H0571-TMA/RECRA

RECEIVED
FEB 14 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0571 was composed of six solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source Characterization – 200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via facsimile on January 3, 2000.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

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Data
Log In

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.5 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 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.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.9 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.10 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SAMPLE SUMMARY

SDG 7239
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WKW1	200 B Pond	SOLID		N910101-01	B99-078	B99-078-133	10/12/99 08:25
B0WKW2	200 B Pond	SOLID		N910101-02	B99-078	B99-078-133	10/12/99 08:38
B0WKW6	200 B Pond	SOLID		N910101-03	B99-078	B99-078-134	10/12/99 08:50
B0WKW7	200 B Pond	SOLID		N910101-04	B99-078	B99-078-134	10/12/99 09:00
B0WKW8	200 B Pond	SOLID		N910101-05	B99-078	B99-078-134	10/12/99 09:15
B0WKW9	200 B Pond	SOLID		N910101-06	B99-078	B99-078-134	10/12/99 09:34
Method Blank		SOLID		N910101-08	B99-078		
Method Blank		SOLID		N910101-12	B99-078		
Lab Control Sample		SOLID		N910101-07	B99-078		
Lab Control Sample		SOLID		N910101-11	B99-078		
Duplicate (N910101-01)	200 B Pond	SOLID		N910101-09	B99-078		10/12/99 08:25
Duplicate (N910101-01)	200 B Pond	SOLID		N910101-13	B99-078		10/12/99 08:25
Duplicate (N910101-03)	200 B Pond	SOLID		N910101-10	B99-078		10/12/99 08:50

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRB-SEB-207925
Case no SDG H0571

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
7239	B99-078-133	B0WKW1	SOLID	91.8			10/14/99	2	N910101-01	7239-001
		B0WKW2	SOLID	96.1			10/14/99	2	N910101-02	7239-002
	B99-078-134	B0WKW6	SOLID	96.8			10/14/99	2	N910101-03	7239-003
		B0WKW7	SOLID	97.7			10/14/99	2	N910101-04	7239-004
		B0WKW8	SOLID	96.5			10/14/99	2	N910101-05	7239-005
		B0WKW9	SOLID	96.3			10/14/99	2	N910101-06	7239-006
		Method Blank	SOLID						N910101-08	7239-008
		Method Blank	SOLID						N910101-12	7239-012
		Lab Control Sample	SOLID						N910101-07	7239-007
		Lab Control Sample	SOLID						N910101-11	7239-011
		Duplicate (N910101-01)	SOLID				10/14/99	2	N910101-09	7239-009
		Duplicate (N910101-01)	SOLID				10/14/99	2	N910101-13	7239-013
		Duplicate (N910101-03)	SOLID				10/14/99	2	N910101-10	7239-010

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

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	6904-103	5.0	6			1	1	1/1		
NP	SOLID	Neptunium in Soil	6904-103	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-103	5.0	6			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-103	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-103	10.0	6			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-103	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-103	15.0	6			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-103	9.0	6			1	1	1/1		
Liquid Scintillation Counting												
NI_L	SOLID	Nickel 63 in Soil	6904-103	10.0	4			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
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Report date 01/13/00

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SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WKW1			N910101-01	7239-001	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-001	GAM		11/23/99	12/30/99	NJV	Gamma Scan
B99-078-133	B99-078		10/14/99	7239-001	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-001	PU		12/10/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-001	SR		12/07/99	12/30/99	NJV	Total Strontium in Soil
				7239-001	TH		12/10/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-001	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
B0WKW2			N910101-02	7239-002	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-002	GAM		11/23/99	12/30/99	NJV	Gamma Scan
B99-078-133	B99-078		10/14/99	7239-002	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-002	PU		12/10/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-002	SR		12/10/99	12/30/99	NJV	Total Strontium in Soil
				7239-002	TH		12/13/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-002	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
B0WKW6			N910101-03	7239-003	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-003	GAM		11/23/99	12/30/99	NJV	Gamma Scan
B99-078-134	B99-078		10/14/99	7239-003	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
				7239-003	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-003	PU		12/10/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-003	SR		12/10/99	12/30/99	NJV	Total Strontium in Soil
				7239-003	TC		12/15/99	12/30/99	NJV	Technetium 99 in Soil
				7239-003	TH		12/17/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-003	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
B0WKW7			N910101-04	7239-004	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-004	GAM		11/23/99	12/30/99	NJV	Gamma Scan
B99-078-134	B99-078		10/14/99	7239-004	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
				7239-004	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-004	PU		12/10/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-004	SR		12/06/99	12/30/99	NJV	Total Strontium in Soil
				7239-004	TC		12/16/99	12/30/99	NJV	Technetium 99 in Soil
				7239-004	TH		12/13/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-004	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
BCWKW8			N910101-05	7239-005	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-005	GAM		11/24/99	12/30/99	NJV	Gamma Scan
B99-078-134	B99-078		10/14/99	7239-005	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
				7239-005	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-005	PU		12/10/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-005	SR		12/06/99	12/30/99	NJV	Total Strontium in Soil
				7239-005	TC		12/17/99	12/30/99	NJV	Technetium 99 in Soil
				7239-005	TH		12/14/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-005	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
BCWKW9			N910101-06	7239-006	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-006	GAM		11/24/99	12/30/99	NJV	Gamma Scan
B99-078-134	B99-078		10/14/99	7239-006	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
				7239-006	NP		12/17/99	12/30/99	NJV	Neptunium in Soil
				7239-006	PU		12/13/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-006	SR		12/10/99	12/30/99	NJV	Total Strontium in Soil
				7239-006	TC		12/16/99	12/30/99	NJV	Technetium 99 in Soil
				7239-006	TH		12/17/99	12/30/99	NJV	Thorium, Isotopic in Soil
				7239-006	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
Method Blank			N910101-08	7239-008	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
		SOLID		7239-008	GAM		11/24/99	12/30/99	NJV	Gamma Scan
	B99-078			7239-008	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
				7239-008	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-008	PU		12/13/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-008	SR		12/03/99	12/30/99	NJV	Total Strontium in Soil
				7239-008	TC		12/15/99	12/30/99	NJV	Technetium 99 in Soil
				7239-008	TH		12/13/99	12/30/99	NJV	Thorium, Isotopic in Soil
Method Blank			N910101-12	7239-012	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									

Lab id TMANC
Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N910101-07	7239-007	AM		12/15/99	12/30/99	NJV	Americium 241 in Soil
		SOLID		7239-007	GAM		11/24/99	12/30/99	NJV	Gamma Scan
	B99-078			7239-007	NI_L		12/15/99	12/30/99	NJV	Nickel 63 in Soil
				7239-007	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-007	PU		12/13/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-007	SR		12/03/99	12/30/99	NJV	Total Strontium in Soil
				7239-007	TC		12/15/99	12/30/99	NJV	Technetium 99 in Soil
				7239-007	TH		12/13/99	12/30/99	NJV	Thorium, Isotopic in Soil
Lab Control Sample			N910101-11	7239-011	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									
Duplicate (N910101-01)			N910101-09	7239-009	AM		12/13/99	12/30/99	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/12/99	7239-009	GAM		11/24/99	12/30/99	NJV	Gamma Scan
	B99-078		10/14/99	7239-009	NP		12/09/99	12/30/99	NJV	Neptunium in Soil
				7239-009	PU		12/13/99	12/30/99	NJV	Plutonium, Isotopic in Solids
				7239-009	SR		12/15/99	12/30/99	NJV	Total Strontium in Soil
				7239-009	TH		12/13/99	12/30/99	NJV	Thorium, Isotopic in Soil
Duplicate (N910101-01)			N910101-13	7239-013	U_T		11/02/99	12/30/99	NJV	Uranium, Total in Soil
200 B Pond		SOLID	10/12/99							
	B99-078		10/14/99							
Duplicate (N910101-03)			N910101-10	7239-010	NI_L		12/04/99	12/30/99	NJV	Nickel 63 in Soil
200 B Pond		SOLID	10/12/99	7239-010	TC		12/16/99	12/30/99	NJV	Technetium 99 in Soil
	B99-078		10/14/99							

Lab id TMANC
Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

SDG 7239
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

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	6			1	1	1	9
GAM	B99-078	Gamma Scan	GAMMAHI	6			1	1	1	9
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	4			1	1	1	7
NP	B99-078	Neptunium in Soil	NP237PLATE	6			1	1	1	9
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	6			1	1	1	9
SR	B99-078	Total Strontium in Soil	SRTOTAL	6			1	1	1	9
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	4			1	1	1	7
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	6			1	1	1	9
U_T	B99-078	Uranium, Total in Soil	UKPA	6			1	1	1	9
TOTALS				50			9	9	9	77

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-08 Method Blank

METHOD BLANK

SDG	7239	Client/Case no	Hanford	SDG	H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910101-08	Client sample id	Method Blank		
Dept sample id	7239-008	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
Neptunium 237	13994-20-2	0.009	0.017	0.042		U	NP
Technetium 99	14133-76-7	-0.046	0.19	0.56	15	U	TC
Plutonium 238	13981-16-3	0.004	0.014	0.034	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.021	0.034	1.0	U	PU
Nickel 63	13981-37-8	-0.575	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.004	0.023	0.047	1.0	U	AM
Total Strontium	SR90	-0.026	0.091	0.13	1.0	U	SR
Thorium 228	14274-82-9	-0.022	0.087	0.18	1.0	U	TH
Thorium 230	14269-63-7	-0.014	0.087	0.17	1.0	U	TH
Thorium 232	TH-232	0.007	0.043	0.080	1.0	U	TH
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.050	0.10	U	GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	U		0.11	0.10	U	GAM
Radium 228	15262-20-1	U		0.23	0.20	U	GAM
Thorium 228	14274-82-9	U		0.068		U	GAM
Thorium 232	TH-232	U		0.23		U	GAM
Americium 241	14596-10-2	U		0.056		U	GAM
Uranium 238	U-238	U		6.0		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM

200 Area Source Chara. - 200-CW-1 OU

QC-BLANK 32505

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-12 Method Blank

METHOD BLANK

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910101-12	Client sample id	Method Blank
Dept sample id	7239-012	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	-0.015	0.002	0.004	1.0	U	U_T

200 Area Source Chara. - 200-CW-1 OU

QC-BLANK 32212

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-07 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7239 Client/Case no Hanford SDG H0571

Contact Melissa C. Mannion Case no TRB-SBB-207925

Lab sample id N910101-07 Client sample id Lab Control Sample

Dept sample id 7239-007 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
Neptunium 237	11.1	0.56	0.039			NP	11.9	0.48	93	88-112	
Technetium 99	45.2	1.8	0.49	15		TC	47.1	1.9	96	83-117	80-120
Plutonium 238	12.4	0.86	0.044	1.0		PU	12.5	0.50	99	86-114	80-120
Plutonium 239/240	12.8	0.88	0.036	1.0		PU	13.2	0.53	97	86-114	80-120
Nickel 63	153	3.8	2.0	30		NI_L	147	5.9	104	83-117	
Americium 241	10.8	1.0	0.067	1.0		AM	11.5	0.46	94	84-116	80-120
Total Strontium	13.0	0.65	0.28	1.0		SR	12.4	0.50	105	81-119	
Thorium 228	0.112	0.11	0.18	1.0	U	TH					
Thorium 230	23.7	1.1	0.14	1.0		TH	22.4	0.90	106	88-112	
Thorium 232	0.025	0.025	0.047	1.0	U	TH					
Cobalt 60	1.53	0.15	0.076	0.050		GAM	1.50	0.060	102	72-128	80-120
Cesium 137	1.65	0.14	0.11	0.10		GAM	1.66	0.066	99	74-126	80-120

200 Area Source Chara. - 200-CW-1 OU

QC-LCS 32504

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-11 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7239 Client/Case no Hanford SDG H0571

Contact Melissa C. Mannion Case no TRB-SBB-207925

Lab sample id N910101-11 Client sample id Lab Control Sample

Dept sample id 7239-011 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)	29.8	3.6	0.041	1.0		U_T	33.0	1.3	90	79-121	80-120

200 Area Source Chara. - 200-CW-1 OU

QC-LCS 32211

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-09 B0WKW1

DUPLICATE

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Case no	TRB-SRB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910101-09	Lab sample id	N910101-01
Dept sample id	7239-009	Dept sample id	7239-001
		Received	10/14/99
		% solids	91.8
		Client sample id	B0WKW1
		Location/Matrix	200 B Pond SOLID
		Collected	10/12/99 08:25
		Custody/SAF No	B99-078-133 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
Neptunium 237	0.004	0.035	0.063		U	NP	0.015	0.023	0.042	U	-	
Plutonium 238	-0.008	0.031	0.073	1.0	U	PU	-0.007	0.013	0.037	U	-	
Plutonium 239/240	0.084	0.062	0.084	1.0	J	PU	0.107	0.041	0.032	J	24	117
Americium 241	-0.020	0.024	0.054	1.0	U	AM	0.114	0.23	0.43	U	-	
Total Strontium	0.913	0.094	0.084	1.0	J	SR	1.02	0.12	0.12		11	32
Thorium 228	0.574	0.13	0.12	1.0	J	TH	0.687	0.15	0.10	J	18	48
Thorium 230	0.529	0.14	0.16	1.0	J	TH	0.536	0.14	0.16	J	1	57
Thorium 232	0.440	0.11	0.057	1.0	J	TH	0.542	0.12	0.046	J	21	51
Potassium 40	13.3	0.81	0.42			GAM	13.9	0.81	0.25		4	34
Cobalt 60	U		0.040	0.050	U	GAM	U		0.024	U	-	
Cesium 137	0.133	0.043	0.046	0.10		GAM	0.126	0.020	0.023		5	63
Europium 152	U		0.099	0.10	U	GAM	U		0.060	U	-	
Europium 154	U		0.15	0.10	U	GAM	U		0.084	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.070	U	-	
Radium 226	0.713	0.084	0.078	0.10		GAM	0.653	0.056	0.052		9	39
Radium 228	0.912	0.17	0.19	0.20		GAM	0.896	0.11	0.11		2	46
Thorium 228	0.846	0.048	0.046			GAM	0.885	0.036	0.030		5	33
Thorium 232	0.912	0.17	0.19			GAM	0.896	0.11	0.11		2	46
Americium 241	U		0.15		U	GAM	U		0.036	U	-	
Uranium 238	U		4.5		U	GAM	U		2.9	U	-	
Uranium 235	U		0.16		U	GAM	U		0.091	U	-	

200 Area Source Chara. - 200-CW-1 OU

QC-DUP#1 32506

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-13 B0WKW1

DUPLICATE

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910101-13	Lab sample id	N910101-01
Dept sample id	7239-013	Dept sample id	7239-001
		Received	10/14/99
		% solids	91.8
Client sample id	B0WKW1		
Location/Matrix	200 B Pond SOLID		
Collected	10/12/99 08:25		
Custody/SAF No	B99-078-133 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)	0.537	0.063	0.004	1.0	J	U_T	0.568	0.066	0.004	J	6	31	

200 Area Source Chara. - 200-CW-1 OU

QC-DUP#1 32213

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-10 B0WKW6

DUPLICATE

SDG	7239			Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910101-10	Lab sample id	N910101-03	Client sample id	B0WKW6
Dept sample id	7239-010	Dept sample id	7239-003	Location/Matrix	200 B Pond SOLID
		Received	10/14/99	Collected	10/12/99 08:50
		% solids	96.8	Custody/SAF No	B99-078-134 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
Technetium 99	-0.023	0.18	0.51	15	U	TC	-0.148	0.16	0.38	U	-	
Nickel 63	-0.598	1.2	2.0	30	U	NI_L	-0.301	1.2	2.1	U	-	

200 Area Source Chara. - 200-CW-1 OU

QC-DUP#3 32507

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-01 B0WKW1

DATA SHEET

SDG	7239	Client/Case no	Hanford	SDG H0571	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910101-01	Client sample id	B0WKW1		
Dept sample id	7239-001	Location/Matrix	200 B Pond	SOLID	
Received	10/14/99	Collected	10/12/99 08:25		
% solids	91.8	Custody/SAF No	B99-078-133	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.015	0.023	0.042		U	NP
Total Uranium (ug/g)	7440-61-1	0.568	0.066	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.007	0.013	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	0.107	0.041	0.032	1.0	J	PU
Americium 241	14596-10-2	0.114	0.23	0.43	1.0	U	AM
Total Strontium	SR90	1.02	0.12	0.12	1.0		SR
Thorium 228	14274-82-9	0.687	0.15	0.10	1.0	J	TH
Thorium 230	14269-63-7	0.536	0.14	0.16	1.0	J	TH
Thorium 232	TH-232	0.542	0.12	0.046	1.0	J	TH
Potassium 40	13966-00-2	13.9	0.81	0.25			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	0.126	0.020	0.023	0.10		GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.084	0.10	U	GAM
Europium 155	14391-16-3	U		0.070	0.10	U	GAM
Radium 226	13982-63-3	0.653	0.056	0.052	0.10		GAM
Radium 228	15262-20-1	0.896	0.11	0.11	0.20		GAM
Thorium 228	14274-82-9	0.885	0.036	0.030			GAM
Thorium 232	TH-232	0.896	0.11	0.11			GAM
Americium 241	14596-10-2	U		0.036		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.091		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-02 B0WKW2

DATA SHEET

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910101-02	Client sample id	B0WKW2
Dept sample id	7239-002	Location/Matrix	200 B Pond SOLID
Received	10/14/99	Collected	10/12/99 08:38
% solids	96.1	Custody/SAF No	B99-078-133 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.010	0.029	0.066		U	NP
Total Uranium (ug/g)	7440-61-1	0.711	0.084	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.014	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	0.018	0.021	0.039	1.0	U	PU
Americium 241	14596-10-2	0.019	0.019	0.024	1.0	U	AM
Total Strontium	SR90	7.81	0.47	0.31	1.0		SR
Thorium 228	14274-82-9	0.359	0.11	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.453	0.14	0.15	1.0	J	TH
Thorium 232	TH-232	0.397	0.092	0.043	1.0	J	TH
Potassium 40	13966-00-2	10.6	0.62	0.31			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.069	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Radium 226	13982-63-3	0.468	0.059	0.057	0.10		GAM
Radium 228	15262-20-1	0.530	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.513	0.035	0.034			GAM
Thorium 232	TH-232	0.530	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-03 B0WKW6

DATA SHEET

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910101-03	Client sample id	B0WKW6
Dept sample id	7239-003	Location/Matrix	200 B Pond SOLID
Received	10/14/99	Collected	10/12/99 08:50
% solids	96.8	Custody/SAF No	B99-078-134 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.033	0.041	0.063		U	NP
Technetium 99	14133-76-7	-0.148	0.16	0.38	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.617	0.072	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.004	0.021	0.044	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.014	0.027	1.0	U	PU
Nickel 63	13981-37-8	-0.301	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.014	0.084	0.17	1.0	U	AM
Total Strontium	SR90	6.82	0.42	0.20	1.0		SR
Thorium 228	14274-82-9	0.447	0.14	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.650	0.20	0.19	1.0	J	TH
Thorium 232	TH-232	0.354	0.12	0.075	1.0	J	TH
Potassium 40	13966-00-2	9.83	0.36	0.14			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.040	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	0.358	0.033	0.031	0.10		GAM
Radium 228	15262-20-1	0.498	0.066	0.065	0.20		GAM
Thorium 228	14274-82-9	0.470	0.022	0.021			GAM
Thorium 232	TH-232	0.498	0.066	0.065			GAM
Americium 241	14596-10-2	U		0.054		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-04 B0WKW7

DATA SHEET

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910101-04	Client sample id	B0WKW7
Dept sample id	7239-004	Location/Matrix	200 B Pond SOLID
Received	10/14/99	Collected	10/12/99 09:00
% solids	97.7	Custody/SAF No	B99-078-134 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.032	0.024	0.039		U	NP
Technetium 99	14133-76-7	-0.050	0.25	0.59	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.483	0.056	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.011	0.015	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.008	0.036	1.0	U	PU
Nickel 63	13981-37-8	-0.902	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.024	0.032	0.097	1.0	U	AM
Total Strontium	SR90	18.4	0.38	0.11	1.0		SR
Thorium 228	14274-82-9	0.430	0.12	0.12	1.0	J	TH
Thorium 230	14269-63-7	0.384	0.13	0.15	1.0	J	TH
Thorium 232	TH-232	0.347	0.086	0.041	1.0	J	TH
Potassium 40	13966-00-2	10.3	0.49	0.20			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	U		0.020	0.10	U	GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.081	0.10	U	GAM
Europium 155	14391-16-3	U		0.087	0.10	U	GAM
Radium 226	13982-63-3	0.373	0.046	0.044	0.10		GAM
Radium 228	15262-20-1	0.569	0.13	0.12	0.20		GAM
Thorium 228	14274-82-9	0.446	0.029	0.031			GAM
Thorium 232	TH-232	0.569	0.13	0.12			GAM
Americium 241	14596-10-2	U		0.23		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-05 B0WKW8

DATA SHEET

SDG	7239	Client/Case no	Hanford SDG H0571
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910101-05	Client sample id	B0WKW8
Dept sample id	7239-005	Location/Matrix	200 B Pond SOLID
Received	10/14/99	Collected	10/12/99 09:15
% solids	96.5	Custody/SAF No	B99-078-134 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.019	0.023	0.030		U	NP
Technetium 99	14133-76-7	-0.027	0.17	0.49	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.408	0.048	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.009	0.018	0.054	1.0	U	PU
Plutonium 239/240	PU-239/240	0.009	0.009	0.034	1.0	U	PU
Nickel 63	13981-37-8	-0.779	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.007	0.020	0.042	1.0	U	AM
Total Strontium	SR90	7.02	0.25	0.11	1.0		SR
Thorium 228	14274-82-9	0.519	0.12	0.096	1.0	J	TH
Thorium 230	14269-63-7	0.456	0.13	0.15	1.0	J	TH
Thorium 232	TH-232	0.446	0.098	0.051	1.0	J	TH
Potassium 40	13966-00-2	10.5	0.33	0.14			GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Europium 152	14683-23-9	U		0.035	0.10	U	GAM
Europium 154	15585-10-1	U		0.050	0.10	U	GAM
Europium 155	14391-16-3	U		0.050	0.10	U	GAM
Radium 226	13982-63-3	0.404	0.030	0.028	0.10		GAM
Radium 228	15262-20-1	0.515	0.068	0.065	0.20		GAM
Thorium 228	14274-82-9	0.474	0.020	0.021			GAM
Thorium 232	TH-232	0.515	0.068	0.065			GAM
Americium 241	14596-10-2	U		0.14		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

N910101-06 B0WKW9

DATA SHEET

SDG	7239	Client/Case no	Hanford	SDG H0571	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910101-06	Client sample id	B0WKW9		
Dept sample id	7239-006	Location/Matrix	200 B Pond	SOLID	
Received	10/14/99	Collected	10/12/99 09:34		
% solids	96.3	Custody/SAF No	B99-078-134	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0	0.022	0.045		U	NP
Technetium 99	14133-76-7	-0.201	0.26	0.79	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.402	0.047	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.003	0.016	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.016	0.026	1.0	U	PU
Nickel 63	13981-37-8	-0.470	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	-0.004	0.023	0.052	1.0	U	AM
Total Strontium	SR90	0.702	0.21	0.22	1.0	J	SR
Thorium 228	14274-82-9	0.403	0.14	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.219	0.14	0.18	1.0	J	TH
Thorium 232	TH-232	0.359	0.12	0.076	1.0	J	TH
Potassium 40	13966-00-2	10.6	0.37	0.16			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.054	0.10	U	GAM
Europium 155	14391-16-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	0.365	0.031	0.030	0.10		GAM
Radium 228	15262-20-1	0.509	0.066	0.062	0.20		GAM
Thorium 228	14274-82-9	0.474	0.021	0.019			GAM
Thorium 232	TH-232	0.509	0.066	0.062			GAM
Americium 241	14596-10-2	U		0.050		U	GAM
Uranium 238	U-238	U		1.9		U	GAM
Uranium 235	15117-96-1	U		0.058		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test AM Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6904-103						
B0WKW1	N910101-01			7239-001	U	
B0WKW2	N910101-02			7239-002	U	
B0WKW6	N910101-03			7239-003	U	
B0WKW7	N910101-04			7239-004	U	
B0WKW8	N910101-05			7239-005	U	
B0WKW9	N910101-06			7239-006	U	
BLK (QC ID=32505)	N910101-08			7239-008	U	
LCS (QC ID=32504)	N910101-07			7239-007	ok	
Duplicate (N910101-01)	N910101-09			7239-009	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	

200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 103																
B0WKW1	N910101-01			0.43	0.500			10		939			62	12/12/99	12/13	SS-039
B0WKW2	N910101-02			0.024	0.500			78		936			62	12/12/99	12/13	SS-055
B0WKW6	N910101-03			0.17	0.500			18		936			62	12/12/99	12/13	SS-056
B0WKW7	N910101-04			0.097	0.500			32		936			62	12/12/99	12/13	SS-057
B0WKW8	N910101-05			0.042	0.500			76		936			62	12/12/99	12/13	SS-058
B0WKW9	N910101-06			0.052	0.500			65		935			62	12/12/99	12/13	SS-059
BLK (QC ID=32505)	N910101-08			0.047	0.500			64		935				12/07/99	12/13	SS-062
LCS (QC ID=32504)	N910101-07			0.067	0.500			51		964				12/07/99	12/15	SS-052
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.054	0.500			61		935			62	12/12/99	12/13	SS-063
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 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test AM	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

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	0.11	±	0.26
FOR 9 SAMPLES	YIELD	51	±	50

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test NP Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SPB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6904-103						
B0WKW1	N910101-01			7239-001	U	
B0WKW2	N910101-02			7239-002	U	
B0WKW6	N910101-03			7239-003	U	
B0WKW7	N910101-04			7239-004	U	
B0WKW8	N910101-05			7239-005	U	
B0WKW9	N910101-06			7239-006	U	
BLK (QC ID=32505)	N910101-08			7239-008	U	
LCS (QC ID=32504)	N910101-07			7239-007	ok	
Duplicate (N910101-01)	N910101-09			7239-009	-	U

Nominal values and limits from method RDLs (pCi/g)
200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 103																
B0WKW1	N910101-01			0.042	0.500			66		946			58	12/09/99	12/09	SS 55
B0WKW2	N910101-02			0.066	0.500			52		946			58	12/09/99	12/09	SS 56
B0WKW6	N910101-03			0.063	0.500			63		946			58	12/09/99	12/09	SS 57
B0WKW7	N910101-04			0.039	0.500			64		946			58	12/09/99	12/09	SS 58
B0WKW8	N910101-05			0.030	0.500			66		940			58	12/09/99	12/09	SS 59
B0WKW9	N910101-06			0.045	0.500			62		1074			66	12/09/99	12/17	SS 02
BLK (QC ID=32505)	N910101-08			0.042	0.500			57		937				11/24/99	12/09	SS 64
LCS (QC ID=32504)	N910101-07			0.039	0.500			49		937				11/24/99	12/09	SS 63
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.063	0.500			57		937			58	12/09/99	12/09	SS 65
Nominal values and limits from method					0.500			20-105		100						

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test NP	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

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	0.048 ± 0.026
FOR 9 SAMPLES	YIELD	60 ± 12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test PU Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SDB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6904-103								
B0WKW1	N910101-01			7239-001	U		0.107	J
B0WKW2	N910101-02			7239-002	U		U	
B0WKW6	N910101-03			7239-003	U		U	
B0WKW7	N910101-04			7239-004	U		U	
B0WKW8	N910101-05			7239-005	U		U	
B0WKW9	N910101-06			7239-006	U		U	
BLK (QC ID=32505)	N910101-08			7239-008	U		U	
LCS (QC ID=32504)	N910101-07			7239-007	ok		ok	
Duplicate (N910101-01)	N910101-09			7239-009	-	U	ok	J
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	

200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 103											
B0WKW1	N910101-01			0.037	0.500			94		774			59	12/09/99	12/10	SS-056
B0WKW2	N910101-02			0.039	0.500			91		774			59	12/09/99	12/10	SS-057
B0WKW6	N910101-03			0.044	0.500			88		774			59	12/09/99	12/10	SS-058
B0WKW7	N910101-04			0.047	0.500			82		773			59	12/09/99	12/10	SS-059
B0WKW8	N910101-05			0.054	0.500			68		770			59	12/09/99	12/10	SS-063
B0WKW9	N910101-06			0.030	0.500			95		936			62	12/09/99	12/13	SS-013
BLK (QC ID=32505)	N910101-08			0.034	0.500			75		936				12/07/99	12/13	SS-015
LCS (QC ID=32504)	N910101-07			0.044	0.500			77		936				12/07/99	12/13	SS-014
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.084	0.500			33		936			62	12/09/99	12/13	SS-016
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 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test	PU
Matrix	SOLID
SDG	7239
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0571

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	0.046	±	0.032
FOR 9 SAMPLES	YIELD	78	±	39

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test TH Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SRB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-103							
B0WKW1	N910101-01			7239-001	0.687 J	0.536 J	0.542 J
B0WKW2	N910101-02			7239-002	0.359 J	0.453 J	0.397 J
B0WKW6	N910101-03			7239-003	0.447 J	0.650 J	0.354 J
B0WKW7	N910101-04			7239-004	0.430 J	0.384 J	0.347 J
B0WKW8	N910101-05			7239-005	0.519 J	0.456 J	0.446 J
B0WKW9	N910101-06			7239-006	0.403 J	0.219 J	0.359 J
BLK (QC ID=32505)	N910101-08			7239-008	U	U	U
LCS (QC ID=32504)	N910101-07			7239-007	No data U	ok	No data U
Duplicate (N910101-01)	N910101-09			7239-009	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source Chara. - 200-CW-1 OU							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 103											
B0WKW1	N910101-01			0.16	0.250			99		838			59	12/09/99	12/10	SS-050
B0WKW2	N910101-02			0.15	0.250			88		939			62	12/09/99	12/13	SS-032
B0WKW6	N910101-03			0.19	0.250			77		899			66	12/09/99	12/17	SS-052
B0WKW7	N910101-04			0.15	0.250			96		939			62	12/09/99	12/13	SS-034
B0WKW8	N910101-05			0.15	0.250			91		1018			63	12/09/99	12/14	SS-036
B0WKW9	N910101-06			0.18	0.250			87		899			66	12/09/99	12/17	SS-053
BLK (QC ID=32505)	N910101-08			0.18	0.250			72		938				11/30/99	12/13	SS-041
LCS (QC ID=32504)	N910101-07			0.18	0.250			80		938				11/30/99	12/13	SS-040
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.16	0.250			85		938			62	12/09/99	12/13	SS-044
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 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test TH	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

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	0.17	±	0.032
FOR 9 SAMPLES	YIELD	86	±	18

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test SR Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SRB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-103					
B0WKW1	N910101-01			7239-001	1.02
B0WKW2	N910101-02			7239-002	7.81
B0WKW6	N910101-03			7239-003	6.82
B0WKW7	N910101-04			7239-004	18.4
B0WKW8	N910101-05			7239-005	7.02
B0WKW9	N910101-06			7239-006	0.702 J
BLK (QC ID=32505)	N910101-08			7239-008	U
LCS (QC ID=32504)	N910101-07			7239-007	ok
Duplicate (N910101-01)	N910101-09			7239-009	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0

200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 103																
B0WKW1	N910101-01			0.12	1.00			80		400			56	12/04/99	12/07	GRB-207
B0WKW2	N910101-02			0.31	1.00			89		400			59	12/04/99	12/10	GRB-227
B0WKW6	N910101-03			0.20	1.00			91		400			59	12/04/99	12/10	GRB-228
B0WKW7	N910101-04			0.11	1.00			90		400			55	12/04/99	12/06	GRB-202
B0WKW8	N910101-05			0.11	1.00			89		400			55	12/04/99	12/06	GRB-203
B0WKW9	N910101-06			0.22	1.00			93		400			59	12/04/99	12/10	GRB-204
BLK (QC ID=32505)	N910101-08			0.13	1.00			76		400				12/03/99	12/03	GRB-217
LCS (QC ID=32504)	N910101-07			0.28	1.00			64		400				11/24/99	12/03	GRB-208
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.084	1.00			88		400			64	12/04/99	12/15	GRB-228
Nominal values and limits from method				1.0	1.00					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test SR	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

PROCEDURES	REFERENCE	SRTOTAL
	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.17	±	0.16
FOR 9 SAMPLES	YIELD	84	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test TC	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-103						
B0WKW6	N910101-03			7239-003	U	
B0WKW7	N910101-04			7239-004	U	
B0WKW8	N910101-05			7239-005	U	
B0WKW9	N910101-06			7239-006	U	
BLK (QC ID=32505)	N910101-08			7239-008	U	
LCS (QC ID=32504)	N910101-07			7239-007	ok	
Duplicate (N910101-03)	N910101-10			7239-010	-	U

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

200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 103															
B0WKW6	N910101-03			0.38	1.00			91		101			64	12/10/99	12/15	GRB-232
B0WKW7	N910101-04			0.59	1.00			59		101			65	12/10/99	12/16	GRB-202
B0WKW8	N910101-05			0.49	1.02			63		122			66	12/10/99	12/17	GRB-219
B0WKW9	N910101-06			0.79	1.02			46		101			65	12/10/99	12/16	GRB-204
BLK (QC ID=32505)	N910101-08			0.56	1.02			60		101				12/09/99	12/15	GRB-203
LCS (QC ID=32504)	N910101-07			0.49	1.02			70		101				12/07/99	12/15	GRB-202
Duplicate (N910101-03) (QC ID=32507)	N910101-10			0.51	1.00			68		101			65	12/10/99	12/16	GRB-230
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 0.54 ± 0.25
FOR 7 SAMPLES	YIELD 65 ± 28

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test GAM Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6904-103						
B0WKW1	N910101-01			7239-001	U	0.126
B0WKW2	N910101-02			7239-002	U	U
B0WKW6	N910101-03			7239-003	U	U
B0WKW7	N910101-04			7239-004	U	U
B0WKW8	N910101-05			7239-005	U	U
B0WKW9	N910101-06			7239-006	U	U
BLK (QC ID=32505)	N910101-08			7239-008	U	U
LCS (QC ID=32504)	N910101-07			7239-007	ok	ok
Duplicate (N910101-01)	N910101-09			7239-009	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200 Area Source Chara. - 200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103 2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 103																
B0WKW1	N910101-01			0.071	678					195			42	11/15/99	11/23	MB,07,00
B0WKW2	N910101-02			0.078	838					206			42	11/15/99	11/23	02,03,00
B0WKW6	N910101-03			0.048	858					205			42	11/15/99	11/23	02,04,00
B0WKW7	N910101-04			0.057	824					205			42	11/15/99	11/23	MB,05,00
B0WKW8	N910101-05			0.037	846					479			43	11/15/99	11/24	MB,05,00
B0WKW9	N910101-06			0.046	814					240			43	11/15/99	11/24	02,04,00
BLK (QC ID=32505)	N910101-08			0.11	171					240				11/15/99	11/24	MB,07,00
LCS (QC ID=32504)	N910101-07			0.076	171					240				11/15/99	11/24	01,03,00
Duplicate (N910101-01) (QC ID=32506)	N910101-09			0.11	678					200			43	11/15/99	11/24	02,03,00
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 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test GAM	Matrix SOLID
SDG 7239	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0571	

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

AVERAGES ± 2 SD	MDA	0.070 ± 0.053
FOR 9 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test U T Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-103					
B0WKW1	N910101-01			7239-001	0.568 J
B0WKW2	N910101-02			7239-002	0.711 J
B0WKW6	N910101-03			7239-003	0.617 J
B0WKW7	N910101-04			7239-004	0.483 J
B0WKW8	N910101-05			7239-005	0.408 J
B0WKW9	N910101-06			7239-006	0.402 J
BLK (QC ID=32212)	N910101-12			7239-012	U
LCS (QC ID=32211)	N910101-11			7239-011	ok
Duplicate (N910101-01)	N910101-13			7239-013	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source Chara. - 200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 103												
B0WKW1	N910101-01			0.004	0.0500								21	11/01/99	11/02	KPA-001
B0WKW2	N910101-02			0.004	0.0500								21	11/01/99	11/02	KPA-001
B0WKW6	N910101-03			0.004	0.0500								21	11/01/99	11/02	KPA-001
B0WKW7	N910101-04			0.004	0.0500								21	11/01/99	11/02	KPA-001
B0WKW8	N910101-05			0.004	0.0500								21	11/01/99	11/02	KPA-001
B0WKW9	N910101-06			0.004	0.0500								21	11/01/99	11/02	KPA-001
BLK (QC ID=32212)	N910101-12			0.004	0.0500									11/01/99	11/02	KPA-001
LCS (QC ID=32211)	N910101-11			0.041	0.0500									11/01/99	11/02	KPA-001
Duplicate (N910101-01) (QC ID=32213)	N910101-13			0.004	0.0500								21	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 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test U T Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

PROCEDURES	REFERENCE	UKPA
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD FOR 9 SAMPLES
MDA 0.008 ± 0.025
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/13/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0571

Test NI_L Matrix SOLID
SDG 7239
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0571

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-103						
B0WKW6	N910101-03			7239-003	U	
B0WKW7	N910101-04			7239-004	U	
B0WKW8	N910101-05			7239-005	U	
B0WKW9	N910101-06			7239-006	U	
BLK (QC ID=32505)	N910101-08			7239-008	U	
LCS (QC ID=32504)	N910101-07			7239-007	ok	
Duplicate (N910101-03)	N910101-10			7239-010	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-103	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 103											
B0WKW6	N910101-03			2.1	0.500			100		100			53	12/03/99	12/04	LSC-005
B0WKW7	N910101-04			2.1	0.500			100		100			53	12/03/99	12/04	LSC-005
B0WKW8	N910101-05			2.1	0.500			100		100			53	12/03/99	12/04	LSC-005
B0WKW9	N910101-06			2.0	0.500			100		100			53	12/03/99	12/04	LSC-005
BLK (QC ID=32505)	N910101-08			2.0	0.500			100		100				12/01/99	12/04	LSC-005
LCS (QC ID=32504)	N910101-07			2.0	0.500			100		100				12/07/99	12/15	LSC-005
Duplicate (N910101-03) (QC ID=32507)	N910101-10			2.0	0.500			100		100			53	12/03/99	12/04	LSC-005
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD MDA 2.0 ± 0.11
FOR 7 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/13/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 < 151		SAF No. B99-078		
Ice Chest No. ERC916-614	Field Logbook No. EL-1511		Method of Shipment Fed Ex		
Shipped To TMA/~~RECRA~~ D70 10-12-99	Offsite Property No. A9902916		Bill of Lading/Air Bill No. 4235795304 07		
			COA B20CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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	B0WKW1	Soil	10-12-99	0835	X	X						X		
335	B0WKW2	Soil	10-12-99	0838	X	X						X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
C Miss	10/12/99 1115	Bel IA	10/12/99 1115
Kelt IA	10/13/99 0915	Kelle Nielson / R Nielson	10/13/99 0915
Kelle Nielson / R Nielson	10/13/99 1430	Fed Ex	10/13/99
Fed Ex	10/14/99 10:00	TNV M. Goldenberg	10/14/99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. use B0W801 as shipping criteria

(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

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	B99-078-134	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. ERC96-014	Field Logbook No. EL-1511		Method of Shipment Fed Ex		
Shipped To TMA/RECRA BXB 10-12-99	Offsite Property No. AGX10296		Bill of Lading/Air Bill No. 4235795304 07		
			COA B20CW1 67C		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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

Cpm	Sample No.	Matrix *	Sample Date	Sample Time										
267	BOWKW6	Soil	10-12-99	0850	X	X	X	X						X
403	BOWKW7	Soil	10-12-99	0900	X	X	X	X						X
272	BOWKW8	Soil	10-12-99	0915	X	X	X	X						X
231	BOWKW9	Soil	10-12-99	0934	X	X	X	X						X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Chris 10/12/99 1115	Received By Rel 1A 10/12/99 1115		
Relinquished By Rel 1A 10/13/99 0915	Received By DALE Nielson/R. Nielson 10/13/99 0915		
Relinquished By DALE Nielson/R Nielson 10/13/99 1430	Received By FedEx 10/13/99		
Relinquished By FedEx 10/14/99 10:00	Received By TNW M. Gonzalez 10/14/99 10/14/99		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078. 450 BOW8C1 QS Shipping Criteria

(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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-14-99 10:00

CoC No. B99-078-133, 134

Container I.D. No. EKE98-014 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: 6
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. Goldberg Date: 10-14-99 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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L365
SDG# : H0571
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-14-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 6 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

11-22-99
Date

njp\i10-365

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 350.4

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate EPA 300.0(M)

L-WI-034/B-06/99

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WKW1	% Solids	92.1		%	0.01	1.0
		Chloride by IC	1.7		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	1.4	u	MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	121		MG/KG	6.8	5.0
		Nitrate Nitrite	0.22	u	MG/KG	0.22	1.0
		Ammonia, as N	26.8		MG/KG	1.3	1.0
		pH	7.7		SOIL PH	0.01	1.0
		Sulfide	2.2	u	MG/KG	2.2	1.0
-002	B0WKW2	% Solids	96.7		%	0.01	1.0
		Chloride by IC	4.3		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.8		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	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	36.8		MG/KG	1.3	1.0
		Nitrate Nitrite	0.28		MG/KG	0.19	1.0
		Ammonia, as N	1.2	u	MG/KG	1.2	1.0
		pH	9.1		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-003	B0WKW6	% Solids	97.0		%	0.01	1.0
		Chloride by IC	4.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.5		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.4		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	33.9		MG/KG	1.3	1.0
		Nitrate Nitrite	0.28		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WKW6	Sulfide	2.1	u	MG/KG	2.1	1.0
-004	B0WKW7	% Solids	97.6		%	0.01	1.0
		Chloride by IC	4.3		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3		MG/KG	1.3	1.0
		Cyanide, Total	0.51	u	MG/KG	0.51	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	37.0		MG/KG	1.3	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		Ammonia, as N	1.2	u	MG/KG	1.2	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	3.6		MG/KG	2.0	1.0
-005	B0WKW8	% Solids	97.0		%	0.01	1.0
		Chloride by IC	4.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	20.7		MG/KG	1.3	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-006	B0WKW9	% Solids	96.8		%	0.01	1.0
		Chloride by IC	3.8		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	1.5		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	29.8		MG/KG	1.3	1.0
		Nitrate Nitrite	0.21	u	MG/KG	0.21	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0WKW9	Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.6	SOIL PH	0.01	1.0
		Sulfide	4.0	MG/KG	2.1	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC091-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	99LIC092-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	99LC118-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI075-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3052-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	99LSD057-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0
BLANK10	99LSD058-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0
BLANK10	99LC119B-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WKW1	Chloride by IC	29.1	1.7	27.2	100.9	1.0
		Fluoride by IC	61.2	0.0	54.3	112.8	1.0
		Nitrite by IC	29	1.4 u	27	105.3	1.0
		Nitrate by IC	28	1.4 u	27	102.2	1.0
		Phosphate by IC	27.7	1.4 u	27.2	102.2	1.0
		Sulfate by IC	269	121	136	109.4	5.0
		Nitrate Nitrite	5.7	0.22u	5.4	105.8	1.0
		Ammonia, as N	107	26.8	77.3	103.3	1.0
-005	B0WKW8	Sulfide	345	0.0	397	86.9	1.0
		Sulfide MSD	365	0.0	397	91.8	1.0
-006	B0WKW9	Cyanide, Total	5.0	0.52u	5.2	96.8	1.0
		Soluble Chromium VI	4.3	0.42u	4.2	101.4	1.0
		Insoluble Chromium VI	1030	0.42u	1180	87.8	100
BLANK10	99LXC091-MB1	Chloride by IC	23.5	1.2 u	25.0	94.1	1.0
		Fluoride by IC	53.3	2.5 u	50.0	106.7	1.0
		Nitrite by IC	24	1.2 u	25	96.0	1.0
		Nitrate by IC	24	1.2 u	25	96.0	1.0
		Phosphate by IC	25.0	1.2 u	25.0	100.2	1.0
		Sulfate by IC	23.3	1.2 u	25.0	93.3	1.0
BLANK10	99LIC092-MB1	Chloride by IC	23.5	1.2 u	25.0	93.9	1.0
		Fluoride by IC	53.0	2.5 u	50.0	106.0	1.0
		Nitrite by IC	25	1.2 u	25	99.5	1.0
		Nitrate by IC	24	1.2 u	25	96.6	1.0
		Phosphate by IC	24.5	1.2 u	25.0	97.9	1.0
		Sulfate by IC	23.8	1.2 u	25.0	95.2	1.0
BLANK10	99LVI075-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.7	1.0
		Insoluble Chromium VI	1080	0.40u	1160	92.4	100
BLANK10	99LN3052-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.4	1.0
		Nitrate Nitrite MSD	5.4	0.20u	5.0	107.6	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	99LSD057-MB1	Sulfide	8.4	2.0 u	10.0	84.0	1.0
BLANK10	99LSD058-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-005	B0WKW8	Sulfide	86.9	91.8	5.5
BLANK10	99LN3052-MB1	Nitrate Nitrite	103.4	107.6	4.0
BLANK10	99LAM042-MB1	Ammonia, as N	99.5	100.8	1.2

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WKW1	Chloride by IC	1.7	1.7	0.64	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	1.4 u	1.4 u	NC	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	121	130	7.4	5.0
		Nitrate Nitrite	0.22u	0.22u	NC	1.0
		Ammonia, as N	26.8	26.9	0.36	1.0
		pH	7.7	7.7	0.4	1.0
-005REP	B0WKW8	Sulfide	2.1 u	2.1 u	NC	1.0
-006REP	B0WKW9	Cyanide, Total	0.52u	0.52u	NC	1.0
		Chromium VI	0.42u	0.42u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC118-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	99.8
LCS2	99LC118-LC2	Cyanide, Total LCS	8.9	10	MG/KG	88.6
LCS10	99LC119B-LC1	Cyanide, Total LCS	2.2	2.0	MG/KG	111.2
LCS20	99LC119B-LC2	Cyanide, Total LCS	9.9	10	MG/KG	99.0

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1						
% SOLIDS	001	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	001	S	99LXC091	10/12/99	11/03/99	11/03/99
CHLORIDE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
CHLORIDE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
FLUORIDE BY IC	001	S	99LXC091	10/12/99	11/03/99	11/03/99
FLUORIDE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
FLUORIDE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
NITRITE BY IC	001	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
NITRITE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
NITRATE BY IC	001	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
NITRATE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
TOTAL CYANIDE	001	S	99LC118	10/12/99	10/18/99	10/18/99
PHOSPHATE BY IC	001	S	99LXC091	10/12/99	11/03/99	11/03/99
PHOSPHATE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
PHOSPHATE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
CHROMIUM VI	001	S	99LVI075	10/12/99	10/18/99	10/18/99
SULFATE BY IC	001	S	99LIC092	10/12/99	11/04/99	11/04/99
SULFATE BY IC	001 REP	S	99LIC092	10/12/99	11/04/99	11/04/99
SULFATE BY IC	001 MS	S	99LIC092	10/12/99	11/04/99	11/04/99
NITRATE NITRITE	001	S	99LN3052	10/12/99	11/04/99	11/04/99
NITRATE NITRITE	001 REP	S	99LN3052	10/12/99	11/04/99	11/04/99
NITRATE NITRITE	001 MS	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	001	S	99LAM042	10/12/99	11/02/99	11/02/99
AMMONIA	001 REP	S	99LAM042	10/12/99	11/02/99	11/02/99
AMMONIA	001 MS	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	001	S	99LPH112	10/12/99	10/15/99	10/15/99
PH	001 REP	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	001	S	99LSD057	10/12/99	10/17/99	10/17/99
B0WKW2						
% SOLIDS	002	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99
TOTAL CYANIDE	002	S	99LC118	10/12/99	10/18/99	10/18/99
PHOSPHATE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99
CHROMIUM VI	002	S	99LVI075	10/12/99	10/18/99	10/18/99
SULFATE BY IC	002	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE NITRITE	002	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	002	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	002	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	002	S	99LSD058	10/12/99	10/18/99	10/18/99
B0WKW6						
% SOLIDS	003	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
FLUORIDE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
TOTAL CYANIDE	003	S	99LC118	10/12/99	10/18/99	10/18/99
PHOSPHATE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
CHROMIUM VI	003	S	99LVI075	10/12/99	10/18/99	10/18/99
SULFATE BY IC	003	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE NITRITE	003	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	003	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	003	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	003	S	99LSD058	10/12/99	10/18/99	10/18/99
B0WKW7						
% SOLIDS	004	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
FLUORIDE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
TOTAL CYANIDE	004	S	99LC119B	10/12/99	10/21/99	10/24/99
PHOSPHATE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
CHROMIUM VI	004	S	99LVI075	10/12/99	10/18/99	10/18/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	004	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE NITRITE	004	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	004	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	004	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	004	S	99LSD058	10/12/99	10/18/99	10/18/99
B0WKW8						
% SOLIDS	005	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
FLUORIDE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
TOTAL CYANIDE	005	S	99LC119B	10/12/99	10/21/99	10/24/99
PHOSPHATE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
CHROMIUM VI	005	S	99LVI075	10/12/99	10/18/99	10/18/99
SULFATE BY IC	005	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE NITRITE	005	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	005	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	005	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	005	S	99LSD058	10/12/99	10/18/99	10/18/99
SULFIDE	005 REP	S	99LSD058	10/12/99	10/18/99	10/18/99
SULFIDE	005 MS	S	99LSD058	10/12/99	10/18/99	10/18/99
SULFIDE	005 MSD	S	99LSD058	10/12/99	10/18/99	10/18/99
B0WKW9						
% SOLIDS	006	S	99L%S138	10/12/99	10/19/99	10/20/99
CHLORIDE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
FLUORIDE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRITE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
TOTAL CYANIDE	006	S	99LC119B	10/12/99	10/21/99	10/24/99
TOTAL CYANIDE	006 REP	S	99LC119B	10/12/99	10/21/99	10/24/99
TOTAL CYANIDE	006 MS	S	99LC119B	10/12/99	10/21/99	10/24/99
PHOSPHATE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
CHROMIUM VI	006	S	99LVI075	10/12/99	10/18/99	10/18/99
CHROMIUM VI	006 REP	S	99LVI075	10/12/99	10/18/99	10/18/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	006 MS	S	99LVI075	10/12/99	10/18/99	10/18/99
CHROMIUM VI	006 MSD	S	99LVI075	10/12/99	10/18/99	10/18/99
SULFATE BY IC	006	S	99LXC091	10/12/99	11/03/99	11/03/99
NITRATE NITRITE	006	S	99LN3052	10/12/99	11/04/99	11/04/99
AMMONIA	006	S	99LAM042	10/12/99	11/02/99	11/02/99
PH	006	S	99LPH112	10/12/99	10/15/99	10/15/99
SULFIDE	006	S	99LSD058	10/12/99	10/18/99	10/18/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
CHLORIDE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
CHLORIDE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
CHLORIDE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99
FLUORIDE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
FLUORIDE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
FLUORIDE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
FLUORIDE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99
NITRITE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
NITRITE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
NITRATE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
NITRATE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
NITRITE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
NITRITE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99
NITRATE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
NITRATE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99
TOTAL CYANIDE	LC1 L	S	99LC118	N/A	10/18/99	10/18/99
TOTAL CYANIDE	LC2 L	S	99LC118	N/A	10/18/99	10/18/99
TOTAL CYANIDE	MB1	S	99LC118	N/A	10/18/99	10/18/99
PHOSPHATE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
PHOSPHATE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
PHOSPHATE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
PHOSPHATE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99
CHROMIUM VI	MB1	S	99LVI075	N/A	10/18/99	10/18/99
CHROMIUM VI	MB1 BS	S	99LVI075	N/A	10/18/99	10/18/99
CHROMIUM VI	MB1 BSD	S	99LVI075	N/A	10/18/99	10/18/99
SULFATE BY IC	MB1	S	99LIC092	N/A	11/04/99	11/04/99
SULFATE BY IC	MB1 BS	S	99LIC092	N/A	11/04/99	11/04/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	MB1	S	99LN3052	N/A	11/04/99	11/04/99
NITRATE NITRITE	MB1 BS	S	99LN3052	N/A	11/04/99	11/04/99
NITRATE NITRITE	MB1 BSD	S	99LN3052	N/A	11/04/99	11/04/99
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	99LSD057	N/A	10/17/99	10/17/99
SULFIDE	MB1 BS	S	99LSD057	N/A	10/17/99	10/17/99
SULFATE BY IC	MB1	S	99LXC091	N/A	11/03/99	11/03/99
SULFATE BY IC	MB1 BS	S	99LXC091	N/A	11/03/99	11/03/99
SULFIDE	MB1	S	99LSD058	N/A	10/18/99	10/18/99
SULFIDE	MB1 BS	S	99LSD058	N/A	10/18/99	10/18/99
TOTAL CYANIDE	LC1 L	S	99LC119B	N/A	10/21/99	10/24/99
TOTAL CYANIDE	LC2 L	S	99LC119B	N/A	10/21/99	10/24/99
TOTAL CYANIDE	MB1	S	99LC119B	N/A	10/21/99	10/24/99

RECRA LabNet Use Only

99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: apec Del: std TAT: 30 day
Date Rec'd: 10/14/99 Date Due: 11/13/99
Account #:

Refrigerator #		1	2														
#/Type Container	Liquid																
	Solid	1g	1g							1g	1g	1g					
Volume	Liquid																
	Solid	250	500							500	250	950					
Preservatives																	
ANALYSES REQUESTED →		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					Metal	CN						
		RECRA LabNet Use Only															
		0024H 0GCSC	0025H 0DRO	0PCB						Metal	ICNTO	1PH	Arg				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0024H 0GCSC	0025H 0DRO	0PCB	Metal	ICNTO	1PH	Arg
0001	BOWIKW1			S	10/12/99	0825	✓	✓	✓	✓	✓	✓	✓
2	2					0838							
3	6					0850							
4	7					0900							
5	8					0915							
6	9					0934	✓	✓	✓	✓	✓	✓	✓

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni.
2. Se, Ag, V, Zn, Hg, ~~ICRG~~ 10/14/99
Ang (2) 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICR6
5.
6. Run metrif 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:
*4235795303 92/3.2, 4235795303 81/2.4°C

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 275'		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA DZB 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

2WS

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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 BCWKW1 / Soil / 10-12-99 / 0825			X	X	X	X	X			
335 BCWKW2 / Soil / 10-12-99 / 0838			X	X	X	X	X			

.pm

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/12/99 1115	Received By: Rel 1A	Date/Time: 10/12/99 1115
Relinquished By: Rel #1A	Date/Time: 10/13/99 0915	Received By: R. Nelson	Date/Time: 10/13/99 0915
Relinquished By: R. Nelson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. use BOW801 as shipping criteria

(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

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	B99-078-134	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.: GWS-142	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA B20 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235795303 81
			COA: B20cw, 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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										
07 B0WKW6	Soil	10-12-99	0850					X	X	X	X	X	
03 B0WKW7	Soil	10-12-99	0900					X	X	X	X	X	
72 B0WKW8	Soil	10-12-99	0915					X	X	X	X	X	
31 B0WKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/12/99 1115	Received By: Ref. 1A	Date/Time: 10/12/99 1115
Relinquished By: Ref. 1A	Date/Time: 10/13/99 0915	Received By: R. Nielson	Date/Time: 10/13/99 0915
Relinquished By: R. Nielson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS USE BOWSCIAS Shipping Criteria

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

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

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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L365
SDG/SAF# : H0571/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-14-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 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 with the exception of 99C0307-LC1 for Mercury at 123.8%. All sample results were non-detect with the exception of BOWKW1 which was redigested and reported from batch 99C0316. Refer to the Inorganics Laboratory Control Standards Report.

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

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WKW1	Antimony	500	105.5%

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

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-8-99
Date

alm/m10-365

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L365

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WKW1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	2.0	MG/KG	0.35	1.0
		Barium, Total	74.5	MG/KG	0.03	1.0
		Beryllium, Total	0.49	MG/KG	0.01	1.0
		Cadmium, Total	0.57	MG/KG	0.03	1.0
		Chromium, Total	11.0	MG/KG	0.09	1.0
		Copper, Total	11.9	MG/KG	0.13	1.0
		Mercury, Total	0.06	MG/KG	0.02	1.0
		Nickel, Total	10.2	MG/KG	0.13	1.0
		Lead, Total	10.3	MG/KG	0.22	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.52	MG/KG	0.39	1.0
		Thallium, Total	0.68	MG/KG	0.56	1.0
		Vanadium, Total	63.3	MG/KG	0.06	1.0
		Zinc, Total	55.2	MG/KG	0.09	1.0
-002	B0WKW2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	4.9	MG/KG	0.27	1.0
		Barium, Total	46.0	MG/KG	0.02	1.0
		Beryllium, Total	0.29	MG/KG	0.008	1.0
		Cadmium, Total	0.04	MG/KG	0.02	1.0
		Chromium, Total	2.7	MG/KG	0.06	1.0
		Copper, Total	11.0	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	5.1	MG/KG	0.1	1.0
		Lead, Total	2.4	MG/KG	0.17	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.30 u	MG/KG	0.30	1.0
		Thallium, Total	0.44	MG/KG	0.43	1.0
		Vanadium, Total	43.8	MG/KG	0.05	1.0
		Zinc, Total	34.3	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WKW6	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	3.1	MG/KG	0.32	1.0
		Barium, Total	31.3	MG/KG	0.03	1.0
		Beryllium, Total	0.31	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	4.3	MG/KG	0.08	1.0
		Copper, Total	11.7	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.8	MG/KG	0.12	1.0
		Lead, Total	2.5	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Thallium, Total	0.98	MG/KG	0.52	1.0
		Vanadium, Total	51.8	MG/KG	0.06	1.0
		Zinc, Total	40.4	MG/KG	0.08	1.0
-004	B0WKW7	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.2	MG/KG	0.27	1.0
		Barium, Total	42.7	MG/KG	0.02	1.0
		Beryllium, Total	0.31	MG/KG	0.008	1.0
		Cadmium, Total	0.04	MG/KG	0.02	1.0
		Chromium, Total	3.6	MG/KG	0.07	1.0
		Copper, Total	11.7	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.4	MG/KG	0.1	1.0
		Lead, Total	2.2	MG/KG	0.17	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.30 u	MG/KG	0.30	1.0
		Thallium, Total	0.71	MG/KG	0.43	1.0
		Vanadium, Total	53.2	MG/KG	0.05	1.0
		Zinc, Total	42.1	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0WKW8	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.2	MG/KG	0.30	1.0
		Barium, Total	35.1	MG/KG	0.03	1.0
		Beryllium, Total	0.24	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	7.1	MG/KG	0.07	1.0
		Copper, Total	9.3	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.11	1.0
		Lead, Total	1.8	MG/KG	0.19	1.0
		Antimony, Total	0.27	MG/KG	0.23	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
		Thallium, Total	0.48 u	MG/KG	0.48	1.0
		Vanadium, Total	45.6	MG/KG	0.05	1.0
		Zinc, Total	32.2	MG/KG	0.07	1.0
-006	B0WKW9	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.9	MG/KG	0.29	1.0
		Barium, Total	54.3	MG/KG	0.03	1.0
		Beryllium, Total	0.30	MG/KG	0.009	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	4.0	MG/KG	0.07	1.0
		Copper, Total	13.7	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.6	MG/KG	0.10	1.0
		Lead, Total	2.6	MG/KG	0.18	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.32 u	MG/KG	0.32	1.0
		Thallium, Total	0.71	MG/KG	0.46	1.0
		Vanadium, Total	51.1	MG/KG	0.05	1.0
		Zinc, Total	40.2	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0726-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.04	MG/KG	0.03	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.08 u	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.25	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.07	MG/KG	0.06	1.0
		Zinc, Total	0.22	MG/KG	0.08	1.0
BLANK1	99C0316-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99C0307-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WKW1	Silver, Total	4.8	0.11u	5.3	89.7	1.0
		Arsenic, Total	209	2.0	213	97.3	1.0
		Barium, Total	266	74.5	213	90.0	1.0
		Beryllium, Total	5.6	0.49	5.3	96.5	1.0
		Cadmium, Total	5.2	0.57	5.3	87.2	1.0
		Chromium, Total	33.1	11.0	21.3	103.9	1.0
		Copper, Total	36.7	11.9	26.6	93.1	1.0
		Mercury, Total	0.24	0.06	0.18	104.6	1.0
		Nickel, Total	61.7	10.2	53.2	96.7	1.0
		Lead, Total	58.9	10.3	53.2	91.3	1.0
		Antimony, Total	18.3	0.27u	53.2	34.4	1.0
		Selenium, Total	198	0.52	213	92.7	1.0
		Thallium, Total	196	0.68	213	91.6	1.0
		Vanadium, Total	116	63.3	53.2	98.3	1.0
		Zinc, Total	106	55.2	53.2	94.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WKW1	Silver, Total	0.11u	0.11u	NC	1.0
		Arsenic, Total	2.0	2.1	4.9	1.0
		Barium, Total	74.5	75.2	0.94	1.0
		Beryllium, Total	0.49	0.51	3.4	1.0
		Cadmium, Total	0.57	1.2	71.1	1.0
		Chromium, Total	11.0	11.2	1.8	1.0
		Copper, Total	11.9	12.3	3.3	1.0
		Mercury, Total	0.06	0.05	13.3	1.0
		Nickel, Total	10.2	10.1	0.99	1.0
		Lead, Total	10.3	20.2	64.9	1.0
		Antimony, Total	0.27u	0.27u	NC	1.0
		Selenium, Total	0.52	0.39u	~~NC~~ 200	1.0
		Thallium, Total	0.68	0.76	10.2	1.0
		Vanadium, Total	63.3	65.1	2.8	1.0
		Zinc, Total	55.2	59.5	7.5	1.0

Correction 11/15/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L365

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0726-LC1	Silver, LCS	48.6	50.0	MG/KG	97.2
		Arsenic, LCS	951	1000	MG/KG	95.1
		Barium, LCS	502	500	MG/KG	100.4
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Chromium, LCS	49.5	50.0	MG/KG	99.0
		Copper, LCS	126	125	MG/KG	100.6
		Nickel, LCS	194	200	MG/KG	97.2
		Lead, LCS	241	250	MG/KG	96.4
		Antimony, LCS	293	300	MG/KG	97.8
		Selenium, LCS	922	1000	MG/KG	92.2
		Thallium, LCS	953	1000	MG/KG	95.3
		Vanadium, LCS	252	250	MG/KG	100.9
		Zinc, LCS	95.7	100	MG/KG	95.7
LCS1	99C0316-LC1	Mercury, LCS	1.0	1.0	MG/KG	100.9
LCS1	99C0307-LC1	Mercury, LCS	1.2	1.0	MG/KG	123.8

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1						
SILVER, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
SILVER, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
SILVER, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/28/99
CADMIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/28/99
CADMIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
MERCURY, TOTAL	001	S	99C0316	10/12/99	10/28/99	10/29/99
MERCURY, TOTAL	001 REP	S	99C0316	10/12/99	10/28/99	10/29/99
MERCURY, TOTAL	001 MS	S	99C0316	10/12/99	10/28/99	10/29/99
NICKEL, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
NICKEL, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
NICKEL, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	001	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	001 REP	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	001 MS	S	99L0726	10/12/99	10/26/99	10/27/99
B0WKW2						
SILVER, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
MERCURY, TOTAL	002	S	99C0307	10/12/99	10/21/99	10/22/99
NICKEL, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	002	S	99L0726	10/12/99	10/26/99	10/27/99
B0WKW6						
SILVER, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0307	10/12/99	10/21/99	10/22/99
NICKEL, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	003	S	99L0726	10/12/99	10/26/99	10/27/99
B0WKW7						
SILVER, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
MERCURY, TOTAL	004	S	99C0307	10/12/99	10/21/99	10/22/99
NICKEL, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	004	S	99L0726	10/12/99	10/26/99	10/27/99
B0WKW8						
SILVER, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/28/99
MERCURY, TOTAL	005	S	99C0307	10/12/99	10/21/99	10/22/99
NICKEL, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	005	S	99L0726	10/12/99	10/26/99	10/27/99
B0WKW9						
SILVER, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
ARSENIC, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
BARIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
CADMIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/28/99
CHROMIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
COPPER, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/28/99
MERCURY, TOTAL	006	S	99C0307	10/12/99	10/21/99	10/22/99
NICKEL, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
LEAD, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
ANTIMONY, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
SELENIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
THALLIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
VANADIUM, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99
ZINC, TOTAL	006	S	99L0726	10/12/99	10/26/99	10/27/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
SILVER, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
ARSENIC LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
ARSENIC, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
BARIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
BARIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
BERYLLIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
CADMIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
CADMIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
CHROMIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
COPPER LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
COPPER, TOTAL	MB1	S	99L0726	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	99L0726	N/A	10/26/99	10/27/99
NICKEL, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
LEAD LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
LEAD, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
ANTIMONY LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
ANTIMONY, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
SELENIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
SELENIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
THALLIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
THALLIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
VANADIUM LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
VANADIUM, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
ZINC LABORATORY	LC1 BS	S	99L0726	N/A	10/26/99	10/27/99
ZINC, TOTAL	MB1	S	99L0726	N/A	10/26/99	10/27/99
MERCURY LABORATORY	LC1 BS	S	99C0307	N/A	10/21/99	10/22/99
MERCURY, TOTAL	MB1	S	99C0307	N/A	10/21/99	10/22/99

RECRA LabNet Use Only

99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 10/14/99 Date Due: 11/13/99
Account #:

Refrigerator #		1	2													
#/Type Container	Liquid															
	Solid	1g	1g							1g		1g	1g			
Volume	Liquid															
	Solid	250	500							500		250	950			
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb					INORG: Metal	CN					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H GCMS	8025H GCMS	8082 GCMS						Metals	ICP/MS	IPH	Arg O
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	001	BOWKW1			S	10/12/99	0825	✓	✓	✓						✓	✓	✓	✓
	2	2					0838												
	3	6					0850												
	4	7					0900												
	5	8					0915												
	6	9					0934	✓	✓	✓						✓	✓	✓	✓

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni
2. Se, Ag, V, Zn, Hg, ~~ICRG~~ 10/14/99
Ang ② = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, 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 Property 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:
*4235795303 92/3.2, 4235795303 81/2.4°C

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	Page 1 of

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 2.75'		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DAB 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
Special Handling and/or Storage (265)	No. of Container(s)	1	1	1	1	1	1	1	1		
	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
BOWKW1 (260)	Soil	10-12-99	0825			X	X	X	X	X			
BOWKW2 (335)	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/12/99 1115	Received By: Rec'd 1A	Date/Time: 10/12/99 1115
Relinquished By: Rec'd 1A	Date/Time: 10/13/99 0915	Received By: R Nelson	Date/Time: 10/13/99 0915
Relinquished By: R Nelson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS: use BOW801 as shipping criteria

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

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

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

0160

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-134	Page 1 of 1

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. GWS-142	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA 10-12-99	Offsite Property No. A990295		Bill of Lading/Air Bill No. 4235795303 81

Price Code 8N — Data Turnaround 45 Days

COA B20CW, 67JC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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										
.pm 267	BOWKW6	Soil	10-12-99	0850					X	X	X	X	X	
103	BOWKW7	Soil	10-12-99	0900					X	X	X	X	X	
272	BOWKW8	Soil	10-12-99	0915					X	X	X	X	X	
231	BOWKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Trice	10/12/99 1115	Rel. 1A	10/12/99 1115
Rel. 1A	10/13/99 0915	[illegible]/R Nielson	10/13/99 0915
[illegible]/R Nielson	10/13/99 1430	Fed Ex	

SPECIAL INSTRUCTIONS — 45 Bowgulas

See chain of custody comments on SAF B99-078. Shipping Criteria

(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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

019

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L365
SDG/SAF#: H0571/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-14-99

DIESEL RANGE ORGANICS

The set of samples consisted of six (6) soil samples collected on 10-12-99.

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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

R:\SHARE\LC\GCSCAN\10-365d.doc

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

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

GLOSSARY OF 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 18:30

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0WKW1	B0WKW1	B0WKW1	B0WKW2	B0WKW6	B0WKW7
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	113 %	114 %	101 %	95 %	113 %	103 %
Diesel Range Organics		4.2 U	86 %	77 %	4.0 U	4.1 U	4.1 U

	Cust ID:	B0WKW8	B0WKW9	BLK	BLK BS
Sample Information	RFW#:	005	006	99LE1279-MB1	99LE1279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	103 %	100 %	93 %	105 %
Diesel Range Organics		4.0 U	4.1 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.

003

11/8/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1	001	S	99LE1279	10/12/99	10/21/99	10/27/99
B0WKW1	001 MS	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW1	001 MSD	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW2	002	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW6	003	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW7	004	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW8	005	S	99LE1279	10/12/99	10/21/99	10/28/99
B0WKW9	006	S	99LE1279	10/12/99	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: 9910L365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: opee Del: std TAT: 30 days
Date Rec'd: 10/14/99 Date Due: 11/13/99
Account #:

Refrigerator #		1	2													005
#/Type Container	Liquid															
	Solid	1g	1g							1g		1g	1g			
Volume	Liquid															
	Solid	250	500							500		250	950			
Preservatives																
ANALYSES REQUESTED →		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN					
		RECRA LabNet Use Only														
		0624H 0608C	0625H 0DRO	0PCB						Metal	ICNTO	1PH	Ang0			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0608C	0625H 0DRO	0PCB				Metal	ICNTO	1PH	Ang0			
0001	BOWLW1			S	10/12/99	0825	✓	✓	✓				✓	✓	✓	✓			
2	2					0838													
3	6					0850													
4	7					0900													
5	8					0915													
6	9					0934													

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni.
2. Se, Ag, V, Zn, Hg, ~~ICRG~~ 10/14/99
Ang ② = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, 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: *4236795303 92/3.2, 4235795303 81/2.4°C

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 215'		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA DZB 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20 CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
Special Handling and/or Storage (245)	No. of Container(s)	1	1	1	1	1	1	1	1		
	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
pm 60	BCWKW1	Soil	10-12-99	0825			X	X	X	X	X			
35	BCWKW2	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/12/99 1115	Received By: Rel 1A	Date/Time: 10/12/99 1115
Relinquished By: Rel #1A	Date/Time: 10/13/99 0915	Received By: R. Nelson	Date/Time: 10/13/99 0915
Relinquished By: R. Nelson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS use BOW801 as shipping criteria

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

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	B99-078-134	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.: GWS-142	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 820 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 423579530381
			COA: B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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

PM	Sample No.	Matrix *	Sample Date	Sample Time										
67	BOWKW6	Soil	10-12-99	0850					X	X	X	X	X	
03	BOWKW7	Soil	10-12-99	0900					X	X	X	X	X	
72	BOWKW8	Soil	10-12-99	0915					X	X	X	X	X	
231	BOWKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/12/99 1115	Received By: Rob. A	Date/Time: 10/12/99 1115
Relinquished By: Rob A	Date/Time: 10/13/99 0915	Received By: R. Nielson	Date/Time: 10/13/99 0915
Relinquished By: R Nielson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS 45 - Bowgias Shipping criteria

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

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

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9910L365
SDG/SAF#: H0571/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-14-99

GC SCAN

The set of samples consisted of six (6) soil samples collected on 10-12-99.

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%.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

r:\share\le\gcscan\10-365.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 #: 99LC057

Initiator: C. Schnell RFW Batch: 99LC365 99LC392 Parameter: OGCSC
Date: 11/2/99 Samples: 99LC420 99LC421 99LC444 Matrix: Soil
Client: TNU Hanford Method: SW846/MCAWW/CLP/ 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 (162%) [limits are 50-150%]

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

4. Project Manager Instructions...signature/date: Janette G. Johnson 11/8/99

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

5. Final Action...signature/date: [illegible] 11/11/99 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
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: 11/05/99 07:45

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0WKW1	B0WKW1	B0WKW1	B0WKW2	B0WKW6	B0WKW7
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		5.0 U	113 %	117 %	4.9 U	5.0 U	5.0 U
Ethanol		5.0 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U

	Cust ID:	B0WKW8	B0WKW9	BLK	BLK BS
Sample Information	RFW#:	005	006	99LLC162-MB1	99LLC162-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	5.0 U	5.0 U	162 * %
Ethanol		5.0 U	5.0 U	5.0 U	5.0 U

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

604

11/11/99

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1	001	S	99LLC162	10/12/99	10/25/99	10/29/99
B0WKW1	001 MS	S	99LLC162	10/12/99	10/25/99	10/29/99
B0WKW1	001 MSD	S	99LLC162	10/12/99	10/25/99	10/29/99
B0WKW2	002	S	99LLC162	10/12/99	10/25/99	10/29/99
B0WKW6	003	S	99LLC162	10/12/99	10/25/99	10/30/99
B0WKW7	004	S	99LLC162	10/12/99	10/25/99	10/30/99
B0WKW8	005	S	99LLC162	10/12/99	10/25/99	10/30/99
B0WKW9	006	S	99LLC162	10/12/99	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

ekadilles

RECRA LabNet Use Only: 99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: opec Del: std TAT: 30 day
Date Rec'd: 10/14/99 Date Due: 11/13/99
Account #:

Refrigerator #		1	2															
#/Type Container	Liquid																	
	Solid	1g	1g							1g		1g	1g					
Volume	Liquid																	
	Solid	250	500							500		250	950					
Preservatives																		
ANALYSES REQUESTED		ORGANIC								INORG								
		VOA	BNA	Pest/PCB	Herb					Metal	CN							
		RECRA LabNet Use Only																
		0224H OGCSC	0225H ODRO	OPCB						Metto	ICNTO	IPH	Ang80					

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	0224H OGCSC	0225H ODRO	OPCB	Metto	ICNTO	IPH	Ang80
001	BOWKW1			S	10/12/99	0825	✓	✓	✓	✓	✓	✓	✓
2	2					0838							
3	6					0850							
4	7					0900							
5	8					0915							
6	9					0934							

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ~~ICRC~~ 10/14/99
Ang ③ 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICR6
5.
6. Run metrif 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:
*4235795303 92/3.2, 4235795303 81/2.4°C

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 2/5		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DAB 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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										
BOWKW1	Soil	10-12-99	0825			X	X	X	X	X			
BOWKW2	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Chris	10/12/99 1115	RL IA	10/12/99 1115
Rec #1A	10/13/99 0915	R Nelson / R Nelson	10/13/99 0915
R Nelson / R Nelson	10/13/99 1430	Fed Ex	

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078. use BOW801 as shipping criteria

(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

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	B99-078-134	Page 1 of 1

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. GWS-142	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To TMA/RECRA B20 10-12-99	**Offsite Property No.** A990295		**Bill of Lading/Air Bill No.** 4235795303 81

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

COA B20cw1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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										
67 B0WKW6	Soil	10-12-99	0850					X	X	X	X	X	
03 B0WKW7	Soil	10-12-99	0900					X	X	X	X	X	
72 B0WKW8	Soil	10-12-99	0915					X	X	X	X	X	
-31 B0WKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Trice	10/12/99 1115	Rel. 1A	10/12/99 1115
Relinquished By	Date/Time	Received By	Date/Time
Rel. 1A	10/13/99 0915	R. Nielson	10/13/99 0915
Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	10/13/99 1430	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS US Bowglas Shipping Criteria

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

008

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

DEC 1999

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9910L365
SDG/SAF#: H0571/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-14-99

PCB

The set of samples consisted of six (6) soil samples collected on 10-12-99.

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 11-11,12-99. 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. Eleven (11) of twenty (20) 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\10L365.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

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

Initiator: Bpaster RFW Batch: 9910L365, 392, 419, 420 Parameter: OPCB
Date: 11/17/99 Samples: Matrix: Soil
Client: TNU - Hanford 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	157	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: D Weln 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: _____

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/18/99 16:19

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

05

	Cust ID:	B0WKW1	B0WKW1	B0WKW1	B0WKW2	B0WKW6	B0WKW7
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	88 %	95 %	108 %	125 * %	158 * %	142 * %
	Decachlorobiphenyl	100 %	85 %	121 %	141 * %	176 * %	162 * %
Aroclor-1016		36 U	36 U	36 U	34 U	34 U	34 U
Aroclor-1221		72 U	72 U	72 U	69 U	69 U	68 U
Aroclor-1232		36 U	36 U	36 U	34 U	34 U	34 U
Aroclor-1242		36 U	36 U	36 U	34 U	34 U	34 U
Aroclor-1248		36 U	36 U	36 U	34 U	34 U	34 U
Aroclor-1254		36 U	75 %	88 %	34 U	34 U	34 U
Aroclor-1260		36 U	36 U	36 U	34 U	34 U	34 U

	Cust ID:	B0WKW8	B0WKW9	PBLKXM	PBLKXM BS
Sample Information	RFW#:	005	006	99LE1283-MB1	99LE1283-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	130 * %	108 %	140 * %	102 %
	Decachlorobiphenyl	143 * %	126 * %	155 * %	112 %
Aroclor-1016		34 U	34 U	33 U	33 U
Aroclor-1221		69 U	69 U	67 U	67 U
Aroclor-1232		34 U	34 U	33 U	33 U
Aroclor-1242		34 U	34 U	33 U	33 U
Aroclor-1248		34 U	34 U	33 U	33 U
Aroclor-1254		34 U	34 U	33 U	86 %
Aroclor-1260		34 U	34 U	33 U	33 U

11-19-99

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

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1	001	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW1	001 MS	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW1	001 MSD	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW2	002	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW6	003	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW7	004	S	99LE1283	10/12/99	10/21/99	11/11/99
B0WKW8	005	S	99LE1283	10/12/99	10/21/99	11/12/99
B0WKW9	006	S	99LE1283	10/12/99	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

pw 11-19-99

RECRA LabNet Use Only

99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client TNU-Hanford B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 10/14/99 Date Due 11/13/99

Account #

Refrigerator #		1	2													
#/Type Container	Liquid															
	Solid	1g	1g							1g		1g	1g			
Volume	Liquid															
	Solid	250	500							500		250	950			
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA									INORG: Metal						
	ORGANIC: BNA									INORG: CN						
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H OGCSC	OG25H ODRO	OPCB	Metal	ICNTO	IPH	Sp80
001	BOWIKW1			S	10/12/99	0825	✓	✓	✓	✓	✓	✓	✓
2	2					0838							
3	6					0850							
4	7					0900							
5	8					0915							
6	9					0934							

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

Special Instructions:
Sap# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni.
2. Se, Ag, V, Zn, Hg, ~~ICRG~~ 10/14/99
Anz (1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICR6
5.
6. Run matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
2) 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	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795303 92/3.2, 4235795303 81/2.4°C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 2/5		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 028 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

2NO

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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.		

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
260	BCWKW1	Soil	10-12-99	0825			X	X	X	X	X			
335	BCWKW2	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Chris	10/12/99 1115	Rel 1A	10/12/99 1115
Rel #1A	10/13/99 0915	Nelson/R Nelson	10/13/99 0915
Nelson/R. Nelson	10/13/99 1430	Fed Ex	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. use BOW801 as shipping criteria

(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

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	B99-078-134	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.: GWS-142	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 423579530381
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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

pm	Sample No.	Matrix *	Sample Date	Sample Time											
07	BOWKW6	Soil	10-12-99	0850					X	X	X	X	X	
03	BOWKW7	Soil	10-12-99	0900					X	X	X	X	X	
72	BOWKW8	Soil	10-12-99	0915					X	X	X	X	X	
231	BOWKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Chris	10/12/99 1115	Ref. IA	10/12/99 1115
Relinquished By	Date/Time	Received By	Date/Time
Ref. IA	10/13/99 0915	R. Nickson	10/13/99 0915
Relinquished By	Date/Time	Received By	Date/Time
R. Nickson	10/13/99 1430	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS 45 Bowsetas

See chain of custody comments on SAF B99-078. Shipping Criteria

(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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L365
SDG/SAF #: H0571/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-14-99

SEMIVOLATILE

Six (6) soil samples were collected on 10-12-99.

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

11-15-99
Date

som\gorup\data\bna\tnu10365.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 11/10/99 14:49

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WKW1		B0WKW1		B0WKW1		B0WKW2		B0WKW6		B0WKW7	
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	64	%	68	%	67	%	67	%	73	%	44	%
	2-Fluorobiphenyl	68	%	66	%	67	%	67	%	74	%	46	%
	Terphenyl-d14	76	%	78	%	74	%	75	%	82	%	52	%
	Phenol-d5	63	%	66	%	68	%	62	%	70	%	46	%
	2-Fluorophenol	59	%	64	%	62	%	58	%	65	%	41	%
	2,4,6-Tribromophenol	60	%	72	%	74	%	59	%	70	%	39	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	62	%	63	%	340	U	340	U	340	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	340	U	340	U	340	U
2-Chlorophenol		360	U	64	%	65	%	340	U	340	U	340	U
1,3-Dichlorobenzene		360	U	360	U	360	U	340	U	340	U	340	U
1,4-Dichlorobenzene		360	U	64	%	63	%	340	U	340	U	340	U
1,2-Dichlorobenzene		360	U	360	U	360	U	340	U	340	U	340	U
2-Methylphenol		360	U	360	U	360	U	340	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	340	U	340	U	340	U
4-Methylphenol		360	U	360	U	360	U	340	U	340	U	340	U
N-Nitroso-di-n-propylamine		360	U	81	%	83	%	340	U	340	U	340	U
Hexachloroethane		360	U	360	U	360	U	340	U	340	U	340	U
Nitrobenzene		360	U	360	U	360	U	340	U	340	U	340	U
Isophorone		360	U	360	U	360	U	340	U	340	U	340	U
2-Nitrophenol		360	U	360	U	360	U	340	U	340	U	340	U
2,4-Dimethylphenol		360	U	360	U	360	U	340	U	340	U	340	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	340	U	340	U	340	U
2,4-Dichlorophenol		360	U	360	U	360	U	340	U	340	U	340	U
1,2,4-Trichlorobenzene		360	U	70	%	66	%	340	U	340	U	340	U
Naphthalene		360	U	360	U	360	U	340	U	340	U	340	U
4-Chloroaniline		360	U	360	U	360	U	340	U	340	U	340	U
Hexachlorobutadiene		360	U	360	U	360	U	340	U	340	U	340	U
4-Chloro-3-methylphenol		360	U	65	%	68	%	340	U	340	U	340	U
2-Methylnaphthalene		360	U	360	U	360	U	340	U	340	U	340	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	340	U	340	U	340	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	340	U	340	U	340	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	840	U	860	U	840	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L365 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WKW1		B0WKW1		B0WKW1		B0WKW2		B0WKW6		B0WKW7	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	340	U	340	U	340	U
2-Nitroaniline	900	U	900	U	900	U	840	U	860	U	840	U
Dimethylphthalate	360	U	360	U	360	U	340	U	340	U	340	U
Acenaphthylene	360	U	360	U	360	U	340	U	340	U	340	U
2,6-Dinitrotoluene	360	U	360	U	360	U	340	U	340	U	340	U
3-Nitroaniline	900	U	900	U	900	U	840	U	860	U	840	U
Acenaphthene	360	U	66	%	68	%	340	U	340	U	340	U
2,4-Dinitrophenol	900	U	900	U	900	U	840	U	860	U	840	U
4-Nitrophenol	900	U	58	%	65	%	840	U	860	U	840	U
Dibenzofuran	360	U	360	U	360	U	340	U	340	U	340	U
2,4-Dinitrotoluene	360	U	68	%	73	%	340	U	340	U	340	U
Diethylphthalate	360	U	360	U	360	U	340	U	340	U	340	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	340	U	340	U	340	U
Fluorene	360	U	360	U	360	U	340	U	340	U	340	U
4-Nitroaniline	900	U	900	U	900	U	840	U	860	U	840	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	840	U	860	U	840	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	340	U	340	U	340	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	340	U	340	U	340	U
Hexachlorobenzene	360	U	360	U	360	U	340	U	340	U	340	U
Pentachlorophenol	900	U	73	%	78	%	840	U	860	U	840	U
Phenanthrene	360	U	360	U	360	U	340	U	340	U	340	U
Anthracene	360	U	360	U	360	U	340	U	340	U	340	U
Carbazole	360	U	360	U	360	U	340	U	340	U	340	U
Di-n-butylphthalate	360	U	360	U	360	U	340	U	340	U	340	U
Fluoranthene	360	U	360	U	360	U	340	U	340	U	340	U
Pyrene	360	U	78	%	77	%	340	U	340	U	340	U
Butylbenzylphthalate	360	U	360	U	360	U	340	U	340	U	340	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	340	U	340	U	340	U
Benzo(a)anthracene	360	U	360	U	360	U	340	U	340	U	340	U
Chrysene	360	U	360	U	360	U	340	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	340	U	340	U	340	U
Di-n-octyl phthalate	360	U	360	U	360	U	340	U	340	U	340	U
Benzo(b)fluoranthene	360	U	360	U	360	U	340	U	340	U	340	U
Benzo(k)fluoranthene	360	U	360	U	360	U	340	U	340	U	340	U
Benzo(a)pyrene	360	U	360	U	360	U	340	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	340	U	340	U	340	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	340	U	340	U	340	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	340	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: 11/10/99 14:49

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0WKW8		B0WKW9		SBLKEU		SBLKEU BS	
Sample Information	RFW#:	005		006		99LE1275-MB1		99LE1275-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	70	%	72	%	80	%	76	%
	2-Fluorobiphenyl	67	%	69	%	79	%	76	%
	Terphenyl-d14	83	%	85	%	79	%	75	%
	Phenol-d5	69	%	73	%	73	%	72	%
	2-Fluorophenol	64	%	67	%	77	%	74	%
	2,4,6-Tribromophenol	64	%	71	%	69	%	76	%
Phenol		340	U	340	U	330	U	70	%
bis(2-Chloroethyl)ether		340	U	340	U	330	U	330	U
2-Chlorophenol		340	U	340	U	330	U	73	%
1,3-Dichlorobenzene		340	U	340	U	330	U	330	U
1,4-Dichlorobenzene		340	U	340	U	330	U	72	%
1,2-Dichlorobenzene		340	U	340	U	330	U	330	U
2-Methylphenol		340	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	330	U	330	U
4-Methylphenol		340	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	340	U	330	U	79	%
Hexachloroethane		340	U	340	U	330	U	330	U
Nitrobenzene		340	U	340	U	330	U	330	U
Isophorone		340	U	340	U	330	U	330	U
2-Nitrophenol		340	U	340	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	340	U	330	U	77	%
Naphthalene		340	U	340	U	330	U	330	U
4-Chloroaniline		340	U	340	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	340	U	330	U	70	%
2-Methylnaphthalene		340	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	340	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WKW8		B0WKW9		SBLKEU		SBLKEU BS	
RFW#:	005		006		99LE1275-MB1		99LE1275-MB1	
2-Chloronaphthalene	340	U	340	U	330	U	330	U
2-Nitroaniline	860	U	860	U	840	U	840	U
Dimethylphthalate	340	U	340	U	330	U	330	U
Acenaphthylene	340	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	330	U	330	U
3-Nitroaniline	860	U	860	U	840	U	840	U
Acenaphthene	340	U	340	U	330	U	76	%
2,4-Dinitrophenol	860	U	860	U	840	U	840	U
4-Nitrophenol	860	U	860	U	840	U	73	%
Dibenzofuran	340	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	340	U	330	U	71	%
Diethylphthalate	340	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	330	U	330	U
Fluorene	340	U	340	U	330	U	330	U
4-Nitroaniline	860	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	330	U	330	U
Pentachlorophenol	860	U	860	U	840	U	81	%
Phenanthrene	340	U	340	U	330	U	330	U
Anthracene	340	U	340	U	330	U	330	U
Carbazole	340	U	340	U	330	U	330	U
Di-n-butylphthalate	340	U	340	U	330	U	330	U
Fluoranthene	340	U	340	U	330	U	330	U
Pyrene	340	U	340	U	330	U	75	%
Butylbenzylphthalate	340	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	330	U	330	U
Chrysene	340	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	330	U	330	U
Di-n-octyl phthalate	340	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	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.

B0WKW1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A102412

Level: (low/med) LOW Date Received: 10/14/99

% 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.	UNKNOWN	22.39	90	J
2.	UNKNOWN	24.23	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-002

Sample wt/vol: 30.8 (g/mL) G Lab File ID: A102415

Level: (low/med) LOW Date Received: 10/14/99

% 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	24.23	70	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-003

Sample wt/vol: 30.2 (g/mL) G Lab File ID: A102508

Level: (low/med) LOW Date Received: 10/14/99

% 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	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-004

Sample wt/vol: 30.4 (g/mL) G Lab File ID: A102509

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: 2 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.

B0WKW8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A102510

Level: (low/med) LOW Date Received: 10/14/99

% 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.

B0WKW9

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L365-006

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A102511

Level: (low/med) LOW Date Received: 10/14/99

% 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	27.44	100	J

FORM 1 SV-TIC 3/90

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: 10/14/99 RFW LOT # :9910L365

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1	001	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW1	001 MS	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW1	001 MSD	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW2	002	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW6	003	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW7	004	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW8	005	S	99LE1275	10/12/99	10/19/99	10/25/99
B0WKW9	006	S	99LE1275	10/12/99	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

99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 10/14/99 Date Due: 11/13/99

Account #:

Refrigerator #		1	2													
#/Type Container	Liquid															
	Solid	1g	1g							1g	1g	1g				
Volume	Liquid															
	Solid	250	500							500	250	950				
Preservatives																
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Metal	CN					
		RECRA LabNet Use Only														
		0624H 06CSC	0625H 0DRO	0PCB						Metal0	ICNTO	1PH	Ag80			

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 06CSC	0625H 0DRO	0PCB					Metal0	ICNTO	1PH	Ag80			
001	BOWIKW1			S	10/12/99	0825	✓	✓	✓					✓	✓	✓	✓			
2	2					0838														
3	6					0850														
4	7					0900														
5	8					0915														
6	9					0934														

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

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni.
2. Se, Ag, V, Zn, Hg, ~~ICRG~~ 14 10/14/99
Ang ② = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, 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:
*423579530392/3.2, 423579530381/2.4°C

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 215	SAF No.: B99-078	
Ice Chest No.: SML-528	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: ~~TMA~~/RECRA 8-28 10-12-99	Offsite Property No.: A990295	Bill of Lading/Air Bill No.: 4235 7953 0392	
		COA: B20CW167C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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	BCWKW1	Soil	10-12-99	0825			X	X	X	X	X			
335	BCWKW2	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Chris 10/12/99 1115	Received By: Rel 1A 10/12/99 1115	
Relinquished By: Rel #1A 10/13/99 0915	Received By: Dell Nelson / R Nelson 10/13/99 0915	
Relinquished By: Dell Nelson / R Nelson 10/13/99 1430	Received By: Fed Ex	
Relinquished By:	Received By:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. use BCW 801 as shipping criteria

(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

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	B99-078-134	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.: GWS-142	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235795303581
			COA: B20cw, 67JC

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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

pm	Sample No.	Matrix *	Sample Date	Sample Time										
267	BOWKW6	Soil	10-12-99	0850					X	X	X	X	X	
103	BOWKW7	Soil	10-12-99	0900					X	X	X	X	X	
272	BOWKW8	Soil	10-12-99	0915					X	X	X	X	X	
231	BOWKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/12/99 1115	Received By: Rel. 1A	Date/Time: 10/12/99 1115
Relinquished By: Rel. 1A	Date/Time: 10/13/99 0915	Received By: R Nielson	Date/Time: 10/13/99 0915
Relinquished By: R Nielson	Date/Time: 10/13/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS: See chain of custody comments on SAF B99-078. use Bowscias shipping criteria

(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

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
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L365
SDG/SAF #: H0571/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-14-99

GC/MS VOLATILE

Six (6) soil samples were collected on 10-12-99.

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 10-20,21-99.

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. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 3x the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-28-99
Date

som\group\data\voa\tnu10365.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 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: 11/24/99 14:19

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WKW1		B0WKW2		B0WKW6		B0WKW7		B0WKW8		B0WKW9	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		0.909		0.877		0.862		0.943		0.926	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	100	%	97	%	95	%	98	%	103	%	100	%
	Bromofluorobenzene	92	%	90	%	94	%	97	%	106	%	103	%
	1,2-Dichloroethane-d4	97	%	91	%	92	%	95	%	99	%	108	%
Chloromethane		11	U	9	U	9	U	9	U	10	U	10	U
Bromomethane		11	U	9	U	9	U	9	U	10	U	10	U
Vinyl Chloride		11	U	9	U	9	U	9	U	10	U	10	U
Chloroethane		11	U	9	U	9	U	9	U	10	U	10	U
Methylene Chloride		20	B	15	B	14	B	15	B	20	B	20	B
Acetone		42		9	U	9	U	9	U	10	U	10	U
Carbon Disulfide		6	U	5	U	4	U	4	U	5	U	5	U
1,1-Dichloroethene		6	U	5	U	4	U	4	U	5	U	5	U
1,1-Dichloroethane		6	U	5	U	4	U	4	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	5	U	4	U	4	U	5	U	5	U
Chloroform		6	U	5	U	4	U	4	U	5	U	5	U
1,2-Dichloroethane		6	U	5	U	4	U	4	U	5	U	5	U
2-Butanone		10	J	9	U	9	U	9	U	10	U	10	U
1,1,1-Trichloroethane		6	U	5	U	4	U	4	U	5	U	5	U
Carbon Tetrachloride		6	U	5	U	4	U	4	U	5	U	5	U
Bromodichloromethane		6	U	5	U	4	U	4	U	5	U	5	U
1,2-Dichloropropane		6	U	5	U	4	U	4	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	5	U	4	U	4	U	5	U	5	U
Trichloroethene		6	U	5	U	4	U	4	U	5	U	5	U
Dibromochloromethane		6	U	5	U	4	U	4	U	5	U	5	U
1,1,2-Trichloroethane		6	U	5	U	4	U	4	U	5	U	5	U
Benzene		6	U	5	U	4	U	4	U	5	U	5	U
Trans-1,3-Dichloropropene		6	U	5	U	4	U	4	U	5	U	5	U
Bromoform		6	U	5	U	4	U	4	U	5	U	5	U
4-Methyl-2-pentanone		11	U	9	U	9	U	9	U	10	U	10	U
2-Hexanone		11	U	9	U	9	U	9	U	10	U	10	U
Tetrachloroethene		6	U	5	U	4	U	4	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	5	U	4	U	4	U	5	U	5	U
Toluene		6	U	5	U	4	U	4	U	5	U	5	U

*= Outside of EPA CLP QC limits.

gl 11-24-99

RFW Batch Number: 9910L365 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WKW1	B0WKW2	B0WKW6	B0WKW7	B0WKW8	B0WKW9
RFW#:	001	002	003	004	005	006
Chlorobenzene	6 U	5 U	4 U	4 U	5 U	5 U
Ethylbenzene	6 U	5 U	4 U	4 U	5 U	5 U
Styrene	6 U	5 U	4 U	4 U	5 U	5 U
Xylene (total)	6 U	5 U	4 U	4 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/24/99 14:19

RFW Batch Number: **9910L365** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

90

	Cust ID:	B0WKW9		B0WKW9		VBLKYD		VBLKYW		VBLKYW BS	
Sample Information	RFW#:	006 MS		006 MSD		99LVK446-MB1		99LVK447-MB1		99LVK447-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.862		0.943		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	96	%	100	%	110	%	108	%	107	%
	Bromofluorobenzene	98	%	97	%	114	%	107	%	106	%
	1,2-Dichloroethane-d4	91	%	101	%	111	%	103	%	99	%
Chloromethane		9	U	10	U	10	U	10	U	10	U
Bromomethane		9	U	10	U	10	U	10	U	10	U
Vinyl Chloride		9	U	10	U	10	U	10	U	10	U
Chloroethane		9	U	10	U	10	U	10	U	10	U
Methylene Chloride		12	B	14	B	13		22		23	B
Acetone		9	U	10	U	10	U	10	U	10	U
Carbon Disulfide		4	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		100	%	103	%	5	U	5	U	104	%
1,1-Dichloroethane		4	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		4	U	5	U	5	U	5	U	5	U
Chloroform		4	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		4	U	5	U	5	U	5	U	5	U
2-Butanone		9	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		4	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		4	U	5	U	5	U	5	U	5	U
Bromodichloromethane		4	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		4	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		4	U	5	U	5	U	5	U	5	U
Trichloroethene		99	%	103	%	5	U	5	U	106	%
Dibromochloromethane		4	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		4	U	5	U	5	U	5	U	5	U
Benzene		103	%	109	%	5	U	5	U	110	%
Trans-1,3-Dichloropropene		4	U	5	U	5	U	5	U	5	U
Bromoform		4	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		9	U	10	U	10	U	10	U	10	U
2-Hexanone		9	U	10	U	10	U	10	U	10	U
Tetrachloroethene		4	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		4	U	5	U	5	U	5	U	5	U
Toluene		102	%	106	%	5	U	5	U	109	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9910L365** Client: ***TNU-HANFORD B99-078*** Work Order: 10985001001 Page: 2b

Cust ID:	B0WKW9		B0WKW9		VBLKYD		VBLKYW		VBLKYW BS	
RFW#:	006 MS		006 MSD		99LVK446-MB1		99LVK447-MB1		99LVK447-MB1	
Chlorobenzene	100	%	105	%	5	U	5	U	108	%
Ethylbenzene	4	U	5	U	5	U	5	U	5	U
Styrene	4	U	5	U	5	U	5	U	5	U
Xylene (total)	4	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-001

Sample wt/vol: 5.10 (g/mL) G Lab File ID: k102027

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: not dec. 8 Date Analyzed: 10/20/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-002

Sample wt/vol: 5.50 (g/mL) G Lab File ID: k102028

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: not dec. 3 Date Analyzed: 10/20/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-003

Sample wt/vol: 5.70 (g/mL) G Lab File ID: k102029

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: not dec. 3 Date Analyzed: 10/20/99

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 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-004

Sample wt/vol: 5.80 (g/mL) G Lab File ID: k102030

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: not dec. 2 Date Analyzed: 10/20/99

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.	UNKNOWN	17.133	5	JB

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-005

Sample wt/vol: 5.30 (g/mL) G Lab File ID: k102038

Level: (low/med) LOW Date Received: 10/14/99

% Moisture: not dec. 3 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.				

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKW9

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 9910L365-006

Sample wt/vol: 5.40 (g/mL) G Lab File ID: k102039

Level: (low/med) LOW Date Received: 10/14/99

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

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	17.123	5	J

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKYD

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: SOIL Lab Sample ID: 99LVK446-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: k102021

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

% Moisture: not dec. 0 Date Analyzed: 10/20/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.173	20	J

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKYW

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: 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 12/88 Rev.

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

DATE RECEIVED: 10/14/99 RFW LOT # :9910L365

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKW1	001	S	99LVK446	10/12/99	N/A	10/20/99
B0WKW2	002	S	99LVK446	10/12/99	N/A	10/20/99
B0WKW6	003	S	99LVK446	10/12/99	N/A	10/20/99
B0WKW7	004	S	99LVK446	10/12/99	N/A	10/20/99
B0WKW8	005	S	99LVK447	10/12/99	N/A	10/21/99
B0WKW9	006	S	99LVK447	10/12/99	N/A	10/21/99
B0WKW9	006 MS	S	99LVK447	10/12/99	N/A	10/21/99
B0WKW9	006 MSD	S	99LVK447	10/12/99	N/A	10/21/99

LAB QC:

VBLKYD	MB1	S	99LVK446	N/A	N/A	10/20/99
VBLKYW	MB1	S	99LVK447	N/A	N/A	10/21/99
VBLKYW	MB1 BS	S	99LVK447	N/A	N/A	10/21/99

gw 11-24-99

RECRA LabNet Use Only
99101365

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

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

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: opec Del: std TAT: 30 day
Date Rec'd: 10/14/99 Date Due: 11/13/99
Account #:

Refrigerator #		1	2														
#/Type Container	Liquid																
	Solid	1g	1g							1g		1g	1g				
Volume	Liquid																
	Solid	250	500							500		250	950				
Preservatives																	
ANALYSES REQUESTED →		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					Metal	CN						
		RECRA LabNet Use Only															
		0624H 0GCSC	0625H 0DRO	0PCB						Metal	ICNTO	1PH	8080				

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 0GCSC	0625H 0DRO	0PCB					Metal	ICNTO	1PH	8080				
001	BOWLW1			S	10/12/99	0825	✓	✓	✓					✓	✓	✓	✓				
2	2					0838															
3	6					0850															
4	7					0900															
5	8					0915															
6	9					0934	✓	✓	✓					✓	✓	✓	✓				

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

Special Instructions:
Saf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni.
2. Se, Ag, V, Zn, Hg, ~~ICRC~~ 10/14/99
Ang (2) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICR6
5.
6. Run matrix QC

Relinquished by	Received by	Date	Time
FedEx	Jenson	10/14/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

RECRA LabNet Use Only

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

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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235679530392/3.2, 4235679530381/2.4 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-133	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 215'		SAF No.: B99-078
Ice Chest No.: SML-528	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 10-12-99	Offsite Property No.: A990295		Bill of Lading/Air Bill No.: 4235 7953 0392
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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	BCWKW1	Soil	10-12-99	0825			X	X	X	X	X			
335	BCWKW2	Soil	10-12-99	0838			X	X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Chris	10/12/99 1115	Rel 1A	10/12/99 1115
Rel #1A	10/13/99 0915	Kelly Nelson / R. Nelson	10/13/99 0915
Kelly Nelson / R. Nelson	10/13/99 1430	Fed Ex	

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078. use BOW801 as shipping criteria

(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

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	B99-078-134	Page 1 of 1

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. GWS-142	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To TMA/RECRA BZD 10-12-99	**Offsite Property No.** A990295		**Bill of Lading/Air Bill No.** 4235795303 81
			COA B20CW1 671C

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

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	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										
pm 267	BOWKW6	Soil	10-12-99	0850					X	X	X	X	X	
103	BOWKW7	Soil	10-12-99	0900					X	X	X	X	X	
272	BOWKW8	Soil	10-12-99	0915					X	X	X	X	X	
231	BOWKW9	Soil	10-12-99	0934					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
C. Trice	10/12/99 1115	Rob. IA	10/12/99 1115
Rob IA	10/13/99 0915	[illegible]/R Nielson	10/13/99 0915
[illegible]/R Nielson	10/13/99 1430	Fed Ex	

SPECIAL INSTRUCTIONS See chain of custody comments on SAF B99-078. use Bowgtas shipping criteria

(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

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

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