H0573-TMA/RECRA

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FEB 14 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0573 was composed of seven solid 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 Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via facsimile on January 5, 2000.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

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Data
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2.5 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analyses

BHI did not request any of the samples be analyzed for Isotopic Uranium after reporting the Total Uranium results on November 3, 1999 via facsimile.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.10 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.11 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

SAMPLE SUMMARY

SDG 7241
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WL01	Hanford Site	SOLID		N910109-01	B99-078	B99-078-135	10/13/99 08:08
B0WL02	Hanford Site	SOLID		N910109-02	B99-078	B99-078-135	10/13/99 08:18
B0WL03	Hanford Site	SOLID		N910109-03	B99-078	B99-078-135	10/13/99 08:28
B0WL04	Hanford Site	SOLID		N910109-04	B99-078	B99-078-135	10/13/99 08:38
B0WL06	Hanford Site	SOLID		N910109-05	B99-078	B99-078-136	10/13/99 08:46
B0WL07	Hanford Site	SOLID		N910109-06	B99-078	B99-078-136	10/13/99 09:08
B0WL08	Hanford Site	SOLID		N910109-07	B99-078	B99-078-136	10/13/99 09:25
Method Blank		SOLID		N910109-09	B99-078		
Method Blank		SOLID		N910109-14	B99-078		
Lab Control Sample		SOLID		N910109-08	B99-078		
Lab Control Sample		SOLID		N910109-13	B99-078		
Duplicate (N910109-01)	Hanford Site	SOLID		N910109-10	B99-078		10/13/99 08:08
Duplicate (N910109-01)	Hanford Site	SOLID		N910109-15	B99-078		10/13/99 08:08
Duplicate (N910109-05)	Hanford Site	SOLID		N910109-11	B99-078		10/13/99 08:46
Spike (N910109-06)	Hanford Site	SOLID		N910109-12	B99-078		10/13/99 09:08

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

SDG 7241
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

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
7241	B99-078-135	B0WL01	SOLID	91.6			10/15/99	2	N910109-01	7241-001
		B0WL02	SOLID	90.8			10/15/99	2	N910109-02	7241-002
		B0WL03	SOLID	97.1			10/15/99	2	N910109-03	7241-003
		B0WL04	SOLID	97.1			10/15/99	2	N910109-04	7241-004
	B99-078-136	B0WL06	SOLID	97.1			10/15/99	2	N910109-05	7241-005
		B0WL07	SOLID	93.3			10/15/99	2	N910109-06	7241-006
		B0WL08	SOLID	93.7			10/15/99	2	N910109-07	7241-007
		Method Blank	SOLID						N910109-09	7241-009
		Method Blank	SOLID						N910109-14	7241-014
		Lab Control Sample	SOLID						N910109-08	7241-008
		Lab Control Sample	SOLID						N910109-13	7241-013
		Duplicate (N910109-01)	SOLID				10/15/99	2	N910109-10	7241-010
		Duplicate (N910109-01)	SOLID				10/15/99	2	N910109-15	7241-015
		Duplicate (N910109-05)	SOLID				10/15/99	2	N910109-11	7241-011
		Spike (N910109-06)	SOLID				10/15/99	2	N910109-12	7241-012

Lab id TMANC
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Version Ver 1.0
Form DVD-QS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

SDG 7241
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

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	6904-112	5.0	7			1	1	1/1		
NP	SOLID	Neptunium in Soil	6904-112	5.0	3			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-112	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-112	5.0	7			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-112	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-112	10.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-112	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-112	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-112	10.0	3			1	1	1/1	1/1	
NI_L	SOLID	Nickel 63 in Soil	6904-112	10.0	3			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

WORK SUMMARY

SDG 7241
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WL01			N910109-01	7241-001	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-001	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-135	B99-078		10/15/99	7241-001	PU		12/16/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-001	SR		12/10/99	01/04/00	NJV	Total Strontium in Soil
				7241-001	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-001	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
B0WL02			N910109-02	7241-002	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-002	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-135	B99-078		10/15/99	7241-002	PU		12/16/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-002	SR		12/15/99	01/04/00	NJV	Total Strontium in Soil
				7241-002	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-002	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
B0WL03			N910109-03	7241-003	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-003	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-135	B99-078		10/15/99	7241-003	PU		12/17/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-003	SR		12/13/99	01/04/00	NJV	Total Strontium in Soil
				7241-003	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-003	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
B0WL04			N910109-04	7241-004	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-004	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-135	B99-078		10/15/99	7241-004	PU		12/17/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-004	SR		12/14/99	01/04/00	NJV	Total Strontium in Soil
				7241-004	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-004	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
B0WL06			N910109-05	7241-005	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-005	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-136	B99-078		10/15/99	7241-005	H		12/12/99	01/04/00	NJV	Tritium in Soil
				7241-005	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
				7241-005	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-005	PU		12/17/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-005	SR		12/15/99	01/04/00	NJV	Total Strontium in Soil
				7241-005	TC		12/18/99	01/04/00	NJV	Technetium 99 in Soil
				7241-005	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-005	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

SDG 7241
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WL07			N910109-06	7241-006	AM		12/16/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-006	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-136	B99-078		10/15/99	7241-006	H		12/12/99	01/04/00	NJV	Tritium in Soil
				7241-006	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
				7241-006	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-006	PU		12/20/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-006	SR		12/11/99	01/04/00	NJV	Total Strontium in Soil
				7241-006	TC		12/21/99	01/04/00	NJV	Technetium 99 in Soil
				7241-006	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-006	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
B0WL08			N910109-07	7241-007	AM		12/29/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-007	GAM		11/29/99	01/04/00	NJV	Gamma Scan
B99-078-136	B99-078		10/15/99	7241-007	H		12/12/99	01/04/00	NJV	Tritium in Soil
				7241-007	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
				7241-007	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-007	PU		12/20/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-007	SR		12/09/99	01/04/00	NJV	Total Strontium in Soil
				7241-007	TC		12/27/99	01/04/00	NJV	Technetium 99 in Soil
				7241-007	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
				7241-007	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
Method Blank			N910109-09	7241-009	AM		12/17/99	01/04/00	NJV	Americium 241 in Soil
		SOLID		7241-009	GAM		11/29/99	01/04/00	NJV	Gamma Scan
	B99-078			7241-009	H		12/12/99	01/04/00	NJV	Tritium in Soil
				7241-009	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
				7241-009	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-009	PU		12/20/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-009	SR		12/07/99	01/04/00	NJV	Total Strontium in Soil
				7241-009	TC		12/27/99	01/04/00	NJV	Technetium 99 in Soil
				7241-009	TH		12/16/99	01/04/00	NJV	Thorium, Isotopic in Soil
Method Blank			N910109-14	7241-014	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									

Lab id TMANC
Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

SDG 7241
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N910109-08	7241-008	AM		12/29/99	01/04/00	NJV	Americium 241 in Soil
		SOLID		7241-008	GAM		11/30/99	01/04/00	NJV	Gamma Scan
	B99-078			7241-008	H		12/12/99	01/04/00	NJV	Tritium in Soil
				7241-008	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
				7241-008	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-008	PU		12/16/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-008	SR		12/07/99	01/04/00	NJV	Total Strontium in Soil
				7241-008	TC		12/21/99	01/04/00	NJV	Technetium 99 in Soil
				7241-008	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
Lab Control Sample			N910109-13	7241-013	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									
Duplicate (N910109-01)			N910109-10	7241-010	AM		12/17/99	01/04/00	NJV	Americium 241 in Soil
Hanford Site		SOLID	10/13/99	7241-010	GAM		11/29/99	01/04/00	NJV	Gamma Scan
	B99-078		10/15/99	7241-010	PU		12/20/99	01/04/00	NJV	Plutonium, Isotopic in Solids
				7241-010	SR		12/14/99	01/04/00	NJV	Total Strontium in Soil
				7241-010	TH		12/17/99	01/04/00	NJV	Thorium, Isotopic in Soil
Duplicate (N910109-01)			N910109-15	7241-015	U_T		11/02/99	01/04/00	NJV	Uranium, Total in Soil
Hanford Site		SOLID	10/13/99							
	B99-078		10/15/99							
Duplicate (N910109-05)			N910109-11	7241-011	H		12/12/99	01/04/00	NJV	Tritium in Soil
Hanford Site		SOLID	10/13/99	7241-011	NI_L		12/08/99	01/04/00	NJV	Nickel 63 in Soil
	B99-078		10/15/99	7241-011	NP		12/22/99	01/04/00	NJV	Neptunium in Soil
				7241-011	TC		12/21/99	01/04/00	NJV	Technetium 99 in Soil
Spike (N910109-06)			N910109-12	7241-012	H		12/12/99	01/04/00	NJV	Tritium in Soil
Hanford Site		SOLID	10/13/99							
	B99-078		10/15/99							

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SAMPLE DELIVERY GROUP H0573

SDG 7241
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

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	7			1	1	1		10
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	1		10
H	B99-078	Tritium in Soil	EPA906.0	3			1	1	1	1	7
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	3			1	1	1		6
NP	B99-078	Neptunium in Soil	NP237PLATE	3			1	1	1		6
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	7			1	1	1		10
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	1		10
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	3			1	1	1		6
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	1		10
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1		10
TOTALS				54			10	10	10	1	85

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-09 Method Blank

METHOD BLANK

SDG	7241	Client/Case no	Hanford	SDG	H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910109-09	Client sample id	Method Blank		
Dept sample id	7241-009	Material/Matrix			SOLID
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.034	0.11	0.18	400	U	H
Neptunium 237	13994-20-2	0.008	0.031	0.055		U	NP
Technetium 99	14133-76-7	-0.040	0.24	0.68	15	U	TC
Plutonium 238	13981-16-3	-0.016	0.016	0.052	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.023	0.043	1.0	U	PU
Nickel 63	13981-37-8	-0.497	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	0.042	0.039	0.052	1.0	U	AM
Total Strontium	SR90	-0.101	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.030	0.12	0.23	1.0	U	TH
Thorium 230	14269-63-7	0.030	0.10	0.18	1.0	U	TH
Thorium 232	TH-232	0	0.020	0.077	1.0	U	TH
Potassium 40	13966-00-2	U		0.79		U	GAM
Cobalt 60	10198-40-0	U		0.076	0.050	U	GAM
Cesium 137	10045-97-3	U		0.061	0.10	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.091	0.10	U	GAM
Radium 226	13982-63-3	U		0.11	0.10	U	GAM
Radium 228	15262-20-1	U		0.25	0.20	U	GAM
Thorium 228	14274-82-9	U		0.078		U	GAM
Thorium 232	TH-232	U		0.25		U	GAM
Americium 241	14596-10-2	U		0.063		U	GAM
Uranium 238	U-238	U		8.1		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

200 B Pond, 200 Area Source Chara.

QC-BLANK 32539

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-14 Method Blank

METHOD BLANK

SDG	7241	Client/Case no	Hanford	SDG H0573	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910109-14	Client sample id	Method Blank		
Dept sample id	7241-014	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
Total Uranium (ug/g)	7440-61-1	-0.008	0.003	0.004	1.0	U	U_T

200 B Pond, 200 Area Source Chara.

QC-BLANK 32215

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7241

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0573

Case no TRB-SBB-207925

Lab sample id N910109-08

Dept sample id 7241-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.0	0.34	0.18	400	J	H	12.3	0.49	106	83-117	80-120
Neptunium 237	9.89	0.39	0.049			NP	10.6	0.42	93	89-111	
Technetium 99	40.8	1.4	0.49	15		TC	42.7	1.7	96	84-116	80-120
Plutonium 238	10.2	0.77	0.067	1.0		PU	10.0	0.40	102	85-115	80-120
Plutonium 239/240	10.4	0.78	0.051	1.0		PU	10.6	0.42	98	85-115	80-120
Nickel 63	141	3.4	2.0	30		NI_L	134	5.4	105	83-117	
Americium 241	10.3	2.1	0.36	1.0		AM	9.58	0.38	108	66-134	80-120
Total Strontium	12.1	0.61	0.28	1.0		SR	11.3	0.45	107	81-119	
Thorium 228	0.042	0.084	0.17	1.0	U	TH					
Thorium 230	22.3	1.6	0.19	1.0		TH	20.4	0.82	109	84-116	
Thorium 232	0.070	0.084	0.11	1.0	U	TH					
Cobalt 60	1.43	0.15	0.096	0.050		GAM	1.44	0.058	99	72-128	80-120
Cesium 137	1.47	0.14	0.12	0.10		GAM	1.51	0.060	97	73-127	80-120

200 B Pond, 200 Area Source Chara.

QC-LCS 32538

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7241

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0573

Case no TRB-SBB-207925

Lab sample id N910109-13

Dept sample id 7241-013

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
Total Uranium (ug/g)	38.2	4.7	0.041	1.0		U_T	41.2	1.6	93	78-122	80-120

200 B Pond, 200 Area Source Chara.

QC-LCS 32214

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-10 B0WL01

DUPLICATE

SDG 7241		Client/Case no Hanford	SDG H0573
Contact Melissa C. Mannion		Case no TRB-SPB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N910109-10	Lab sample id N910109-01	Client sample id B0WL01	
Dept sample id 7241-010	Dept sample id 7241-001	Location/Matrix Hanford Site	SOLID
	Received 10/15/99	Collected 10/13/99 08:08	
	% solids 91.6	Custody/SAF No B99-078-135	B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Plutonium 238	-0.019	0.019	0.064	1.0	U	PU	0.014	0.034	0.058	U	-	
Plutonium 239/240	0.072	0.048	0.064	1.0	J	PU	0.088	0.041	0.038	J	20	119
Americium 241	0.021	0.051	0.081	1.0	U	AM	0.012	0.023	0.037	U	-	
Total Strontium	1.17	0.15	0.14	1.0		SR	1.12	0.17	0.17		4	37
Thorium 228	0.631	0.20	0.20	1.0	J	TH	0.644	0.18	0.14	J	2	64
Thorium 230	0.746	0.20	0.18	1.0	J	TH	0.683	0.20	0.17	J	9	60
Thorium 232	0.659	0.16	0.074	1.0	J	TH	0.673	0.16	0.077	J	2	52
Potassium 40	14.3	0.50	0.21			GAM	14.8	0.46	0.20		3	33
Cobalt 60	U		0.021	0.050	U	GAM	U		0.021	U	-	
Cesium 137	0.409	0.024	0.019	0.10		GAM	0.426	0.022	0.016		4	34
Europium 152	U		0.056	0.10	U	GAM	U		0.051	U	-	
Europium 154	U		0.077	0.10	U	GAM	U		0.070	U	-	
Europium 155	U		0.082	0.10	U	GAM	U		0.054	U	-	
Radium 226	0.673	0.048	0.043	0.10		GAM	0.702	0.042	0.037		4	35
Radium 228	0.901	0.10	0.097	0.20		GAM	0.959	0.092	0.087		6	39
Thorium 228	0.879	0.033	0.030			GAM	0.912	0.030	0.027		4	33
Thorium 232	0.901	0.10	0.097			GAM	0.959	0.092	0.087		6	39
Americium 241	U		0.074		U	GAM	U		0.069	U	-	
Uranium 238	U		3.0		U	GAM	U		2.3	U	-	
Uranium 235	U		0.095		U	GAM	U		0.087	U	-	

200 B Pond, 200 Area Source Chara.

QC-DUP#1 32540

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-15 B0WL01

DUPLICATE

SDG	7241			Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N910109-15	Lab sample id	N910109-01	Client sample id	B0WL01
Dept sample id	7241-015	Dept sample id	7241-001	Location/Matrix	Hanford Site SOLID
		Received	10/15/99	Collected	10/13/99 08:08
		% solids	91.6	Custody/SAF No	B99-078-135 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)	0.794	0.092	0.004	1.0	J	U_T	0.724	0.084	0.004	J	9	31	

200 B Pond, 200 Area Source Chara.

QC-DUP#1 32216

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-11 B0WL06

DUPLICATE

SDG	7241			Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N910109-11	Lab sample id	N910109-05	Client sample id	B0WL06
Dept sample id	7241-011	Dept sample id	7241-005	Location/Matrix	Hanford Site SOLID
		Received	10/15/99	Collected	10/13/99 08:46
		% solids	97.1	Custody/SAF No	B99-078-136 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	-0.004	0.053	0.090	400	U	H	0.005	0.053	0.090	U	-	
Neptunium 237	0.009	0.023	0.042		U	NP	0.012	0.025	0.059	U	-	
Technetium 99	-0.123	0.13	0.23	15	U	TC	-0.190	0.27	0.61	U	-	
Nickel 63	-0.704	1.5	2.5	30	U	NI_L	0.325	1.2	2.1	U	-	

200 B Pond, 200 Area Source Chara.

QC-DUP#5 32541

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-12 B0WL07

MATRIX SPIKE

SDG 7241		Client/Case no Hanford	SDG H0573
Contact Melissa C. Mannion		Case no TRB-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id N910109-12	Lab sample id N910109-06	Client sample id B0WL07	
Dept sample id 7241-012	Dept sample id 7241-006	Location/Matrix Hanford Site	SOLID
	Received 10/15/99	Collected 10/13/99 09:08	
	% solids 93.3	Custody/SAF No B99-078-136	B99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	23.0	0.31	0.087	400	J	H	25.9	1.0	0.027	0.055	89	85-115	

200 B Pond, 200 Area Source Chara.

QC-MS#6 32542

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-01 B0WL01

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-01	Client sample id	B0WL01
Dept sample id	7241-001	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 08:08
% solids	91.6	Custody/SAF No	B99-078-135 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	0.724	0.084	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.014	0.034	0.058	1.0	U	PU
Plutonium 239/240	PU-239/240	0.088	0.041	0.038	1.0	J	PU
Americium 241	14596-10-2	0.012	0.023	0.037	1.0	U	AM
Total Strontium	SR90	1.12	0.17	0.17	1.0		SR
Thorium 228	14274-82-9	0.644	0.18	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.683	0.20	0.17	1.0	J	TH
Thorium 232	TH-232	0.673	0.16	0.077	1.0	J	TH
Potassium 40	13966-00-2	14.8	0.46	0.20			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	0.426	0.022	0.016	0.10		GAM
Europium 152	14683-23-9	U		0.051	0.10	U	GAM
Europium 154	15585-10-1	U		0.070	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Radium 226	13982-63-3	0.702	0.042	0.037	0.10		GAM
Radium 228	15262-20-1	0.959	0.092	0.087	0.20		GAM
Thorium 228	14274-82-9	0.912	0.030	0.027			GAM
Thorium 232	TH-232	0.959	0.092	0.087			GAM
Americium 241	14596-10-2	U		0.069		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.087		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-02 B0WL02

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-02	Client sample id	B0WL02
Dept sample id	7241-002	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 08:18
% solids	90.8	Custody/SAF No	B99-078-135 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	0.528	0.061	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.010	0.016	0.025	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.016	0.020	1.0	J	PU
Americium 241	14596-10-2	0.020	0.023	0.035	1.0	U	AM
Total Strontium	SR90	2.71	0.19	0.12	1.0		SR
Thorium 228	14274-82-9	0.673	0.14	0.10	1.0	J	TH
Thorium 230	14269-63-7	0.548	0.15	0.17	1.0	J	TH
Thorium 232	TH-232	0.671	0.14	0.047	1.0	J	TH
Potassium 40	13966-00-2	15.0	0.63	0.27			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.038	0.10	U	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.780	0.061	0.056	0.10		GAM
Radium 228	15262-20-1	1.01	0.15	0.14	0.20		GAM
Thorium 228	14274-82-9	0.927	0.043	0.041			GAM
Thorium 232	TH-232	1.01	0.15	0.14			GAM
Americium 241	14596-10-2	U		0.27		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Uranium 235	15117-96-1	U		0.15		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-03 B0WL03

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SRB-207925
Lab sample id	N910109-03	Client sample id	B0WL03
Dept sample id	7241-003	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 08:28
% solids	97.1	Custody/SAF No	B99-078-135 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	0.752	0.087	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.013	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.003	0.013	0.032	1.0	U	PU
Americium 241	14596-10-2	-0.009	0.051	0.12	1.0	U	AM
Total Strontium	SR90	17.6	0.89	0.26	1.0		SR
Thorium 228	14274-82-9	0.287	0.12	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.553	0.19	0.19	1.0	J	TH
Thorium 232	TH-232	0.512	0.15	0.078	1.0	J	TH
Potassium 40	13966-00-2	6.86	1.7	0.99			GAM
Cobalt 60	10198-40-0	U		0.12	0.050	U	GAM
Cesium 137	10045-97-3	U		0.10	0.10	U	GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	U		0.32	0.10	U	GAM
Europium 155	14391-16-3	U		0.47	0.10	U	GAM
Radium 226	13982-63-3	U		0.35	0.10	U	GAM
Radium 228	15262-20-1	U		0.71	0.20	U	GAM
Thorium 228	14274-82-9	0.432	0.16	0.18			GAM
Thorium 232	TH-232	U		0.71		U	GAM
Americium 241	14596-10-2	U		0.58		U	GAM
Uranium 238	U-238	U		13		U	GAM
Uranium 235	15117-96-1	U		0.61		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-04 B0WL04

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-04	Client sample id	B0WL04
Dept sample id	7241-004	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 08:38
% solids	97.1	Custody/SAF No	B99-078-135 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	0.381	0.045	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.006	0.018	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.003	0.012	0.034	1.0	U	PU
Americium 241	14596-10-2	0	0.056	0.11	1.0	U	AM
Total Strontium	SR90	17.2	0.85	0.41	1.0		SR
Thorium 228	14274-82-9	0.455	0.17	0.20	1.0	J	TH
Thorium 230	14269-63-7	0.412	0.17	0.19	1.0	J	TH
Thorium 232	TH-232	0.370	0.13	0.081	1.0	J	TH
Potassium 40	13966-00-2	11.0	0.65	0.31			GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Europium 152	14683-23-9	U		0.069	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.072	0.10	U	GAM
Radium 226	13982-63-3	0.390	0.067	0.063	0.10		GAM
Radium 228	15262-20-1	0.562	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.618	0.058	0.054			GAM
Thorium 232	TH-232	0.562	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.057		U	GAM
Uranium 238	U-238	U		4.0		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-05 B0WL06

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-05	Client sample id	B0WL06
Dept sample id	7241-005	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 08:46
% solids	97.1	Custody/SAF No	B99-078-136 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.005	0.053	0.090	400	U	H
Neptunium 237	13994-20-2	0.012	0.025	0.059		U	NP
Technetium 99	14133-76-7	-0.190	0.27	0.61	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.448	0.053	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.019	0.042	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.006	0.024	1.0	U	PU
Nickel 63	13981-37-8	0.325	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.004	0.016	0.039	1.0	U	AM
Total Strontium	SR90	16.9	0.79	0.24	1.0		SR
Thorium 228	14274-82-9	0.436	0.16	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.542	0.18	0.17	1.0	J	TH
Thorium 232	TH-232	0.562	0.16	0.074	1.0	J	TH
Potassium 40	13966-00-2	10.5	0.61	0.26			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.074	0.10	U	GAM
Europium 154	15585-10-1	U		0.099	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Radium 226	13982-63-3	0.349	0.049	0.053	0.10		GAM
Radium 228	15262-20-1	0.450	0.12	0.13	0.20		GAM
Thorium 228	14274-82-9	0.480	0.034	0.036			GAM
Thorium 232	TH-232	0.450	0.12	0.13			GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-06 B0WL07

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-06	Client sample id	B0WL07
Dept sample id	7241-006	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 09:08
% solids	93.3	Custody/SAF No	B99-078-136 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.027	0.055	0.092	400	U	H
Neptunium 237	13994-20-2	0.018	0.016	0.026		U	NP
Technetium 99	14133-76-7	0.015	0.23	0.50	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.498	0.059	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.005	0.028	0.058	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.005	0.028	0.058	1.0	U	PU
Nickel 63	13981-37-8	0.543	1.3	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.005	0.029	0.070	1.0	U	AM
Total Strontium	SR90	12.0	0.55	0.20	1.0		SR
Thorium 228	14274-82-9	0.307	0.13	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.232	0.13	0.17	1.0	J	TH
Thorium 232	TH-232	0.250	0.093	0.071	1.0	J	TH
Potassium 40	13966-00-2	10.6	0.44	0.21			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	0.039	0.017	0.019	0.10	J	GAM
Europium 152	14683-23-9	U		0.048	0.10	U	GAM
Europium 154	15585-10-1	U		0.067	0.10	U	GAM
Europium 155	14391-16-3	U		0.058	0.10	U	GAM
Radium 226	13982-63-3	0.380	0.037	0.035	0.10		GAM
Radium 228	15262-20-1	0.534	0.096	0.089	0.20		GAM
Thorium 228	14274-82-9	0.528	0.027	0.025			GAM
Thorium 232	TH-232	0.534	0.096	0.089			GAM
Americium 241	14596-10-2	U		0.072		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.088		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

N910109-07 B0WL08

DATA SHEET

SDG	7241	Client/Case no	Hanford SDG H0573
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910109-07	Client sample id	B0WL08
Dept sample id	7241-007	Location/Matrix	Hanford Site SOLID
Received	10/15/99	Collected	10/13/99 09:25
% solids	93.7	Custody/SAF No	B99-078-136 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.001	0.054	0.093	400	U	H
Neptunium 237	13994-20-2	0.038	0.027	0.038			NP
Technetium 99	14133-76-7	-0.169	0.21	0.47	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.522	0.061	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.019	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.009	0.019	0.057	1.0	U	PU
Nickel 63	13981-37-8	-0.109	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.004	0.015	0.035	1.0	U	AM
Total Strontium	SR90	1.40	0.19	0.18	1.0		SR
Thorium 228	14274-82-9	0.293	0.14	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.375	0.16	0.16	1.0	J	TH
Thorium 232	TH-232	0.269	0.12	0.090	1.0	J	TH
Potassium 40	13966-00-2	11.2	0.59	0.28			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	0.054	0.027	0.030	0.10	J	GAM
Europium 152	14683-23-9	U		0.063	0.10	U	GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Radium 226	13982-63-3	0.446	0.053	0.048	0.10		GAM
Radium 228	15262-20-1	0.622	0.13	0.12	0.20		GAM
Thorium 228	14274-82-9	0.563	0.037	0.036			GAM
Thorium 232	TH-232	0.622	0.13	0.12			GAM
Americium 241	14596-10-2	U		0.23		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 B Pond, 200 Area Source Chara.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test AM	Matrix SOLID
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0573	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6904-112						
B0WL01	N910109-01			7241-001	U	
B0WL02	N910109-02			7241-002	U	
B0WL03	N910109-03			7241-003	U	
B0WL04	N910109-04			7241-004	U	
B0WL06	N910109-05			7241-005	U	
B0WL07	N910109-06			7241-006	U	
B0WL08	N910109-07			7241-007	U	
BLK (QC ID=32539)	N910109-09			7241-009	U	
LCS (QC ID=32538)	N910109-08			7241-008	ok	
Duplicate (N910109-01)	N910109-10			7241-010	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0

200 B Pond, 200 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 112											
B0WL01	N910109-01			0.037	0.500			54		1088			64	12/16/99	12/16	SS-005
B0WL02	N910109-02			0.035	0.500			77		1088			64	12/16/99	12/16	SS-008
B0WL03	N910109-03			0.12	0.500			38		725			64	12/16/99	12/16	SS-045
B0WL04	N910109-04			0.11	0.500			46		723			64	12/16/99	12/16	SS-048
B0WL06	N910109-05			0.039	0.500			54		1088			64	12/16/99	12/16	SS-009
B0WL07	N910109-06			0.070	0.500			43		1088			64	12/16/99	12/16	SS-010
B0WL08	N910109-07			0.035	0.500			58		1074			77	12/16/99	12/29	SS-055
BLK (QC ID=32539)	N910109-09			0.052	0.500			93		784				12/07/99	12/17	SS-048
LCS (QC ID=32538)	N910109-08			0.36	0.500			79		1071				11/24/99	12/29	SS-051
Duplicate (N910109-01) (QC ID=32540)	N910109-10			0.081	0.500			73		784			65	12/16/99	12/17	SS-049
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test AM	Matrix SOLID
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SRB-207925	
Case no SDG H0573	

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	0.094	±	0.20
FOR 10 SAMPLES	YIELD	62	±	36

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test NP	Matrix SOLID
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0573	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 6904-112					
B0WL06	N910109-05			7241-005	U
B0WL07	N910109-06			7241-006	U
B0WL08	N910109-07			7241-007	0.038
BLK (QC ID=32539)	N910109-09			7241-009	U
LCS (QC ID=32538)	N910109-08			7241-008	ok
Duplicate (N910109-05)	N910109-11			7241-011	- U

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

200 B Pond, 200 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 112											
B0WL06	N910109-05			0.059	0.500			22		1680			70	12/22/99	12/22	SS 5
B0WL07	N910109-06			0.026	0.500			68		1680			70	12/22/99	12/22	SS 6
B0WL08	N910109-07			0.038	0.500			66		1680			70	12/22/99	12/22	SS 15
BLK (QC ID=32539)	N910109-09			0.055	0.500			57		1654				12/22/99	12/22	SS 57
LCS (QC ID=32538)	N910109-08			0.049	0.500			59		1680				12/22/99	12/22	SS 16
Duplicate (N910109-05) (QC ID=32541)	N910109-11			0.042	0.500			50		1644			70	12/22/99	12/22	SS 59
Nominal values and limits from method					0.500			20-105		100						

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

AVERAGES ± 2 SD	MDA	0.045	±	0.024
FOR 6 SAMPLES	YIELD	54	±	34

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test PU Matrix SOLID
SDG 7241
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6904-112								
B0WL01	N910109-01			7241-001	U		0.088	J
B0WL02	N910109-02			7241-002	U		0.029	J
B0WL03	N910109-03			7241-003	U		U	
B0WL04	N910109-04			7241-004	U		U	
B0WL06	N910109-05			7241-005	U		U	
B0WL07	N910109-06			7241-006	U		U	
B0WL08	N910109-07			7241-007	U		U	
BLK (QC ID=32539)	N910109-09			7241-009	U		U	
LCS (QC ID=32538)	N910109-08			7241-008	ok		ok	
Duplicate (N910109-01)	N910109-10			7241-010	-	U	ok	J
Nominal values and limits from method 200 B Pond, 200 Area Source Chara.				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 112																
B0WL01	N910109-01			0.058	0.500			96		725			64	12/14/99	12/16	SS-044
B0WL02	N910109-02			0.025	0.500			81		1088			64	12/14/99	12/16	SS-006
B0WL03	N910109-03			0.037	0.500			81		879			65	12/14/99	12/17	SS-056
B0WL04	N910109-04			0.041	0.500			88		880			65	12/14/99	12/17	SS-059
B0WL06	N910109-05			0.042	0.500			84		880			65	12/14/99	12/17	SS-063
B0WL07	N910109-06			0.058	0.500			71		715			68	12/14/99	12/20	SS-014
B0WL08	N910109-07			0.057	0.500			74		715			68	12/14/99	12/20	SS-015
BLK (QC ID=32539)	N910109-09			0.052	0.500			86		715				12/13/99	12/20	SS-016
LCS (QC ID=32538)	N910109-08			0.067	0.500			86		728				12/07/99	12/16	SS-039
Duplicate (N910109-01) (QC ID=32540)	N910109-10			0.064	0.500			67		748			68	12/14/99	12/20	SS-057
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 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test PU Matrix SOLID	
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0573	

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	0.050	±	0.027
FOR 10 SAMPLES	YIELD	81	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test TH Matrix SOLID
SDG 7241
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-112							
B0WL01	N910109-01			7241-001	0.644 J	0.683 J	0.673 J
B0WL02	N910109-02			7241-002	0.673 J	0.548 J	0.671 J
B0WL03	N910109-03			7241-003	0.287 J	0.553 J	0.512 J
B0WL04	N910109-04			7241-004	0.455 J	0.412 J	0.370 J
B0WL06	N910109-05			7241-005	0.436 J	0.542 J	0.562 J
B0WL07	N910109-06			7241-006	0.307 J	0.232 J	0.250 J
B0WL08	N910109-07			7241-007	0.293 J	0.375 J	0.269 J
BLK (QC ID=32539)	N910109-09			7241-009	U	U	U
LCS (QC ID=32538)	N910109-08			7241-008	No data U	ok	No data U
Duplicate (N910109-01)	N910109-10			7241-010	ok J	ok J	ok J
Nominal values and limits from method 200 B Pond, 200 Area Source Chara.				RDLs (pCi/g)	1.0	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 112																
B0WL01	N910109-01			0.17	0.250			92		538			65	12/17/99	12/17	SS-027
B0WL02	N910109-02			0.17	0.250			98		783			65	12/17/99	12/17	SS-045
B0WL03	N910109-03			0.19	0.250			84		538			65	12/17/99	12/17	SS-031
B0WL04	N910109-04			0.20	0.250			83		538			65	12/17/99	12/17	SS-032
B0WL06	N910109-05			0.18	0.250			92		538			65	12/17/99	12/17	SS-033
B0WL07	N910109-06			0.17	0.250			96		538			65	12/17/99	12/17	SS-034
B0WL08	N910109-07			0.16	0.250			99		427			65	12/17/99	12/17	SS-035
BLK (QC ID=32539)	N910109-09			0.23	0.250			86		540				12/13/99	12/16	SS-040
LCS (QC ID=32538)	N910109-08			0.19	0.250			83		427				12/13/99	12/17	SS-036
Duplicate (N910109-01) (QC ID=32540)	N910109-10			0.20	0.250			94		536			65	12/17/99	12/17	SS-041
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 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test	TH
Matrix	SOLID
SDG	7241
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0573

PROCEDURES	REFERENCE	TMPLATE
	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	0.19	±	0.041
FOR 10 SAMPLES	YIELD	91	±	12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test	SR
Matrix	SOLID
SDG	7241
Contact	Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SPB-207925
Case no	SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-112					
B0WL01	N910109-01			7241-001	1.12
B0WL02	N910109-02			7241-002	2.71
B0WL03	N910109-03			7241-003	17.6
B0WL04	N910109-04			7241-004	17.2
B0WL06	N910109-05			7241-005	16.9
B0WL07	N910109-06			7241-006	12.0
B0WL08	N910109-07			7241-007	1.40
BLK (QC ID=32539)	N910109-09			7241-009	U
LCS (QC ID=32538)	N910109-08			7241-008	ok
Duplicate (N910109-01)	N910109-10			7241-010	ok
Nominal values and limits from method 200 B Pond, 200 Area Source Chara.				RDLs (pCi/g)	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 112																
B0WL01	N910109-01			0.17	1.00			84		200			58	12/08/99	12/10	GRB-229
B0WL02	N910109-02			0.12	1.00			91		200			63	12/08/99	12/15	GRB-230
B0WL03	N910109-03			0.26	1.00			92		400			61	12/08/99	12/13	GRB-225
B0WL04	N910109-04			0.41	1.00			90		200			62	12/08/99	12/14	GRB-230
B0WL06	N910109-05			0.24	1.00			87		400			63	12/08/99	12/15	GRB-228
B0WL07	N910109-06			0.20	1.00			91		400			59	12/08/99	12/11	GRB-230
B0WL08	N910109-07			0.18	1.00			87		200			57	12/08/99	12/09	GRB-232
BLK (QC ID=32539)	N910109-09			0.17	1.00			81		400				12/07/99	12/07	GRB-202
LCS (QC ID=32538)	N910109-08			0.28	1.00			76		200				12/07/99	12/07	GRB-222
Duplicate (N910109-01) (QC ID=32540)	N910109-10			0.14	1.00			80		200			62	12/08/99	12/14	GRB-224
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test SR	Matrix SOLID
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0573	

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	0.22	±	0.17
FOR 10 SAMPLES	YIELD	86	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test	TC
Matrix	SOLID
SDG	7241
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SDB-207925
Case no	SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-112						
B0WL06	N910109-05			7241-005	U	
B0WL07	N910109-06			7241-006	U	
B0WL08	N910109-07			7241-007	U	
BLK (QC ID=32539)	N910109-09			7241-009	U	
LCS (QC ID=32538)	N910109-08			7241-008	ok	
Duplicate (N910109-05)	N910109-11			7241-011	-	U

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

200 B Pond, 200 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 112															
B0WL06	N910109-05			0.61	1.02			57		101			66	12/14/99	12/18	GRB-221
B0WL07	N910109-06			0.50	1.03			50		200			69	12/14/99	12/21	GRB-204
B0WL08	N910109-07			0.47	1.03			74		101			75	12/14/99	12/27	GRB-227
BLK (QC ID=32539)	N910109-09			0.68	1.02			50		101				12/13/99	12/27	GRB-228
LCS (QC ID=32538)	N910109-08			0.49	1.02			73		101				12/13/99	12/21	GRB-207
Duplicate (N910109-05) (QC ID=32541)	N910109-11			0.23	1.02			71		400			69	12/14/99	12/21	GRB-219
Nominal values and limits from method				15	1.02			20-105		50			180			

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

AVERAGES ± 2 SD	MDA	0.50	± 0.31
FOR 6 SAMPLES	YIELD	62	± 23

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test GAM Matrix SOLID	Client Hanford
SDG 7241	Contract TRB-SPB-207925
Contact Melissa C. Mannion	Case no SDG H0573

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6904-112						
B0WL01	N910109-01			7241-001	U	0.426
B0WL02	N910109-02			7241-002	U	U
B0WL03	N910109-03			7241-003	U	U
B0WL04	N910109-04			7241-004	U	U
B0WL06	N910109-05			7241-005	U	U
B0WL07	N910109-06			7241-006	U	0.039 J
B0WL08	N910109-07			7241-007	U	0.054 J
BLK (QC ID=32539)	N910109-09			7241-009	U	U
LCS (QC ID=32538)	N910109-08			7241-008	ok	ok
Duplicate (N910109-01)	N910109-10			7241-010	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10

200 B Pond, 200 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 112															
B0WL01	N910109-01			0.060	697					245			47	11/15/99	11/29	02,04,00
B0WL02	N910109-02			0.077	630					245			47	11/15/99	11/29	MB,05,00
B0WL03	N910109-03			0.25	826					38			47	11/15/99	11/29	MB,06,00
B0WL04	N910109-04			0.10	841					204			47	11/15/99	11/29	02,01,00
B0WL06	N910109-05			0.083	842					204			47	11/15/99	11/29	02,03,00
B0WL07	N910109-06			0.053	677					205			47	11/15/99	11/29	02,04,00
B0WL08	N910109-07			0.075	670					205			47	11/15/99	11/29	MB,05,00
BLK (QC ID=32539)	N910109-09			0.16	171					201				11/15/99	11/29	01,01,00
LCS (QC ID=32538)	N910109-08			0.096	171					232				11/15/99	11/30	01,03,00
Duplicate (N910109-01) (QC ID=32540)	N910109-10			0.062	697					201			47	11/15/99	11/29	02,04,00
Nominal values and limits from method				0.050	171					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test GAM Matrix SOLID	Client Hanford
SDG 7241	Contract TRB-SPB-207925
Contact Melissa C. Mannion	Case no SDG H0573

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	0.10 ± 0.12
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test U T Matrix SOLID
SDG 7241
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SPB-207925
Case no SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-112					
B0WL01	N910109-01			7241-001	0.724 J
B0WL02	N910109-02			7241-002	0.528 J
B0WL03	N910109-03			7241-003	0.752 J
B0WL04	N910109-04			7241-004	0.381 J
B0WL06	N910109-05			7241-005	0.448 J
B0WL07	N910109-06			7241-006	0.498 J
B0WL08	N910109-07			7241-007	0.522 J
BLK (QC ID=32215)	N910109-14			7241-014	U
LCS (QC ID=32214)	N910109-13			7241-013	ok
Duplicate (N910109-01)	N910109-15			7241-015	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 B Pond, 200 Area Source Chara.					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 112												
B0WL01	N910109-01			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL02	N910109-02			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL03	N910109-03			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL04	N910109-04			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL06	N910109-05			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL07	N910109-06			0.004	0.0500								20	11/01/99	11/02	KPA-001
B0WL08	N910109-07			0.004	0.0500								20	11/01/99	11/02	KPA-001
BLK (QC ID=32215)	N910109-14			0.004	0.0500									11/01/99	11/02	KPA-001
LCS (QC ID=32214)	N910109-13			0.041	0.0500									11/01/99	11/02	KPA-001
Duplicate (N910109-01) (QC ID=32216)	N910109-15			0.004	0.0500								20	11/01/99	11/02	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 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test U T	Matrix SOLID
SDG 7241	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0573	

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	0.008 ± 0.023
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 7241
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-112						
B0WL06	N910109-05			7241-005	U	
B0WL07	N910109-06			7241-006	U	
B0WL08	N910109-07			7241-007	U	
BLK (QC ID=32539)	N910109-09			7241-009	U	
LCS (QC ID=32538)	N910109-08			7241-008	ok	J
Duplicate (N910109-05)	N910109-11			7241-011	-	U
Spike (N910109-06)	N910109-12			7241-012	ok	J
Nominal values and limits from method				RDLs (pCi/g)	400	
200 B Pond, 200 Area Source Chara.						

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	PWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 112																
B0WL06	N910109-05			0.090	21.0			100		120			60	12/11/99	12/12	LSC-005
B0WL07	N910109-06			0.092	20.0			100		120			60	12/11/99	12/12	LSC-005
B0WL08	N910109-07			0.093	20.0			100		120			60	12/11/99	12/12	LSC-005
BLK (QC ID=32539)	N910109-09			0.18	20.5			50		120				12/10/99	12/12	LSC-005
LCS (QC ID=32538)	N910109-08			0.18	20.5			50		120				12/11/99	12/12	LSC-005
Duplicate (N910109-05) (QC ID=32541)	N910109-11			0.090	20.8			100		120			60	12/11/99	12/12	LSC-005
Spike (N910109-06) (QC ID=32542)	N910109-12			0.087	20.9			100		120			60	12/10/99	12/12	LSC-005
Nominal values and limits from method				400	20.5					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 FOR 7 SAMPLES
MDA 0.12 ± 0.088
YIELD 86 ± 49

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0573

Test NI L Matrix SOLID
SDG 7241
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0573

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-112						
B0WL06	N910109-05			7241-005	U	
B0WL07	N910109-06			7241-006	U	
B0WL08	N910109-07			7241-007	U	
BLK (QC ID=32539)	N910109-09			7241-009	U	
LCS (QC ID=32538)	N910109-08			7241-008	ok	
Duplicate (N910109-05)	N910109-11			7241-011	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 B Pond, 200 Area Source Chara.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-112	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 112											
B0WL06	N910109-05			2.1	0.500			96		100			56	12/08/99	12/08	LSC-004
B0WL07	N910109-06			2.1	0.500			92		100			56	12/08/99	12/08	LSC-004
B0WL08	N910109-07			2.1	0.500			95		100			56	12/08/99	12/08	LSC-004
BLK (QC ID=32539)	N910109-09			2.1	0.500			96		100				12/06/99	12/08	LSC-004
LCS (QC ID=32538)	N910109-08			2.0	0.500			98		100				12/06/99	12/08	LSC-004
Duplicate (N910109-05) (QC ID=32541)	N910109-11			2.5	0.500			79		100			56	12/08/99	12/08	LSC-004
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD MDA 2.2 ± 0.35
FOR 6 SAMPLES YIELD 93 ± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-017	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~ ~~SB~~ FB 10-13-99	Offsite Property No.: A990297		Bill of Lading/Air Bill No.: 4235795530451
			COA B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time									
COC	BOWL01	Soil	10-13-99	0808	X						X		
964	BOWL02	Soil	10-13-99	0818	X						X		
991	BOWL03	Soil	10-13-99	0828	X						X		
982	BOWL04	Soil	10-13-99	0838	X						X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Doug Bowers	10-13-99/1114
Received By:	B.F.FB	10-13-99/1114
Relinquished By:	KeyFTB	10/14/99 1015
Received By:	R Nielson/R Nielson	10/14/99 1015
Relinquished By:	R Nielson/R Nielson	10/14/99 1430
Received By:	Fedex	10/14/99
Relinquished By:	Fed Ex 10/15/99 10:00	
Received By:	TNU M.Goldberg 10/15/99 10:00	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (*Arsenic, Barium, Cadmium, Chromium*, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 Collector unavailable to sign COC. use BOW8C1 as T.A.

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	B99-078-136	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-017	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA AR 10-13-99	Offsite Property No.: A990297		Bill of Lading/Air Bill No.: 4235795304 51
			COA: DZOC w/ C 7/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

CPM	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846	X	X	X	X	X					
379	BOWL07	Soil	10-13-99	0908	X	X	X	X	X					
200	BOWL08	Soil	10-13-99	0925	X	X	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 10-13-99/1114	Received By: R.T. TB 10-13-99/1114		
Relinquished By: Bert TB 10/14/99 1015	Received By: R. Nielson/R. Nielson 10/14/99 1015		
Relinquished By: R. Nielson/R. Nielson 10/14/99 1430	Received By: FedEx 10/14/99		
Relinquished By: FedEx 10/15/99 10:00	Received By: TW McGoldenberg 10/15/99 10:00		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

Collector unavailable to sign C.O.C

use BOW 8C1 as TA

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	B99-078-136	Page 2 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-017	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~ 0578 10-13-99	Offsite Property No.: A990297		Bill of Lading/Air Bill No.: 4235795304 51
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	None										
	Type of Container	aG										
Special Handling and/or Storage	No. of Container(s)	1										
	Volume	1000mL										
SAMPLE ANALYSIS		See item (1) in Special Instructions.										

CPM	Sample No.	Matrix *	Sample Date	Sample Time										
1378	BOWL06	Soil	10-13-99	0846	X									
1379	BOWL07	Soil	10-13-99	0908	X									
1380	BOWL08	Soil	10-13-99	0925	X									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Doug Bowers	10-13-99 1114
Received By:	R.F. LB	10-13-99 1114
Relinquished By: Kerr LB		10/14/99 1015
Received By:	R Nielson / R Nielson	10/14/99 1015
Relinquished By: R Nielson / R Nielson		10/14/99 1430
Received By:	Fed Ex	10/14/99
Relinquished By: Fed Ex		10/15/99 10:00
Received By:	TNU M. Goldenberg	10/15/99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

Collector unavailable to sign C.O.C.

Please BOW8C1 as TA

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 10-15-99 10:00

CoC No. B99-078-135, 136

Container I.D. No. ERC96-017 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: 10
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: 10-15-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

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

DEC 1999

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW # : 9910L392
SDG/SAF #: H0573/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-15-99

SEMIVOLATILE

Seven (7) soil samples were collected on 10-13-99.

The samples and their associated QC samples were extracted on 10-19-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-22,25-99.

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

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

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

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

4. All surrogate recoveries were within EPA QC limits.

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

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

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

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-23-99
Date

som\gorup\data\bna\tnu10392.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 19 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 11/20/99 10:56

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WL01		B0WL01		B0WL01		B0WL02		B0WL03		B0WL04	
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	70	%	73	%	73	%	71	%	67	%	65	%
	2-Fluorobiphenyl	72	%	70	%	70	%	70	%	70	%	67	%
	Terphenyl-d14	84	%	77	%	81	%	86	%	80	%	65	%
	Phenol-d5	69	%	63	%	77	%	72	%	65	%	56	%
	2-Fluorophenol	64	%	62	%	68	%	64	%	61	%	62	%
	2,4,6-Tribromophenol	73	%	68	%	71	%	68	%	60	%	50	%
Phenol		360	U	58	%	70	%	360	U	340	U	340	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	340	U	340	U
2-Chlorophenol		360	U	61	%	68	%	360	U	340	U	340	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	340	U
1,4-Dichlorobenzene		360	U	64	%	70	%	360	U	340	U	340	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	340	U
2-Methylphenol		360	U	360	U	360	U	360	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	340	U	340	U
4-Methylphenol		360	U	360	U	360	U	360	U	340	U	340	U
N-Nitroso-di-n-propylamine		360	U	76	%	94	%	360	U	340	U	340	U
Hexachloroethane		360	U	360	U	360	U	360	U	340	U	340	U
Nitrobenzene		360	U	360	U	360	U	360	U	340	U	340	U
Isophorone		360	U	360	U	360	U	360	U	340	U	340	U
2-Nitrophenol		360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	340	U	340	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	340	U	340	U
1,2,4-Trichlorobenzene		360	U	70	%	74	%	360	U	340	U	340	U
Naphthalene		360	U	360	U	360	U	360	U	340	U	340	U
4-Chloroaniline		360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	340	U	340	U
4-Chloro-3-methylphenol		360	U	59	%	70	%	360	U	340	U	340	U
2-Methylnaphthalene		360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	340	U	340	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	340	U	340	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	900	U	850	U	860	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L392 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

05

Cust ID:	B0WL01		B0WL01		B0WL01		B0WL02		B0WL03		B0WL04	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	340	U	340	U
2-Nitroaniline	900	U	900	U	900	U	900	U	850	U	860	U
Dimethylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
Acenaphthylene	360	U	360	U	360	U	360	U	340	U	340	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	340	U	340	U
3-Nitroaniline	900	U	900	U	900	U	900	U	850	U	860	U
Acenaphthene	360	U	68	%	72	%	360	U	340	U	340	U
2,4-Dinitrophenol	900	U	900	U	900	U	900	U	850	U	860	U
4-Nitrophenol	900	U	55	%	60	%	900	U	850	U	860	U
Dibenzofuran	360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dinitrotoluene	360	U	70	%	81	%	360	U	340	U	340	U
Diethylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	340	U
Fluorene	360	U	360	U	360	U	360	U	340	U	340	U
4-Nitroaniline	900	U	900	U	900	U	900	U	850	U	860	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	900	U	850	U	860	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	340	U	340	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	340	U	340	U
Pentachlorophenol	900	U	74	%	78	%	900	U	850	U	860	U
Phenanthrene	360	U	360	U	360	U	360	U	340	U	340	U
Anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Carbazole	360	U	360	U	360	U	360	U	340	U	340	U
Di-n-butylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
Fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Pyrene	360	U	76	%	87	%	360	U	340	U	340	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(a)anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Chrysene	360	U	360	U	360	U	360	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	360	U	340	U	340	U
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(b)fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(k)fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(a)pyrene	360	U	360	U	360	U	360	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	340	U	340	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	360	U	340	U	340	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 11/20/99 10:56

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0WL06		B0WL07		B0WL08		SBLKEU		SBLKEU BS	
Sample Information	RFW#:	005		006		007		99LE1275-MB1		99LE1275-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	67	%	65	%	65	%	80	%	76	%
	2-Fluorobiphenyl	70	%	70	%	69	%	79	%	76	%
	Terphenyl-d14	69	%	71	%	71	%	79	%	75	%
	Phenol-d5	63	%	62	%	61	%	73	%	72	%
	2-Fluorophenol	66	%	64	%	65	%	77	%	74	%
	2,4,6-Tribromophenol	57	%	55	%	54	%	69	%	76	%
Phenol		340	U	350	U	350	U	330	U	70	%
bis(2-Chloroethyl)ether		340	U	350	U	350	U	330	U	330	U
2-Chlorophenol		340	U	350	U	350	U	330	U	73	%
1,3-Dichlorobenzene		340	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		340	U	350	U	350	U	330	U	72	%
1,2-Dichlorobenzene		340	U	350	U	350	U	330	U	330	U
2-Methylphenol		340	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	350	U	350	U	330	U	330	U
4-Methylphenol		340	U	350	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	350	U	350	U	330	U	79	%
Hexachloroethane		340	U	350	U	350	U	330	U	330	U
Nitrobenzene		340	U	350	U	350	U	330	U	330	U
Isophorone		340	U	350	U	350	U	330	U	330	U
2-Nitrophenol		340	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		340	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		340	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	350	U	350	U	330	U	77	%
Naphthalene		340	U	350	U	350	U	330	U	330	U
4-Chloroaniline		340	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		340	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	350	U	350	U	330	U	70	%
2-Methylnaphthalene		340	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	880	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WL06		B0WL07		B0WL08		SBLKEU		SBLKEU BS	
RFW#:	005		006		007		99LE1275-MB1		99LE1275-MB1	
2-Chloronaphthalene	340	U	350	U	350	U	330	U	330	U
2-Nitroaniline	860	U	880	U	860	U	840	U	840	U
Dimethylphthalate	340	U	350	U	350	U	330	U	330	U
Acenaphthylene	340	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	350	U	330	U	330	U
3-Nitroaniline	860	U	880	U	860	U	840	U	840	U
Acenaphthene	340	U	350	U	350	U	330	U	76	%
2,4-Dinitrophenol	860	U	880	U	860	U	840	U	840	U
4-Nitrophenol	860	U	880	U	860	U	840	U	73	%
Dibenzofuran	340	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	340	U	350	U	350	U	330	U	71	%
Diethylphthalate	340	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	350	U	330	U	330	U
Fluorene	340	U	350	U	350	U	330	U	330	U
4-Nitroaniline	860	U	880	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	880	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	350	U	330	U	330	U
Pentachlorophenol	860	U	880	U	860	U	840	U	81	%
Phenanthrene	340	U	350	U	350	U	330	U	330	U
Anthracene	340	U	350	U	350	U	330	U	330	U
Carbazole	340	U	350	U	350	U	330	U	330	U
Di-n-butylphthalate	340	U	350	U	350	U	330	U	330	U
Fluoranthene	340	U	350	U	350	U	330	U	330	U
Pyrene	340	U	350	U	350	U	330	U	75	%
Butylbenzylphthalate	340	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	350	U	330	U	330	U
Chrysene	340	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	350	U	330	U	330	U
Di-n-octyl phthalate	340	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	350	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	340	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.

B0WL01

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A102512

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.23	100	JA
2.	UNKNOWN	24.21	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL02

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-002

Sample wt/vol: 30.4 (g/mL) G Lab File ID: A102515

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 9 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.23	100	JA
2.	UNKNOWN	24.21	200	J
3.	UNKNOWN	27.44	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL03

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-003

Sample wt/vol: 30.3 (g/mL) G Lab File ID: A102516

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.21	80	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL04

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102503

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 3 decanted: (Y/N)__ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL06

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102504

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL07

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-006

Sample wt/vol: 30.4 (g/mL) G Lab File ID: D102505

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WL08

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-007

Sample wt/vol: 30.7 (g/mL) G Lab File ID: D102506

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKEU

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1275-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102205

Level: (low/med) LOW Date Received: 10/19/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	27.98	80	J

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01	001	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL01	001 MS	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL01	001 MSD	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL02	002	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL03	003	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL04	004	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL06	005	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL07	006	S	99LE1275	10/13/99	10/19/99	10/25/99
B0WL08	007	S	99LE1275	10/13/99	10/19/99	10/25/99

LAB QC:

SBLKEU	MB1	S	99LE1275	N/A	10/19/99	10/22/99
SBLKEU	MB1 BS	S	99LE1275	N/A	10/19/99	10/22/99

RECRA LabNet Use Only: 9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals

Client: TMu Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: std TAT: 30 day
Date Rec'd: 10-15-99 Date Due: 11/14/99
Account #:

Refrigerator #		1	2	2					2	2	2	2					
#/Type Container	Liquid																
	Solid	1AG	1AG	1					1AG	1	1AG	1AG					
Volume	Liquid																
	Solid	250	500	1					500	1	250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Id	Inorg					
RECRA LabNet Use Only		0624H 06C5C	0625H 0DRO	OPCB					Metal	ICNO	IPH	Ang					

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 06C5C	0625H 0DRO	OPCB	Metal	ICNO	IPH	Ang
001	B0L01			WS 10-15-99	10-13-99	0808	✓	✓	✓	✓	✓	✓	✓
002	02					0818	✓	✓	✓	✓	✓	✓	✓
003	03					0828	✓	✓	✓	✓	✓	✓	✓
004	04					0838	✓	✓	✓	✓	✓	✓	✓
005	06					0846	✓	✓	✓	✓	✓	✓	✓
006	07					0908	✓	✓	✓	✓	✓	✓	✓
007	08					0925	✓	✓	✓	✓	✓	✓	✓

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

Special Instructions:
Saf # B99-078

*N2357953047 3 - 3.9°C
N2357953046 2 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Ang (1) = 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Run Matrix QC

RECRA LabNet

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
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 96-013	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 10-13-99	Offsite Property No.: A410298		Bill of Lading/Air Bill No.: 4235795306473
			COA: B2CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-13-99 1114	Received By: BOF 13	Date/Time: 10-13-99 1114
Relinquished By: BOF #13	Date/Time: 10/14/99 1030	Received By: R Nielson / R Nielson	Date/Time: 10/14/99 1030
Relinquished By: R Nielson / R Nielson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW8C1 as TA

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	B99-078-136	Page 1 of 1 RJN 10/14/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: SML-418	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RZB 10-13-99	Offsite Property No.: A99U298		Bill of Lading/Air Bill No.: 4235795530462
			COA B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
379	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
380	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-13-99/1114	Received By: RCF HB	Date/Time: 10-13-99/1114
Relinquished By: RCF HB	Date/Time: 10/14/99 1030	Received By: R. Nelson	Date/Time: 10/14/99 1030
Relinquished By: R. Nelson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

use BOW8C1 as T-A

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

DEC 1999

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9910L392
SDG/SAF#: H0573/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-15-99

PCB

The set of samples consisted of seven (7) soil samples collected on 10-13-99.

The samples and their associated QC samples were extracted on 10-21-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-12-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Sixteen (16) of twenty-two (22) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

pef\r:\group\data\pest\10L392.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.

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99GC214

Initiator: B. Foster RFW Batch: 9910L365, 392, 419, 420 Parameter: UPCB
Date: 11/17/99 Samples: Matrix: Soil
Client: TWU - Hartford Method: SW846/MCAWW/CLP/ Prep Batch: 99LE1283

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)

The following samples had high surrogates

9910L365-

	TCX	PCB
002	125	141
003	152	176
004	142	162
005	130	143

9910L392-

	TCX	PCB
001 MS	160	174
001 MSD	145	157
002	120	136
003	135	152
006	175	191
007	168	181

9910L420-

	TCX	PCB
001 MS	170	180
002	128	138
004	122	135

Blank 99LE1283 was also high at 148% + 155%

2. Known or Probable Causes(s)

QC limit = TCX = 118%
PCB = 122%

All spike recoveries were ok. All samples with PCB's were ok for surrogates.

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: Michelle Johnson 11/19/99

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

5. Final Action...signature/date: S. D. Weim 11-19-99 Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/18/99 16:20

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

	Cust ID:	B0WL01	B0WL01	B0WL01	B0WL02	B0WL03	B0WL04
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	112 %	160 * %	145 * %	120 * %	135 * %	85 %
	Decachlorobiphenyl	128 * %	174 * %	157 * %	136 * %	152 * %	109 %
Aroclor-1016		36 U	36 U	36 U	36 U	34 U	34 U
Aroclor-1221		73 U	73 U	73 U	73 U	69 U	69 U
Aroclor-1232		36 U	36 U	36 U	36 U	34 U	34 U
Aroclor-1242		36 U	36 U	36 U	36 U	34 U	34 U
Aroclor-1248		36 U	36 U	36 U	36 U	34 U	34 U
Aroclor-1254		36 U	77 %	93 %	36 U	34 U	34 U
Aroclor-1260		36 U	36 U	36 U	36 U	34 U	34 U

	Cust ID:	B0WL06	B0WL07	B0WL08	PBLKXM	PBLKXM BS
Sample Information	RFW#:	005	006	007	99LE1283-MB1	99LE1283-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	102 %	175 * %	168 * %	140 * %	102 %
	Decachlorobiphenyl	123 * %	191 * %	181 * %	155 * %	112 %
Aroclor-1016		34 U	36 U	35 U	33 U	33 U
Aroclor-1221		69 U	71 U	71 U	67 U	67 U
Aroclor-1232		34 U	36 U	35 U	33 U	33 U
Aroclor-1242		34 U	36 U	35 U	33 U	33 U
Aroclor-1248		34 U	36 U	35 U	33 U	33 U
Aroclor-1254		34 U	36 U	35 U	33 U	86 %
Aroclor-1260		34 U	36 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

gw 11-19-99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01	001	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL01	001 MS	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL01	001 MSD	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL02	002	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL03	003	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL04	004	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL06	005	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL07	006	S	99LE1283	10/13/99	10/21/99	11/12/99
B0WL08	007	S	99LE1283	10/13/99	10/21/99	11/12/99

LAB QC:

PBLKXM	MB1	S	99LE1283	N/A	10/21/99	11/12/99
PBLKXM	MB1 BS	S	99LE1283	N/A	10/21/99	11/12/99

gd 11-19-99

RECRA LabNet Use Only

9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals

Client: TMU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: std TAT: 30 days

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2					
#/Type Container	Liquid																
	Solid	1PG	1PG	1					1PG	1	1PG	1PG					
Volume	Liquid																
	Solid	250	500	1					500	1	250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Inorg					

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	8260 8270	8260 8270	8260 8270	8260 8270														
							RECRA LabNet Use Only																	
001	BW101			WS	10-13-99	0808	✓	✓	✓						✓	✓	✓	✓						
002	02					0818	✓	✓	✓						✓	✓	✓	✓						
003	03					0828	✓	✓	✓						✓	✓	✓	✓						
004	04					0838	✓	✓	✓						✓	✓	✓	✓						
005	06					0846	✓	✓	✓						✓	✓	✓	✓						
006	07					0908	✓	✓	✓						✓	✓	✓	✓						
007	08					0925	✓	✓	✓						✓	✓	✓	✓						

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

Special Instructions:

Saf # B99-078

*4235795304 73 - 3.9°C
4235795304 62 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Ang (1) = 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, IN H3N, ICR6
5.
6. Run matrix QC

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 96-013	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 10-13-99	Offsite Property No.: A010298		Bill of Lading/Air Bill No.: 4235795310473
			COA: B2CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-13-99/1114	Received By: Doug Bowers	Date/Time: 10-13-99/1114
Relinquished By: Ref #1B	Date/Time: 10/14/99 1030	Received By: [illegible]/R Nielson	Date/Time: 10/14/99 1030
Relinquished By: [illegible]/R Nielson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW8C1 as TA

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	B99-078-136	Page 1 of 21 RJN 10/14/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: SML-418	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~IMA~~/RECRA 82B.10-13.99	Offsite Property No.: A99D298		Bill of Lading/Air Bill No.: 4235795301462
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
379	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
380	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	10-13-99/1114	Received By	10-13-99/1114
Relinquished By		10/14/99 1030	Received By	10/14/99 1030
Relinquished By		10/14/99 1430	Received By	Fed Ex
Relinquished By	Fed Ex	10-15-99 0900	Received By	10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

USC BOW8C1 as T-A

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# : 9910L392
SDG/SAF# : H0573/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-15-99

METALS CASE NARRATIVE

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

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

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 20 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WL01	Antimony	100	97.4

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-17-99
Date

mld/m10-392

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L392

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __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-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WL01	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.7	MG/KG	0.25	1.0
		Barium, Total	70.5	MG/KG	0.02	1.0
		Beryllium, Total	0.56	MG/KG	0.009	1.0
		Cadmium, Total	18.0	MG/KG	0.04	1.0
		Chromium, Total	9.5	MG/KG	0.06	1.0
		Copper, Total	13.3	MG/KG	0.05	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Nickel, Total	10.9	MG/KG	0.09	1.0
		Lead, Total	7.2	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.56	MG/KG	0.39	1.0
		Vanadium, Total	49.5	MG/KG	0.05	1.0
		Zinc, Total	55.4	MG/KG	0.05	1.0
-002	B0WL02	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.6	MG/KG	0.30	1.0
		Barium, Total	78.7	MG/KG	0.02	1.0
		Beryllium, Total	0.51	MG/KG	0.01	1.0
		Cadmium, Total	1.5	MG/KG	0.04	1.0
		Chromium, Total	9.2	MG/KG	0.08	1.0
		Copper, Total	14.5	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.5	MG/KG	0.11	1.0
		Lead, Total	7.2	MG/KG	0.23	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Thallium, Total	0.71	MG/KG	0.47	1.0
		Vanadium, Total	50.6	MG/KG	0.07	1.0
		Zinc, Total	46.3	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WL03	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.6	MG/KG	0.25	1.0
		Barium, Total	36.3	MG/KG	0.02	1.0
		Beryllium, Total	0.29	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	2.7	MG/KG	0.06	1.0
		Copper, Total	10.6	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	3.8	MG/KG	0.09	1.0
		Lead, Total	2.2	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.39 u	MG/KG	0.39	1.0
		Vanadium, Total	40.0	MG/KG	0.05	1.0
		Zinc, Total	29.1	MG/KG	0.05	1.0
-004	B0WL04	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.0	MG/KG	0.25	1.0
		Barium, Total	35.7	MG/KG	0.02	1.0
		Beryllium, Total	0.25	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	2.2	MG/KG	0.07	1.0
		Copper, Total	10.4	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	3.5	MG/KG	0.09	1.0
		Lead, Total	2.0	MG/KG	0.20	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.41 u	MG/KG	0.41	1.0
		Vanadium, Total	33.3	MG/KG	0.06	1.0
		Zinc, Total	27.5	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0WL06	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.1	MG/KG	0.22	1.0
		Barium, Total	38.2	MG/KG	0.02	1.0
		Beryllium, Total	0.31	MG/KG	0.008	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.9	MG/KG	0.06	1.0
		Copper, Total	11.3	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.4	MG/KG	0.08	1.0
		Lead, Total	2.0	MG/KG	0.17	1.0
		Antimony, Total	0.17 u	MG/KG	0.17	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.36 u	MG/KG	0.36	1.0
		Vanadium, Total	40.2	MG/KG	0.05	1.0
		Zinc, Total	31.2	MG/KG	0.04	1.0
-006	B0WL07	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.8	MG/KG	0.24	1.0
		Barium, Total	85.6	MG/KG	0.02	1.0
		Beryllium, Total	0.64	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	3.7	MG/KG	0.06	1.0
		Copper, Total	16.7	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.2	MG/KG	0.09	1.0
		Lead, Total	2.3	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.45	MG/KG	0.37	1.0
		Thallium, Total	0.74	MG/KG	0.39	1.0
		Vanadium, Total	82.9	MG/KG	0.05	1.0
		Zinc, Total	44.6	MG/KG	0.04	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0WL08	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.6	MG/KG	0.25	1.0
		Barium, Total	76.9	MG/KG	0.02	1.0
		Beryllium, Total	0.67	MG/KG	0.009	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	3.9	MG/KG	0.07	1.0
		Copper, Total	15.5	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.0	MG/KG	0.09	1.0
		Lead, Total	2.6	MG/KG	0.20	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.41	MG/KG	0.38	1.0
		Thallium, Total	0.78	MG/KG	0.40	1.0
		Vanadium, Total	94.5	MG/KG	0.06	1.0
		Zinc, Total	50.1	MG/KG	0.05	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0727-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.09	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.43 u	MG/KG	0.43	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.16	MG/KG	0.05	1.0
BLANK1	99C0316-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WL01	Silver, Total	4.1	0.07u	4.6	89.1	1.0
		Arsenic, Total	166	2.7	182	89.8	1.0
		Barium, Total	240	70.5	182	92.9	1.0
		Beryllium, Total	4.7	0.56	4.6	90.0	1.0
		Cadmium, Total	21.7	18.0	4.6	80.4	1.0
		Chromium, Total	27.0	9.5	18.2	96.2	1.0
		Copper, Total	34.2	13.3	22.7	92.1	1.0
		Mercury, Total	0.24	0.04	0.16	128.8	1.0
		Nickel, Total	51.5	10.9	45.5	89.2	1.0
		Lead, Total	47.0	7.2	45.5	87.5	1.0
		Antimony, Total	13.8	0.19u	45.5	30.3	1.0
		Selenium, Total	159	0.37u	182	87.4	1.0
		Thallium, Total	166	0.56	182	90.8	1.0
		Vanadium, Total	90.6	49.5	45.5	90.3	1.0
		Zinc, Total	95.1	55.4	45.5	87.3	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WL01	Silver, Total	0.07u	0.07u	NC	1.0
		Arsenic, Total	2.7	2.9	7.1	1.0
		Barium, Total	70.5	76.0	7.5	1.0
		Beryllium, Total	0.56	0.60	7.2	1.0
		Cadmium, Total	18.0	20.4	12.5	1.0
		Chromium, Total	9.5	10.7	11.9	1.0
		Copper, Total	13.3	13.8	3.7	1.0
		Mercury, Total	0.04	0.05	37.2	1.0
		Nickel, Total	10.9	11.4	4.5	1.0
		Lead, Total	7.2	7.3	1.4	1.0
		Antimony, Total	0.19u	0.19u	NC	1.0
		Selenium, Total	0.37u	0.37	~~NC~~ 200	1.0
		Thallium, Total	0.56	0.39u	~~NC~~ 200	1.0
		Vanadium, Total	49.5	54.2	9.1	1.0
		Zinc, Total	55.4	58.0	4.6	1.0

Corrections
AD 11/16/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0727-LC1	Silver, LCS	48.2	50.0	MG/KG	96.4
		Arsenic, LCS	946	1000	MG/KG	94.6
		Barium, LCS	494	500	MG/KG	98.8
		Beryllium, LCS	24.0	25.0	MG/KG	96.0
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	124	125	MG/KG	98.9
		Nickel, LCS	190	200	MG/KG	95.0
		Lead, LCS	238	250	MG/KG	95.2
		Antimony, LCS	286	300	MG/KG	95.3
		Selenium, LCS	916	1000	MG/KG	91.6
		Thallium, LCS	976	1000	MG/KG	97.6
		Vanadium, LCS	252	250	MG/KG	100.7
		Zinc, LCS	94.1	100	MG/KG	94.1
LCS1	99C0316-LC1	Mercury, LCS	1.0	1.0	MG/KG	100.9

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01						
SILVER, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
SILVER, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
SILVER, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	001	S	99C0316	10/13/99	10/28/99	10/29/99
MERCURY, TOTAL	001 REP	S	99C0316	10/13/99	10/28/99	10/29/99
MERCURY, TOTAL	001 MS	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
NICKEL, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
NICKEL, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	001	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	001 REP	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	001 MS	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL02						
SILVER, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	002	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	002	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL03						
SILVER, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	003	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL04						
SILVER, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	004	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	004	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL06						
SILVER, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	005	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	005	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL07						
SILVER, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	006	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
SELENIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	006	S	99L0727	10/13/99	10/26/99	10/27/99
B0WL08						
SILVER, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
ARSENIC, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
BARIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
CADMIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
CHROMIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
COPPER, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
MERCURY, TOTAL	007	S	99C0316	10/13/99	10/28/99	10/29/99
NICKEL, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
LEAD, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
ANTIMONY, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
THALLIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
VANADIUM, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99
ZINC, TOTAL	007	S	99L0727	10/13/99	10/26/99	10/27/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
SILVER, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ARSENIC LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ARSENIC, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
BARIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
BARIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
BERYLLIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
CADMIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
CADMIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
CHROMIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
CHROMIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
COPPER LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
COPPER, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
MERCURY LABORATORY	LC1 BS	S	99C0316	N/A	10/28/99	10/29/99
MERCURY, TOTAL	MB1	S	99C0316	N/A	10/28/99	10/29/99
NICKEL LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
NICKEL, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
LEAD LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
LEAD, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ANTIMONY LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ANTIMONY, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
SELENIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
SELENIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
THALLIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
THALLIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
VANADIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
VANADIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ZINC LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ZINC, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99

RECRA LabNet Use Only: 9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All — FIELD PERSONNel: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TMU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: std TAT: 30 day

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2					
#/Type Container	Liquid																
	Solid	1PG	1PG	1					1PG	1	1PG	1PG					
Volume	Liquid																
	Solid	250	500	1					500	1	250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Anions					
		RECRA LabNet Use Only															
		02 24H 06 SC	02 25H ODRO	OPCB					METO	ICNUTO	IPH	Ang(1)					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metals	CN	pH	Anions
001	BOW101			WS	10-13-99	0808	✓	✓	✓					✓	✓	✓	✓
002	02					0818	✓	✓	✓					✓	✓	✓	✓
003	03					0828	✓	✓	✓					✓	✓	✓	✓
004	04					0838	✓	✓	✓					✓	✓	✓	✓
005	06					0846	✓	✓	✓					✓	✓	✓	✓
006	07					0908	✓	✓	✓					✓	✓	✓	✓
007	08					0925	✓	✓	✓					✓	✓	✓	✓

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

Special Instructions:

Saf # B99-078

* 42357953047 3 - 3.9°C
42357953046 2 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Ang (1) = 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, IN H3N, ICR6
5.
6. Run matrix QC

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

OTB

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-013	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA 888 10-13-99	Offsite Property No.: A990298	Bill of Lading/Air Bill No.: 4235795304 73	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-13-99 1114	Received By: BOF 1B	Date/Time: 10-13-99 1114
Relinquished By: BOF #1B	Date/Time: 10/14/99 1030	Received By: R. Nielson	Date/Time: 10/14/99 1030
Relinquished By: R. Nielson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900
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.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW8C1 as TA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

010

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 1 RJN 10/14/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: SML-418	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA BZB 10-13-99	Offsite Property No.: A99U298		Bill of Lading/Air Bill No.: 4235795304 62
			COA B20GW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
379	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
380	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers 10-13-99 1114	Received By: B C F 1B 10-13-99 1114	Date/Time
Relinquished By: BCF 1B 10/14/99 1030	Received By: Bill Nelson / R. Nelson 10/14/99 1030	Date/Time
Relinquished By: Bill Nelson / R. Nelson 10/14/99 1430	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex 10-15-99 0900	Received By: T Murray 10-15-99 0900	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

use BOWR01 as T-A

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

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

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

DEC 1999
RECEIVED
Data

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW # : 9910L392
SDG/SAF #: H0573/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-15-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 10-13-99.

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 10-21,27-99.

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 detected in the samples.

4. Two (2) of thirty-six (36) surrogate recoveries were outside EPA QC limits. The analyses of associated matrix spike samples fulfills the reanalysis requirements.

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

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

7. The method blank 99LVK447-MB1 contained the common laboratory contaminant Methylene Chloride at a level less than 3x the CRQL. The method blank 99LVH445-MB1 contained the common laboratory contaminants Methylene Chloride, Acetone at levels less than 2x the CRQL and the target compound 2-Hexanone at a level less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-30-99
Date

som\group\data\voa\tnu10392.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 20 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/29/99 20:03

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WL01	B0WL01	B0WL01	B0WL02	B0WL03	B0WL04
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.877	1.04	1.11	0.943	1.00	0.847
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	76 * %	99 %	100 %	87 %	102 %	98 %
	Bromofluorobenzene	73 * %	98 %	98 %	82 %	99 %	97 %
	1,2-Dichloroethane-d4	84 %	92 %	96 %	89 %	105 %	106 %
Chloromethane		10 U	11 U	12 U	10 U	10 U	9 U
Bromomethane		10 U	11 U	12 U	10 U	10 U	9 U
Vinyl Chloride		10 U	11 U	12 U	10 U	10 U	9 U
Chloroethane		10 U	11 U	12 U	10 U	10 U	9 U
Methylene Chloride		11 B	12 B	13 B	15 B	17 B	13 B
Acetone		10 U	11 U	12 U	1 J	10 U	9 U
Carbon Disulfide		5 U	6 U	6 U	5 U	5 U	4 U
1,1-Dichloroethene		5 U	110 %	102 %	5 U	5 U	4 U
1,1-Dichloroethane		5 U	6 U	6 U	5 U	5 U	4 U
1,2-Dichloroethene (total)		5 U	6 U	6 U	5 U	5 U	4 U
Chloroform		5 U	6 U	6 U	5 U	5 U	4 U
1,2-Dichloroethane		5 U	6 U	6 U	5 U	5 U	4 U
2-Butanone		10 U	11 U	12 U	10 U	10 U	9 U
1,1,1-Trichloroethane		5 U	6 U	6 U	5 U	5 U	4 U
Carbon Tetrachloride		5 U	6 U	6 U	5 U	5 U	4 U
Bromodichloromethane		5 U	6 U	6 U	5 U	5 U	4 U
1,2-Dichloropropane		5 U	6 U	6 U	5 U	5 U	4 U
cis-1,3-Dichloropropene		5 U	6 U	6 U	5 U	5 U	4 U
Trichloroethene		5 U	100 %	99 %	5 U	5 U	4 U
Dibromochloromethane		5 U	6 U	6 U	5 U	5 U	4 U
1,1,2-Trichloroethane		5 U	6 U	6 U	5 U	5 U	4 U
Benzene		5 U	99 %	99 %	5 U	5 U	4 U
Trans-1,3-Dichloropropene		5 U	6 U	6 U	5 U	5 U	4 U
Bromoform		5 U	6 U	6 U	5 U	5 U	4 U
4-Methyl-2-pentanone		10 U	11 U	12 U	10 U	10 U	9 U
2-Hexanone		10 U	11 U	12 U	10 U	10 U	9 U
Tetrachloroethene		5 U	4 J	3 J	5 U	5 U	4 U
1,1,2,2-Tetrachloroethane		5 U	6 U	6 U	5 U	5 U	4 U
Toluene		5 U	100 %	99 %	5 U	5 U	4 U

*= Outside of EPA CLP QC limits.

11-30-99

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WL01	B0WL01	B0WL01	B0WL02	B0WL03	B0WL04
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	5 U	99 %	98 %	5 U	5 U	4 U
Ethylbenzene	5 U	6 U	6 U	5 U	5 U	4 U
Styrene	5 U	6 U	6 U	5 U	5 U	4 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U	4 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/29/99 20:03

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0WL06		B0WL07		B0WL08		VBLKYW		VBLKYW BS		VBLKXK	
Sample Information	RFW#:	005		006		007		99LVK447-MB1		99LVK447-MB1		99LVH445-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.862		1.06		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	102	%	97	%	97	%	108	%	107	%	96	%
	Bromofluorobenzene	98	%	100	%	98	%	107	%	106	%	99	%
	1,2-Dichloroethane-d4	104	%	93	%	92	%	103	%	99	%	88	%
			fl		fl		fl		fl		fl		fl
Chloromethane		9	U	11	U	11	U	10	U	10	U	10	U
Bromomethane		9	U	11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		9	U	11	U	11	U	10	U	10	U	10	U
Chloroethane		9	U	11	U	11	U	10	U	10	U	10	U
Methylene Chloride		14	B	13	B	12	B	22		23	B	10	
Acetone		2	J	4	JB	7	JB	10	U	10	U	3	J
Carbon Disulfide		4	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		4	U	6	U	6	U	5	U	104	%	5	U
1,1-Dichloroethane		4	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		4	U	6	U	6	U	5	U	5	U	5	U
Chloroform		4	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		4	U	6	U	6	U	5	U	5	U	5	U
2-Butanone		9	U	11	U	11	U	10	U	10	U	3	J
1,1,1-Trichloroethane		4	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		4	U	6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		4	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		4	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		4	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene		4	U	6	U	6	U	5	U	106	%	5	U
Dibromochloromethane		4	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		4	U	6	U	6	U	5	U	5	U	5	U
Benzene		4	U	6	U	6	U	5	U	110	%	5	U
Trans-1,3-Dichloropropene		4	U	6	U	6	U	5	U	5	U	5	U
Bromoform		4	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		9	U	11	U	11	U	10	U	10	U	10	U
2-Hexanone		9	U	11	U	11	U	10	U	10	U	2	J
Tetrachloroethene		4	U	6	U	1	J	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		4	U	6	U	6	U	5	U	5	U	5	U
Toluene		4	U	6	U	6	U	5	U	109	%	5	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WL06	B0WL07	B0WL08	VBLKYW	VBLKYW BS	VBLKXK
RFW#:	005	006	007	99LVK447-MB1	99LVK447-MB1	99LVH445-MB1
Chlorobenzene	4 U	6 U	6 U	5 U	108 %	5 U
Ethylbenzene	4 U	6 U	6 U	5 U	5 U	5 U
Styrene	4 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	4 U	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL01

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-001

Sample wt/vol: 5.70 (g/mL) G Lab File ID: k102046

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 8 Date Analyzed: 10/21/99

Column: (pack/cap) CAP Dilution Factor: 0.877

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL02

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-002

Sample wt/vol: 5.30 (g/mL) G Lab File ID: k102047

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 9 Date Analyzed: 10/21/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL03

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-003

Sample wt/vol: 5.00 (g/mL) G Lab File ID: k102048

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 3 Date Analyzed: 10/21/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL04

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-004

Sample wt/vol: 5.90 (g/mL) G Lab File ID: k102049

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 3 Date Analyzed: 10/21/99

Column: (pack/cap) CAP Dilution Factor: 0.847

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.168	6	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL06

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-005

Sample wt/vol: 5.80 (g/mL) G Lab File ID: k102050

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 3 Date Analyzed: 10/21/99

Column: (pack/cap) CAP Dilution Factor: 0.862

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.158	7	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL07

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-006

Sample wt/vol: 4.70 (g/mL) G Lab File ID: h102706

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 6 Date Analyzed: 10/27/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WL08

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L392-007

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h102707

Level: (low/med) LOW Date Received: 10/15/99

% Moisture: not dec. 6 Date Analyzed: 10/27/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKYW

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVK447-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: k102036

Level: (low/med) LOW Date Received: 10/20/99

% Moisture: not dec. 0 Date Analyzed: 10/21/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKXK

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVH445-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h102704

Level: (low/med) LOW Date Received: 10/27/99

% Moisture: not dec. 0 Date Analyzed: 10/27/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01	001	S	99LVK447	10/13/99	N/A	10/21/99
B0WL01	001 MS	S	99LVH445	10/13/99	N/A	10/27/99
B0WL01	001 MSD	S	99LVH445	10/13/99	N/A	10/27/99
B0WL02	002	S	99LVK447	10/13/99	N/A	10/21/99
B0WL03	003	S	99LVK447	10/13/99	N/A	10/21/99
B0WL04	004	S	99LVK447	10/13/99	N/A	10/21/99
B0WL06	005	S	99LVK447	10/13/99	N/A	10/21/99
B0WL07	006	S	99LVH445	10/13/99	N/A	10/27/99
B0WL08	007	S	99LVH445	10/13/99	N/A	10/27/99

LAB QC:

VBLKYW	MB1	S	99LVK447	N/A	N/A	10/21/99
VBLKYW	MB1 BS	S	99LVK447	N/A	N/A	10/21/99
VBLKXK	MB1	S	99LVH445	N/A	N/A	10/27/99

11-30-99

RECRA LabNet Use Only

9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals

RECRA LabNet

Client: TMu Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Odette Johnson

QC: Apec Del: std TAT: 30 day

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2
#/Type Container	Liquid											
	Solid	1AG	1AG	1					1AG	1	1AG	1AG
Volume	Liquid											
	Solid	250	500	1					500	1	250	1000
Preservatives		–	–						–		–	–
ANALYSES REQUESTED		ORGANIC							INORG			
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Anig

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0625C	0625H 0DRO	0PCB					Metal	ICNTD	1PH	Anig
001	BW1L01			WS (TM 10-15-99)	10-13-99	0808	✓	✓	✓					✓	✓	✓	✓
002	02					0818	✓	✓	✓					✓	✓	✓	✓
003	03					0828	✓	✓	✓					✓	✓	✓	✓
004	04					0838	✓	✓	✓					✓	✓	✓	✓
005	06					0846	✓	✓	✓					✓	✓	✓	✓
006	07					0908	✓	✓	✓					✓	✓	✓	✓
007	08					0925	✓	✓	✓					✓	✓	✓	✓

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

Special Instructions:

Ref # B99-078

*4235795304 73 - 3.9°C
4235795304 62 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Ang (1) = 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Run matrix QC

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-013	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 10-13-99	Offsite Property No.: A410298		Bill of Lading/Air Bill No.: 4235795306473
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
392	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers 10-13-99/1114	Date/Time	Received By: BOF 13 10-13-99/1114	Date/Time
Relinquished By: REF #1B 10/14/99	Date/Time 1030	Received By: R Nielson 10/14/99	Date/Time 1030
Relinquished By: R Nielson 10/14/99	Date/Time 1430	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex 10-15-99 0900	Date/Time	Received By: T Murray 10-15-99 0900	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOWBC1 as TA

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	B99-078-136	Page 1 of 1 RJN 10/14/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: SML-418	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA BZB 10-13-99	Offsite Property No.: A99D298		Bill of Lading/Air Bill No.: 4235795530462
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
379	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
380	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-13-99/1114	Received By: R of 1B	Date/Time: 10-13-99/1114
Relinquished By: R of 1B	Date/Time: 10/14/99 1030	Received By: Kurt Nielsen / R. Nielsen	Date/Time: 10/14/99 1030
Relinquished By: Kurt Nielsen / R. Nielsen	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

ASC BOWRCI of T-A

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

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9910L392
SDG/SAF#: H0573/B99-0078

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-15-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 10-13-99.

The samples and their associated QC samples were prepared on 10-25-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and 1-Propanol on 10-29,30-99.

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

1. The 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 outside advisory control limits of 50%-150%. A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

r:\share\lc\gcscan\10-392.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.

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99LLOST

Initiator: C Schnell RFW Batch: 9910365 9910392
Date: 11/2/99 Samples: 9910420 9910421 9910444 Parameter: OGCSC
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Matrix: Soil
Prep Batch: 99LC162

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)

BS recovery high (167%)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

- all MS recoveries OK (four sets), or high..
- positives not detected

Freddie G Johnson 11/8/99

4. Project Manager Instructions...signature/date: _____

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

5. Final Action...signature/date: _____ Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 11/04/99 17:28

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

004

	Cust ID:	B0WL01	B0WL01	B0WL01	B0WL02	B0WL03	B0WL04
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		5.5 U	125 %	117 %	5.0 U	5.0 U	4.9 U
Ethanol		5.5 U	5.5 U	5.5 U	5.0 U	5.0 U	4.9 U

	Cust ID:	B0WL06	B0WL07	B0WL08	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LLC162-MB1	99LLC162-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		4.8 U	5.0 U	5.0 U	5.0 U	162 * %
Ethanol		4.8 U	5.0 U	5.0 U	5.0 U	5.0 U

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

01/16/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01	001	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL01	001 MS	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL01	001 MSD	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL02	002	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL03	003	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL04	004	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL06	005	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL07	006	S	99LLC162	10/13/99	10/25/99	10/30/99
B0WL08	007	S	99LLC162	10/13/99	10/25/99	10/30/99

LAB QC:

BLK	MB1	S	99LLC162	N/A	10/25/99	10/29/99
BLK	MB1 BS	S	99LLC162	N/A	10/25/99	10/29/99

RECRA LabNet Use Only

9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: The Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: std TAT: 30 day

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2
#/Type Container	Liquid											
	Solid	1AG	1AG	1					1AG	1	1AG	1AG
Volume	Liquid											
	Solid	250	500	1					500	1	250	1000
Preservatives		–	–						–		–	–

ANALYSES REQUESTED →

ORGANIC				INORG			
VOA	BNA	Pest/PCB	Herb	Metal	CN	pH	Inorg

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	8260/8240	8270C/8270C	8015M/8015	PCB	Metals (1)	ICNTD	pH	Anions (1)
001	BW0101			WS	10-13-99	0808	✓	✓	✓		✓	✓	✓	✓
002	02					0818	✓	✓	✓		✓	✓	✓	✓
003	03					0828	✓	✓	✓		✓	✓	✓	✓
004	04					0838	✓	✓	✓		✓	✓	✓	✓
005	06					0846	✓	✓	✓		✓	✓	✓	✓
006	07					0908	✓	✓	✓		✓	✓	✓	✓
007	08					0925	✓	✓	✓		✓	✓	✓	✓

Special Instructions:

Saf # B99-078

*4235795304 73 - 3.9°C
4235795304 62 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Anz (1) = 3. NO3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Run Matrix QC

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No. ERC 96-013	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To TMA/RECRA 10-13-99	**Offsite Property No.** AQ10298		**Bill of Lading/Air Bill No.** 4235795310473
			COA B20CW1 67IC

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 10-13-99 1114	Received By BOF 1B 10-13-99 1114		
Relinquished By BOF #1B 10/14/99 1030	Received By R. Nielson 10/14/99 1030		
Relinquished By R. Nielson 10/14/99 1430	Received By Fed Ex		
Relinquished By Fed Ex 10-15-99 0900	Received By TTMurray 10-15-99 0900		
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.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW8C1 as TA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

KJN 10/14/99

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No. SML-418	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To TMA/RECRA 15 B 10-13-99	**Offsite Property No.** A990298		**Bill of Lading/Air Bill No.** 4235795530462
			COA B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions
178	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
179	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
200	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-13-99/1114	ACF/B	10-13-99/1114
ACF/B	10/14/99 1030	R. Nelson	10/14/99 1030
R. Nelson / R. Nelson	10/14/99 1430	Fed Ex	
Fed Ex	10-15-99 0900	T Murray	10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

use BOW8C1 as T-A

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# : 9910L392
SDG/SAF#: H0573/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-15-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 10-13-99.

The samples and their associated QC samples were prepared on 10-21-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-27,28-99. The analysis met the intent of method WTPH-D.

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

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

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

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

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

R:\SHARE\LC\GCSCAN\10-392d.doc

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

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

DIESEL RANGE ORGANICS BY GC

Report Date: 11/04/99 18:31

RFW Batch Number: **9910L392** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00**

003

	Cust ID:	B0WL01	B0WL01	B0WL01	B0WL02	B0WL03	B0WL04
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	123 %	118 %	102 %	91 %	90 %	88 %
Diesel Range Organics		4.3 U	88 %	81 %	4.3 U	4.1 U	4.1 U

	Cust ID:	B0WL06	B0WL07	B0WL08	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1279-MB1	99LE1279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	69 %	92 %	77 %	93 %	105 %
Diesel Range Organics		4.1 U	4.2 U	4.2 U	4.0 U	95 %

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.

11/8/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01	001	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL01	001 MS	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL01	001 MSD	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL02	002	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL03	003	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL04	004	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL06	005	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL07	006	S	99LE1279	10/13/99	10/21/99	10/28/99
B0WL08	007	S	99LE1279	10/13/99	10/21/99	10/28/99

LAB QC:

BLK	MB1	S	99LE1279	N/A	10/21/99	10/27/99
BLK	MB1 BS	S	99LE1279	N/A	10/21/99	10/27/99

RECRA LabNet Use Only

9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

Client: Thu Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: std TAT: 30 day

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2						
#/Type Container	Liquid																	
	Solid	1AG	1AG	1					1AG	1	1AG	1AG						
Volume	Liquid																	
	Solid	250	500	1					500	1	250	1000						
Preservatives		–	–						–		–	–						
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Anions						

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	8260 24H 8260C	8025H 8DRO	OPCB					Metal (8)	ICND	1 PH	Anng (1)				
001	Bau601			WS	10-13-99	0808	✓	✓	✓					✓	✓	✓	✓				
002	02					0818	✓	✓	✓					✓	✓	✓	✓				
003	03					0828	✓	✓	✓					✓	✓	✓	✓				
004	04					0838	✓	✓	✓					✓	✓	✓	✓				
005	06					0846	✓	✓	✓					✓	✓	✓	✓				
006	07					0908	✓	✓	✓					✓	✓	✓	✓				
007	08					0925	✓	✓	✓					✓	✓	✓	✓				

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

Special Instructions:

Saf # B99-078

*42557953047 3 - 3.9°C
42357953046 2 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:

1. Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
3. Ang (1) = NO3NO2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Run matrix QC

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078		
Ice Chest No. ERC 96-013	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex		
Shipped To TMA/RECRA 10-13-99	**Offsite Property No.** AQ10298		**Bill of Lading/Air Bill No.** 4235795306473		
			COA B2CW1 67C		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	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	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions	See item (3) in Special Instructions			

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-13-99 1114	RF 1B	10-13-99 1114
RF #1B	10/14/99 1030	R Nielson	10/14/99 1030
R Nielson	10/14/99 1430	Fed Ex	
Fed Ex	10/15/99 0900	TT Murray	10/15/99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW801 as TA

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	B99-078-136	Page 1 of 21 RJN 10/14/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: SML-418	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA BZB 10-13-99	Offsite Property No.: A99U298		Bill of Lading/Air Bill No.: 4235795 3 0462
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time										
378	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
379	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
380	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-13-99/1114	Received By: RCF 1B	Date/Time: 10-13-99/1114
Relinquished By: RCF 1B	Date/Time: 10/14/99 1032	Received By: Rollie Nielson / R. Nelson	Date/Time: 10/14/99 1032
Relinquished By: Rollie Nielson / R Nielson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9036; Ammonia - 350.3; Total Cyanide - 9010

use BOW8C1 as T-A

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# : 9910L392
SDG# : H0573
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-15-99

INORGANIC CASE NARRATIVE

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

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

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

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicate for Sulfide was 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-1-99
Date

njp\i10-392

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	__		✓ ILMO4.0 (e)
% Volatile Soilids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygne Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Prpearation Leach		__ 1312	
Paint Filter		9095A	

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

Other: Ammonia **Method** EPA 350.3

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

L-WI-034/B-06/99

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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.

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WL01	% Solids	91.6	%	0.01	1.0
		Chloride by IC	11.2	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	54	MG/KG	1.4	1.0
		Cyanide, Total	0.55 u	MG/KG	0.55	1.0
		Phosphate by IC	1.4 u	MG/KG	1.4	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	1280	MG/KG	68.3	50.0
		Nitrate Nitrite	12.7	MG/KG	1.0	5.0
		Ammonia, as N	18.5	MG/KG	1.4	1.0
		pH	4.6	SOIL PH	0.01	1.0
		Sulfide	4.1	MG/KG	2.2	1.0
-002	B0WL02	% Solids	91.5	%	0.01	1.0
		Chloride by IC	9.2	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	51	MG/KG	1.4	1.0
		Cyanide, Total	0.55 u	MG/KG	0.55	1.0
		Phosphate by IC	3.0	MG/KG	1.4	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	437	MG/KG	13.7	10.0
		Nitrate Nitrite	12.0	MG/KG	1.1	5.0
		Ammonia, as N	1.3	MG/KG	1.3	1.0
		pH	6.1	SOIL PH	0.01	1.0
		Sulfide	3.7	MG/KG	2.2	1.0
-003	B0WL03	% Solids	97.0	%	0.01	1.0
		Chloride by IC	13.5	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	8.8	MG/KG	1.3	1.0
		Cyanide, Total	0.52 u	MG/KG	0.52	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Sulfate by IC	48.7	MG/KG	1.3	1.0
		Nitrate Nitrite	2.9	MG/KG	0.18	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.0	SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0WL07	Ammonia, as N	8.4		MG/KG	1.3	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	4.1		MG/KG	2.1	1.0
-007	B0WL08	% Solids	94.4		%	0.01	1.0
		Chloride by IC	2.8		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	8.9		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	39.4		MG/KG	1.3	1.0
		Nitrate Nitrite	2.6		MG/KG	0.21	1.0
		Ammonia, as N	31.8		MG/KG	1.3	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC093-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LXC094-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	99LC120-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI076-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3054-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD059-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

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INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WL01	Chloride by IC	65.0	11.2	54.6	98.4	2.0
		Fluoride by IC	118	1.7	109	106.1	2.0
		Nitrite by IC	55	1.4 u	55	100.2	2.0
		Nitrate by IC	110	54	55	104.3	2.0
		Cyanide, Total	5.4	0.55u	5.5	98.4	1.0
		Phosphate by IC	50.5	1.4 u	54.6	92.5	2.0
		Sulfate by IC	2700	1280	1370	104.2	50.0
		Nitrate Nitrite	17.4	12.7	5.3	88.3	5.0
		Ammonia, as N	107	18.5	89.6	99.1	1.0
-007	B0WL08	Soluble Chromium VI	4.2	0.42u	4.2	102.7	1.0
		Insoluble Chromium VI	1030	0.42u	1180	88.0	100
		Sulfide	341	0.0	407	83.8	1.0
		Sulfide MSD	353	0.0	407	86.8	1.0
BLANK10	99LXC093-MB1	Chloride by IC	24.4	1.2 u	25.0	97.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.2	1.0
		Nitrite by IC	25	1.2 u	25	100.2	1.0
		Nitrate by IC	24	1.2 u	25	97.3	1.0
		Phosphate by IC	24.6	1.2 u	25.0	98.4	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.0	1.0
BLANK10	99LXC094-MB1	Chloride by IC	23.1	1.2 u	25.0	92.6	1.0
		Fluoride by IC	52.6	2.5 u	50.0	105.1	1.0
		Nitrite by IC	25	1.2 u	25	99.3	1.0
		Nitrate by IC	24	1.2 u	25	95.4	1.0
		Phosphate by IC	24.7	1.2 u	25.0	98.7	1.0
		Sulfate by IC	23.7	1.2 u	25.0	94.8	1.0
BLANK10	99LVI076-MB1	Soluble Chromium VI	4.1	0.40u	4.0	101.7	1.0
		Insoluble Chromium VI	1170	0.40u	1160	100.5	100
BLANK10	99LN3054-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.6	1.0
		Nitrate Nitrite MSD	4.8	0.20u	5.0	97.0	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	49.8	1.2 u	50.0	99.5	1.0
		Ammonia, as N MSD	50.4	1.2 u	50.0	100.8	1.0
BLANK10	99LSD059-MB1	Sulfide	10.0	2.0 u	10.0	100	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-007	B0WL08	Sulfide	83.8	83.8	3.6
BLANK10	99LN3054-MB1	Nitrate Nitrite	99.6	97.0	2.6
BLANK10	99LAM042-MB1	Ammonia, as N	99.5	100.8	1.2

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INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WL01	Chloride by IC	11.2	11.4	1.2	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	54	56	3.4	1.0
		Cyanide, Total	0.55u	0.55u	NC	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	1280	1130	12.3	50.0
		Nitrate Nitrite	12.7	11.9	6.3	5.0
		Ammonia, as N	18.5	19.6	6.1	1.0
-007REP	B0WL08	Chromium VI	0.42u	0.42u	NC	1.0
		pH	8.4	8.4	0.5	1.0
		Sulfide	2.1 u	2.1 u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L392

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC120-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	92.2
LCS2	99LC120-LC2	Cyanide, Total LCS	10	10	MG/KG	101.9

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL01						
% SOLIDS	001	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	001	S	99LXC093	10/13/99	11/09/99	11/09/99
CHLORIDE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
CHLORIDE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
FLUORIDE BY IC	001	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
FLUORIDE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRITE BY IC	001	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRITE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRATE BY IC	001	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRATE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
TOTAL CYANIDE	001	S	99LC120	10/13/99	10/25/99	10/25/99
TOTAL CYANIDE	001 REP	S	99LC120	10/13/99	10/25/99	10/25/99
TOTAL CYANIDE	001 MS	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	001	S	99LXC093	10/13/99	11/09/99	11/09/99
PHOSPHATE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
PHOSPHATE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
CHROMIUM VI	001	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	001	S	99LXC094	10/13/99	11/10/99	11/10/99
SULFATE BY IC	001 REP	S	99LXC094	10/13/99	11/10/99	11/10/99
SULFATE BY IC	001 MS	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRATE NITRITE	001	S	99LN3054	10/13/99	11/09/99	11/11/99
NITRATE NITRITE	001 REP	S	99LN3054	10/13/99	11/09/99	11/11/99
NITRATE NITRITE	001 MS	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	001	S	99LAM042	10/13/99	11/02/99	11/02/99
AMMONIA	001 REP	S	99LAM042	10/13/99	11/02/99	11/02/99
AMMONIA	001 MS	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	001	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	001	S	99LSD059	10/13/99	10/19/99	10/20/99
B0WL02						
% SOLIDS	002	S	99L%S138	10/13/99	10/19/99	10/20/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	002	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	002	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	002	S	99LXC093	10/13/99	11/09/99	11/09/99
TOTAL CYANIDE	002	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	002	S	99LXC093	10/13/99	11/09/99	11/09/99
CHROMIUM VI	002	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	002	S	99LXC094	10/13/99	11/10/99	11/10/99
NITRATE NITRITE	002	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	002	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	002	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	002	S	99LSD059	10/13/99	10/19/99	10/20/99
B0WL03						
% SOLIDS	003	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
TOTAL CYANIDE	003	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
CHROMIUM VI	003	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	003	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE NITRITE	003	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	003	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	003	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	003	S	99LSD059	10/13/99	10/19/99	10/20/99
B0WL04						
% SOLIDS	004	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99
TOTAL CYANIDE	004	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	004	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE NITRITE	004	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	004	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	004	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	004	S	99LSD059	10/13/99	10/19/99	10/20/99
B0WL06						
% SOLIDS	005	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
TOTAL CYANIDE	005	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
CHROMIUM VI	005	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	005	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE NITRITE	005	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	005	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	005	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	005	S	99LSD059	10/13/99	10/19/99	10/20/99
B0WL07						
% SOLIDS	006	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	006	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	006	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	006	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	006	S	99LXC094	10/13/99	11/10/99	11/10/99
TOTAL CYANIDE	006	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	006	S	99LXC093	10/13/99	11/09/99	11/09/99
CHROMIUM VI	006	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	006	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE NITRITE	006	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	006	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	006	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	006	S	99LSD059	10/13/99	10/19/99	10/20/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WL08						
% SOLIDS	007	S	99L%S138	10/13/99	10/19/99	10/20/99
CHLORIDE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
FLUORIDE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRITE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
TOTAL CYANIDE	007	S	99LC120	10/13/99	10/25/99	10/25/99
PHOSPHATE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
CHROMIUM VI	007	S	99LVI076	10/13/99	10/19/99	10/19/99
CHROMIUM VI	007 REP	S	99LVI076	10/13/99	10/19/99	10/19/99
CHROMIUM VI	007 MS	S	99LVI076	10/13/99	10/19/99	10/19/99
CHROMIUM VI	007 MSD	S	99LVI076	10/13/99	10/19/99	10/19/99
SULFATE BY IC	007	S	99LXC093	10/13/99	11/09/99	11/09/99
NITRATE NITRITE	007	S	99LN3054	10/13/99	11/09/99	11/11/99
AMMONIA	007	S	99LAM042	10/13/99	11/02/99	11/02/99
PH	007	S	99LPH114	10/13/99	10/21/99	10/21/99
PH	007 REP	S	99LPH114	10/13/99	10/21/99	10/21/99
SULFIDE	007	S	99LSD059	10/13/99	10/19/99	10/20/99
SULFIDE	007 REP	S	99LSD059	10/13/99	10/19/99	10/20/99
SULFIDE	007 MS	S	99LSD059	10/13/99	10/19/99	10/20/99
SULFIDE	007 MSD	S	99LSD059	10/13/99	10/19/99	10/20/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
CHLORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
CHLORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
CHLORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRITE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99

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

DATE RECEIVED: 10/15/99 RFW LOT # :9910L392

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
TOTAL CYANIDE	LC1 L	S	99LC120	N/A	10/25/99	10/25/99
TOTAL CYANIDE	LC2 L	S	99LC120	N/A	10/25/99	10/25/99
TOTAL CYANIDE	MB1	S	99LC120	N/A	10/25/99	10/25/99
PHOSPHATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
PHOSPHATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
CHROMIUM VI	MB1	S	99LVI076	N/A	10/19/99	10/19/99
CHROMIUM VI	MB1 BS	S	99LVI076	N/A	10/19/99	10/19/99
CHROMIUM VI	MB1 BSD	S	99LVI076	N/A	10/19/99	10/19/99
SULFATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
SULFATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE NITRITE	MB1	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BS	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BSD	S	99LN3054	N/A	11/09/99	11/11/99
AMMONIA	MB1	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BS	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BSD	S	99LAM042	N/A	11/02/99	11/02/99
SULFIDE	MB1	S	99LSD059	N/A	10/19/99	10/20/99
SULFIDE	MB1 BS	S	99LSD059	N/A	10/19/99	10/20/99
SULFATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
SULFATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99

RECRA LabNet Use Only

9910L392

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

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All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: The Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Arlette Johnson

QC: Spec Del: std TAT: 30 day

Date Rec'd: 10-15-99 Date Due: 11/14/99

Account #:

Refrigerator #		1	2	2					2	2	2	2
#/Type Container	Liquid											
	Solid	1AG	1AG	1					1AG	1	1AG	1AG
Volume	Liquid											
	Solid	250	500	1					500	1	250	1000
Preservatives		–	–						–		–	–
ANALYSES REQUESTED →		ORGANIC							INORG			
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Anions

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	8021AH 8015CSC	8025H 8DRO	8PCB				Metal	ICNTD	1pH	Anion
001	B0L01			LWS 10-15-99	10-15-99	0808	✓	✓	✓				✓	✓	✓	✓
002	02					0818	✓	✓	✓				✓	✓	✓	✓
003	03					0828	✓	✓	✓				✓	✓	✓	✓
004	04					0838	✓	✓	✓				✓	✓	✓	✓
005	06					0846	✓	✓	✓				✓	✓	✓	✓
006	07					0908	✓	✓	✓				✓	✓	✓	✓
007	08					0925	✓	✓	✓				✓	✓	✓	✓

Special Instructions:

Saf # B99-078

*4235795304 73 - 3.9°C
4235795304 62 - 4.1°C

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg,
Anq (2) = 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Run Matrix QC

RECRA LabNet Use Only

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

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

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

Cooler Temp. * °C

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-15-99	0900

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-135	Page 1 of 1

018

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-013	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA 10-13-99	Offsite Property No.: A0010298	Bill of Lading/Air Bill No.: 4235795310473	
		COA: B2CW1 67IC	

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

	Sample No.	Matrix *	Sample Date	Sample Time										
260	BOWL01	Soil	10-13-99	0808		X	X	X	X	X				
264	BOWL02	Soil	10-13-99	0818		X	X	X	X	X				
391	BOWL03	Soil	10-13-99	0828		X	X	X	X	X				
382	BOWL04	Soil	10-13-99	0838		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 10-13-99/1114	Received By: BOF 1B	Date/Time: 10-13-99/1114
Relinquished By: BOF #1B	Date/Time: 10/14/99 1030	Received By: R Nielson / R Nielson	Date/Time: 10/14/99 1030
Relinquished By: R Nielson / R Nielson	Date/Time: 10/14/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-15-99 0900	Received By: T Murray	Date/Time: 10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) *ICP Metals* - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) 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 BOW801 as TA

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

B99-078-150

RJN 10/14/99

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No. SML-418	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To TMA/RECRA BZB 10-13-99	**Offsite Property No.** A9W298		**Bill of Lading/Air Bill No.** 4235795304 62
			COA B20CW167C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

	Sample No.	Matrix *	Sample Date	Sample Time										
178	BOWL06	Soil	10-13-99	0846						X	X	X	X	X
179	BOWL07	Soil	10-13-99	0908						X	X	X	X	X
180	BOWL08	Soil	10-13-99	0925						X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-13-99/1114	BSF 1B	10-13-99/1114
BSF 1B	10/14/99 1030	R. Nelson	10/14/99 1030
R. Nelson / R. Nelson	10/14/99 1430	Fed Ex	
Fed Ex	10-15-99 0900	TMurray	10-15-99 0900

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

usc BOW8C1 of I-A

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

019