H0508- TMA/RCRA

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JAN 18 2000
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Thermo Nutech
W.O. No. N9-08-172-7189

Bechtel Hanford Inc.
SDG H0508

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0508 is composed of eight solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were transmitted to BHI via facsimile on October 18, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Total and Isotopic Uranium Analyses

Isotopic analyses were to be based on the results from the total uranium analyses. Isotopic Uranium was not requested for any of the samples. No problems were encountered during the course of the analyses.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses. Recounts were performed on samples B0W898 and B0W899.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.6 Tritium Analyses

No problems were encountered during the course of the analyses.

2.7 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.8 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

SAMPLE SUMMARY

SDG 7189
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W894	GP-8<15'bgs	SOLID		N908172-01	B99-078	B99-078-102	08/27/99 07:48
B0W895	GP-8<15'bgs	SOLID		N908172-02	B99-078	B99-078-102	08/27/99 07:50
B0W896	GP-8<15'bgs	SOLID		N908172-03	B99-078	B99-078-102	08/27/99 08:20
B0W897	GP-8<15'bgs	SOLID		N908172-04	B99-078	B99-078-102	08/27/99 08:35
B0W898	GP-8<15'bgs	SOLID		N908172-05	B99-078	B99-078-102	08/27/99 08:54
B0W899	GP-8<15'bgs	SOLID		N908172-06	B99-078	B99-078-102	08/27/99 09:10
B0W8B2	GP-8<15'bgs	SOLID		N908172-07	B99-078	B99-078-103	08/27/99 09:26
B0W8B3	GP-8<15'bgs	SOLID		N908172-08	B99-078	B99-078-103	08/27/99 09:45
Method Blank		SOLID		N908146-09	B99-078		
Method Blank		SOLID		N908172-10	B99-078		
Lab Control Sample		SOLID		N908146-08	B99-078		
Lab Control Sample		SOLID		N908172-09	B99-078		
Duplicate (N908172-01)	GP-8<15'bgs	SOLID		N908172-11	B99-078		08/27/99 07:48
Duplicate (N908172-07)	GP-8<15'bgs	SOLID		N908172-12	B99-078		08/27/99 09:26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/02/99

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SAMPLE DELIVERY GROUP H0508

QC SUMMARY

SDG 7189
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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		Method Blank	SOLID						N908146-09	7185-009
		Lab Control Sample	SOLID						N908146-08	7185-008
7189	B99-078-102	B0W894	SOLID	94.6			08/31/99	4	N908172-01	7189-001
		B0W895	SOLID	94.3			08/31/99	4	N908172-02	7189-002
		B0W896	SOLID	93.8			08/31/99	4	N908172-03	7189-003
		B0W897	SOLID	95.9			08/31/99	4	N908172-04	7189-004
		B0W898	SOLID	95.5			08/31/99	4	N908172-05	7189-005
		B0W899	SOLID	95.8			08/31/99	4	N908172-06	7189-006
	B99-078-103	B0W8B2	SOLID	95.5			08/31/99	4	N908172-07	7189-007
		B0W8B3	SOLID	91.6			08/31/99	4	N908172-08	7189-008
		Method Blank	SOLID						N908172-10	7189-010
		Lab Control Sample	SOLID						N908172-09	7189-009
		Duplicate (N908172-01)	SOLID	94.6			08/31/99	4	N908172-11	7189-011
		Duplicate (N908172-07)	SOLID	95.5			08/31/99	4	N908172-12	7189-012

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SAMPLE DELIVERY GROUP H0508

SDG 7189
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6893-130	5.0	8			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-130	5.0	8			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-130	5.0	8			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-130	10.0	8			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	6893-130	15.0	8			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-130	9.0	8			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-130	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.

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Version 3.06
Report date 11/02/99

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SAMPLE DELIVERY GROUP H0508

WORK SUMMARY

SDG 7189
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W894			N908172-01	7189-001	AM		10/08/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-001	GAM		10/05/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-001	PU		10/09/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-001	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-001	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-001	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W895			N908172-02	7189-002	AM		10/09/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-002	GAM		10/05/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-002	PU		10/09/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-002	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-002	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-002	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W896			N908172-03	7189-003	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-003	GAM		10/05/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-003	PU		10/09/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-003	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-003	TH		10/16/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-003	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W897			N908172-04	7189-004	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-004	GAM		10/05/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-004	PU		10/09/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-004	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-004	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-004	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W898			N908172-05	7189-005	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-005	GAM		10/06/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-005	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-005	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-005	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-005	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

SDG 7189
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W899			N908172-06	7189-006	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-006	GAM		10/06/99	10/18/99	NJV	Gamma Scan
B99-078-102	B99-078		08/31/99	7189-006	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-006	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-006	TH		10/16/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-006	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W8B2			N908172-07	7189-007	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-007	GAM		10/06/99	10/18/99	NJV	Gamma Scan
B99-078-103	B99-078		08/31/99	7189-007	H		10/04/99	10/18/99	NJV	Tritium in Soil
				7189-007	NI_L		10/11/99	10/18/99	NVJ	Nickel 63 in Soil
				7189-007	PU		10/10/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-007	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-007	TC		10/06/99	10/18/99	NJV	Technetium 99 in Soil
				7189-007	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-007	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
B0W8B3			N908172-08	7189-008	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-008	GAM		10/06/99	10/18/99	NJV	Gamma Scan
B99-078-103	B99-078		08/31/99	7189-008	H		10/04/99	10/18/99	NJV	Tritium in Soil
				7189-008	NI_L		10/11/99	10/18/99	NVJ	Nickel 63 in Soil
				7189-008	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-008	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-008	TC		10/06/99	10/18/99	NJV	Technetium 99 in Soil
				7189-008	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-008	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
Method Blank			N908146-09	7185-009	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
		SOLID		7185-009	TC		10/06/99	10/12/99	NJV	Technetium 99 in Soil
	B99-078									
Method Blank			N908172-10	7189-010	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
		SOLID		7189-010	GAM		10/07/99	10/18/99	NJV	Gamma Scan
	B99-078			7189-010	H		10/04/99	10/18/99	NJV	Tritium in Soil
				7189-010	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-010	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-010	TH		10/16/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-010	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
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SAMPLE DELIVERY GROUP H0508

SDG 7189
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N908146-08	7185-008	NI_L		10/11/99	10/11/99	NJV	Nickel 63 in Soil
		SOLID		7185-008	TC		10/04/99	10/12/99	NJV	Technetium 99 in Soil
	B99-078									
Lab Control Sample			N908172-09	7189-009	AM		10/10/99	10/18/99	NJV	Americium 241 in Soil
		SOLID		7189-009	GAM		10/07/99	10/18/99	NJV	Gamma Scan
	B99-078			7189-009	H		10/04/99	10/18/99	NJV	Tritium in Soil
				7189-009	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-009	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-009	TH		10/14/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-009	U_T	A0R1	10/06/99	10/18/99	NJV	Uranium, Total in Soil
Duplicate (N908172-01)			N908172-11	7189-011	AM		10/09/99	10/18/99	NJV	Americium 241 in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-011	GAM		10/07/99	10/18/99	NJV	Gamma Scan
	B99-078		08/31/99	7189-011	PU		10/11/99	10/18/99	NJV	Plutonium, Isotopic in Solids
				7189-011	SR		10/06/99	10/18/99	NJV	Total Strontium in Soil
				7189-011	TH		10/16/99	10/18/99	NJV	Thorium, Isotopic in Soil
				7189-011	U_T		10/02/99	10/18/99	NJV	Uranium, Total in Soil
Duplicate (N908172-07)			N908172-12	7189-012	H		10/05/99	10/19/99	NJV	Tritium in Soil
GP-8<15'bgs		SOLID	08/27/99	7189-012	NI_L		10/11/99	10/18/99	NVJ	Nickel 63 in Soil
	B99-078		08/31/99	7189-012	TC		10/04/99	10/18/99	NJV	Technetium 99 in Soil

Lab id TMANC
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SAMPLE DELIVERY GROUP H0508

SDG 7189
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	8			1	1	1	11
GAM	B99-078	Gamma Scan	GAMMAHI	8			1	1	1	11
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	8			1	1	1	11
SR	B99-078	Total Strontium in Soil	SRTOTAL	8			1	1	1	11
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	8			1	1	1	11
U_T	B99-078	Uranium, Total in Soil	UKPA	8			1	1	1	11
TOTALS				54			9	9	9	81

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908146-09 Method Blank

METHOD BLANK

SDG	7189	Client/Case no	Hanford SDG-H0508
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	N.A.			400		H
Technetium 99	14133-76-7	0.216	0.30	0.41	15	U	TC
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		U_T
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Nickel 63	13981-37-8	-0.326	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	N.A.			1.0		AM
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

200 Area source chctzn-200-CW-1 OU

QC-BLANK 31751

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-10 Method Blank

METHOD BLANK

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-10	Client sample id	Method Blank
Dept sample id	7189-010	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.020	0.040	0.070	400	U	H
Total Uranium (ug/g)	7440-61-1	0	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	-0.010	0.020	0.049	1.0	U	PU
Plutonium 239/240	PU-239/240	0.007	0.020	0.042	1.0	U	PU
Americium 241	14596-10-2	0.004	0.022	0.036	1.0	U	AM
Total Strontium	SR-RAD	-0.010	0.15	0.20	1.0	U	SR
Thorium 228	14274-82-9	-0.022	0.086	0.17	1.0	U	TH
Thorium 230	14269-63-7	0.043	0.10	0.16	1.0	U	TH
Thorium 232	TH-232	0.007	0.029	0.055	1.0	U	TH
Potassium 40	13966-00-2	U		0.30		U	GAM
Cobalt 60	10198-40-0	U		0.012	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.10	U	GAM
Europium 152	14683-23-9	U		0.030	0.10	U	GAM
Europium 154	15585-10-1	U		0.033	0.10	U	GAM
Europium 155	14391-16-3	U		0.023	0.10	U	GAM
Radium 226	13982-63-3	U		0.023	0.10	U	GAM
Radium 228	15262-20-1	U		0.053	0.20	U	GAM
Thorium 228	14274-82-9	U		0.015		U	GAM
Thorium 232	TH-232	U		0.053		U	GAM
Americium 241	14596-10-2	U		0.014		U	GAM
Uranium 238	U-238	U		1.4		U	GAM
Uranium 235	15117-96-1	U		0.041		U	GAM

200 Area source chctzn-200-CW-1 OU

QC-BLANK 31847

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908146-08 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7189 Client/Case no Hanford SDG-H0508
Contact Kevin C. Johnson Case no TRB-SBB-207925

Lab sample id N908146-08 Client sample id Lab Control Sample
Dept sample id 7185-008 Material/Matrix SOLID
SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	N.A.			400		H					80-120
Technetium 99	60.4	1.6	0.39	15		TC	63.5	2.5	95	84-116	80-120
Total Uranium (ug/g)	N.A.			1.0		U_T					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	146	3.6	2.3	30		NI_L	134	5.4	109	82-118	
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 230	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

200 Area source chctzn-200-CW-1 OU

QC-LCS 31750

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-09

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7189
Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0508
Case no TRB-SBB-207925

Lab sample id N908172-09
Dept sample id 7189-009

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	6.33	0.14	0.071	400	J	H	6.03	0.24	105	83-117	80-120
Total Uranium (ug/g)	31.8	9.5	0.072	1.0		U_T	33.0	1.3	96	54-146	80-120
Plutonium 238	9.46	0.79	0.050	1.0		PU	10.0	0.40	95	85-115	80-120
Plutonium 239/240	10.3	0.85	0.050	1.0		PU	10.6	0.42	97	85-115	80-120
Americium 241	9.89	0.55	0.029	1.0		AM	9.58	0.38	103	87-113	80-120
Total Strontium	12.3	0.69	0.34	1.0		SR	11.3	0.45	109	80-120	
Thorium 230	21.3	1.3	0.19	1.0		TH	20.4	0.82	104	86-114	
Cobalt 60	0.332	0.021	0.008	0.050		GAM	0.324	0.013	102	74-126	80-120
Cesium 137	0.339	0.019	0.012	0.10		GAM	0.333	0.013	102	75-125	80-120

200 Area source chctzn-200-CW-1 OU

QC-LCS 31846

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-11

B0W894

DUPLICATE

SDG	7189			Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908172-11	Lab sample id	N908172-01	Client sample id	B0W894
Dept sample id	7189-011	Dept sample id	7189-001	Location/Matrix	GP-8<15'bgs SOLID
		Received	08/31/99	Collected	08/27/99 07:48
% solids	94.6	% solids	94.6	Custody/SAF No	B99-078-102 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)	0.409	0.052	0.007	1.0	J	U_T	0.405	0.051	0.007	J	1	33	
Plutonium 238	0.006	0.023	0.054	1.0	U	PU	-0.005	0.015	0.033	U	-		
Plutonium 239/240	0.011	0.034	0.062	1.0	U	PU	0.012	0.015	0.024	U	-		
Americium 241	0	0.020	0.040	1.0	U	AM	0	0.020	0.036	U	-		
Total Strontium	-0.028	0.12	0.17	1.0	U	SR	-0.038	0.12	0.17	U	-		
Thorium 228	0.248	0.099	0.13	1.0	J	TH	0.342	0.15	0.15	J	32	92	
Thorium 230	0.346	0.13	0.16	1.0	J	TH	0.288	0.15	0.20	J	18	94	
Thorium 232	0.317	0.099	0.054	1.0	J	TH	0.331	0.13	0.082	J	4	76	
Potassium 40	12.3	0.31	0.13			GAM	11.6	0.57	0.28		6	33	
Cobalt 60	U		0.012	0.050	U	GAM	U		0.028	U	-		
Cesium 137	0.070	0.009	0.011	0.10	J	GAM	0.075	0.028	0.032	J	7	69	
Europium 152	U		0.032	0.10	U	GAM	U		0.073	U	-		
Europium 154	U		0.046	0.10	U	GAM	U		0.091	U	-		
Europium 155	U		0.052	0.10	U	GAM	U		0.14	U	-		
Radium 226	0.600	0.029	0.025	0.10		GAM	0.643	0.054	0.052		7	35	
Radium 228	0.854	0.061	0.056	0.20		GAM	0.791	0.13	0.13		8	41	
Thorium 228	0.751	0.020	0.017			GAM	0.760	0.035	0.034		1	33	
Thorium 232	0.854	0.061	0.056			GAM	0.791	0.13	0.13		8	41	
Americium 241	U		0.045		U	GAM	U		0.11	U	-		
Uranium 238	U		1.7		U	GAM	U		3.6	U	-		
Uranium 235	U		0.062		U	GAM	U		0.11	U	-		

200 Area source chctzn-200-CW-1 OU

QC-DUP#1 31848

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-12 B0W8B2

DUPLICATE

SDG	7189			Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908172-12	Lab sample id	N908172-07	Client sample id	B0W8B2
Dept sample id	7189-012	Dept sample id	7189-007	Location/Matrix	GP-8<15'bgs SOLID
		Received	08/31/99	Collected	08/27/99 09:26
% solids	95.5	% solids	95.5	Custody/SAF No	B99-078-103 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	-0.003	0.042	0.072	400	U	H	-0.009	0.041	0.070	U	-		
Technetium 99	-0.061	0.29	0.49	15	U	TC	0.419	0.42	0.44	U	-		
Nickel 63	-0.058	1.4	2.3	30	U	NI_L	-1.06	1.4	2.3	U	-		

200 Area source chctzn-200-CW-1 OU

QC-DUP#7 31849

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-01 B0W894

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-01	Client sample id	B0W894
Dept sample id	7189-001	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 07:48
% solids	94.6	Custody/SAF No	B99-078-102 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	0.405	0.051	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.005	0.015	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.012	0.015	0.024	1.0	U	PU
Americium 241	14596-10-2	0	0.020	0.036	1.0	U	AM
Total Strontium	SR-RAD	-0.038	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.342	0.15	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.288	0.15	0.20	1.0	J	TH
Thorium 232	TH-232	0.331	0.13	0.082	1.0	J	TH
Potassium 40	13966-00-2	11.6	0.57	0.28			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Cesium 137	10045-97-3	0.075	0.028	0.032	0.10	J	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.091	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Radium 226	13982-63-3	0.643	0.054	0.052	0.10		GAM
Radium 228	15262-20-1	0.791	0.13	0.13	0.20		GAM
Thorium 228	14274-82-9	0.760	0.035	0.034			GAM
Thorium 232	TH-232	0.791	0.13	0.13			GAM
Americium 241	14596-10-2	U		0.11		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.11		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-02 B0W895

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-02	Client sample id	B0W895
Dept sample id	7189-002	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 07:50
% solids	94.3	Custody/SAF No	B99-078-102 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	0.303	0.038	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.008	0.031	0.055	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.023	0.055	1.0	U	PU
Americium 241	14596-10-2	-0.014	0.034	0.064	1.0	U	AM
Total Strontium	SR-RAD	-0.016	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.343	0.15	0.17	1.0	J	TH
Thorium 230	14269-63-7	0.161	0.13	0.20	1.0	U	TH
Thorium 232	TH-232	0.322	0.13	0.082	1.0	J	TH
Potassium 40	13966-00-2	12.3	0.38	0.17			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	0.154	0.013	0.014	0.10		GAM
Europium 152	14683-23-9	U		0.040	0.10	U	GAM
Europium 154	15585-10-1	U		0.054	0.10	U	GAM
Europium 155	14391-16-3	U		0.065	0.10	U	GAM
Radium 226	13982-63-3	0.543	0.032	0.028	0.10		GAM
Radium 228	15262-20-1	0.800	0.073	0.065	0.20		GAM
Thorium 228	14274-82-9	0.718	0.023	0.020			GAM
Thorium 232	TH-232	0.800	0.073	0.065			GAM
Americium 241	14596-10-2	U		0.052		U	GAM
Uranium 238	U-238	U		1.9		U	GAM
Uranium 235	15117-96-1	U		0.062		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-03 B0W896

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-03	Client sample id	B0W896
Dept sample id	7189-003	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 08:20
% solids	93.8	Custody/SAF No	B99-078-102 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	0.486	0.060	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.020	0.033	0.072	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.033	0.055	1.0	U	PU
Americium 241	14596-10-2	0.016	0.021	0.025	1.0	U	AM
Total Strontium	SR-RAD	0.031	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.396	0.12	0.11	1.0	J	TH
Thorium 230	14269-63-7	0.521	0.15	0.17	1.0	J	TH
Thorium 232	TH-232	0.283	0.10	0.071	1.0	J	TH
Potassium 40	13966-00-2	12.9	0.49	0.24			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.269	0.031	0.030	0.10		GAM
Europium 152	14683-23-9	U		0.059	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.672	0.047	0.043	0.10		GAM
Radium 228	15262-20-1	0.921	0.099	0.092	0.20		GAM
Thorium 228	14274-82-9	0.838	0.032	0.030			GAM
Thorium 232	TH-232	0.921	0.099	0.092			GAM
Americium 241	14596-10-2	U		0.21		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-04 B0W897

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-04	Client sample id	B0W897
Dept sample id	7189-004	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 08:35
% solids	95.9	Custody/SAF No	B99-078-102 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	0.484	0.060	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.003	0.020	0.040	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.020	0.036	1.0	U	PU
Americium 241	14596-10-2	0.008	0.025	0.047	1.0	U	AM
Total Strontium	SR-RAD	-0.016	0.11	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.038	0.15	0.29	1.0	U	TH
Thorium 230	14269-63-7	0.380	0.20	0.22	1.0	J	TH
Thorium 232	TH-232	0.291	0.13	0.097	1.0	J	TH
Potassium 40	13966-00-2	10.9	1.6	0.18			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	0.040	0.015	0.016	0.10	J	GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.052	0.10	U	GAM
Europium 155	14391-16-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	U		0.054	0.10	U	GAM
Radium 228	15262-20-1	U		0.11	0.20	U	GAM
Thorium 228	14274-82-9	U		0.33		U	GAM
Thorium 232	TH-232	U		0.11		U	GAM
Americium 241	14596-10-2	U		0.023		U	GAM
Uranium 238	U-238	U		1.9		U	GAM
Uranium 235	15117-96-1	U		0.061		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-05 B0W898

DATA SHEET

SDG	7189	Client/Case no	Hanford	SDG-H0508	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908172-05	Client sample id	B0W898		
Dept sample id	7189-005	Location/Matrix	GP-8<15'bgs	SOLID	
Received	08/31/99	Collected	08/27/99 08:54		
% solids	95.5	Custody/SAF No	B99-078-102	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	0.475	0.059	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.012	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.012	0.033	1.0	U	PU
Americium 241	14596-10-2	-0.017	0.020	0.042	1.0	U	AM
Total Strontium	SR-RAD	-0.064	0.13	0.18	1.0	U	SR
Thorium 228	14274-82-9	0.211	0.16	0.21	1.0	J	TH
Thorium 230	14269-63-7	0.382	0.19	0.18	1.0	J	TH
Thorium 232	TH-232	0.289	0.13	0.10	1.0	J	TH
Potassium 40	13966-00-2	10.5	0.37	0.14			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		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.058	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.397	0.032	0.031	0.10		GAM
Radium 228	15262-20-1	0.651	0.092	0.084	0.20		GAM
Thorium 228	14274-82-9	0.564	0.024	0.020			GAM
Thorium 232	TH-232	0.651	0.092	0.084			GAM
Americium 241	14596-10-2	U		0.053		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.063		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-06 B0W899

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-06	Client sample id	B0W899
Dept sample id	7189-006	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 09:10
% solids	95.8	Custody/SAF No	B99-078-102 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	0.465	0.059	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.008	0.017	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.012	0.025	0.055	1.0	U	PU
Americium 241	14596-10-2	0.008	0.020	0.039	1.0	U	AM
Total Strontium	SR-RAD	-0.030	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.352	0.12	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.382	0.15	0.18	1.0	J	TH
Thorium 232	TH-232	0.359	0.12	0.092	1.0	J	TH
Potassium 40	13966-00-2	11.6	0.53	0.22			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Europium 152	14683-23-9	U		0.062	0.10	U	GAM
Europium 154	15585-10-1	U		0.084	0.10	U	GAM
Europium 155	14391-16-3	U		0.087	0.10	U	GAM
Radium 226	13982-63-3	0.473	0.058	0.054	0.10		GAM
Radium 228	15262-20-1	0.544	0.10	0.098	0.20		GAM
Thorium 228	14274-82-9	0.560	0.034	0.034			GAM
Thorium 232	TH-232	0.544	0.10	0.098			GAM
Americium 241	14596-10-2	U		0.22		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Uranium 235	15117-96-1	U		0.11		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-07 B0W8B2

DATA SHEET

SDG	7189	Client/Case no	Hanford SDG-H0508
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908172-07	Client sample id	B0W8B2
Dept sample id	7189-007	Location/Matrix	GP-8<15'bgs SOLID
Received	08/31/99	Collected	08/27/99 09:26
% solids	95.5	Custody/SAF No	B99-078-103 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.009	0.041	0.070	400	U	H
Technetium 99	14133-76-7	0.419	0.42	0.44	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.526	0.066	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.020	0.039	0.070	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.020	0.044	1.0	U	PU
Nickel 63	13981-37-8	-1.06	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	0.005	0.016	0.025	1.0	U	AM
Total Strontium	SR-RAD	-0.091	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.229	0.12	0.17	1.0	J	TH
Thorium 230	14269-63-7	0.526	0.18	0.18	1.0	J	TH
Thorium 232	TH-232	0.209	0.10	0.076	1.0	J	TH
Potassium 40	13966-00-2	10.4	0.65	0.32			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.034	0.10	U	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.456	0.053	0.051	0.10		GAM
Radium 228	15262-20-1	0.611	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.610	0.038	0.038			GAM
Thorium 232	TH-232	0.611	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Uranium 235	15117-96-1	U		0.12		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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

N908172-08 B0W8B3

DATA SHEET

SDG	7189	Client/Case no	Hanford	SDG-H0508	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908172-08	Client sample id	B0W8B3		
Dept sample id	7189-008	Location/Matrix	GP-8<15'bgs	SOLID	
Received	08/31/99	Collected	08/27/99 09:45		
% solids	91.6	Custody/SAF No	B99-078-103	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.006	0.041	0.070	400	U	H
Technetium 99	14133-76-7	0.059	0.28	0.47	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.521	0.065	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.017	0.025	0.067	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.025	0.060	1.0	U	PU
Nickel 63	13981-37-8	0.038	1.4	2.3	30	U	NI_L
Americium 241	14596-10-2	0.015	0.015	0.019	1.0	U	AM
Total Strontium	SR-RAD	-0.077	0.11	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.182	0.16	0.23	1.0	U	TH
Thorium 230	14269-63-7	0.833	0.24	0.21	1.0	J	TH
Thorium 232	TH-232	0.208	0.13	0.14	1.0	J	TH
Potassium 40	13966-00-2	11.5	0.74	0.31			GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.069	0.10	U	GAM
Radium 226	13982-63-3	0.491	0.066	0.061	0.10		GAM
Radium 228	15262-20-1	0.702	0.17	0.17	0.20		GAM
Thorium 228	14274-82-9	0.628	0.041	0.038			GAM
Thorium 232	TH-232	0.702	0.17	0.17			GAM
Americium 241	14596-10-2	U		0.042		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test AM	Matrix SOLID
SDG 7189	
Contact Kevin C. Johnson	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0508	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-130						
B0W894	N908172-01			7189-001	U	
B0W895	N908172-02			7189-002	U	
B0W896	N908172-03			7189-003	U	
B0W897	N908172-04			7189-004	U	
B0W898	N908172-05			7189-005	U	
B0W899	N908172-06			7189-006	U	
B0W8B2	N908172-07			7189-007	U	
B0W8B3	N908172-08			7189-008	U	
BLK (QC ID=31847)	N908172-10			7189-010	U	
LCS (QC ID=31846)	N908172-09			7189-009	ok	
Duplicate (N908172-01)	N908172-11			7189-011	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area source chctzn-200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-130	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.130												
B0W894	N908172-01			0.036	0.500			88		811			42	10/08/99	10/08	SS-066
B0W895	N908172-02			0.064	0.500			81		1003			43	10/08/99	10/09	SS-045
B0W896	N908172-03			0.025	0.500			83		1086			44	10/08/99	10/10	SS-008
B0W897	N908172-04			0.047	0.500			86		1086			44	10/08/99	10/10	SS-009
B0W898	N908172-05			0.042	0.500			88		1086			44	10/08/99	10/10	SS-012
B0W899	N908172-06			0.039	0.500			87		1085			44	10/08/99	10/10	SS-014
B0W8B2	N908172-07			0.025	0.500			85		1085			44	10/08/99	10/10	SS-016
B0W8B3	N908172-08			0.019	0.500			87		1088			44	10/08/99	10/10	SS-059
BLK (QC ID=31847)	N908172-10			0.036	0.500			95		1088				10/08/99	10/10	SS-061
LCS (QC ID=31846)	N908172-09			0.029	0.500			91		1088				10/08/99	10/10	SS-060
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.040	0.500			86		1087			43	10/08/99	10/09	SS-061
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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test AM	Matrix SOLID
SDG 7189	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0508	

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	0.037	±	0.025
FOR 11 SAMPLES	YIELD	87	±	7

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	PU
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-130								
B0W894	N908172-01			7189-001	U		U	
B0W895	N908172-02			7189-002	U		U	
B0W896	N908172-03			7189-003	U		U	
B0W897	N908172-04			7189-004	U		U	
B0W898	N908172-05			7189-005	U		U	
B0W899	N908172-06			7189-006	U		U	
B0W8B2	N908172-07			7189-007	U		U	
B0W8B3	N908172-08			7189-008	U		U	
BLK (QC ID=31847)	N908172-10			7189-010	U		U	
LCS (QC ID=31846)	N908172-09			7189-009	ok		ok	
Duplicate (N908172-01)	N908172-11			7189-011	-	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 6893-130	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.130												
B0W894	N908172-01			0.033	0.500			89		1089			43	10/08/99	10/09	SS-058
B0W895	N908172-02			0.055	0.500			56		1078			43	10/08/99	10/09	SS-064
B0W896	N908172-03			0.072	0.500			53		1078			43	10/08/99	10/09	SS-065
B0W897	N908172-04			0.040	0.500			68		1078			43	10/08/99	10/09	SS-066
B0W898	N908172-05			0.033	0.500			82		953			45	10/08/99	10/11	SS-005
B0W899	N908172-06			0.055	0.500			58		953			45	10/08/99	10/11	SS-006
B0W8B2	N908172-07			0.070	0.500			65		1085			44	10/08/99	10/10	SS-048
B0W8B3	N908172-08			0.067	0.500			60		954			45	10/08/99	10/11	SS-012
BLK (QC ID=31847)	N908172-10			0.049	0.500			74		954				10/08/99	10/11	SS-014
LCS (QC ID=31846)	N908172-09			0.050	0.500			56		954				10/08/99	10/11	SS-013
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.062	0.500			42		957			45	10/08/99	10/11	SS-055
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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	PU
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

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

AVERAGES ± 2 SD	MDA	0.053	±	0.028
FOR 11 SAMPLES	YIELD	64	±	27

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	TH
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-130							
B0W894	N908172-01			7189-001	0.342 J	0.288 J	0.331 J
B0W895	N908172-02			7189-002	0.343 J	U	0.322 J
B0W896	N908172-03			7189-003	0.396 J	0.521 J	0.283 J
B0W897	N908172-04			7189-004	U	0.380 J	0.291 J
B0W898	N908172-05			7189-005	0.211 J	0.382 J	0.289 J
B0W899	N908172-06			7189-006	0.352 J	0.382 J	0.359 J
B0W8B2	N908172-07			7189-007	0.229 J	0.526 J	0.209 J
B0W8B3	N908172-08			7189-008	U	0.833 J	0.208 J
BLK (QC ID=31847)	N908172-10			7189-010	U	U	U
LCS (QC ID=31846)	N908172-09			7189-009		ok	
Duplicate (N908172-01)	N908172-11			7189-011	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area source chctzn-200-CW-1 OU							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-130	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.130												
B0W894	N908172-01			0.20	0.250			84		534			48	10/14/99	10/14	SS-036
B0W895	N908172-02			0.20	0.250			87		534			48	10/14/99	10/14	SS-038
B0W896	N908172-03			0.17	0.250			85		725			50	10/14/99	10/16	SS-031
B0W897	N908172-04			0.29	0.250			70		530			48	10/14/99	10/14	SS-041
B0W898	N908172-05			0.21	0.250			66		526			48	10/14/99	10/14	SS-044
B0W899	N908172-06			0.18	0.250			85		725			50	10/14/99	10/16	SS-032
B0W8B2	N908172-07			0.18	0.250			87		526			48	10/14/99	10/14	SS-048
B0W8B3	N908172-08			0.23	0.250			67		526			48	10/14/99	10/14	SS-049
BLK (QC ID=31847)	N908172-10			0.17	0.250			90		725				10/14/99	10/16	SS-033
LCS (QC ID=31846)	N908172-09			0.19	0.250			87		526				10/14/99	10/14	SS-050
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.16	0.250			93		725			50	10/14/99	10/16	SS-034
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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	TH
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

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	±	0.073
FOR 11 SAMPLES	YIELD	82	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test SR	Matrix SOLID
SDG 7189	
Contact Kevin C. Johnson	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0508	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6893-130						
B0W894	N908172-01			7189-001	U	
B0W895	N908172-02			7189-002	U	
B0W896	N908172-03			7189-003	U	
B0W897	N908172-04			7189-004	U	
B0W898	N908172-05			7189-005	U	
B0W899	N908172-06			7189-006	U	
B0W8B2	N908172-07			7189-007	U	
B0W8B3	N908172-08			7189-008	U	
BLK (QC ID=31847)	N908172-10			7189-010	U	
LCS (QC ID=31846)	N908172-09			7189-009	ok	
Duplicate (N908172-01)	N908172-11			7189-011	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area source chctzn-200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-130	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.130															
B0W894	N908172-01			0.17	1.00			91		400			40	10/06/99	10/06	GRB-217
B0W895	N908172-02			0.16	1.00			93		400			40	10/06/99	10/06	GRB-218
B0W896	N908172-03			0.17	1.00			89		400			40	10/06/99	10/06	GRB-219
B0W897	N908172-04			0.16	1.00			93		400			40	10/06/99	10/06	GRB-220
B0W898	N908172-05			0.18	1.00			85		400			40	10/06/99	10/06	GRB-221
B0W899	N908172-06			0.17	1.00			89		400			40	10/06/99	10/06	GRB-222
B0W8B2	N908172-07			0.17	1.00			96		400			40	10/06/99	10/06	GRB-223
B0W8B3	N908172-08			0.16	1.00			95		400			40	10/06/99	10/06	GRB-224
BLK (QC ID=31847)	N908172-10			0.20	1.00			79		400				10/06/99	10/06	GRB-227
LCS (QC ID=31846)	N908172-09			0.34	1.00			81		400				10/06/99	10/06	GRB-225
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.17	1.00			92		400			40	10/06/99	10/06	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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test SR	Matrix SOLID
SDG 7189	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0508	

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	0.19	±	0.10
FOR 11 SAMPLES	YIELD	89	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test TC Matrix SOLID
SDG 7189
Contact Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-113						
B0W8B2	N908172-07			7189-007	U	
B0W8B3	N908172-08			7189-008	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908172-07)	N908172-12			7189-012	-	U

Nominal values and limits from method RDLs (pCi/g) 15
200 Area source chctzn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-113 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.113																
B0W8B2	N908172-07			0.44	1.00			79		101			40	09/30/99	10/06	GRB-202
B0W8B3	N908172-08			0.47	1.00			74		101			40	09/30/99	10/06	GRB-203
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 (N908172-07) (QC ID=31849)	N908172-12			0.49	1.00			72		101			38	09/30/99	10/04	GRB-228
Nominal values and limits from method				15	1.01			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 0.44 ± 0.082
FOR 5 SAMPLES YIELD 78 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test GAM Matrix SOLID
SDG 7189
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6893-130								
B0W894	N908172-01			7189-001	U		0.075	J
B0W895	N908172-02			7189-002	U		0.154	
B0W896	N908172-03			7189-003	U		0.269	
B0W897	N908172-04			7189-004	U		0.040	J
B0W898	N908172-05			7189-005	U		U	
B0W899	N908172-06			7189-006	U		U	
B0W8B2	N908172-07			7189-007	U		U	
B0W8B3	N908172-08			7189-008	U		U	
BLK (QC ID=31847)	N908172-10			7189-010	U		U	
LCS (QC ID=31846)	N908172-09			7189-009	ok		ok	
Duplicate (N908172-01)	N908172-11			7189-011	-	U	ok	J
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 6893-130	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.130															
B0W894	N908172-01			0.074	750					313			39	09/17/99	10/05	02,03,00
B0W895	N908172-02			0.043	731					313			39	09/17/99	10/05	02,04,00
B0W896	N908172-03			0.064	725					314			39	09/17/99	10/05	MB,05,00
B0W897	N908172-04			0.036	797					314			39	09/17/99	10/05	MB,07,00
B0W898	N908172-05			0.046	867					202			40	09/17/99	10/06	02,04,00
B0W899	N908172-06			0.070	816					202			40	09/17/99	10/06	MB,05,00
B0W8B2	N908172-07			0.085	797					200			40	09/17/99	10/06	02,03,00
B0W8B3	N908172-08			0.12	718					201			40	09/17/99	10/06	02,01,00
BLK (QC ID=31847)	N908172-10			0.020	774					233				09/17/99	10/07	MB,07,00
LCS (QC ID=31846)	N908172-09			0.008	774					232				09/17/99	10/07	01,04,00
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.034	750					437			41	09/17/99	10/07	02,04,00
Nominal values and limits from method				0.050	774					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test GAM Matrix SOLID	Client Hanford
SDG 7189	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0508

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	0.055 ± 0.064
FOR 11 SAMPLES	YIELD	____ ± ____

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	U T
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-130					
B0W894	N908172-01			7189-001	0.405 J
B0W895	N908172-02			7189-002	0.303 J
B0W896	N908172-03			7189-003	0.486 J
B0W897	N908172-04			7189-004	0.484 J
B0W898	N908172-05			7189-005	0.475 J
B0W899	N908172-06			7189-006	0.465 J
B0W8B2	N908172-07			7189-007	0.526 J
B0W8B3	N908172-08			7189-008	0.521 J
BLK (QC ID=31847)	N908172-10			7189-010	U
LCS (QC ID=31846)	N908172-09		A0R1	7189-009	ok
Duplicate (N908172-01)	N908172-11			7189-011	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0

200 Area source chctzn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-130	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.130												
B0W894	N908172-01			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W895	N908172-02			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W896	N908172-03			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W897	N908172-04			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W898	N908172-05			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W899	N908172-06			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W8B2	N908172-07			0.007	0.0500								36	10/02/99	10/02	KPA-001
B0W8B3	N908172-08			0.007	0.0500								36	10/02/99	10/02	KPA-001
BLK (QC ID=31847)	N908172-10			0.007	0.0500									10/02/99	10/02	KPA-001
LCS (QC ID=31846)	N908172-09		A0R1	0.072	0.0500									10/06/99	10/06	KPA-001
Duplicate (N908172-01) (QC ID=31848)	N908172-11			0.007	0.0500								36	10/02/99	10/02	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	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	U T
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

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	±	0.039
FOR 11 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test H Matrix SOLID
SDG 7189
Contact Kevin C. Johnson

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-130						
B0W8B2	N908172-07			7189-007	U	
B0W8B3	N908172-08			7189-008	U	
BLK (QC ID=31847)	N908172-10			7189-010	U	
LCS (QC ID=31846)	N908172-09			7189-009	ok	J
Duplicate (N908172-07)	N908172-12			7189-012	-	U

Nominal values and limits from method RDLs (pCi/g) 400
200 Area source chctzn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-130 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.130																
B0W8B2	N908172-07			0.070	20.5			100		120			38	10/02/99	10/04	LSC-007
B0W8B3	N908172-08			0.070	20.2			100		120			38	10/02/99	10/04	LSC-007
BLK (QC ID=31847)	N908172-10			0.070	20.4			100		120				10/02/99	10/04	LSC-007
LCS (QC ID=31846)	N908172-09			0.071	20.4			100		120				10/02/99	10/04	LSC-007
Duplicate (N908172-07) (QC ID=31849)	N908172-12			0.072	20.0			100		120			39	10/02/99	10/05	LSC-007
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 0.071 ± 0.002
FOR 5 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0508

Test	NI L
Matrix	SOLID
SDG	7189
Contact	Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0508

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-113						
B0W8B2	N908172-07			7189-007	U	
B0W8B3	N908172-08			7189-008	U	
BLK (QC ID=31751)	N908146-09			7185-009	U	
LCS (QC ID=31750)	N908146-08			7185-008	ok	
Duplicate (N908172-07)	N908172-12			7189-012	-	U

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

200 Area source chctzn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-113	2σ prep error 10.0 %			Reference Lab Notebook 6893 pg.113												
B0W8B2	N908172-07			2.3	0.500			100		100			45	10/04/99	10/11	LSC-004
B0W8B3	N908172-08			2.3	0.500			100		100			45	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 (N908172-07) (QC ID=31849)	N908172-12			2.3	0.500			100		100			45	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				
FOR 5 SAMPLES	MDA	2.3	±	0
	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
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SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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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SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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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Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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).

Lab id TMANC
Protocol Hanford
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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

SDG 7189
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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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Version Ver 1.0
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SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/02/99

SDG 7189
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0508

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'

Lab id TMANC
Protocol Hanford
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Case no SDG-H0508

METHOD SUMMARY

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

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.

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-8 <15' bgs		**SAF No.** B99-078
Ice Chest No. ERC 96-054	**Field Logbook No.** EL-1511		**Method of Shipment** Federal Express
Shipped To TMA/RECRA 8-27-99	**Offsite Property No.** A990232		**Bill of Lading/Air Bill No.** 4235 7952 8782
			COA B20CW2 671C

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

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										
B0W894	Soil	8-27-99	0748	X						X	B0W548		
B0W895	Soil	8-27-99	0750	X						X	B0W548		
B0W896	Soil	8-27-99	0820	X						X	B0W548		
B0W897	Soil	8-27-99	0835	X						X	B0W548		
B0W898	Soil	8-27-99	0854	X						X	B0W548		

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

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/27/99 1300	Refer IB	8/27/99 1300
REFER IB	8/30/99 11:00	CTRICE/Chice	8/30/99 11:00
CTRICE/Chice	8/30/99 1400	FEDEX	8/30/99 14:00
Fed Ex	8-31-99 9:30	TNV M. Goldenberg	8-31-99 9:39

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT PRESENT 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

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	B99-078-102	Page 2 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-054	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/~~RECRA~~ DZB 8-27-99	Offsite Property No.: A990232		Bill of Lading/Air Bill No.: 4235 7952 8782
			COA: B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W899 / Soil / 8-27-99 / 0910	X*						X*	Bowjt8		
~~B0W8B0~~ / Soil / DZB 8-27-99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Bowjt JB	Date/Time: 8/27/99 1300
Relinquished By: Porter JB	Date/Time: 8/30/99 11:00	Received By: CTRICE/CTrice	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CTrice	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex 8-31-99	Date/Time: 9:30	Received By: TNV M. Goldenberg	Date/Time: 9:30 8-31-99
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT PRESENT TO SIGN COCs

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

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21 BXB 8-27-99

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96-054	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RCRA BXB 8-27-99	Offsite Property No.: A990232	Bill of Lading/Air Bill No.: 4235 7952 8782	
		COA: B20EW1 67/C	

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										
B0W8B2	Soil	8-27-99	0926	X	X	X	X						X
B0W8B3	Soil	8-27-99	0945	X	X	X	X						X
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~		BXB 8-27-99										
~~B0W8B6~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 13:00	Received By: Peter TB	Date/Time: 8/27/99 13:00
Relinquished By: PETER TB	Date/Time: 8/30/99 11:00	Received By: CTRICE/Chris	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: FedEx	Date/Time: 8-31-99 9:30	Received By: TNV McGoldenberg 9:30	Date/Time: 8-31-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT PRESENT TO SIGN COC.

(1) ICP Metals - 6010A (Superfrace) {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 to ship

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 8-31-99 9:30

CoC No. B99-078-102, 103

Container I.D. No. ERC96-054 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

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

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 8-31-99 Time: 9:30

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 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# : 9908L930
SDG# : H0508
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 08-31-99

INORGANIC CASE NARRATIVE

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

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

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

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blanks were within method criteria.

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

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

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

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

10. Matrix quality control analyses were not performed for Nitrate Nitrite. These analyses will be performed and data will be submitted as required by the client.

Pat Ec

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-29-99
Date

njp\i08-930

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.

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 EPA 353.2
Nitrite EPA 352.3
Ammonia

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W899	% Solids	96.6		%	0.01	1.0
		Chloride by IC	1.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	23		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.4		MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	19.8		MG/KG	1.3	1.0
		Nitrate Nitrite	5.2		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.1		SOIL PH	0.0	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-002	B0W8B2	% Solids	95.6		%	0.01	1.0
		Chloride by IC	3.6		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	65		MG/KG	2.6	2.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	2.1		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	14.8		MG/KG	1.3	1.0
		Nitrate Nitrite	14.6		MG/KG	1.0	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.2		SOIL PH	0.0	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-003	B0W8B3	% Solids	92.4		%	0.01	1.0
		Chloride by IC	4.2		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	64		MG/KG	5.4	4.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	60.8		MG/KG	5.4	4.0
		Nitrate Nitrite	14.3		MG/KG	1.1	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.1		SOIL PH	0.0	1.0

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INORGANICS DATA SUMMARY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W8B3	Sulfide	1.1 u	MG/KG	1.1	1.0
-004	B0W894	% Solids	95.0	%	0.01	1.0
		Chloride by IC	1.8	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	43	MG/KG	1.3	1.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	4.3	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	81.2	MG/KG	2.6	2.0
		Nitrate Nitrite	10.3	MG/KG	0.21	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.8	SOIL PH	0.0	1.0
		Sulfide	1.1 u	MG/KG	1.1	1.0
-005	B0W895	% Solids	94.9	%	0.01	1.0
		Chloride by IC	1.9	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	47	MG/KG	1.3	1.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	5.6	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	57.7	MG/KG	2.6	2.0
		Nitrate Nitrite	9.7	MG/KG	0.21	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.9	SOIL PH	0.0	1.0
		Sulfide	4.0	MG/KG	1.1	1.0
-006	B0W896	% Solids	94.6	%	0.01	1.0
		Chloride by IC	2.0	MG/KG	1.3	1.0
		Fluoride by IC	2.7	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	47	MG/KG	1.3	1.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	4.7	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	108	MG/KG	5.3	4.0
		Nitrate Nitrite	9.7	MG/KG	0.20	1.0

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INORGANICS DATA SUMMARY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W896	Ammonia, as N	1.6		MG/KG	1.3	1.0
		pH	8.1		SOIL PH	0.0	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-007	B0W897	% Solids	95.9		%	0.01	1.0
		Chloride by IC	2.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	48		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	3.0		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	121		MG/KG	2.6	2.0
		Nitrate Nitrite	8.9		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.2		SOIL PH	0.0	1.0
		Sulfide	3.9		MG/KG	1.0	1.0
-008	B0W898	% Solids	96.2		%	0.01	1.0
		Chloride by IC	1.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	31		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.7		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	41.6		MG/KG	1.3	1.0
		Nitrate Nitrite	8.0		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.6		SOIL PH	0.0	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC080-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC099-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI061-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3B45-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM035-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD042-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LC102A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0

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INORGANICS ACCURACY REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W899	Chloride by IC	28.0	1.9	25.9	100.6	1.0
		Chloride by IC MSD	28.6	1.9	25.9	103.1	1.0
		Fluoride by IC	58.3	0.44	51.8	111.8	1.0
		Fluoride by IC MSD	58.2	0.44	51.8	111.6	1.0
		Nitrite by IC	27	1.3 u	26	104.5	1.0
		Nitrite by IC MSD	27	1.3 u	26	106.2	1.0
		Nitrate by IC	51	23	26	110.2	1.0
		Nitrate by IC MSD	52	23	26	112.0	1.0
		Phosphate by IC	27.7	1.4	25.9	101.7	1.0
		Phosphate by IC MSD	27.8	1.4	25.9	102.0	1.0
		Sulfate by IC	48.4	19.8	25.9	110.5	1.0
		Sulfate by IC MSD	48.4	19.8	25.9	110.5	1.0
		Ammonia, as N	102	1.3 u	101	101.5	1.0
		Ammonia, as N MSD	105	1.3 u	101	103.8	1.0
-002	B0W8B2	Cyanide, Total	5.0	0.52u	5.2	96.0	1.0
-008	B0W898	Soluble Chromium VI	3.9	0.42u	4.2	98.7	1.0
		Insoluble Chromium VI	1200	0.42u	1180	101.9	100
		Sulfide	377	0.0	397	95.0	1.0
		Sulfide MSD	352	0.0	397	88.6	1.0
BLANK10	99LIC080-MB1	Chloride by IC	24.3	1.2 u	25.0	97.3	1.0
		Fluoride by IC	53.3	2.5 u	50.0	106.6	1.0
		Nitrite by IC	24	1.2 u	25	97.5	1.0
		Nitrate by IC	24	1.2 u	25	97.9	1.0
		Phosphate by IC	25.8	1.2 u	25.0	103.1	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.2	1.0
BLANK10	99LVI061-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.0	1.0
		Insoluble Chromium VI	1120	0.40u	1160	96.1	100
BLANK10	99LN3B45-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.4	1.0
		Nitrate Nitrite MSD	5.2	0.20u	5.0	103.0	1.0
BLANK10	99LAM035-MB1	Ammonia, as N	52.4	1.2 u	50.0	104.8	1.0
		Ammonia, as N MSD	52.6	1.2 u	50.0	105.2	1.0
BLANK10	99LSD042-MB1	Sulfide	9.4	1.0 u	10.0	94.0	1.0
		Sulfide MSD	9.1	1.0 u	10.0	91.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W899	Chloride by IC	100.6	103.1	2.4
		Fluoride by IC	111.8	111.6	0.20
		Nitrite by IC	104.5	106.2	1.7
		Nitrate by IC	110.2	112.0	1.6
		Phosphate by IC	101.7	102.0	0.36
		Sulfate by IC	110.5	110.5	0.017
		Ammonia, as N	101.5	103.8	2.2
-008	B0W898	Chromium VI	98.7	101.9	3.1
		Sulfide	95.0	88.6	6.9
BLANK10	99LN3B45-MB1	Nitrate Nitrite	102.4	103.0	0.58
BLANK10	99LAM035-MB1	Ammonia, as N	104.8	105.2	0.48
BLANK10	99LSD042-MB1	Sulfide	94.0	91.0	3.2

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INORGANICS PRECISION REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W899	Chloride by IC	1.9	2.0	3.7	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	23	23	0.61	1.0
		Phosphate by IC	1.4	1.3 u	NC	1.0
		Sulfate by IC	19.8	19.6	0.60	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0
-002REP	B0W8B2	Cyanide, Total	0.52u	0.52u	NC	1.0
-008REP	B0W898	% Solids	96.2	96.5	0.23	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		pH	9.6	9.6	0.0	1.0
		Sulfide	1.0 u	1.0 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/29/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
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
LCS10	99LC102A-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	93.9
LCS20	99LC102A-LC2	Cyanide, Total LCS	9.1	10	MG/KG	90.6

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899						
% SOLIDS	001	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
CHLORIDE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
CHLORIDE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
CHLORIDE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	001	S	99LC099	08/27/99	09/06/99	09/06/99
PHOSPHATE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
PHOSPHATE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	001	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	001	S	99LIC080	08/27/99	09/25/99	09/25/99
SULFATE BY IC	001 REP	S	99LIC080	08/27/99	09/25/99	09/25/99
SULFATE BY IC	001 MS	S	99LIC080	08/27/99	09/25/99	09/25/99
SULFATE BY IC	001 MSD	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	001	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	001	S	99LAM035	08/27/99	09/15/99	09/15/99
AMMONIA	001 REP	S	99LAM035	08/27/99	09/15/99	09/15/99
AMMONIA	001 MS	S	99LAM035	08/27/99	09/15/99	09/15/99
AMMONIA	001 MSD	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	001	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	001	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W8B2						
% SOLIDS	002	S	99L%S121	08/27/99	09/02/99	09/03/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	002	S	99LC099	08/27/99	09/06/99	09/06/99
TOTAL CYANIDE	002 REP	S	99LC099	08/27/99	09/06/99	09/06/99
TOTAL CYANIDE	002 MS	S	99LC099	08/27/99	09/06/99	09/06/99
PHOSPHATE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	002	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	002	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	002	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	002	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	002	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	002	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W8B3						
% SOLIDS	003	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	003	S	99LC102A	08/27/99	09/09/99	09/10/99
PHOSPHATE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	003	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	003	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	003	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	003	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	003	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	003	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W894						
% SOLIDS	004	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	004	S	99LC099	08/27/99	09/06/99	09/06/99
PHOSPHATE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	004	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	004	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	004	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	004	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	004	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	004	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W895						
% SOLIDS	005	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	005	S	99LC099	08/27/99	09/06/99	09/06/99
PHOSPHATE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	005	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	005	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	005	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	005	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	005	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	005	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W896						
% SOLIDS	006	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	006	S	99LC099	08/27/99	09/06/99	09/06/99
PHOSPHATE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	006	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	006	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	006	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	006	S	99LAM035	08/27/99	09/15/99	09/15/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	006	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	006	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W897						
% SOLIDS	007	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	007	S	99LC102A	08/27/99	09/09/99	09/10/99
PHOSPHATE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	007	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	007	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	007	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	007	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	007	S	99LPH099	08/27/99	09/15/99	09/15/99
SULFIDE	007	S	99LSD042	08/27/99	09/02/99	09/02/99
B0W898						
% SOLIDS	008	S	99L%S121	08/27/99	09/02/99	09/03/99
% SOLIDS	008 REP	S	99L%S121	08/27/99	09/02/99	09/03/99
CHLORIDE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
FLUORIDE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRITE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
TOTAL CYANIDE	008	S	99LC102A	08/27/99	09/09/99	09/10/99
PHOSPHATE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
CHROMIUM VI	008	S	99LVI061	08/27/99	09/07/99	09/07/99
CHROMIUM VI	008 REP	S	99LVI061	08/27/99	09/07/99	09/07/99
CHROMIUM VI	008 MS	S	99LVI061	08/27/99	09/07/99	09/07/99
CHROMIUM VI	008 MSD	S	99LVI061	08/27/99	09/07/99	09/07/99
SULFATE BY IC	008	S	99LIC080	08/27/99	09/25/99	09/25/99
NITRATE NITRITE	008	S	99LN3B45	08/27/99	09/16/99	09/17/99
AMMONIA	008	S	99LAM035	08/27/99	09/15/99	09/15/99
PH	008	S	99LPH099	08/27/99	09/15/99	09/15/99
PH	008 REP	S	99LPH099	08/27/99	09/15/99	09/15/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	008	S	99LSD042	08/27/99	09/02/99	09/02/99
SULFIDE	008 REP	S	99LSD042	08/27/99	09/02/99	09/02/99
SULFIDE	008 MS	S	99LSD042	08/27/99	09/02/99	09/02/99
SULFIDE	008 MSD	S	99LSD042	08/27/99	09/02/99	09/02/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
CHLORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRITE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRITE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
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
PHOSPHATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
PHOSPHATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
CHROMIUM VI	MB1	S	99LVI061	N/A	09/07/99	09/07/99
CHROMIUM VI	MB1 BS	S	99LVI061	N/A	09/07/99	09/07/99
CHROMIUM VI	MB1 BSD	S	99LVI061	N/A	09/07/99	09/07/99
SULFATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
SULFATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE NITRITE	MB1	S	99LN3B45	N/A	09/17/99	09/17/99
NITRATE NITRITE	MB1 BS	S	99LN3B45	N/A	09/17/99	09/17/99
NITRATE NITRITE	MB1 BSD	S	99LN3B45	N/A	09/17/99	09/17/99
AMMONIA	MB1	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BS	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BSD	S	99LAM035	N/A	09/15/99	09/15/99
SULFIDE	MB1	S	99LSD042	N/A	09/02/99	09/02/99
SULFIDE	MB1 BS	S	99LSD042	N/A	09/02/99	09/02/99
SULFIDE	MB1 BSD	S	99LSD042	N/A	09/02/99	09/02/99
TOTAL CYANIDE	LC1 L	S	99LC102A	N/A	09/09/99	09/10/99
TOTAL CYANIDE	LC2 L	S	99LC102A	N/A	09/09/99	09/10/99
TOTAL CYANIDE	MB1	S	99LC102A	N/A	09/09/99	09/10/99

RECRA LabNet Use Only

99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

017

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 8/31/99 Date Due: 9/30/99

Account #:

Refrigerator #		1	6	1					6		6	6				
#/Type Container	Liquid															
	Solid	1q	1q	1					1q		1q	1q				
Volume	Liquid															
	Solid	250	500	1					500		250	1lr				
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		OG24H OGCSC	OG25H ODRO	OPCB					MetO		IPH	AnaO				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB			MetO		IPH	AnaO				
001	B0W899			S	8/27/99	0910	✓	✓	✓			✓		✓	✓				
2	B2					0926													
3	B3					0945													
4	94					0748													
5	96					0750													
6	96					0820													
7	97					0836													
8	98					0854													

MetO = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICP6

Special Instructions:

Req # B99-078

9/2/99 added IN3N2 to all samples

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:

1. Run matrix QC

AnaO2 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,

3. ICSO4, ISFD, INH3N, ICNTO, IN3N2

* 4. 42357952 8808 - 4.2°C

5. 42357952 8819 - 4.7°C

6. 42357952 8820 - 5.8°C

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. * °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	8.31.99	0930

Relinquished by	Received by	Date	Time
	Original		
	Rewritten		

KJ 7700L730

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8819
			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								
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X	Bowyer	
~~B0W8B0~~	~~Soil~~	8-27-99									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: CBRUCE/Chris	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99 /09:30	Received By: D Smith	Date/Time: 8-31-99 /0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

collected

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

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

4235 7952 8819 4.7°

4235 7952 8820 5.8°

4235 7952 8808 temp: 4.2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21

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-8 >15' bgs		SAF No. B99-078
Ice Chest No. SML-579	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-27-99	Offsite Property No. A99 0234		Bill of Lading/Air Bill No. 4235 7952 8820
			COA BOW B20CW1 671C

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										
002 B0W8B2	Soil	8-27-99	0926					X	X	X	X	X	
003 B0W8B3	Soil	8-27-99	0945					X	X	X	X	X	
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~		8-27-99										
~~B0W8B6~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: Peter JB	Date/Time: 8/30/99 11:00	Received By: C Price	Date/Time: 8/30/99 11:00
Relinquished By: C Price	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: D Smith	Date/Time: 8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

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	B99-078-102	Page 1 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA ~~8-27-99~~	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8808
			COA: B20CW167C

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									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		Bowsl8	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		Bowsl8	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		Bowsl8	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		Bowsl8	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		Bowsl8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Peter JB	Date/Time: 8/27/99 1300
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: CTRICE/CAinc	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CAinc	Date/Time: 8/30/99 1400	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: [illegible]	Date/Time: 8-31-99/0930
LABORATORY SECTION: Received By		Title	Date/Time
FINAL SAMPLE DISPOSITION: Disposal Method		Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L930
SDG/SAF# : B99-078/H0508

W.O.# : 10985-001-001-9999-00
Date Received: 08-31-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 8 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 temperatures have been recorded on the Chain of Custody.

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

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

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

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

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

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 21 pages.

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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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-30-99
Date

mld/m08-930

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L930

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 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W899	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.3	MG/KG	0.28	1.0
		Barium, Total	50.3	MG/KG	0.03	1.0
		Beryllium, Total	0.1	MG/KG	0.009	1.0
		Cadmium, Total	0.22	MG/KG	0.03	1.0
		Chromium, Total	4.0	MG/KG	0.07	1.0
		Copper, Total	14.6	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.0	MG/KG	0.10	1.0
		Lead, Total	3.6	MG/KG	0.18	1.0
		Selenium, Total	0.66	MG/KG	0.32	1.0
		Vanadium, Total	68.3	MG/KG	0.05	1.0
		Zinc, Total	48.0	MG/KG	0.07	1.0
-002	B0W8B2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.8	MG/KG	0.27	1.0
		Barium, Total	50.5	MG/KG	0.02	1.0
		Beryllium, Total	0.16	MG/KG	0.008	1.0
		Cadmium, Total	0.14	MG/KG	0.02	1.0
		Chromium, Total	5.8	MG/KG	0.07	1.0
		Copper, Total	13.9	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.0	MG/KG	0.1	1.0
		Lead, Total	4.0	MG/KG	0.17	1.0
		Selenium, Total	0.57	MG/KG	0.30	1.0
		Vanadium, Total	62.0	MG/KG	0.05	1.0
		Zinc, Total	45.4	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W8B3	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.9	MG/KG	0.31	1.0
		Barium, Total	67.7	MG/KG	0.03	1.0
		Beryllium, Total	0.20	MG/KG	0.009	1.0
		Cadmium, Total	0.12	MG/KG	0.03	1.0
		Chromium, Total	6.1	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	8.3	MG/KG	0.11	1.0
		Lead, Total	4.3	MG/KG	0.19	1.0
		Selenium, Total	0.64	MG/KG	0.34	1.0
		Vanadium, Total	53.6	MG/KG	0.06	1.0
		Zinc, Total	45.9	MG/KG	0.07	1.0
-004	B0W894	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.1	MG/KG	0.26	1.0
		Barium, Total	85.2	MG/KG	0.02	1.0
		Beryllium, Total	0.30	MG/KG	0.008	1.0
		Cadmium, Total	0.12	MG/KG	0.02	1.0
		Chromium, Total	8.8	MG/KG	0.06	1.0
		Copper, Total	14.3	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.3	MG/KG	0.1	1.0
		Lead, Total	5.1	MG/KG	0.17	1.0
		Selenium, Total	0.92	MG/KG	0.30	1.0
		Vanadium, Total	64.8	MG/KG	0.05	1.0
		Zinc, Total	50.1	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W895	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.8	MG/KG	0.34	1.0
		Barium, Total	80.3	MG/KG	0.03	1.0
		Beryllium, Total	0.22	MG/KG	0.01	1.0
		Cadmium, Total	0.18	MG/KG	0.03	1.0
		Chromium, Total	7.4	MG/KG	0.08	1.0
		Copper, Total	13.2	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.0	MG/KG	0.13	1.0
		Lead, Total	4.6	MG/KG	0.22	1.0
		Selenium, Total	0.94	MG/KG	0.39	1.0
		Vanadium, Total	69.8	MG/KG	0.06	1.0
		Zinc, Total	51.3	MG/KG	0.08	1.0
-006	B0W896	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.9	MG/KG	0.27	1.0
		Barium, Total	83.4	MG/KG	0.02	1.0
		Beryllium, Total	0.35	MG/KG	0.008	1.0
		Cadmium, Total	0.16	MG/KG	0.02	1.0
		Chromium, Total	8.5	MG/KG	0.07	1.0
		Copper, Total	13.8	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.7	MG/KG	0.1	1.0
		Lead, Total	5.0	MG/KG	0.17	1.0
		Selenium, Total	0.58	MG/KG	0.30	1.0
		Vanadium, Total	61.6	MG/KG	0.05	1.0
		Zinc, Total	49.6	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W897	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.8	MG/KG	0.33	1.0
		Barium, Total	49.3	MG/KG	0.03	1.0
		Beryllium, Total	0.28	MG/KG	0.01	1.0
		Cadmium, Total	0.1	MG/KG	0.03	1.0
		Chromium, Total	4.9	MG/KG	0.08	1.0
		Copper, Total	15.3	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.3	MG/KG	0.12	1.0
		Lead, Total	3.6	MG/KG	0.21	1.0
		Selenium, Total	0.58	MG/KG	0.37	1.0
		Vanadium, Total	68.0	MG/KG	0.06	1.0
		Zinc, Total	48.5	MG/KG	0.08	1.0
-008	B0W898	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.4	MG/KG	0.26	1.0
		Barium, Total	32.9	MG/KG	0.02	1.0
		Beryllium, Total	0.11	MG/KG	0.008	1.0
		Cadmium, Total	0.07	MG/KG	0.02	1.0
		Chromium, Total	3.6	MG/KG	0.06	1.0
		Copper, Total	12.5	MG/KG	0.09	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	6.5	MG/KG	0.09	1.0
		Lead, Total	2.8	MG/KG	0.17	1.0
		Selenium, Total	0.64	MG/KG	0.29	1.0
		Vanadium, Total	56.3	MG/KG	0.05	1.0
		Zinc, Total	41.0	MG/KG	0.06	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0643-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.10	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09	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	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0270-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W899	Silver, Total	4.2	0.09u	4.6	91.3	1.0
		Arsenic, Total	173	3.3	183	92.7	1.0
		Barium, Total	219	50.3	183	92.2	1.0
		Beryllium, Total	4.5	0.1	4.6	95.7	1.0
		Cadmium, Total	4.5	0.22	4.6	93.1	1.0
		Chromium, Total	22.7	4.0	18.3	102.2	1.0
		Copper, Total	36.1	14.6	22.9	93.9	1.0
		Mercury, Total	0.15	0.02u	0.15	100	1.0
		Nickel, Total	49.8	7.0	45.8	93.4	1.0
		Lead, Total	45.7	3.6	45.8	91.9	1.0
		Selenium, Total	165	0.66	183	89.9	1.0
		Vanadium, Total	117	68.3	45.8	106.8	1.0
		Zinc, Total	92.6	48.0	45.8	97.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W899	Silver, Total	0.09u	0.09u	NC	1.0
		Arsenic, Total	3.3	2.9	12.9	1.0
		Barium, Total	50.3	56.8	12.1	1.0
		Beryllium, Total	0.1	0.26	90.9	1.0
		Cadmium, Total	0.22	0.16	28.3	1.0
		Chromium, Total	4.0	4.5	11.8	1.0
		Copper, Total	14.6	14.8	1.4	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	7.0	8.1	14.6	1.0
		Lead, Total	3.6	3.3	8.7	1.0
		Selenium, Total	0.66	0.55	18.6	1.0
		Vanadium, Total	68.3	73.4	7.2	1.0
		Zinc, Total	48.0	49.4	2.9	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/30/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L930

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0643-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Arsenic, LCS	974	1000	MG/KG	97.4
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.4	25.0	MG/KG	97.6
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	50.3	50.0	MG/KG	100.6
		Copper, LCS	124	125	MG/KG	99.5
		Nickel, LCS	197	200	MG/KG	98.4
		Lead, LCS	246	250	MG/KG	98.6
		Selenium, LCS	945	1000	MG/KG	94.5
		Vanadium, LCS	256	250	MG/KG	102.5
		Zinc, LCS	96.7	100	MG/KG	96.7
LCS1	99C0270-LC1	Mercury, LCS	1.1	1.0	MG/KG	105.5

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899						
SILVER, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/27/99
SILVER, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/27/99
SILVER, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
ARSENIC, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
ARSENIC, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/27/99
BARIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/27/99
BARIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
BERYLLIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
BERYLLIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/27/99
COPPER, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/27/99
COPPER, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	001	S	99C0270	08/27/99	09/12/99	09/12/99
MERCURY, TOTAL	001 REP	S	99C0270	08/27/99	09/12/99	09/12/99
MERCURY, TOTAL	001 MS	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
NICKEL, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
NICKEL, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/27/99
VANADIUM, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/27/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	001	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	001 REP	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	001 MS	S	99L0643	08/27/99	09/22/99	09/27/99
B0W8B2						
SILVER, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	002	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	002	S	99L0643	08/27/99	09/22/99	09/27/99
B0W8B3						
SILVER, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	003	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	003	S	99L0643	08/27/99	09/22/99	09/27/99
B0W894						
SILVER, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/27/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	004	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	004	S	99L0643	08/27/99	09/22/99	09/27/99
B0W895						
SILVER, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	005	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	005	S	99L0643	08/27/99	09/22/99	09/27/99
B0W896						
SILVER, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/27/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	006	S	99L0643	08/27/99	09/22/99	09/27/99
B0W897						
SILVER, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	007	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	007	S	99L0643	08/27/99	09/22/99	09/27/99
B0W898						
SILVER, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/27/99
ARSENIC, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
BARIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/27/99
BERYLLIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
CADMIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
CHROMIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
COPPER, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/27/99
MERCURY, TOTAL	008	S	99C0270	08/27/99	09/12/99	09/12/99
NICKEL, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
LEAD, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
SELENIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/28/99
VANADIUM, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/27/99
ZINC, TOTAL	008	S	99L0643	08/27/99	09/22/99	09/27/99

LAB QC:

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
SILVER, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
ARSENIC LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
ARSENIC, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
BARIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
BARIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
BERYLLIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
CADMIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
CADMIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
CHROMIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
CHROMIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
COPPER LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
COPPER, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
MERCURY LABORATORY	LC1 BS	S	99C0270	N/A	09/12/99	09/12/99
MERCURY, TOTAL	MB1	S	99C0270	N/A	09/12/99	09/12/99
NICKEL LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
NICKEL, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
LEAD LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
LEAD, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
SELENIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/28/99
SELENIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/28/99
VANADIUM LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
VANADIUM, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99
ZINC LABORATORY	LC1 BS	S	99L0643	N/A	09/22/99	09/27/99
ZINC, TOTAL	MB1	S	99L0643	N/A	09/22/99	09/27/99

RECRA LabNet Use Only

99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
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	UV					
Preservatives																	
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal								
	ORGANIC: BNA																
	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	OG24H OGCSC	OG25H ODRO	OPCB	MetD		IPH	AngD					
001	BØW899			S	8/27/99	0910	✓	✓	✓	✓		✓	✓					
2	B2					0926												
3	B3					0945												
4	94					0748												
5	96					0750												
6	96					0820												
7	97					0836												
8	98					0854												

MetD = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICP6

Special Instructions:
Seq # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:
1. Run matrix QC
AngD2 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO
* 4. 423579528808 - 4.2°C
5. 423579528819 - 4.7°C
6. 423579528820 - 5.8°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

01 00

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-102

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA ~~B70~~ 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8819
			COA: B20CW167/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None				
Type of Container	sG	sG	sG	sG	sG	sG	sG				
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										
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X		Bowsla		
~~B0W8B0~~	~~Soil~~	~~B70 8-27-99~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: CHRIS CEARLOCK	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8.31.99 /09:30	Received By: [illegible]	Date/Time: 8.31.99 /0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

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

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

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

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

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

4235 7952 8819 4.7°

4235 7952 8820 5.8°

4235 7952 8808 temp. 4.2°

019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: SML-579	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A99 0234	Bill of Lading/Air Bill No.: 4235 7952 8820	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS										
Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	sG
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
Special Handling and/or Storage										
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										
002 B0W8B2	Soil	8-27-99	0926					X	X	X	X	X	
003 B0W8B3	Soil	8-27-99	0945					X	X	X	X	X	
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~												
~~B0W8B6~~	~~Soil~~												

8-27-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: C Price	Date/Time: 8/30/99 11:00
Relinquished By: C Price	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: D Amen	Date/Time: 8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

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

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

020

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 1 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA BJB 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8808
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		Bowsk	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		Bowsk	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		Bowsk	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		Bowsk	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		Bowsk	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Peter J.B.	Date/Time: 8/27/99 1300
Relinquished By: PETER J.B.	Date/Time: 8/30/99 11:00	Received By: CTRICE/CAINE	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CAINE	Date/Time: 8/30/99 1400	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: [illegible]	Date/Time: 8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCS.

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

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

021

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L930
SDG/SAF#: H0508/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 08-31-99

DIESEL RANGE ORGANICS

The set of samples consisted of eight (8) soil samples collected on 08-27-99.

The samples and their associated QC samples were prepared on 09-10-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-17,18-99. The analysis met the intent of method WTPH-D.

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

2. All required holding times for extraction and analysis were met.

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

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

5. All surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

R:\SHARE\LC\GCSCAN\08-930d.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.

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: 09/22/99 08:36

RFW Batch Number: 9908L930 Client: TNU-HANFORD B99-078 Work Order: 10985-001-001-9999-00 Page: 1

003

	Cust ID:	B0W899	B0W899	B0W899	B0W8B2	B0W8B3	B0W894
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 %	74 %	75 %	71 %	68 %	76 %
Diesel Range Organics		4.0 U	76 %	67 %	4.2 U	4.3 U	4.2 U

	Cust ID:	B0W895	B0W896	B0W897	B0W898	BLK	BLK BS
Sample Information	RFW#:	005	006	007	008	99LE1105-MB1	99LE1105-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	74 %	74 %	57 %	78 %	64 %	74 %
Diesel Range Organics		4.1 U	4.2 U	4.1 U	4.1 U	4.0 U	73 %

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.

9/22/99

9/24/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899	001	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W899	001 MS	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W899	001 MSD	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W8B2	002	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W8B3	003	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W894	004	S	99LE1105	08/27/99	09/10/99	09/17/99
B0W895	005	S	99LE1105	08/27/99	09/10/99	09/18/99
B0W896	006	S	99LE1105	08/27/99	09/10/99	09/18/99
B0W897	007	S	99LE1105	08/27/99	09/10/99	09/18/99
B0W898	008	S	99LE1105	08/27/99	09/10/99	09/18/99

LAB QC:

BLK	MB1	S	99LE1105	N/A	09/10/99	09/17/99
BLK	MB1 BS	S	99LE1105	N/A	09/10/99	09/17/99

09/24/99

RECRA LabNet Use Only

99081930

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 #: 10986-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
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	Ur					
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		0624H OGCSC	0625H ODRO	0PCB					MetQ		1PH	AnaQ					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625H ODRO	0PCB			MetQ		1PH	AnaQ				
001	B0W899			S	8/27/99	0910	✓	✓	✓			✓		✓	✓				
2	B2					0926													
3	B3					0945													
4	94					0748													
5	95					0750													
6	96					0820													
7	97					0836													
8	98					0854													

MetQ = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICPG

Special Instructions:
Ref # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:
1. Run matrix QC
AnaQ2 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO
* 4. 42357952 8808 - 4.2°C
5. 42357952 8819 - 4.7°C
6. 42357952 8820 - 5.8°C

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

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

74 74081930

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8819
			COA: B20CW167C

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										
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X		Bowers		
~~B0W8B0~~	~~Soil~~	8-27-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter J.B.	Date/Time: 8/27/99 13:00
Relinquished By: PETER J.B.	Date/Time: 8/30/99 11:00	Received By: CTRUCE/Chris	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: FedEx	Date/Time: 8-31-99 /09:30	Received By: [illegible]	Date/Time: 8-31-99 /0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

Collect

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

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

4235 7952 8819 4.7°

4235 7952 8820 5.8°

4235 7952 8808

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: SML-579	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A99 0234	Bill of Lading/Air Bill No.: 4235 7952 8820	
		COA: BOW B20CW1 671C	

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										
002 B0W8B2	Soil	8-27-99	0926					X	X	X	X	X	
003 B0W8B3	Soil	8-27-99	0945					X	X	X	X	X	
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~												
~~B0W8B6~~	~~Soil~~												

8-27-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: Peter JB	Date/Time: 8/30/99 11:00	Received By: C Luce	Date/Time: 8/30/99 11:00
Relinquished By: C Luce	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8.31.99/0930	Received By: D. Smith	Date/Time: 8.31.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

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	B99-078-102	Page 1 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8808
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		Bowsl8	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		Bowsl8	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		Bowsl8	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		Bowsl8	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		Bowsl8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Peter LB	Date/Time: 8/27/99 1300
Relinquished By: PETER LB	Date/Time: 8/30/99 11:00	Received By: CTRICE/CAINE	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CAINE	Date/Time: 8/30/99 1400	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: D. Smith	Date/Time: 8-31-99/0930
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9908L930
SDG/SAF#: H0508/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 08-31-99

PCB

The set of samples consisted of eight (8) soil samples collected on 08-27-99.

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 09-25-99. 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 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.

OCT 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

pef\r:\group\data\pest\08L-930.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 9 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 17:11

RFW Batch Number: **9908L930** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0W899	B0W8B2	B0W8B2	B0W8B2	B0W8B3	B0W894
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	115 %	95 %	100 %	98 %	88 %	92 %
	Decachlorobiphenyl	104 %	91 %	95 %	89 %	87 %	89 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		35 U	35 U	35 U	35 U	36 U	35 U
Aroclor-1221		69 U	70 U	70 U	70 U	72 U	70 U
Aroclor-1232		35 U	35 U	35 U	35 U	36 U	35 U
Aroclor-1242		35 U	35 U	35 U	35 U	36 U	35 U
Aroclor-1248		35 U	35 U	35 U	35 U	36 U	35 U
Aroclor-1254		35 U	35 U	83 %	81 %	36 U	35 U
Aroclor-1260		35 U	35 U	35 U	35 U	36 U	35 U

	Cust ID:	B0W895	B0W896	B0W897	B0W898	PBLKUJ	PBLKUJ BS
Sample Information	RFW#:	005	006	007	008	99LE1088-MB1	99LE1088-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	108 %	72 %	78 %	80 %	115 %	105 %
	Decachlorobiphenyl	99 %	74 %	77 %	78 %	107 %	98 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		35 U	35 U	35 U	35 U	33 U	33 U
Aroclor-1221		70 U	70 U	70 U	69 U	67 U	67 U
Aroclor-1232		35 U	35 U	35 U	35 U	33 U	33 U
Aroclor-1242		35 U	35 U	35 U	35 U	33 U	33 U
Aroclor-1248		35 U	35 U	35 U	35 U	33 U	33 U
Aroclor-1254		35 U	35 U	35 U	35 U	33 U	65 %
Aroclor-1260		35 U	35 U	35 U	35 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

AW 09-28-99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899	001	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W8B2	002	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W8B2	002 MS	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W8B2	002 MSD	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W8B3	003	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W894	004	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W895	005	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W896	006	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W897	007	S	99LE1088	08/27/99	09/07/99	09/25/99
B0W898	008	S	99LE1088	08/27/99	09/07/99	09/25/99

LAB QC:

PBLKUJ	MB1	S	99LE1088	N/A	09/07/99	09/25/99
PBLKUJ	MB1 BS	S	99LE1088	N/A	09/07/99	09/25/99

AW 09-28-99

RECRA LabNet Use Only

99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 8/31/99 Date Due: 9/30/99

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	UV				
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		0024H OGCSC	0025H ODRO	0713B					MetQ		1PH	AnaQ				

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 OGCSC	0025H ODRO	0713B			MetQ		1PH	AnaQ				
001	BØW899			S	8/27/99	0910	✓	✓	✓			✓		✓	✓				
2	B2					0926													
3	B3					0945													
4	94					0748													
5	96					0750													
6	96					0820													
7	97					0836													
8	98					0854													

MetQ = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, HG, ICRG

Special Instructions:

Seq # B99-078

9/2/99 added IN3N2 to all samples

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:

1. Run matrix QC
2. AnaQ = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO, IN3N2
4. * 42357952 8808 - 4.2°C
5. 42357952 8819 - 4.7°C
6. 42357952 8820 - 5.8°C

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2

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-8 <15' bgs		SAF No. B99-078
Ice Chest No. ERC 96-047	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-27-99	Offsite Property No. A990233		Bill of Lading/Air Bill No. 4235 7952 8819
			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								
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X	Bowers	
~~B0W8B0~~	~~Soil~~	8-27-99									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Bruce Porter	8/27/99 13:00	Peter JB	8/27/99 13:00
Relinquished By	Date/Time	Received By	Date/Time
PETER JB	8/30/99 11:00	CTRICE/Chris	8/30/99 11:00
Relinquished By	Date/Time	Received By	Date/Time
Chris	8/30/99 14:00	FEDEX	8/30/99 14:00
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	8-31-99/09:30	D Smith	8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

Collected

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

4235 7952 8819 4.7°

4235 7952 8820 5.8°

4235 7952 8808 temp 4.2°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: SML-579	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-27-99	Offsite Property No.: B99 0234	Bill of Lading/Air Bill No.: 4235 7952 8820	
		COA: Bow B20CW1 671C	

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	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.
B0W8B2	Soil	8-27-99	0926					X	X	X	X	X	
B0W8B3	Soil	8-27-99	0945					X	X	X	X	X	
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~												
~~B0W8B6~~	~~Soil~~												

8-27-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: Peter JB	Date/Time: 8/30/99 11:00	Received By: C Price	Date/Time: 8/30/99 11:00
Relinquished By: C Price	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8.31.99/0930	Received By: D. Smith	Date/Time: 8.31.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 BOWSL8 to ship

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

B99-078-102

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA ~~B 7B~~ 8-27-99	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8808
			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									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		Bowslb	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		Bowslb	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		Bowslb	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		Bowslb	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		Bowslb	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/27/99 1300	Peter JB	8/27/99 1300
Peter JB	8/30/99 11:00	CTRICE/CAnu	8/30/99 11:00
CTRICE/CAnu	8/30/99 1400	FEDEX	8/30/99 14:00
Fed Ex	8-31-99/0930	D Smith	8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

LD COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L930 e H0508 osj
SDG/SAF #: H0510/B99-078 10/14/99

W.O. #: 10985-001-001-9999-00
Date Received: 08-31-99

SEMIVOLATILE

Eight (8) soil samples were collected on 08-27-99.

The samples and their associated QC samples were extracted on 09-07-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-23,24-99.

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

1. The cooler 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. The samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

5. All surrogate recoveries were within EPA QC limits.

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

7. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-13-99
Date

som\gorup\data\bna\tnu08930.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 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

	Cust ID:	B0W899	B0W899	B0W899	B0W8B2	B0W8B3	B0W894
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	79 %	89 %	86 %	84 %	87 %	84 %
	2-Fluorobiphenyl	79 %	78 %	73 %	81 %	73 %	73 %
	Terphenyl-d14	88 %	85 %	82 %	92 %	84 %	78 %
	Phenol-d5	66 %	64 %	70 %	71 %	71 %	67 %
	2-Fluorophenol	63 %	69 %	73 %	70 %	65 %	64 %
	2,4,6-Tribromophenol	71 %	83 %	79 %	75 %	70 %	69 %
		fl	fl	fl	fl	fl	fl
Phenol		350 U	58 %	66 %	350 U	360 U	350 U
bis(2-Chloroethyl)ether		350 U	350 U	350 U	350 U	360 U	350 U
2-Chlorophenol		350 U	67 %	71 %	350 U	360 U	350 U
1,3-Dichlorobenzene		350 U	350 U	350 U	350 U	360 U	350 U
1,4-Dichlorobenzene		350 U	76 %	79 %	350 U	360 U	350 U
1,2-Dichlorobenzene		350 U	350 U	350 U	350 U	360 U	350 U
2-Methylphenol		350 U	350 U	350 U	350 U	360 U	350 U
2,2'-oxybis(1-Chloropropane)		350 U	350 U	350 U	350 U	360 U	350 U
4-Methylphenol		350 U	350 U	350 U	350 U	360 U	350 U
N-Nitroso-di-n-propylamine		350 U	100 %	112 %	350 U	360 U	350 U
Hexachloroethane		350 U	350 U	350 U	350 U	360 U	350 U
Nitrobenzene		350 U	350 U	350 U	350 U	360 U	350 U
Isophorone		350 U	350 U	350 U	350 U	360 U	350 U
2-Nitrophenol		350 U	350 U	350 U	350 U	360 U	350 U
2,4-Dimethylphenol		350 U	350 U	350 U	350 U	360 U	350 U
bis(2-Chloroethoxy)methane		350 U	350 U	350 U	350 U	360 U	350 U
2,4-Dichlorophenol		350 U	350 U	350 U	350 U	360 U	350 U
1,2,4-Trichlorobenzene		350 U	85 %	83 %	350 U	360 U	350 U
Naphthalene		350 U	350 U	350 U	350 U	360 U	350 U
4-Chloroaniline		350 U	350 U	350 U	350 U	360 U	350 U
Hexachlorobutadiene		350 U	350 U	350 U	350 U	360 U	350 U
4-Chloro-3-methylphenol		350 U	71 %	75 %	350 U	360 U	350 U
2-Methylnaphthalene		350 U	350 U	350 U	350 U	360 U	350 U
Hexachlorocyclopentadiene		350 U	350 U	350 U	350 U	360 U	350 U
2,4,6-Trichlorophenol		350 U	350 U	350 U	350 U	360 U	350 U
2,4,5-Trichlorophenol		860 U	860 U	860 U	870 U	900 U	880 U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W899		B0W899		B0W899		B0W8B2		B0W8B3		B0W894	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	350	U	350	U	350	U	360	U	350	U
2-Nitroaniline	860	U	860	U	860	U	870	U	900	U	880	U
Dimethylphthalate	350	U	350	U	350	U	350	U	360	U	350	U
Acenaphthylene	350	U	350	U	350	U	350	U	360	U	350	U
2,6-Dinitrotoluene	350	U	350	U	350	U	350	U	360	U	350	U
3-Nitroaniline	860	U	860	U	860	U	870	U	900	U	880	U
Acenaphthene	350	U	82	%	79	%	350	U	360	U	350	U
2,4-Dinitrophenol	860	U	860	U	860	U	870	U	900	U	880	U
4-Nitrophenol	860	U	42	%	42	%	870	U	900	U	880	U
Dibenzofuran	350	U	350	U	350	U	350	U	360	U	350	U
2,4-Dinitrotoluene	350	U	82	%	82	%	350	U	360	U	350	U
Diethylphthalate	350	U	350	U	350	U	350	U	360	U	350	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	360	U	350	U
Fluorene	350	U	350	U	350	U	350	U	360	U	350	U
4-Nitroaniline	860	U	860	U	860	U	870	U	900	U	880	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	870	U	900	U	880	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	360	U	350	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	360	U	350	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	360	U	350	U
Pentachlorophenol	860	U	68	%	73	%	870	U	900	U	880	U
Phenanthrene	350	U	350	U	350	U	350	U	360	U	350	U
Anthracene	350	U	350	U	350	U	350	U	360	U	350	U
Carbazole	350	U	350	U	350	U	350	U	360	U	350	U
Di-n-butylphthalate	350	U	350	U	350	U	350	U	21	J	350	U
Fluoranthene	350	U	350	U	350	U	350	U	360	U	350	U
Pyrene	350	U	84	%	86	%	350	U	360	U	350	U
Butylbenzylphthalate	350	U	350	U	350	U	350	U	360	U	350	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	360	U	350	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	360	U	350	U
Chrysene	350	U	350	U	350	U	350	U	360	U	350	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	350	U	360	U	350	U
Di-n-octyl phthalate	350	U	350	U	350	U	350	U	360	U	350	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	360	U	350	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	360	U	350	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	360	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	360	U	350	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	350	U	360	U	350	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	U	360	U	350	U

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

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

RFW Batch Number: **9908L930** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 09/29/99 17:08 Page: 2a

	Cust ID:	B0W895		B0W896		B0W897		B0W898		SBLKCP		SBLKCP BS	
Sample Information	RFW#:	005		006		007		008		99LE1086-MB1		99LE1086-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	78	%	75	%	78	%	90	%	99	%	95	%
	2-Fluorobiphenyl	77	%	71	%	77	%	89	%	100	%	91	%
	Terphenyl-d14	85	%	82	%	82	%	95	%	103	%	103	%
	Phenol-d5	70	%	61	%	68	%	80	%	84	%	86	%
	2-Fluorophenol	66	%	60	%	66	%	76	%	79	%	81	%
	2,4,6-Tribromophenol	67	%	67	%	63	%	78	%	77	%	83	%
Phenol		350	U	350	U	350	U	350	U	330	U	78	%
bis(2-Chloroethyl)ether		350	U	350	U	350	U	350	U	330	U	330	U
2-Chlorophenol		350	U	350	U	350	U	350	U	330	U	79	%
1,3-Dichlorobenzene		350	U	350	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	350	U	350	U	350	U	330	U	85	%
1,2-Dichlorobenzene		350	U	350	U	350	U	350	U	330	U	330	U
2-Methylphenol		350	U	350	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	350	U	330	U	330	U
4-Methylphenol		350	U	350	U	350	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	350	U	350	U	350	U	330	U	102	%
Hexachloroethane		350	U	350	U	350	U	350	U	330	U	330	U
Nitrobenzene		350	U	350	U	350	U	350	U	330	U	330	U
Isophorone		350	U	350	U	350	U	350	U	330	U	330	U
2-Nitrophenol		350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		350	U	350	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		350	U	350	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	350	U	350	U	350	U	330	U	89	%
Naphthalene		350	U	350	U	350	U	350	U	330	U	330	U
4-Chloroaniline		350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		350	U	350	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	350	U	350	U	350	U	330	U	80	%
2-Methylnaphthalene		350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		880	U	880	U	870	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

70

Cust ID:	B0W895		B0W896		B0W897		B0W898		SBLKCP		SBLKCP BS	
RFW#:	005		006		007		008		99LE1086-MB1		99LE1086-MB1	
2-Chloronaphthalene	350	U	350	U	350	U	350	U	330	U	330	U
2-Nitroaniline	880	U	880	U	870	U	860	U	840	U	840	U
Dimethylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
Acenaphthylene	350	U	350	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	350	U	350	U	350	U	330	U	330	U
3-Nitroaniline	880	U	880	U	870	U	860	U	840	U	840	U
Acenaphthene	350	U	350	U	350	U	350	U	330	U	91	%
2,4-Dinitrophenol	880	U	880	U	870	U	860	U	840	U	840	U
4-Nitrophenol	880	U	880	U	870	U	860	U	840	U	70	%
Dibenzofuran	350	U	350	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	350	U	350	U	350	U	330	U	91 *	%
Diethylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	350	U	330	U	330	U
Fluorene	350	U	350	U	350	U	350	U	330	U	330	U
4-Nitroaniline	880	U	880	U	870	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	880	U	880	U	870	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	350	U	350	U	350	U	350	U	330	U	330	U
Pentachlorophenol	880	U	880	U	870	U	860	U	840	U	79	%
Phenanthrene	350	U	350	U	350	U	350	U	330	U	330	U
Anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Carbazole	350	U	350	U	350	U	350	U	330	U	330	U
Di-n-butylphthalate	350	U	350	U	350	U	33	J	330	U	330	U
Fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Pyrene	350	U	350	U	350	U	350	U	330	U	94	%
Butylbenzylphthalate	350	U	350	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Chrysene	350	U	350	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	350	U	350	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	350	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W899

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092316

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/23/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.78	200	JAB
2.	UNKNOWN	24.31	400	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W8B2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092406

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 09/07/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/24/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.78	100	JAB
2.	UNKNOWN	21.12	100	JB
3.	UNKNOWN	24.32	600	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W8B3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092407

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 09/07/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/24/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.79	200	JAB
2.	ALDOL CONDENSATE	8.34	90	JAB
3.	ORGANIC ACID	21.13	300	JB
4.	UNKNOWN	24.32	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W894

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092408

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 5 decanted: (Y/N) Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.79	100	JAB
2.	ALDOL CONDENSATE	8.35	90	JAB
3.	ALDOL CONDENSATE	9.13	70	JA
4.	ORGANIC ACID	21.13	300	JB
5.	UNKNOWN	24.32	800	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W895

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092409

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.79	100	JAB
2.	ALDOL CONDENSATE	8.36	90	JAB
3.	ALDOL CONDENSATE	9.13	90	JA
4.	ORGANIC ACID	21.12	100	JB
5.	UNKNOWN	24.32	500	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W896

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092410

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.79	100	JAB
2.	ALDOL CONDENSATE	8.35	90	JAB
3.	ALDOL CONDENSATE	9.13	70	JA
4.	ORGANIC ACID	21.12	200	JB
5.	UNKNOWN	24.32	600	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W897

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092411

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 09/07/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/24/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.79	100	JAB
2.	ALDOL CONDENSATE	8.36	70	JAB
3.	ORGANIC ACID	21.12	90	JB
4.	UNKNOWN	24.32	500	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W898

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L930-008

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092403

Level: (low/med) LOW Date Received: 08/31/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.70	200	JAB
2.	ALDOL CONDENSATE	9.24	90	JAB
3.	ORGANIC ACID	21.76	300	JB
4.	UNKNOWN	25.33	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCP

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1086-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092305

Level: (low/med) LOW Date Received: 09/07/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/07/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/23/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.71	200	JA
2.	ALDOL CONDENSATE	9.24	100	JA
3.	ORGANIC ACID	21.77	300	J
4.	UNKNOWN	25.33	500	J

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899	001	S	99LE1086	08/27/99	09/07/99	09/23/99
B0W899	001 MS	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W899	001 MSD	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W8B2	002	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W8B3	003	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W894	004	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W895	005	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W896	006	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W897	007	S	99LE1086	08/27/99	09/07/99	09/24/99
B0W898	008	S	99LE1086	08/27/99	09/07/99	09/24/99

LAB QC:

SBLKCP	MB1	S	99LE1086	N/A	09/07/99	09/23/99
SBLKCP	MB1 BS	S	99LE1086	N/A	09/07/99	09/23/99

RECRA LabNet Use Only
99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) Perrone wet lab

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
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	1/2				
Preservatives															
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb			Metal	CN						
		RECRA LabNet Use Only													
		OG24H OGCSC	OG25H ODRO	OPCB				MetQ		IPH	AnqQ				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB					MetQ		IPH	AnqQ				
001	B0W899			S	8/27/99	0910	✓	✓	✓					✓		✓	✓				
2	B2					0926															
3	B3					0945															
4	94					0748															
5	95					0750															
6	96					0820															
7	97					0836															
8	98					0854															

MetQ = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRG

Special Instructions:

Ref # B99-078
9/2/99 added IN3N2 to all samples

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:

1. Run matrix QC
2. AnqQ2 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO, IN3N2
4. * 4235795288 08 - 4.2°C
5. 4235795288 19 - 4.7°C
6. 4235795288 20 - 5.8°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Ignatio	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

RECRA LabNet Use Only

99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 8/31/99 Date Due: 9/30/99

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	UR					
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		0624H OGCSC	0625H ODRO	OPCB					MetQ		1PH	AnqQ					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H OGCSC	0625H ODRO	OPCB				MetQ		1PH	AnqQ				
001	B0W899			S	8/27/99	0910	✓	✓	✓				✓		✓	✓				
2	B2					0926														
3	B3					0945														
4	94					0748														
5	96					0750														
6	96					0820														
7	97					0836														
8	98					0854														

MetQ = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, HG, ICRC

Special Instructions:

Seq # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:

1. Run matrix QC
2. AnqQ = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTD
4. * 423579528808 - 4.2°C
5. 423579528819 - 4.7°C
6. 423579528820 - 5.8°C

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original		
	Rewritten		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

9908L930

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2

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-8 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A990233	Bill of Lading/Air Bill No.: 4235 7952 8819	
		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										
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X		Bowers		
~~B0W8B0~~	~~Soil~~	8-27-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: CHRIS CEARLOCK	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: FedEx	Date/Time: 8.31.99 / 09:30	Received By: D. Smith	Date/Time: 8.31.99 / 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

Collected

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

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

4235 7952 8819 4.7°

4235 7952 8808

4235 7952 8820 5.8°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 2

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: SML-579	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A99 0234	Bill of Lading/Air Bill No.: 4235 7952 8820	
		COA: BOW B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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.
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 No.	Matrix *	Sample Date	Sample Time										
B0W8B2	Soil	8-27-99	0926					X	X	X	X	X	
B0W8B3	Soil	8-27-99	0945					X	X	X	X	X	
~~B0W8B4~~	~~Soil~~												
~~B0W8B5~~	~~Soil~~												
~~B0W8B6~~	~~Soil~~												

8-27-99

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/27/99 12:00	Peter JB	8/27/99 13:00
Peter JB	8/30/99 11:00	Chris	8/30/99 11:00
Chris	9/30/99 14:00	FEDEX	9/30/99 14:00
Leo Ex	8.31.99/0930	D. Smith	8.31.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

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	B99-078-102	Page 1 of 2 22

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-8 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA ~~R.TB~~ 8-27-99	Offsite Property No.: A990233	Bill of Lading/Air Bill No.: 4235 7952 8808	
		COA B20CW167C	

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									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		BOW5L8	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		BOW5L8	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		BOW5L8	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		BOW5L8	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		BOW5L8	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	8/27/99 1300	Peter JB	8/27/99 1300
PETER JB	8/30/99 11:00	CTRICE/CAIN	8/30/99 11:00
CTRICE/CAIN	8/30/99 1400	FEDEX	8/30/99 14:00
Fed Ex	8-31-99/0930	D. Smith	8-31-99/0930

LABORATORY SECTION — Received By: _____ Title: _____ Date/Time: _____

FINAL SAMPLE DISPOSITION — Disposal Method: _____ Disposed By: _____ Date/Time: _____

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9908L930
SDG/SAF#: H0508/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-31-99

eight (8) osg
10/14/99

GC SCAN

The set of samples consisted of ~~seven~~ (7) soil samples collected on 08-27-99.

The samples and their associated QC samples were prepared on 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. The blank spike recovery was within advisory control limits of 50%-150%.

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

OCT 1999
RECEIVED
Date
Log In

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

r:\share\lc\gcscan\08-930.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.

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:28

RFW Batch Number: **9908L930** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W899	B0W899	B0W899	B0W8B2	B0W8B3	B0W894
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		3.9 U	76 %	83 %	4.1 U	4.8 U	4.4 U
Ethanol		3.9 U	4.6 U	4.6 U	4.1 U	4.8 U	4.4 U

	Cust ID:	B0W895	B0W896	B0W897	B0W898	BLK	BLK BS
Sample Information	RFW#:	005	006	007	008	99LLC133-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	4.8 U	4.5 U	5.0 U	95 %
Ethanol		5.0 U	5.0 U	4.8 U	4.5 U	5.0 U	5.0 U

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

09/16/99

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899	001	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W899	001 MS	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W899	001 MSD	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W8B2	002	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W8B3	003	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W894	004	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W895	005	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W896	006	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W897	007	S	99LLC133	08/27/99	09/02/99	09/03/99
B0W898	008	S	99LLC133	08/27/99	09/02/99	09/03/99

LAB QC:

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

09/13/99

RECRA LabNet Use Only
99081930

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
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	UV					
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		0024H OGCSC	0025H ODRO	07CB					MetD		1PH	AngO					

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	OGCSC	ODRO	CB		MetD		1PH	AngO					
001	B0W899			S	8/27/99	0910	✓	✓	✓		✓		✓	✓					
2	B2					0926													
3	B3					0945													
4	94					0748													
5	96					0750													
6	96					0820													
7	97					0836													
8	98					0854													

MetD = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, HG, ICRG

Special Instructions:
Ref # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:
1. Run matrix QC
AngO2 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO
* 4. 423579528808 - 4.2°C
5. 423579528819 - 4.7°C
6. 423579528820 - 5.8°C

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Ajmal	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

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

TO 7400L430

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2

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-8 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-27-99	Offsite Property No.: A990233	Bill of Lading/Air Bill No.: 4235 7952 8819	
		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										
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X		Bowers		
~~B0W8B0~~	~~Soil~~	8-27-99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter JB	Date/Time: 8/27/99 13:00
Relinquished By: PETER JB	Date/Time: 8/30/99 11:00	Received By: CTRUCE/Chris	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99 /09:30	Received By: [illegible]	Date/Time: 8-31-99 /0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

Collected

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

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

4235 7952 8819 4.7°

4235 7952 8808 demi 4.2°

4235 7952 8820 5.8°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 21

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-8 >15' bgs		SAF No.: B99-078
Ice Chest No.: SML-579	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A99 0234		Bill of Lading/Air Bill No.: 4235 7952 8820
			COA: BOW B20CW1 671C

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								
002 B0W8B2	Soil	8-27-99	0976				X	X	X	X	X
003 B0W8B3	Soil	8-27-99	0945				X	X	X	X	X
~~B0W8B4~~	~~Soil~~										
~~B0W8B5~~	~~Soil~~										
~~B0W8B6~~	~~Soil~~										

8-27-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter IB	Date/Time: 8/27/99 13:00
Relinquished By: PETER IB	Date/Time: 8/30/99 11:00	Received By: C Price	Date/Time: 8/30/99 11:00
Relinquished By: C Price	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8.31.99/0930	Received By: D. Smith	Date/Time: 8.31.99/0930
LABORATORY SECTION: Received By		Title	Date/Time
FINAL SAMPLE DISPOSITION: Disposal Method		Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 0045 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-8 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: ~~TMA~~/RECRA ~~8-27-99~~	Offsite Property No.: A990233	Bill of Lading/Air Bill No.: 4235 7952 8808	
		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) {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									
004	B0W894	Soil	8-27-99	0748		X	X	X	X	X		Bowsl8	
005	B0W895	Soil	8-27-99	0750		X	X	X	X	X		Bowsl8	
006	B0W896	Soil	8-27-99	0820		X	X	X	X	X		Bowsl8	
007	B0W897	Soil	8-27-99	0835		X	X	X	X	X		Bowsl8	
008	B0W898	Soil	8-27-99	0854		X	X	X	X	X		Bowsl8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Refer JB	Date/Time: 8/27/99 1300
Relinquished By: REFER JB	Date/Time: 8/30/99 11:00	Received By: CTRICE/CAMU	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CAMU	Date/Time: 8/30/99 1400	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: D. Smith	Date/Time: 8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

OCT 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L930 H0508 05 10/14/99
SDG/SAF #: H0510/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-31-99

GC/MS VOLATILE

Eight (8) soil samples were collected on 08-27-99.

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 09-09,10-99.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

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

4. One (1) of thirty-nine (39) surrogate recoveries was outside EPA QC limits. The analyses of associated matrix spike samples fulfills the reanalysis requirements for sample B0W8B2.

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

6. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 3x the CRQL. The method blank 99LVN272-MB2 also contained the target compound Toluene at a level less than the CRQL. The amount of Methylene Chloride in the method blank was due to the laboratory contamination. A second method blank was analyzed and has been reported as 99LVN272-MB2 to demonstrate the laboratory contamination. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-13-99
Date

som\group\data\ voa\tnu09930.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 16 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 #: 99WT134

Initiator: MSchneider RFW Batch: 9909L936 Parameter: 8260 VOA
Date: 9/11/99 Samples: 005, 006, 007, 008, 002 MS/MSD Matrix: Soils
Client: TNU Hed Method: SW846/MCAWW/CLP/ Prep Batch: —
110508

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)

Samples had high DCM recoveries due to lab contamination. DCM recoveries ranged from 25 ppb to 39 ppb in samples and 11 ppb in daily Blank. A 2nd & 3rd blank ran after the samples with DCM at 40 ppb and 17 ppb, respectively.

2. Known or Probable Causes(s)

Lab (extraction) contamination

BOW882 MS/MSD, BOW895 - 898

3. Discussion and Proposed Action

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

Other Description:

Samples now out of hold. Report samples along with 1st (11 ppb) and 2nd (40 ppb) daily blanks to demonstrate lab contamination

Report & Narrate

4. Project Manager Instructions...signature/date: Phillip G. Johnson 9/13/99

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person Kevin Johnson 9/13/99
__ Add
__ Cancel

5. Final Action...signature/date: Beth Ribino 10/4/99

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: M. Taylor	__	__ Inorganic: Perrone
2	X Project Mgr: Stone/Carey/Schrenkel/Johnson	__	__ GC/LC: Schnell
1	X Section Mgr: Wesson/Daniels	__	__ MS: LeMin/Taylor
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 10/04/99 03:01

RFW Batch Number: **9908L930** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W899	B0W8B2	B0W8B2	B0W8B2	B0W8B3	B0W894
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	0.980	1.04	1.02	1.06	1.04
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	112 %	118 * %	107 %	93 %	117 %	115 %
	Bromofluorobenzene	88 %	85 %	94 %	84 %	88 %	89 %
	1,2-Dichloroethane-d4	113 %	112 %	116 %	106 %	114 %	114 %
Chloromethane		10 U	10 U	11 U	11 U	12 U	11 U
Bromomethane		10 U	10 U	11 U	11 U	12 U	11 U
Vinyl Chloride		10 U	10 U	11 U	11 U	12 U	11 U
Chloroethane		10 U	10 U	11 U	11 U	12 U	11 U
Methylene Chloride		13 B	13 B	42 B	36 B	16 B	16 B
Acetone		3 JB	3 JB	4 JB	4 JB	3 JB	3 JB
Carbon Disulfide		5 U	5 U	6 U	6 U	6 U	6 U
1,1-Dichloroethene		5 U	5 U	98 %	98 %	6 U	6 U
1,1-Dichloroethane		5 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)		5 U	5 U	6 U	6 U	6 U	6 U
Chloroform		5 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloroethane		5 U	5 U	6 U	6 U	6 U	6 U
2-Butanone		10 U	10 U	11 U	11 U	12 U	11 U
1,1,1-Trichloroethane		5 U	5 U	6 U	6 U	6 U	6 U
Carbon Tetrachloride		5 U	5 U	6 U	6 U	6 U	6 U
Bromodichloromethane		5 U	5 U	6 U	6 U	6 U	6 U
1,2-Dichloropropane		5 U	5 U	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene		5 U	5 U	6 U	6 U	6 U	6 U
Trichloroethene		5 U	5 U	104 %	105 %	6 U	6 U
Dibromochloromethane		5 U	5 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane		5 U	5 U	6 U	6 U	6 U	6 U
Benzene		5 U	5 U	109 %	110 %	6 U	6 U
Trans-1,3-Dichloropropene		5 U	5 U	6 U	6 U	6 U	6 U
Bromoform		5 U	5 U	6 U	6 U	6 U	6 U
4-Methyl-2-pentanone		10 U	10 U	11 U	11 U	12 U	11 U
2-Hexanone		10 U	10 U	11 U	11 U	12 U	11 U
Tetrachloroethene		5 U	5 U	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane		5 U	5 U	6 U	6 U	6 U	6 U
Toluene		5 U	5 U	113 %	115 %	6 U	6 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L930 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0W899	B0W8B2	B0W8B2	B0W8B2	B0W8B3	B0W894
RFW#:	001	002	002 MS	002 MSD	003	004
Chlorobenzene	5 U	5 U	103 %	106 %	6 U	6 U
Ethylbenzene	5 U	5 U	6 U	6 U	6 U	6 U
Styrene	5 U	5 U	6 U	6 U	6 U	6 U
Xylene (total)	5 U	5 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: 10/04/99 03:01

RFW Batch Number: **9908L930** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W895		B0W896		B0W897		B0W898		VBLKRJ		VBLKRK	
Sample Information	RFW#:	005		006		007		008		99LVN270-MB1		99LVN272-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		0.962		0.962		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	110	%	112	%	115	%	111	%	108	%	110	%
	Bromofluorobenzene	96	%	98	%	100	%	96	%	97	%	94	%
	1,2-Dichloroethane-d4	112	%	116	%	118	%	115	%	110	%	112	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		26	B	31	B	32	B	32	B	7		11	
Acetone		3	JB	2	JB	3	JB	3	JB	2	J	2	J
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	1	J	5	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L930 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 2b

Cust ID:	B0W895	B0W896	B0W897	B0W898	VBLKRJ	VBLKRK
RFW#:	005	006	007	008	99LVN270-MB1	99LVN272-MB1
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKRL**

Sample Information

RFW#: **99LVN272-MB2**
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate Recovery	Toluene-d8	105	%
	Bromofluorobenzene	96	%
	1,2-Dichloroethane-d4	109	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	41	
Acetone	2	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	1	J

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKRL**

RFW#: **99LVN272-MB2**

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

*= Outside of EPA CLP QC limits.

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

DATE RECEIVED: 08/31/99 RFW LOT # :9908L930

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W899	001	S	99LVN270	08/27/99	N/A	09/10/99
B0W8B2	002	S	99LVN270	08/27/99	N/A	09/10/99
B0W8B2	002 MS	S	99LVN272	08/27/99	N/A	09/10/99
B0W8B2	002 MSD	S	99LVN272	08/27/99	N/A	09/10/99
B0W8B3	003	S	99LVN270	08/27/99	N/A	09/10/99
B0W894	004	S	99LVN270	08/27/99	N/A	09/10/99
B0W895	005	S	99LVN272	08/27/99	N/A	09/10/99
B0W896	006	S	99LVN272	08/27/99	N/A	09/10/99
B0W897	007	S	99LVN272	08/27/99	N/A	09/10/99
B0W898	008	S	99LVN272	08/27/99	N/A	09/10/99

LAB QC:

VBLKRJ	MB1	S	99LVN270	N/A	N/A	09/09/99
VBLKRK	MB1	S	99LVN272	N/A	N/A	09/10/99
VBLKRL	MB2	S	99LVN272	N/A	N/A	09/10/99

RECRA LabNet Use Only
99081930

Custody Transfer Record/Lab Work Request

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RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) perrone wet lab

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
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	Ur				
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
RECRA LabNet Use Only		0024H OGCSC	0025H ODRO	0PCB					MetQ		1PH	AngQ				

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	OGCSC	ODRO	0PCB	MetQ	1PH	AngQ
001	BØW899			S	8/27/99	0910	✓	✓	✓	✓	✓	✓
2	B2					0926						
3	B3					0945						
4	94					0748						
5	96					0750						
6	96					0820						
7	97					0836						
8	98					0854						

MetQ = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRG

Special Instructions:
Saf # B99-078
9/2/99 added IN3N2 to all samples

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:
1. Run matrix QC
AngQ = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO, IN3N2
* 4. 423579528808 - 4.2°C
5. 423579528819 - 4.7°C
6. 423579528820 - 5.8°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original Rewritten		

RECRA LabNet Use Only

99081930

Custody Transfer Record/Lab Work Request

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RECRA LabNet

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ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 8/31/99 Date Due: 9/30/99
Account #:

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

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB				MetD		IPH	AnqD
001	B0W899			S	8/27/99	0910	✓	✓	✓				✓		✓	✓
2	B2					0926										
3	B3					0945										
4	94					0748										
5	96					0750										
6	96					0820										
7	97					0836										
8	98					0854										

MetD = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg, ICRG

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

OGCSC = 1-propanol, ethanol

DATE/REVISIONS:
1. Run matrix QC
AnqD2 = ICEL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N, ICNTO
* 4. 423579528808 - 4.2°C
5. 423579528819 - 4.7°C
6. 423579528820 - 5.8°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Jones	8-31-99	0930

Relinquished by	Received by	Date	Time
	Original		
	Rewritten		

99082930

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-102	Page 2 of 2 14

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-8 <15' bgs	SAF No.: B99-078	
Ice Chest No.: ERC 96-047	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA ~~8-27-99~~	Offsite Property No.: A990233	Bill of Lading/Air Bill No.: 4235 7952 8819	
		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								
001 B0W899	Soil	8-27-99	0910		X	X	X	X	X	Bowers	
~~B0W8B0~~	~~Soil~~	~~8-27-99~~									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Bruce Porter	Date/Time: 8/27/99 13:00	Received By: Peter J.B.	Date/Time: 8/27/99 13:00
Relinquished By: PETER J.B.	Date/Time: 8/30/99 11:00	Received By: CERCE/Chris	Date/Time: 8/30/99 11:00
Relinquished By: Chris	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8.31.99 / 09:30	Received By: D. Smith	Date/Time: 8.31.99 / 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COC'S

(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

collected

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

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

4235 7952 8819 4.7°

4235 7952 8820 5.8°

4235 7952 8808

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-103	Page 1 of 2

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-8 >15' bgs	SAF No.: B99-078	
Ice Chest No.: SML-579	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-27-99	Offsite Property No.: A99 0234	Bill of Lading/Air Bill No.: 4235 7952 8820	
		COA: BOW B20CW1 671C	

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								
002 B0W8B2	Soil	8-27-99	0926				X	X	X	X	X
003 B0W8B3	Soil	8-27-99	0945				X	X	X	X	X
~~B0W8B4~~	~~Soil~~										
~~B0W8B5~~	~~Soil~~										
~~B0W8B6~~	~~Soil~~										

8-27-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 12:00	Received By: Peter IB	Date/Time: 8/27/99 13:00
Relinquished By: Peter IB	Date/Time: 8/30/99 11:00	Received By: C Luce	Date/Time: 8/30/99 11:00
Relinquished By: C Luce	Date/Time: 8/30/99 14:00	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Geo Ex	Date/Time: 8.31.99/0930	Received By: D. Smith	Date/Time: 8.31.99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE 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 to ship

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	B99-078-102	Page 1 of 2

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-8 <15' bgs		SAF No.: B99-078
Ice Chest No.: ERC-96-060/047	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: ~~TMA~~/RECRA ~~8-27-99~~	Offsite Property No.: A990233		Bill of Lading/Air Bill No.: 4235 7952 8808
			COA: B20CW1 671C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
004 B0W894	Soil	8-27-99	0748		X	X	X	X	X	B0W5L8	
005 B0W895	Soil	8-27-99	0750		X	X	X	X	X	B0W5L8	
006 B0W896	Soil	8-27-99	0820		X	X	X	X	X	B0W5L8	
007 B0W897	Soil	8-27-99	0835		X	X	X	X	X	B0W5L8	
008 B0W898	Soil	8-27-99	0854		X	X	X	X	X	B0W5L8	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 8/27/99 1300	Received By: Peter J.B	Date/Time: 8/27/99 1300
Relinquished By: PETER J.B	Date/Time: 8/30/99 11:00	Received By: CTRICE/CAINE	Date/Time: 8/30/99 11:00
Relinquished By: CTRICE/CAINE	Date/Time: 8/30/99 1400	Received By: FEDEX	Date/Time: 8/30/99 14:00
Relinquished By: Fed Ex	Date/Time: 8-31-99/0930	Received By: D. Smith	Date/Time: 8-31-99/0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR NOT AVAILABLE TO SIGN COCs.

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

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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