4235795286 79-4.0°C

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4235795286 79
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. 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	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#: 9908L883
SDG/SAF#: H0503/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 08-26-99

PCB

The set of samples consisted of seven (7) soil samples collected on 08-24-99.

The samples and their associated QC samples were extracted on 09-07-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-23,24-99. 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 a sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

OCT 1999
RECEIVED
Data
Log In

pef\r:\group\data\pest\08L-883.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/27/99 17:02

RFW Batch Number: **9908L883** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0W884	B0W885	B0W885	B0W885	B0W886	B0W887
Sample Information	RFW#:	001	002	002 MS	002 MSD	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	98 %	95 %	100 %	100 %	98 %	85 %
	Decachlorobiphenyl	88 %	87 %	94 %	90 %	90 %	78 %
Aroclor-1016		36 U	41 U	41 U	41 U	40 U	40 U
Aroclor-1221		73 U	81 U	81 U	81 U	81 U	80 U
Aroclor-1232		36 U	41 U	41 U	41 U	40 U	40 U
Aroclor-1242		36 U	41 U	41 U	41 U	40 U	40 U
Aroclor-1248		36 U	41 U	41 U	41 U	40 U	40 U
Aroclor-1254		36 U	41 U	78 %	70 %	40 U	40 U
Aroclor-1260		36 U	41 U	41 U	41 U	40 U	40 U

	Cust ID:	B0W888	B0W890	B0W891	PBLKUH	PBLKUH BS
Sample Information	RFW#:	005	006	007	99LE1087-MB1	99LE1087-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	98 %	95 %	100 %	100 %	90 %
	Decachlorobiphenyl	91 %	90 %	95 %	92 %	82 %
Aroclor-1016		37 U	37 U	37 U	33 U	33 U
Aroclor-1221		74 U	75 U	73 U	67 U	67 U
Aroclor-1232		37 U	37 U	37 U	33 U	33 U
Aroclor-1242		37 U	37 U	37 U	33 U	33 U
Aroclor-1248		37 U	37 U	37 U	33 U	33 U
Aroclor-1254		37 U	37 U	37 U	33 U	65 %
Aroclor-1260		37 U	37 U	37 U	33 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

gw 09-28-99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884	001	S	99LE1087	08/24/99	09/07/99	09/23/99
B0W885	002	S	99LE1087	08/24/99	09/07/99	09/23/99
B0W885	002 MS	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W885	002 MSD	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W886	003	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W887	004	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W888	005	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W890	006	S	99LE1087	08/24/99	09/07/99	09/24/99
B0W891	007	S	99LE1087	08/24/99	09/07/99	09/24/99

LAB QC:

PBLKUH	MB1	S	99LE1087	N/A	09/07/99	09/23/99
PBLKUH	MB1 BS	S	99LE1087	N/A	09/07/99	09/23/99

gw 09-28-99

RECRA LabNet Use Only: 9908L8E3

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TWL-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 109885-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
Account #:

Refrigerator #		1	6-1					6		6	6					006
#/Type Container	Liquid															
	Solid	1g	1g-1					1g		1g	1g					
Volume	Liquid															
	Solid	250	500-1		w/VOA	w/BNA		500		250	1pt					
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA							INORG: Metal								
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	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	0026H	0025H	OPCB	OGCGC	ODRO	Metal		IPH	Anion					
001	B0W884			S	8/24/99	0738	X	X	X	X	X	X		X	X					
2	85					0756														
3	86					0808														
4	87					0826														
5	88					0846														
6	90					0904														
7	91					0930														

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, Hg, ICP6
Anion (3.) = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OGCGC = ethanol + propanol
* 6. 4235795286 79-4.0°C

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 4235795286 8
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. 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0980

Relinquished by	Received by	Date	Time
Original	Rewritten		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96 013 AND ERC96 043	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A990229		Bill of Lading/Air Bill No.: 4235 7952 8680
			COA: B20CW167/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									
B0W884	Soil	8-24-99	0738		X	X	X	X	X		3.5'-4.5'	
B0W885	Soil	8-24-99	0756		X	X	X	X	X		6'-7'	
B0W886	Soil	8-24-99	0808		X	X	X	X	X		8.5'-9.5'	
B0W887	Soil	8-24-99	0826		X	X	X	X	X		11'-12'	
B0W888	Soil	8-24-99	0846		X	X	X	X	X		14'-15'	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 8/24/99 13:00	Received By: Peter TB	Date/Time: 8/24/99 13:00
Relinquished By: REF ID	Date/Time: 82599 1100	Received By: SJGALE	Date/Time: 82599 1100
Relinquished By: SJGALE	Date/Time: 82599 1100	Received By: FED EX	Date/Time:
Relinquished By: Jeel	Date/Time:	Received By: Jonson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.
COLLECTOR UNAVAILABLE TO SIGN COC.
(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
use BOW528 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96 043	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA BJD 8-24-99	Offsite Property No.: A990229		Bill of Lading/Air Bill No.: 4235 7952 8679
			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
Special Handling and/or Storage	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										
B0W890 / 18.5'-19.5'	Soil / 8-24-99 / 0904					X	X	X	X	X	
B0W891 / 24'-25'	Soil / 8-24-99 / 0930					X	X	X	X	X	
~~B0W892~~	~~Soil~~										
~~B0W893~~	~~Soil~~ BJD 8-24-99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 13:00
Relinquished By: NGF JB	Date/Time: 8/25/99 11:00	Received By: Catherine Sine	Date/Time: 8/25/99 11:00
Relinquished By: Catherine Sine	Date/Time: 8/25/99 11:00	Received By: FEDEX	Date/Time:
Relinquished By: Dedeep	Date/Time:	Received By: Janson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

use BOWJL8 as shipping criteria

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

4.0

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
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L883
SDG/SAF# : B99-078/H0503

W.O.# : 10985-001-001-9999-00
Date Received: 08-26-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

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

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

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

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

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

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

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

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

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

11. The duplicate analyses for 3 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 20 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

9-28-99
Date

mld/m08-883

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L883

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 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W884	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	4.9	MG/KG	0.30	1.0
		Barium, Total	99.1	MG/KG	0.03	1.0
		Beryllium, Total	0.28	MG/KG	0.01	1.0
		Cadmium, Total	0.16	MG/KG	0.03	1.0
		Chromium, Total	11.2	MG/KG	0.07	1.0
		Copper, Total	14.9	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	13.3	MG/KG	0.11	1.0
		Lead, Total	6.4	MG/KG	0.19	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
		Vanadium, Total	46.9	MG/KG	0.05	1.0
		Zinc, Total	46.0	MG/KG	0.07	1.0
-002	B0W885	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	16.8	MG/KG	0.38	1.0
		Barium, Total	129	MG/KG	0.03	1.0
		Beryllium, Total	0.45	MG/KG	0.01	1.0
		Cadmium, Total	0.19	MG/KG	0.03	1.0
		Chromium, Total	13.3	MG/KG	0.09	1.0
		Copper, Total	19.3	MG/KG	0.14	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	13.9	MG/KG	0.14	1.0
		Lead, Total	10.9	MG/KG	0.24	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Vanadium, Total	39.5	MG/KG	0.07	1.0
		Zinc, Total	48.8	MG/KG	0.09	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W886	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	8.0	MG/KG	0.34	1.0
		Barium, Total	79.5	MG/KG	0.03	1.0
		Beryllium, Total	0.35	MG/KG	0.01	1.0
		Cadmium, Total	0.14	MG/KG	0.03	1.0
		Chromium, Total	9.5	MG/KG	0.08	1.0
		Copper, Total	16.3	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.3	MG/KG	0.12	1.0
		Lead, Total	8.0	MG/KG	0.22	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	50.6	MG/KG	0.06	1.0
		Zinc, Total	47.8	MG/KG	0.08	1.0
-004	B0W887	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	11.1	MG/KG	0.37	1.0
		Barium, Total	117	MG/KG	0.03	1.0
		Beryllium, Total	0.37	MG/KG	0.01	1.0
		Cadmium, Total	0.15	MG/KG	0.03	1.0
		Chromium, Total	12.7	MG/KG	0.09	1.0
		Copper, Total	17.7	MG/KG	0.14	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	12.6	MG/KG	0.14	1.0
		Lead, Total	9.8	MG/KG	0.24	1.0
		Selenium, Total	0.60	MG/KG	0.42	1.0
		Vanadium, Total	49.1	MG/KG	0.07	1.0
		Zinc, Total	51.4	MG/KG	0.09	1.0

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INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W888	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	6.6	MG/KG	0.34	1.0
		Barium, Total	63.7	MG/KG	0.03	1.0
		Beryllium, Total	0.29	MG/KG	0.01	1.0
		Cadmium, Total	0.1	MG/KG	0.03	1.0
		Chromium, Total	9.4	MG/KG	0.08	1.0
		Copper, Total	17.3	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.5	MG/KG	0.12	1.0
		Lead, Total	7.0	MG/KG	0.21	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	47.4	MG/KG	0.06	1.0
		Zinc, Total	46.9	MG/KG	0.08	1.0
-006	B0W890	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	3.9	MG/KG	0.27	1.0
		Barium, Total	50.4	MG/KG	0.02	1.0
		Beryllium, Total	0.25	MG/KG	0.01	1.0
		Cadmium, Total	0.07	MG/KG	0.02	1.0
		Chromium, Total	7.7	MG/KG	0.06	1.0
		Copper, Total	16.8	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	0.1	1.0
		Lead, Total	4.2	MG/KG	0.17	1.0
		Selenium, Total	0.31	MG/KG	0.30	1.0
		Vanadium, Total	32.1	MG/KG	0.05	1.0
		Zinc, Total	32.0	MG/KG	0.06	1.0

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INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W891	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.7	MG/KG	0.31	1.0
		Barium, Total	43.8	MG/KG	0.03	1.0
		Beryllium, Total	0.15	MG/KG	0.01	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	6.7	MG/KG	0.07	1.0
		Copper, Total	12.4	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.3	MG/KG	0.11	1.0
		Lead, Total	3.2	MG/KG	0.20	1.0
		Selenium, Total	0.48	MG/KG	0.35	1.0
		Vanadium, Total	27.5	MG/KG	0.06	1.0
		Zinc, Total	28.1	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0638-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
BLANK1	99L0624-MB1	Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.12	MG/KG	0.03	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.10	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.11	MG/KG	0.08	1.0
BLANK1	99C0256-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W884	Silver, Total	4.5	0.1 u	4.8	93.8	1.0
		Arsenic, Total	171	4.9	181	91.7	1.0
		Barium, Total	257	99.1	181	87.4	1.0
		Beryllium, Total	4.7	0.28	4.8	92.1	1.0
		Cadmium, Total	4.2	0.16	4.5	89.7	1.0
		Chromium, Total	27.5	11.2	18.1	90.1	1.0
		Copper, Total	35.1	14.9	22.6	89.4	1.0
		Mercury, Total	0.17	0.02u	0.17	103.6	1.0
		Nickel, Total	50.9	13.3	45.2	83.2	1.0
		Lead, Total	47.3	6.4	45.2	90.5	1.0
		Selenium, Total	162	0.33u	181	89.9	1.0
		Vanadium, Total	89.8	46.9	45.2	94.9	1.0
		Zinc, Total	86.4	46.0	45.2	89.4	1.0

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INORGANICS PRECISION REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W884	Silver, Total	0.1 u	0.08u	NC	1.0
		Arsenic, Total	4.9	4.1	17.8	1.0
		Barium, Total	99.1	89.0	10.7	1.0
		Beryllium, Total	0.28	0.29	2.9	1.0
		Cadmium, Total	0.16	0.12	32.0	1.0
		Chromium, Total	11.2	9.5	16.4	1.0
		Copper, Total	14.9	13.8	7.7	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	13.3	10.4	24.5	1.0
		Lead, Total	6.4	6.5	1.6	1.0
		Selenium, Total	0.33u	0.42	~~NC~~ 200	1.0
		Vanadium, Total	46.9	39.6	16.9	1.0
		Zinc, Total	46.0	41.8	9.6	1.0

Corrections MMS 9/23/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0638-LC1	Silver, LCS	48.9	50.0	MG/KG	97.8
		Beryllium, LCS	24.2	25.0	MG/KG	96.8
LCS1	99L0624-LC1	Arsenic, LCS	965	1000	MG/KG	96.5
		Barium, LCS	488	500	MG/KG	97.5
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	122	125	MG/KG	97.6
		Nickel, LCS	191	200	MG/KG	95.6
		Lead, LCS	243	250	MG/KG	97.2
		Selenium, LCS	940	1000	MG/KG	94.0
		Vanadium, LCS	249	250	MG/KG	99.7
		Zinc, LCS	96.1	100	MG/KG	96.1
LCS1	99C0256-LC1	Mercury, LCS	0.96	1.0	MG/KG	96.0

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884						
SILVER, TOTAL	001	S	99L0638	08/24/99	09/22/99	09/23/99
SILVER, TOTAL	001 REP	S	99L0638	08/24/99	09/22/99	09/23/99
SILVER, TOTAL	001 MS	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
ARSENIC, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
ARSENIC, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	001	S	99L0638	08/24/99	09/22/99	09/23/99
BERYLLIUM, TOTAL	001 REP	S	99L0638	08/24/99	09/22/99	09/23/99
BERYLLIUM, TOTAL	001 MS	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
CADMIUM, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
CADMIUM, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	001	S	99C0256	08/24/99	08/30/99	08/30/99
MERCURY, TOTAL	001 REP	S	99C0256	08/24/99	08/30/99	08/30/99
MERCURY, TOTAL	001 MS	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
NICKEL, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
NICKEL, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	001	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	001 REP	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	001 MS	S	99L0624	08/24/99	09/14/99	09/15/99
B0W885						
SILVER, TOTAL	002	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	002	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	002	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	002	S	99L0624	08/24/99	09/14/99	09/15/99
B0W886						
SILVER, TOTAL	003	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	003	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	003	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	003	S	99L0624	08/24/99	09/14/99	09/15/99
B0W887						
SILVER, TOTAL	004	S	99L0638	08/24/99	09/22/99	09/23/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	004	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	004	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	004	S	99L0624	08/24/99	09/14/99	09/15/99
B0W888						
SILVER, TOTAL	005	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	005	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	005	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	005	S	99L0624	08/24/99	09/14/99	09/15/99
B0W890						
SILVER, TOTAL	006	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	006	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	006	S	99L0624	08/24/99	09/14/99	09/15/99
B0W891						
SILVER, TOTAL	007	S	99L0638	08/24/99	09/22/99	09/23/99
ARSENIC, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
BARIUM, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
BERYLLIUM, TOTAL	007	S	99L0638	08/24/99	09/22/99	09/23/99
CADMIUM, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
CHROMIUM, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
COPPER, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
MERCURY, TOTAL	007	S	99C0256	08/24/99	08/30/99	08/30/99
NICKEL, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
LEAD, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
SELENIUM, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
VANADIUM, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99
ZINC, TOTAL	007	S	99L0624	08/24/99	09/14/99	09/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0638	N/A	09/22/99	09/23/99
SILVER, TOTAL	MB1	S	99L0638	N/A	09/22/99	09/23/99
ARSENIC LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
ARSENIC, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
BARIUM LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
BARIUM, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0638	N/A	09/22/99	09/23/99
BERYLLIUM, TOTAL	MB1	S	99L0638	N/A	09/22/99	09/23/99
CADMIUM LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
CADMIUM, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
CHROMIUM LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
CHROMIUM, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
COPPER LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
MERCURY LABORATORY	LC1 BS	S	99C0256	N/A	08/30/99	08/30/99
MERCURY, TOTAL	MB1	S	99C0256	N/A	08/30/99	08/30/99
NICKEL LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
NICKEL, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
LEAD LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
LEAD, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
SELENIUM LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
SELENIUM, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
VANADIUM LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
VANADIUM, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99
ZINC LABORATORY	LC1 BS	S	99L0624	N/A	09/14/99	09/15/99
ZINC, TOTAL	MB1	S	99L0624	N/A	09/14/99	09/15/99

RECRA LabNet Use Only: 99081883

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 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
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	4oz					
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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H	0025H	OPCB	OGCGC	ODRO	Metals		IPH	Anions				
001	B0W884			S	8/24/99	0738	X	X	X	X	X	X		X	X				
2	85					0756													
3	86					0808													
4	87					0826													
5	88					0846													
6	90					0904													
7	91					0930													

Run matrix QC

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Metals = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICP6
3. Anions = IN3N2, ICCL, ICF, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OGCGC = ethanol + propanol
6. 4235795286 79-4.0°C

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # 4235795286 79
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0980

Relinquished by	Received by	Date	Time
Original			
	Rewritten		

0188

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A990229		Bill of Lading/Air Bill No.: 4235 7952 8680
			COA: B20CW167/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									
B0W884	Soil	8-24-99	0738		X	X	X	X	X		3.5'-4.5'	
B0W885	Soil	8-24-99	0756		X	X	X	X	X		6'-7'	
B0W886	Soil	8-24-99	0808		X	X	X	X	X		8.5'-9.5'	
B0W887	Soil	8-24-99	0826		X	X	X	X	X		11'-12'	
B0W888	Soil	8-24-99	0846		X	X	X	X	X		14'-15'	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bert Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 13:00
Relinquished By: REF JB	Date/Time: 82599 1100	Received By: SJGALE	Date/Time: 82599 1100
Relinquished By: SJGALE	Date/Time: 82599 1100	Received By: FED EX	Date/Time:
Relinquished By: Jeclerq	Date/Time:	Received By: Janson for DN	Date/Time: 8/26/99 0430

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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}

use ~~DOT~~ BOW728 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector Bowers/Porter/Nielson	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-13 >15' bgs		SAF No. B99-078
Ice Chest No. ERC 96 043	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA B70 8-24-99	Offsite Property No. A990229		Bill of Lading/Air Bill No. 4235 7952 8679
			COA B20CW1 67/C

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									
B0W890 / 18.5'-19.5'	Soil	8-24-99	0904					X	X	X	X	X
B0W891 / 24'-25'	Soil	8-24-99	0930					X	X	X	X	X
~~B0W892~~	~~Soil~~											
B0W893	Soil	B70 8-24-99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Peter JB	Date/Time: 8/24/99 13:00
Relinquished By: NGF JB	Date/Time: 8/25/99 11:00	Received By: Catherine Sine	Date/Time: 8/25/99 11:00
Relinquished By: Catherine Sine	Date/Time: 8/25/99 11:00	Received By: FEDEX	Date/Time:
Relinquished By: Dell Reed	Date/Time:	Received By: Janson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

use B0W5L8 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

4.0

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

020

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# : 9908L883
SDG# : H0503
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 08-26-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 7 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 Total Cyanide, Nitrate Nitrite and Ammonia. These analyses will be performed and data will be submitted as required by the client.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-29-99
Date

njp&pef\i08-883

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 19 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	__		✓ 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

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W884	% Solids	91.5		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	55		MG/KG	2.7	1.0
		Cyanide, Total	0.55	u	MG/KG	0.55	1.0
		Phosphate by IC	2.4		MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	6.6		MG/KG	1.4	1.0
		Nitrate Nitrite	13.7		MG/KG	0.54	5.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	9.6		SOIL PH	0.01	1.0
		Sulfide	4.2		MG/KG	1.1	1.0
-002	B0W885	% Solids	82.1		%	0.01	1.0
		Chloride by IC	14.0		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	250		MG/KG	30	10
		Cyanide, Total	0.61	u	MG/KG	0.61	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	0.49	u	MG/KG	0.49	1.0
		Sulfate by IC	92.1		MG/KG	3.0	2.0
		Nitrate Nitrite	63.2		MG/KG	3.0	25.0
		Ammonia, as N	1.5	u	MG/KG	1.5	1.0
		pH	8.5		SOIL PH	0.01	1.0
		Sulfide	1.2	u	MG/KG	1.2	1.0
-003	B0W886	% Solids	82.3		%	0.01	1.0
		Chloride by IC	10.5		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	230		MG/KG	30	10
		Cyanide, Total	0.61	u	MG/KG	0.61	1.0
		Phosphate by IC	1.7		MG/KG	1.5	1.0
		Chromium VI	0.49	u	MG/KG	0.49	1.0
		Sulfate by IC	61.8		MG/KG	1.5	1.0
		Nitrate Nitrite	36.6		MG/KG	1.2	10.0
		Ammonia, as N	1.5	u	MG/KG	1.5	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

RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W886	Sulfide	1.2 u	MG/KG	1.2	1.0
-004	B0W887	% Solids	83.8	%	0.01	1.0
		Chloride by IC	11.8	MG/KG	1.5	1.0
		Fluoride by IC	3.0 u	MG/KG	3.0	1.0
		Nitrite by IC	1.5 u	MG/KG	1.5	1.0
		Nitrate by IC	180	MG/KG	30	10
		Cyanide, Total	0.60 u	MG/KG	0.60	1.0
		Phosphate by IC	1.5 u	MG/KG	1.5	1.0
		Chromium VI	0.48 u	MG/KG	0.48	1.0
		Sulfate by IC	64.0	MG/KG	3.0	2.0
		Nitrate Nitrite	47.0	MG/KG	1.2	10.0
		Ammonia, as N	1.5 u	MG/KG	1.5	1.0
		pH	8.5	SOIL PH	0.01	1.0
		Sulfide	1.2 u	MG/KG	1.2	1.0
-005	B0W888	% Solids	90.0	%	0.01	1.0
		Chloride by IC	11.8	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	81	MG/KG	11	4.0
		Cyanide, Total	0.56 u	MG/KG	0.56	1.0
		Phosphate by IC	1.4	MG/KG	1.4	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	57.1	MG/KG	5.6	4.0
		Nitrate Nitrite	17.4	MG/KG	0.55	5.0
		Ammonia, as N	1.4 u	MG/KG	1.4	1.0
		pH	9.1	SOIL PH	0.01	1.0
		Sulfide	1.1 u	MG/KG	1.1	1.0
-006	B0W890	% Solids	89.2	%	0.01	1.0
		Chloride by IC	8.2	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	30	MG/KG	2.8	1.0
		Cyanide, Total	0.56 u	MG/KG	0.56	1.0
		Phosphate by IC	1.4 u	MG/KG	1.4	1.0
		Chromium VI	0.45 u	MG/KG	0.45	1.0
		Sulfate by IC	38.5	MG/KG	1.4	1.0
		Nitrate Nitrite	6.2	MG/KG	0.55	5.0

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INORGANICS DATA SUMMARY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W890	Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	9.2		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-007	B0W891	% Solids	90.8		%	0.01	1.0
		Chloride by IC	4.4		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	4.7		MG/KG	2.8	1.0
		Cyanide, Total	0.55	u	MG/KG	0.55	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	29.3		MG/KG	1.4	1.0
		Nitrate Nitrite	0.96		MG/KG	0.11	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.3		SOIL PH	0.01	1.0
		Sulfide	1.1	u	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 #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC078-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	2.5 u	MG/KG	2.5	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	99LVI060-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	99LSD040-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0
BLANK1	99LC099-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0

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INORGANICS ACCURACY REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W884	Chloride by IC	29.2	2.4	27.3	97.9	1.0
		Chloride by IC MSD	29.3	2.4	27.3	98.4	1.0
		Fluoride by IC	60.0	0.0	54.6	109.9	1.0
		Fluoride by IC MSD	60.2	0.0	54.6	110.2	1.0
		Nitrite by IC	28	1.4 u	27	102.5	1.0
		Nitrite by IC MSD	28	1.4 u	27	103.5	1.0
		Nitrate by IC	170	55	110	101.0	4.0
		Nitrate by IC MSD	160	55	110	100.1	4.0
		Phosphate by IC	29.9	2.4	27.3	100.5	1.0
		Phosphate by IC MSD	29.9	2.4	27.3	100.8	1.0
		Soluble Chromium VI	4.2	0.44u	4.4	99.1	1.0
		Insoluble Chromium VI	1210	0.44u	1180	103.2	100
		Sulfate by IC	34.1	6.6	27.3	101.0	1.0
		Sulfate by IC MSD	34.2	6.6	27.3	101.4	1.0
-007	B0W891	Sulfide	383	0.0	436	87.8	1.0
		Sulfide MSD	397	0.0	436	91.1	1.0
BLANK10	99LIC078-MB1	Chloride by IC	23.7	1.2 u	25.0	94.7	1.0
		Fluoride by IC	52.7	2.5 u	50.0	105.4	1.0
		Nitrite by IC	24	1.2 u	25	98.0	1.0
		Nitrate by IC	24	2.5 u	25	97.3	1.0
		Phosphate by IC	25.6	1.2 u	25.0	102.5	1.0
		Sulfate by IC	23.7	1.2 u	25.0	94.7	1.0
BLANK10	99LVI060-MB1	Soluble Chromium VI	4.2	0.40u	4.0	104.3	1.0
		Insoluble Chromium VI	1220	0.40u	1160	104.6	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	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

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INORGANICS DUPLICATE SPIKE REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W884	Chloride by IC	97.9	98.4	0.43
		Fluoride by IC	109.9	110.2	0.28
		Nitrite by IC	102.5	103.5	0.90
		Nitrate by IC	101.0	100.1	0.88
		Phosphate by IC	100.5	100.8	0.26
		Sulfate by IC	101.0	101.4	0.39
-007	B0W891	Sulfide	87.8	91.1	3.6
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

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INORGANICS PRECISION REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L883

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W884	Chloride by IC	2.4	2.4	0.25	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	55	55	0.16	1.0
		Phosphate by IC	2.4	2.3	3.7	1.0
		Chromium VI	0.44u	0.44u	NC	1.0
		Sulfate by IC	6.6	6.5	0.50	1.0
		pH	9.6	9.5	0.8	1.0
-007REP	B0W891	% Solids	90.8	91.8	1.1	1.0
		Sulfide	1.1 u	1.1 u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/28/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L883

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
LCS1	99LC099-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	93.5
LCS2	99LC099-LC2	Cyanide, Total LCS	9.5	10	MG/KG	94.8

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W884						
% SOLIDS	001	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
CHLORIDE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
CHLORIDE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
CHLORIDE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	001	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
PHOSPHATE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
PHOSPHATE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
PHOSPHATE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	001	S	99LVI060	08/24/99	09/02/99	09/02/99
CHROMIUM VI	001 REP	S	99LVI060	08/24/99	09/02/99	09/02/99
CHROMIUM VI	001 MS	S	99LVI060	08/24/99	09/02/99	09/02/99
CHROMIUM VI	001 MSD	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	001	S	99LIC078	08/24/99	09/21/99	09/21/99
SULFATE BY IC	001 REP	S	99LIC078	08/24/99	09/21/99	09/21/99
SULFATE BY IC	001 MS	S	99LIC078	08/24/99	09/21/99	09/21/99
SULFATE BY IC	001 MSD	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	001	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	001	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	001	S	99LPH093	08/24/99	08/31/99	08/31/99
PH	001 REP	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	001	S	99LSD040	08/24/99	08/30/99	08/30/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W885						
% SOLIDS	002	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	002	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	002	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	002	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	002	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	002	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	002	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	002	S	99LSD040	08/24/99	08/30/99	08/30/99
B0W886						
% SOLIDS	003	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	003	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	003	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	003	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	003	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	003	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	003	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	003	S	99LSD040	08/24/99	08/30/99	08/30/99
B0W887						
% SOLIDS	004	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	004	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	004	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	004	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	004	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	004	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	004	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	004	S	99LSD040	08/24/99	08/30/99	08/30/99
B0W888						
% SOLIDS	005	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	005	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	005	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	005	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	005	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	005	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	005	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	005	S	99LSD040	08/24/99	08/30/99	08/30/99
B0W890						
% SOLIDS	006	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	006	S	99LC098	08/24/99	09/03/99	09/03/99
PHOSPHATE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	006	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	006	S	99LIC078	08/24/99	09/21/99	09/21/99

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	006	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	006	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	006	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	006	S	99LSD040	08/24/99	08/30/99	08/30/99
B0W891						
% SOLIDS	007	S	99L%S119	08/24/99	08/30/99	08/31/99
% SOLIDS	007 REP	S	99L%S119	08/24/99	08/30/99	08/31/99
CHLORIDE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
FLUORIDE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRITE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
TOTAL CYANIDE	007	S	99LC099	08/24/99	09/06/99	09/06/99
PHOSPHATE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
CHROMIUM VI	007	S	99LVI060	08/24/99	09/02/99	09/02/99
SULFATE BY IC	007	S	99LIC078	08/24/99	09/21/99	09/21/99
NITRATE NITRITE	007	S	99LN3044	08/24/99	09/08/99	09/09/99
AMMONIA	007	S	99LAM034	08/24/99	09/14/99	09/14/99
PH	007	S	99LPH093	08/24/99	08/31/99	08/31/99
SULFIDE	007	S	99LSD040	08/24/99	08/30/99	08/30/99
SULFIDE	007 REP	S	99LSD040	08/24/99	08/30/99	08/30/99
SULFIDE	007 MS	S	99LSD040	08/24/99	08/30/99	08/30/99
SULFIDE	007 MSD	S	99LSD040	08/24/99	08/30/99	08/30/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
CHLORIDE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
FLUORIDE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
FLUORIDE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
NITRITE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
NITRITE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
NITRATE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
NITRATE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
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

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

DATE RECEIVED: 08/26/99 RFW LOT # :9908L883

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
PHOSPHATE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
CHROMIUM VI	MB1	S	99LVI060	N/A	09/02/99	09/02/99
CHROMIUM VI	MB1 BS	S	99LVI060	N/A	09/02/99	09/02/99
CHROMIUM VI	MB1 BSD	S	99LVI060	N/A	09/02/99	09/02/99
SULFATE BY IC	MB1	S	99LIC078	N/A	09/21/99	09/21/99
SULFATE BY IC	MB1 BS	S	99LIC078	N/A	09/21/99	09/21/99
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	99LSD040	N/A	08/30/99	08/30/99
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
TOTAL CYANIDE	LC1 L	S	99LC099	N/A	09/06/99	09/06/99
TOTAL CYANIDE	LC2 L	S	99LC099	N/A	09/06/99	09/06/99
TOTAL CYANIDE	MB1	S	99LC099	N/A	09/06/99	09/06/99

RECRA LabNet Use Only: 99081883

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TWU-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 days
Date Rec'd: 8/26/99 Date Due: 9/25/99
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	4oz					
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA					w/VOA	w/BNA		INORG: Metal							
	ORGANIC: BNA								INORG: CN							
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															

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	8024H	8025H	8082		8260C	8080		Metal		1PH	Ang					
001	BØW884			S	8/24/99	0738	X	X	X		X	X		X		X	X					
2	85					0756																
3	86					0808																
4	87					0826																
5	88					0846																
6	90					0904																
7	91					0930																

Run matrix QC

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, Hg, ICR6
3. Ang = IN3N2, ICCL, ICF-, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OCSC = ethanol + propanol
6. * 4235795280 79-4.0°C = Cooler temp

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # 4235795280 79
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. 1.8 °C

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/26/99	0980

Relinquished by	Received by	Date	Time
	Original Rewritten		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-99	Page 1 of 1
Collector: Bowers/Porter/Nielson	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-13 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A990229	Bill of Lading/Air Bill No.: 4235 7952 8680	
		COA: B20CW167IC	

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) (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										
B0W884	Soil	8-24-99	0738		X	X	X	X	X		3.5'-4.5'		
B0W885	Soil	8-24-99	0756		X	X	X	X	X		6'-7'		
B0W886	Soil	8-24-99	0808		X	X	X	X	X		8.5'-9.5'		
B0W887	Soil	8-24-99	0826		X	X	X	X	X		11'-12'		
B0W888	Soil	8-24-99	0846		X	X	X	X	X		14'-15'		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/24/99 13:00	Peter JB	8/24/99 13:00
REF ID 82599	1100	S.J. GALE	82599 1100
S.J. GALE	82599 1100	FED EX	
Declare		Janson for DN	8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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.

use ~~BOW~~ BOW528 as shipping criteria

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	B99-078-100	Page 1 of 1

Collector: Bowers/Porter/Nielson	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-13 >15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96 043	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA / DJB 8-24-99	Offsite Property No.: A990229		Bill of Lading/Air Bill No.: 4235 7952 8679
			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 - 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										
B0W890 / 18.5'-19.5'	Soil	8-24-99	0904					X	X	X	X	X	
B0W891 / 24'-25'	Soil	8-24-99	0930					X	X	X	X	X	
~~B0W892~~	~~Soil~~												
~~B0W893~~	~~Soil~~	DJB 8-24-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/24/99 13:00	Received By: Keler JB	Date/Time: 8/24/99 13:00
Relinquished By: NGF JB	Date/Time: 8/25/99 11:00	Received By: Catherine Sine	Date/Time: 8/25/99 11:00
Relinquished By: Catherine Sine	Date/Time: 8/25/99 11:00	Received By: FEDEX	Date/Time:
Relinquished By: Dedeel	Date/Time:	Received By: Janson for DN	Date/Time: 8/26/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.
COLLECTOR UNAVAILABLE TO SIGN COC

(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

use BOWJL8 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

4.0

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