H0559 TMA/RECR 4

Thermo Nutech
W.O. No. N9-10-046-7229

Bechtel Hanford Inc.
SDG H0559

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0559 is composed of seven solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. Results were transmitted to BHI via facsimile on December 2, 1999.

RECEIVED
JAN 27 2000
EDMC

2.0 ANALYSIS NOTES

2.1 Gamma Scan 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.

2.3 Americium-241 Analyses

No problems were encountered during the course of the analyses. A recount was performed on the QC blank.

2.4 Neptunium-237 Analyses

No problems were encountered during the course of the analyses, however the LCS recovery was 73% while acceptable was somewhat lower than expected.

2.5 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses. A recount was performed on the LCS.

2.7 Technetium-99 Analyses

All sample results, including the QC blank, were greater than the respective samples' MDA but less than the RDL.

2.8 Total and Isotopic Uranium Analyses

Isotopic uranium was to be ordered by BHI after reviewing data from the total uranium testing. No isotopic uranium analyses were requested. No problems were encountered during the course of the analyses. The result for the QC blank is reported as 0 ug/g, however the actual number is –7.22E-05 ± 8.13E-05 ug/g.

2.9 Tritium Analyses

No problems were encountered during the course of the analyses.

2.10 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

SAMPLE SUMMARY

SDG 7229
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WKX1	200 B pond	SOLID		N910046-01	B99-078	B99-078-135	10/05/99 07:45
B0WKX2	200 B pond	SOLID		N910046-02	B99-078	B99-078-135	10/05/99 07:55
B0WKX3	200 B pond	SOLID		N910046-03	B99-078	B99-078-135	10/05/99 08:10
B0WKX4	200 B pond	SOLID		N910046-04	B99-078	B99-078-135	10/05/99 08:20
B0WKX5	200 B pond	SOLID		N910046-05	B99-078	B99-078-135	10/05/99 08:33
B0WKX6	200 B pond	SOLID		N910046-06	B99-078	B99-078-136	10/05/99 08:50
B0WKX7	200 B pond	SOLID		N910046-07	B99-078	B99-078-136	10/05/99 09:13
Method Blank		SOLID		N910046-09	B99-078		
Method Blank		SOLID		N910046-14	B99-078		
Method Blank		SOLID		N910152-05	B99-078		
Lab Control Sample		SOLID		N910046-08	B99-078		
Lab Control Sample		SOLID		N910046-13	B99-078		
Lab Control Sample		SOLID		N910152-04	B99-078		
Duplicate (N910046-01)	200 B pond	SOLID		N910046-10	B99-078		10/05/99 07:45
Duplicate (N910046-01)	200 B pond	SOLID		N910046-15	B99-078		10/05/99 07:45
Duplicate (N910046-06)	200 B pond	SOLID		N910046-11	B99-078		10/05/99 08:50
Duplicate (N910046-06)	200 B pond	SOLID		N910046-16	B99-078		10/05/99 08:50
Duplicate (N910046-07)	200 B pond	SOLID		N910046-17	B99-078		10/05/99 09:13
Duplicate (N910046-07)	200 B pond	SOLID		N910046-18	B99-078		10/05/99 09:13
Spike (N910046-07)	200 B pond	SOLID		N910046-12	B99-078		10/05/99 09:13

Lab id TMANC
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SAMPLE DELIVERY GROUP H0559

QC SUMMARY

SDG 7229
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

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
7229	B99-078-135	B0WKX1	SOLID	95.8			10/07/99	2	N910046-01	7229-001
		B0WKX2	SOLID	95.7			10/07/99	2	N910046-02	7229-002
		B0WKX3	SOLID	95.0			10/07/99	2	N910046-03	7229-003
		B0WKX4	SOLID	90.6			10/07/99	2	N910046-04	7229-004
		B0WKX5	SOLID	93.9			10/07/99	2	N910046-05	7229-005
	B99-078-136	B0WKX6	SOLID	93.9			10/07/99	2	N910046-06	7229-006
		B0WKX7	SOLID	96.3			10/07/99	2	N910046-07	7229-007
		Method Blank	SOLID						N910046-09	7229-009
		Method Blank	SOLID						N910046-14	7229-014
		Lab Control Sample	SOLID						N910046-08	7229-008
		Lab Control Sample	SOLID						N910046-13	7229-013
		Duplicate (N910046-01)	SOLID	95.8			10/07/99	2	N910046-10	7229-010
		Duplicate (N910046-01)	SOLID	95.8			10/07/99	2	N910046-15	7229-015
		Duplicate (N910046-06)	SOLID	93.9			10/07/99	2	N910046-11	7229-011
		Duplicate (N910046-06)	SOLID	93.9			10/07/99	2	N910046-16	7229-016
		Duplicate (N910046-07)	SOLID	96.3			10/07/99	2	N910046-17	7229-017
		Duplicate (N910046-07)	SOLID	96.3			10/07/99	2	N910046-18	7229-018
		Spike (N910046-07)	SOLID				10/07/99	2	N910046-12	7229-012
7247		Method Blank	SOLID						N910152-05	7247-005
		Lab Control Sample	SOLID						N910152-04	7247-004

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SAMPLE DELIVERY GROUP H0559

PREP BATCH SUMMARY

SDG 7229
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

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	6904-068	5.0	7			1	1	2/2		
NP	SOLID	Neptunium in Soil	6904-068	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-068	5.0	7			1	1	2/2		
TH	SOLID	Thorium, Isotopic in Soil	6904-068	5.0	7			1	1	2/2		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-068	10.0	7			1	1	2/2		
TC	SOLID	Technetium 99 in Soil	6904-137	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-068	15.0	7			1	1	2/2		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-068	9.0	7			1	1	2/2		X
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-068	10.0	2			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6904-068	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 12/02/99

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SAMPLE DELIVERY GROUP H0559

WORK SUMMARY

SDG 7229
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WKX1			N910046-01	7229-001	AM		11/24/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-001	GAM		10/26/99	12/02/99	NJV	Gamma Scan
B99-078-135	B99-078		10/07/99	7229-001	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-001	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-001	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-001	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
B0WKX2			N910046-02	7229-002	AM		11/26/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-002	GAM		11/20/99	12/02/99	NJV	Gamma Scan
B99-078-135	B99-078		10/07/99	7229-002	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-002	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-002	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-002	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
B0WKX3			N910046-03	7229-003	AM		11/24/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-003	GAM		10/28/99	12/02/99	NJV	Gamma Scan
B99-078-135	B99-078		10/07/99	7229-003	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-003	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-003	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-003	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
B0WKX4			N910046-04	7229-004	AM		11/26/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-004	GAM		10/29/99	12/02/99	NJV	Gamma Scan
B99-078-135	B99-078		10/07/99	7229-004	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-004	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-004	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-004	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
B0WKX5			N910046-05	7229-005	AM		11/26/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-005	GAM		10/29/99	12/02/99	NJV	Gamma Scan
B99-078-135	B99-078		10/07/99	7229-005	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-005	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-005	TH		11/26/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-005	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil

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SAMPLE DELIVERY GROUP H0559

SDG 7229
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WKX6			N910046-06	7229-006	AM		11/26/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-006	GAM		11/10/99	12/02/99	NJV	Gamma Scan
B99-078-136	B99-078		10/07/99	7229-006	H		11/06/99	12/02/99	NJV	Tritium in Soil
				7229-006	NI_L		11/19/99	12/02/99	NJV	Nickel 63 in Soil
				7229-006	NP		11/24/99	12/02/99	NJV	Neptunium in Soil
				7229-006	PU		12/01/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-006	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-006	TC		11/22/99	12/02/99	NJV	Technetium 99 in Soil
				7229-006	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-006	U_T		11/11/99	12/02/99	NJV	Uranium, Total in Soil
B0WKX7			N910046-07	7229-007	AM		11/26/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-007	GAM		11/10/99	12/02/99	NJV	Gamma Scan
B99-078-136	B99-078		10/07/99	7229-007	H		11/06/99	12/02/99	NJV	Tritium in Soil
				7229-007	NI_L		11/19/99	12/02/99	NJV	Nickel 63 in Soil
				7229-007	NP		11/24/99	12/02/99	NJV	Neptunium in Soil
				7229-007	PU		12/01/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-007	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-007	TC		11/24/99	12/02/99	NJV	Technetium 99 in Soil
				7229-007	TH		11/26/99	12/02/99	NJV	Thorium, Isotopic in Soil
				7229-007	U_T		11/11/99	12/02/99	NJV	Uranium, Total in Soil
Method Blank			N910046-09	7229-009	AM		11/29/99	12/02/99	NJV	Americium 241 in Soil
		SOLID		7229-009	GAM		11/20/99	12/02/99	NJV	Gamma Scan
	B99-078			7229-009	H		11/06/99	12/02/99	NJV	Tritium in Soil
				7229-009	NI_L		11/19/99	12/02/99	NJV	Nickel 63 in Soil
				7229-009	NP		11/24/99	12/02/99	NJV	Neptunium in Soil
				7229-009	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-009	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-009	TH		11/24/99	12/02/99	NJV	Thorium, Isotopic in Soil
Method Blank			N910046-14	7229-014	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									
Method Blank			N910152-05	7247-005	TC		11/24/99	11/30/99	NJV	Technetium 99 in Soil
		SOLID								
	B99-078									

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

SDG 7229
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N910046-08	7229-008	AM		11/24/99	12/02/99	NJV	Americium 241 in Soil
		SOLID		7229-008	GAM		10/29/99	12/02/99	NJV	Gamma Scan
	B99-078			7229-008	H		11/06/99	12/02/99	NJV	Tritium in Soil
				7229-008	NI_L		11/19/99	12/02/99	NJV	Nickel 63 in Soil
				7229-008	NP		11/24/99	12/02/99	NJV	Neptunium in Soil
				7229-008	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-008	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-008	TH		11/26/99	12/02/99	NJV	Thorium, Isotopic in Soil
Lab Control Sample			N910046-13	7229-013	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									
Lab Control Sample			N910152-04	7247-004	TC		11/22/99	11/30/99	NJV	Technetium 99 in Soil
		SOLID								
	B99-078									
Duplicate (N910046-01)			N910046-10	7229-010	AM		11/29/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-010	GAM		10/30/99	12/02/99	NJV	Gamma Scan
	B99-078		10/07/99	7229-010	PU		11/24/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-010	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-010	TH		11/27/99	12/02/99	NJV	Thorium, Isotopic in Soil
Duplicate (N910046-01)			N910046-15	7229-015	U_T		10/26/99	12/02/99	NJV	Uranium, Total in Soil
200 B pond		SOLID	10/05/99							
	B99-078		10/07/99							
Duplicate (N910046-06)			N910046-11	7229-011	H		11/06/99	12/02/99	NJV	Tritium in Soil
200 B pond		SOLID	10/05/99	7229-011	NI_L		11/19/99	12/02/99	NJV	Nickel 63 in Soil
	B99-078		10/07/99	7229-011	NP		11/24/99	12/02/99	NJV	Neptunium in Soil
Duplicate (N910046-06)			N910046-16	7229-016	U_T		11/11/99	12/02/99	NJV	Uranium, Total in Soil
200 B pond		SOLID	10/05/99							
	B99-078		10/07/99							

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SAMPLE DELIVERY GROUP H0559

SDG 7229
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N910046-07)			N910046-17	7229-017	AM		11/29/99	12/02/99	NJV	Americium 241 in Soil
200 B pond		SOLID	10/05/99	7229-017	GAM		11/11/99	12/02/99	NJV	Gamma Scan
	B99-078		10/07/99	7229-017	PU		12/01/99	12/02/99	NJV	Plutonium, Isotopic in Solids
				7229-017	SR		11/24/99	12/02/99	NJV	Total Strontium in Soil
				7229-017	TH		11/27/99	12/02/99	NJV	Thorium, Isotopic in Soil
Duplicate (N910046-07)			N910046-18	7229-018	TC		11/22/99	12/02/99	NJV	Technetium 99 in Soil
200 B pond		SOLID	10/05/99							
	B99-078		10/07/99							
Spike (N910046-07)			N910046-12	7229-012	H		11/06/99	12/02/99	NJV	Tritium in Soil
200 B pond		SOLID	10/05/99							
	B99-078		10/07/99							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	7			1	1	2		11
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	2		11
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	1	6
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1		5
NP	B99-078	Neptunium in Soil	NP237PLATE	2			1	1	1		5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	7			1	1	2		11
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	2		11
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1		5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	2		11
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	2		11
TOTALS				50			10	10	16	1	87

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SAMPLE DELIVERY GROUP H0559

N910046-09 Method Blank

METHOD BLANK

SDG	7229	Client/Case no	Hanford	SDG	H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910046-09	Client sample id	Method Blank		
Dept sample id	7229-009	Material/Matrix			SOLID
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.010	0.041	0.071	400	U	H
Neptunium 237	13994-20-2	-0.013	0.027	0.068		U	NP
Plutonium 238	13981-16-3	-0.013	0.015	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.007	0.012	1.0	U	PU
Nickel 63	13981-37-8	0.609	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.006	0.019	0.030	1.0	U	AM
Total Strontium	SR-RAD	-0.030	0.11	0.20	1.0	U	SR
Thorium 228	14274-82-9	-0.073	0.24	0.51	1.0	U	TH
Thorium 230	14269-63-7	0.171	0.20	0.30	1.0	U	TH
Thorium 232	TH-232	0.024	0.098	0.19	1.0	U	TH
Potassium 40	13966-00-2	U		0.40		U	GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.033	0.10	U	GAM
Europium 154	15585-10-1	U		0.040	0.10	U	GAM
Europium 155	14391-16-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	U		0.030	0.10	U	GAM
Radium 228	15262-20-1	U		0.063	0.20	U	GAM
Thorium 228	14274-82-9	U		0.018		U	GAM
Thorium 232	TH-232	U		0.063		U	GAM
Americium 241	14596-10-2	U		0.015		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.043		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32135

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-14 Method Blank

METHOD BLANK

SDG	7229	Client/Case no	Hanford	SDG H0559	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910046-14	Client sample id	Method Blank		
Dept sample id	7229-014	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0	0	0	1.0	J	U_T

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32101

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910152-05 Method Blank

METHOD BLANK

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910152-05	Client sample id	Method Blank
Dept sample id	7247-005	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	N.A.					NP
Technetium 99	14133-76-7	1.28	0.58	1.0	15	J	TC
Curium 244	13981-15-2	N.A.					TP
Uranium 233/234	U-233/234	N.A.			1.0		U
Uranium 235	15117-96-1	N.A.			1.0		U
Uranium 238	U-238	N.A.			1.0		U
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32272

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7229

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0559

Case no TRB-SBB-207925

Lab sample id N910046-08

Dept sample id 7229-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	6.36	0.14	0.072	400	J	H	6.34	0.25	100	84-116	80-120
Neptunium 237	9.67	0.64	0.047			NP	13.2	0.53	73	89-111	
Plutonium 238	12.5	0.50	0.022	1.0		PU	12.5	0.50	100	89-111	80-120
Plutonium 239/240	13.0	0.52	0.024	1.0		PU	13.2	0.53	98	89-111	80-120
Nickel 63	150	3.5	2.0	30		NI_L	147	5.9	102	83-117	
Americium 241	8.77	0.34	0.021	1.0		AM	9.58	0.38	92	89-111	80-120
Total Strontium	12.7	0.54	0.19	1.0		SR	12.4	0.50	102	82-118	
Thorium 230	23.4	1.5	0.18	1.0		TH	22.4	0.90	104	86-114	
Cobalt 60	0.345	0.039	0.024	0.050		GAM	0.374	0.015	92	73-127	80-120
Cesium 137	0.383	0.032	0.024	0.10		GAM	0.408	0.016	94	75-125	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32134

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7229

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0559

Case no TRB-SBB-207925

Lab sample id N910046-13

Dept sample id 7229-013

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	1.64	0.19	0.002	1.0	X	U_T	1.65	0.066	99	77-123	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32100

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910152-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7229

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0559

Case no TRB-SBB-207925

Lab sample id N910152-04

Dept sample id 7247-004

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Neptunium 237	N.A.					NP					
Technetium 99	41.2	1.4	0.51	15	B	TC	42.7	1.7	96	84-116	80-120
Curium 244	N.A.					TP					
Uranium 233/234	N.A.			1.0		U					80-120
Uranium 235	N.A.			1.0		U					80-120
Uranium 238	N.A.			1.0		U					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 230	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32271

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-10 B0WKX1

DUPLICATE

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910046-10	Lab sample id	N910046-01
Dept sample id	7229-010	Dept sample id	7229-001
		Received	10/07/99
% solids	95.8	% solids	95.8
Client sample id	B0WKX1		
Location/Matrix	200 B pond SOLID		
Collected	10/05/99 07:45		
Custody/SAF No	B99-078-135 B99-078		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Plutonium 238	0.030	0.018	0.024	1.0	J	PU	0.023	0.015	0.021	J	26	133
Plutonium 239/240	1.29	0.094	0.017	1.0		PU	1.27	0.086	0.024		2	18
Americium 241	0.356	0.079	0.032	1.0	J	AM	0.425	0.050	0.021	J	18	37
Total Strontium	-0.002	0.14	0.25	1.0	U	SR	-0.019	0.082	0.15	U	-	
Thorium 228	0.405	0.16	0.17	1.0	J	TH	0.649	0.23	0.23	J	46	80
Thorium 230	0.484	0.19	0.17	1.0	J	TH	0.747	0.23	0.17	J	43	74
Thorium 232	0.538	0.16	0.10	1.0	J	TH	0.522	0.17	0.11	J	3	67
Potassium 40	13.9	0.77	0.40			GAM	14.2	0.41	0.17		2	33
Cobalt 60	U		0.044	0.050	U	GAM	U		0.018	U	-	
Cesium 137	7.36	0.13	0.052	0.10		GAM	7.78	0.072	0.030		6	32
Europium 152	U		0.14	0.10	U	GAM	U		0.076	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.063	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.096	U	-	
Radium 226	0.665	0.083	0.083	0.10		GAM	0.609	0.042	0.044		9	39
Radium 228	0.876	0.16	0.15	0.20		GAM	0.852	0.085	0.082		3	45
Thorium 228	0.972	0.090	0.093			GAM	0.753	0.033	0.038		25	36
Thorium 232	0.876	0.16	0.15			GAM	0.852	0.085	0.082		3	45
Americium 241	U		0.42		U	GAM	U		0.29	U	-	
Uranium 238	U		5.2		U	GAM	U		2.2	U	-	
Uranium 235	U		0.17		U	GAM	U		0.11	U	-	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 32136

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-15 B0WKX1

DUPLICATE

SDG	7229			Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910046-15	Lab sample id	N910046-01	Client sample id	B0WKX1
Dept sample id	7229-015	Dept sample id	7229-001	Location/Matrix	200 B pond SOLID
		Received	10/07/99	Collected	10/05/99 07:45
% solids	95.8	% solids	95.8	Custody/SAF No	B99-078-135 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	1.09	0.12	0.004	1.0		U_T	1.25	0.14	0.004		14	30	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 32102

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-11 B0WKX6

DUPLICATE

SDG	7229			Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910046-11	Lab sample id	N910046-06	Client sample id	B0WKX6
Dept sample id	7229-011	Dept sample id	7229-006	Location/Matrix	200 B pond SOLID
		Received	10/07/99	Collected	10/05/99 08:50
% solids	93.9	% solids	93.9	Custody/SAF No	B99-078-136 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	-0.030	0.041	0.071	400	U	H	0.010	0.043	0.072	U	-	
Neptunium 237	0.012	0.019	0.035		U	NP	0.010	0.020	0.038	U	-	
Nickel 63	1.04	1.3	2.2	30	U	NI_L	-0.195	1.3	2.2	U	-	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#6 32137

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-16 B0WKX6

DUPLICATE

SDG	7229			Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910046-16	Lab sample id	N910046-06	Client sample id	B0WKX6
Dept sample id	7229-016	Dept sample id	7229-006	Location/Matrix	200 B pond SOLID
		Received	10/07/99	Collected	10/05/99 08:50
% solids	93.9	% solids	93.9	Custody/SAF No	B99-078-136 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.283	0.032	0.005	1.0	J	U_T	0.275	0.031	0.004	J	3	31	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#6 32308

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-17

B0WKX7

DUPLICATE

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910046-17	Lab sample id	N910046-07
Dept sample id	7229-017	Dept sample id	7229-007
		Received	10/07/99
% solids	96.3	% solids	96.3
Client sample id	B0WKX7		
Location/Matrix	200 B pond SOLID		
Collected	10/05/99 09:13		
Custody/SAF No	B99-078-136 B99-078		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Plutonium 238	-0.004	0.015	0.037	1.0	U	PU	-0.004	0.016	0.038	U	-	
Plutonium 239/240	0.085	0.039	0.037	1.0	J	PU	0.116	0.049	0.038	J	31	94
Americium 241	0.035	0.029	0.036	1.0	U	AM	0.041	0.045	0.069	U	-	
Total Strontium	37.5	1.9	0.79	1.0		SR	39.5	2.2	1.2		5	24
Thorium 228	0.492	0.28	0.39	1.0	J	TH	0.567	0.24	0.31	J	14	105
Thorium 230	1.12	0.39	0.26	1.0		TH	0.968	0.25	0.18	J	15	67
Thorium 232	0.598	0.28	0.21	1.0	J	TH	0.618	0.19	0.15	J	3	84
Potassium 40	11.4	0.39	0.18			GAM	U		1.0	U	168	49
Cobalt 60	U		0.017	0.050	U	GAM	U		0.023	U	-	
Cesium 137	0.038	0.013	0.016	0.10	J	GAM	0.028	0.022	0.027	J	30	120
Europium 152	U		0.045	0.10	U	GAM	U		0.066	U	-	
Europium 154	U		0.056	0.10	U	GAM	U		0.078	U	-	
Europium 155	U		0.066	0.10	U	GAM	U		0.12	U	-	
Radium 226	0.437	0.035	0.031	0.10		GAM	U		0.072	U	143	61
Radium 228	0.561	0.078	0.074	0.20		GAM	U		0.14	U	120	78
Thorium 228	0.547	0.025	0.025			GAM	0.638	0.056	0.056		15	35
Thorium 232	0.561	0.078	0.074			GAM	U		0.14	U	120	78
Americium 241	U		0.080		U	GAM	U		0.28	U	-	
Uranium 238	U		2.0		U	GAM	U		2.8	U	-	
Uranium 235	U		0.085		U	GAM	U		0.13	U	-	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#7 32309

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-18 B0WKX7

DUPLICATE

SDG	7229			Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910046-18	Lab sample id	N910046-07	Client sample id	B0WKX7
Dept sample id	7229-018	Dept sample id	7229-007	Location/Matrix	200 B pond SOLID
		Received	10/07/99	Collected	10/05/99 09:13
% solids	96.3	% solids	96.3	Custody/SAF No	B99-078-136 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Technetium 99	1.16	0.23	0.53	15	JB	TC	1.30	0.24	0.57	JB	11	46	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#7 32471

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-12

B0WKX7

MATRIX SPIKE

SDG	7229		Client/Case no	Hanford	SDG H0559
Contact	Kevin C. Johnson		Case no	TRB-SBB-207925	
MATRIX SPIKE		ORIGINAL			
Lab sample id	N910046-12	Lab sample id	N910046-07	Client sample id	B0WKX7
Dept sample id	7229-012	Dept sample id	7229-007	Location/Matrix	200 B pond SOLID
		Received	10/07/99	Collected	10/05/99 09:13
		% solids	96.3	Custody/SAF No	B99-078-136 B99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	11.6	0.19	0.071	400	JX	H	12.2	0.49	0.015	0.043	95	84-116	

200 Area Source chrctztn-200-CW-1 OU

QC-MS#7 32138

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-01 B0WKX1

DATA SHEET

SDG	7229	Client/Case no	Hanford	SDG H0559	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910046-01	Client sample id	B0WKX1		
Dept sample id	7229-001	Location/Matrix	200 B pond	SOLID	
Received	10/07/99	Collected	10/05/99 07:45		
% solids	95.8	Custody/SAF No	B99-078-135	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.25	0.14	0.004	1.0		U_T
Plutonium 238	13981-16-3	0.023	0.015	0.021	1.0	J	PU
Plutonium 239/240	PU-239/240	1.27	0.086	0.024	1.0		PU
Americium 241	14596-10-2	0.425	0.050	0.021	1.0	J	AM
Total Strontium	SR-RAD	-0.019	0.082	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.649	0.23	0.23	1.0	J	TH
Thorium 230	14269-63-7	0.747	0.23	0.17	1.0	J	TH
Thorium 232	TH-232	0.522	0.17	0.11	1.0	J	TH
Potassium 40	13966-00-2	14.2	0.41	0.17			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	7.78	0.072	0.030	0.10		GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		0.063	0.10	U	GAM
Europium 155	14391-16-3	U		0.096	0.10	U	GAM
Radium 226	13982-63-3	0.609	0.042	0.044	0.10		GAM
Radium 228	15262-20-1	0.852	0.085	0.082	0.20		GAM
Thorium 228	14274-82-9	0.753	0.033	0.038			GAM
Thorium 232	TH-232	0.852	0.085	0.082			GAM
Americium 241	14596-10-2	U		0.29		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-02 B0WKX2

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-02	Client sample id	B0WKX2
Dept sample id	7229-002	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 07:55
% solids	95.7	Custody/SAF No	B99-078-135 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.31	0.15	0.004	1.0		U_T
Plutonium 238	13981-16-3	0.061	0.017	0.012	1.0	J	PU
Plutonium 239/240	PU-239/240	1.80	0.11	0.009	1.0		PU
Americium 241	14596-10-2	0.576	0.098	0.055	1.0	J	AM
Total Strontium	SR-RAD	-0.064	0.20	0.27	1.0	U	SR
Thorium 228	14274-82-9	0.509	0.16	0.17	1.0	J	TH
Thorium 230	14269-63-7	0.526	0.16	0.16	1.0	J	TH
Thorium 232	TH-232	0.381	0.13	0.069	1.0	J	TH
Potassium 40	13966-00-2	14.7	0.64	0.26			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	7.40	0.11	0.048	0.10		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.657	0.077	0.083	0.10		GAM
Radium 228	15262-20-1	0.976	0.14	0.12	0.20		GAM
Thorium 228	14274-82-9	0.771	0.048	0.058			GAM
Thorium 232	TH-232	0.976	0.14	0.12			GAM
Americium 241	14596-10-2	0.509	0.27	0.39			GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-03 B0WKX3

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-03	Client sample id	B0WKX3
Dept sample id	7229-003	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 08:10
% solids	95.0	Custody/SAF No	B99-078-135 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.563	0.063	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.011	0.010	0.012	1.0	U	PU
Plutonium 239/240	PU-239/240	0.156	0.028	0.012	1.0	J	PU
Americium 241	14596-10-2	0.056	0.022	0.029	1.0	J	AM
Total Strontium	SR-RAD	2.94	0.24	0.18	1.0		SR
Thorium 228	14274-82-9	0.676	0.23	0.20	1.0	J	TH
Thorium 230	14269-63-7	0.955	0.27	0.20	1.0	J	TH
Thorium 232	TH-232	0.445	0.17	0.13	1.0	J	TH
Potassium 40	13966-00-2	15.4	0.92	0.43			GAM
Cobalt 60	10198-40-0	U		0.047	0.050	U	GAM
Cesium 137	10045-97-3	0.562	0.052	0.045	0.10		GAM
Europium 152	14683-23-9	U		0.096	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.082	0.10	U	GAM
Radium 226	13982-63-3	0.561	0.084	0.082	0.10		GAM
Radium 228	15262-20-1	0.878	0.21	0.21	0.20		GAM
Thorium 228	14274-82-9	0.836	0.049	0.047			GAM
Thorium 232	TH-232	0.878	0.21	0.21			GAM
Americium 241	14596-10-2	U		0.067		U	GAM
Uranium 238	U-238	U		5.9		U	GAM
Uranium 235	15117-96-1	U		0.15		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-04 B0WKX4

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-04	Client sample id	B0WKX4
Dept sample id	7229-004	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 08:20
% solids	90.6	Custody/SAF No	B99-078-135 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.524	0.060	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.004	0.011	0.019	1.0	U	PU
Plutonium 239/240	PU-239/240	0.001	0.014	0.025	1.0	U	PU
Americium 241	14596-10-2	0	0.041	0.092	1.0	U	AM
Total Strontium	SR-RAD	2.19	0.22	0.18	1.0		SR
Thorium 228	14274-82-9	0.675	0.28	0.32	1.0	J	TH
Thorium 230	14269-63-7	1.04	0.32	0.23	1.0		TH
Thorium 232	TH-232	0.726	0.25	0.13	1.0	J	TH
Potassium 40	13966-00-2	15.5	0.53	0.21			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	U		0.021	0.10	U	GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.073	0.10	U	GAM
Europium 155	14391-16-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	0.703	0.052	0.045	0.10		GAM
Radium 228	15262-20-1	1.07	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.910	0.033	0.029			GAM
Thorium 232	TH-232	1.07	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.077		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.097		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-05 B0WKX5

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-05	Client sample id	B0WKX5
Dept sample id	7229-005	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 08:33
% solids	93.9	Custody/SAF No	B99-078-135 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.618	0.069	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.018	0.015	0.023	1.0	U	PU
Plutonium 239/240	PU-239/240	0.364	0.048	0.012	1.0	J	PU
Americium 241	14596-10-2	0.083	0.046	0.054	1.0	J	AM
Total Strontium	SR-RAD	2.43	0.19	0.13	1.0		SR
Thorium 228	14274-82-9	0.348	0.20	0.26	1.0	J	TH
Thorium 230	14269-63-7	0.818	0.25	0.22	1.0	J	TH
Thorium 232	TH-232	0.291	0.14	0.11	1.0	J	TH
Potassium 40	13966-00-2	14.6	0.64	0.27			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	0.748	0.047	0.038	0.10		GAM
Europium 152	14683-23-9	U		0.077	0.10	U	GAM
Europium 154	15585-10-1	U		0.098	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	0.679	0.064	0.060	0.10		GAM
Radium 228	15262-20-1	0.760	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.760	0.039	0.038			GAM
Thorium 232	TH-232	0.760	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.27		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-06 B0WKX6

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-06	Client sample id	B0WKX6
Dept sample id	7229-006	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 08:50
% solids	93.9	Custody/SAF No	B99-078-136 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.010	0.043	0.072	400	U	H
Neptunium 237	13994-20-2	0.010	0.020	0.038		U	NP
Technetium 99	14133-76-7	1.42	0.27	0.62	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.275	0.031	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.008	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.179	0.057	0.044	1.0	J	PU
Nickel 63	13981-37-8	-0.195	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0.029	0.026	0.039	1.0	U	AM
Total Strontium	SR-RAD	10.0	0.59	0.35	1.0		SR
Thorium 228	14274-82-9	0.565	0.26	0.30	1.0	J	TH
Thorium 230	14269-63-7	1.00	0.30	0.26	1.0		TH
Thorium 232	TH-232	0.516	0.20	0.12	1.0	J	TH
Potassium 40	13966-00-2	U		0.92		U	GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.038	0.10	U	GAM
Europium 152	14683-23-9	U		0.058	0.10	U	GAM
Europium 154	15585-10-1	U		0.069	0.10	U	GAM
Europium 155	14391-16-3	U		0.056	0.10	U	GAM
Radium 226	13982-63-3	0.494	0.048	0.045	0.10		GAM
Radium 228	15262-20-1	0.760	0.10	0.094	0.20		GAM
Thorium 228	14274-82-9	0.709	0.040	0.040			GAM
Thorium 232	TH-232	0.760	0.10	0.094			GAM
Americium 241	14596-10-2	U		0.089		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.078		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

N910046-07 B0WKX7

DATA SHEET

SDG	7229	Client/Case no	Hanford SDG H0559
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910046-07	Client sample id	B0WKX7
Dept sample id	7229-007	Location/Matrix	200 B pond SOLID
Received	10/07/99	Collected	10/05/99 09:13
% solids	96.3	Custody/SAF No	B99-078-136 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.015	0.043	0.072	400	U	H
Neptunium 237	13994-20-2	0	0.013	0.035		U	NP
Technetium 99	14133-76-7	1.30	0.24	0.57	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.390	0.043	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.004	0.016	0.038	1.0	U	PU
Plutonium 239/240	PU-239/240	0.116	0.049	0.038	1.0	J	PU
Nickel 63	13981-37-8	-0.584	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	0.041	0.045	0.069	1.0	U	AM
Total Strontium	SR-RAD	39.5	2.2	1.2	1.0		SR
Thorium 228	14274-82-9	0.567	0.24	0.31	1.0	J	TH
Thorium 230	14269-63-7	0.968	0.25	0.18	1.0	J	TH
Thorium 232	TH-232	0.618	0.19	0.15	1.0	J	TH
Potassium 40	13966-00-2	U		1.0		U	GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	0.028	0.022	0.027	0.10	J	GAM
Europium 152	14683-23-9	U		0.066	0.10	U	GAM
Europium 154	15585-10-1	U		0.078	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	U		0.072	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Thorium 228	14274-82-9	0.638	0.056	0.056			GAM
Thorium 232	TH-232	U		0.14		U	GAM
Americium 241	14596-10-2	U		0.28		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test AM Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6904-068					
B0WKX1	N910046-01			7229-001	0.425 J
B0WKX2	N910046-02			7229-002	0.576 J
B0WKX3	N910046-03			7229-003	0.056 J
B0WKX4	N910046-04			7229-004	U
B0WKX5	N910046-05			7229-005	0.083 J
B0WKX6	N910046-06			7229-006	U
B0WKX7	N910046-07			7229-007	U
BLK (QC ID=32135)	N910046-09			7229-009	U
LCS (QC ID=32134)	N910046-08			7229-008	ok
Duplicate (N910046-01)	N910046-10			7229-010	ok J
Duplicate (N910046-07)	N910046-17			7229-017	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source chrctztn-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 6904-068	2σ prep error 5.0 %			Reference Lab Notebook 6904 pg. 068												
B0WKX1	N910046-01			0.021	0.500			78		2455			50	11/24/99	11/24	SS-045
B0WKX2	N910046-02			0.055	0.500			75		864			52	11/24/99	11/26	SS-055
B0WKX3	N910046-03			0.029	0.500			79		2460			50	11/24/99	11/24	SS-035
B0WKX4	N910046-04			0.092	0.500			40		864			52	11/24/99	11/26	SS-057
B0WKX5	N910046-05			0.054	0.500			71		864			52	11/24/99	11/26	SS-064
B0WKX6	N910046-06			0.039	0.500			86		864			52	11/24/99	11/26	SS-065
B0WKX7	N910046-07			0.069	0.500			61		874			52	11/24/99	11/26	SS-035
BLK (QC ID=32135)	N910046-09			0.030	0.500			87		888				11/24/99	11/29	SS-008
LCS (QC ID=32134)	N910046-08			0.021	0.500			88		2435				11/24/99	11/24	SS-065
Duplicate (N910046-01) (QC ID=32136)	N910046-10			0.032	0.500			52		1104			55	11/24/99	11/29	SS-016
Duplicate (N910046-07) (QC ID=32309)	N910046-17			0.036	0.500			79		1010			55	11/24/99	11/29	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 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	AM
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

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	0.043	±	0.044
FOR 11 SAMPLES	YIELD	72	±	31

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test NP Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6904-068						
B0WKX6	N910046-06			7229-006	U	
B0WKX7	N910046-07			7229-007	U	
BLK (QC ID=32135)	N910046-09			7229-009	U	
LCS (QC ID=32134)	N910046-08			7229-008	LOW	
Duplicate (N910046-06)	N910046-11			7229-011	-	U

Nominal values and limits from method RDLs (pCi/g)
200 Area Source chrctztn-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 6904-068	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 068											
B0WKX6	N910046-06			0.038	0.500			73		200			50	11/24/99	11/24	BETA
B0WKX7	N910046-07			0.035	0.500			75		200			50	11/24/99	11/24	BETA
BLK (QC ID=32135)	N910046-09			0.068	0.500			34		200				11/24/99	11/24	BETA
LCS (QC ID=32134)	N910046-08			0.047	0.500			35		200				11/24/99	11/24	BETA
Duplicate (N910046-06) (QC ID=32137)	N910046-11			0.035	0.500			69		200			50	11/24/99	11/24	BETA
Nominal values and limits from method					0.500			20-105		100						

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

AVERAGES ± 2 SD MDA 0.045 ± 0.028
FOR 5 SAMPLES YIELD 57 ± 42

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test PU Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6904-068						
B0WKX1	N910046-01			7229-001	0.023 J	1.27
B0WKX2	N910046-02			7229-002	0.061 J	1.80
B0WKX3	N910046-03			7229-003	U	0.156 J
B0WKX4	N910046-04			7229-004	U	U
B0WKX5	N910046-05			7229-005	U	0.364 J
B0WKX6	N910046-06			7229-006	U	0.179 J
B0WKX7	N910046-07			7229-007	U	0.116 J
BLK (QC ID=32135)	N910046-09			7229-009	U	U
LCS (QC ID=32134)	N910046-08			7229-008	ok	ok
Duplicate (N910046-01)	N910046-10			7229-010	ok J	ok
Duplicate (N910046-07)	N910046-17			7229-017	- U	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0
200 Area Source chrctztn-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 6904-068	2σ prep error 5.0 %			Reference Lab Notebook 6904 pg. 068												
B0WKX1	N910046-01			0.024	0.500			91		2492			50	11/24/99	11/24	SS-016
B0WKX2	N910046-02			0.012	0.500			79		2438			50	11/24/99	11/24	SS-058
B0WKX3	N910046-03			0.012	0.500			80		2437			50	11/24/99	11/24	SS-059
B0WKX4	N910046-04			0.025	0.500			67		2437			50	11/24/99	11/24	SS-061
B0WKX5	N910046-05			0.023	0.500			62		2437			50	11/24/99	11/24	SS-062
B0WKX6	N910046-06			0.044	0.500			89		682			57	11/24/99	12/01	SS-005
B0WKX7	N910046-07			0.038	0.500			86		682			57	11/24/99	12/01	SS-006
BLK (QC ID=32135)	N910046-09			0.030	0.500			77		2435				11/24/99	11/24	SS-063
LCS (QC ID=32134)	N910046-08			0.024	0.500			85		2438				11/24/99	11/24	SS-056
Duplicate (N910046-01) (QC ID=32136)	N910046-10			0.024	0.500			77		2435			50	11/24/99	11/24	SS-066
Duplicate (N910046-07) (QC ID=32309)	N910046-17			0.037	0.500			92		682			57	11/24/99	12/01	SS-008
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 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	PU
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

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	0.027	±	0.020
FOR 11 SAMPLES	YIELD	80	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test TH Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-068							
B0WKX1	N910046-01			7229-001	0.649 J	0.747 J	0.522 J
B0WKX2	N910046-02			7229-002	0.509 J	0.526 J	0.381 J
B0WKX3	N910046-03			7229-003	0.676 J	0.955 J	0.445 J
B0WKX4	N910046-04			7229-004	0.675 J	1.04	0.726 J
B0WKX5	N910046-05			7229-005	0.348 J	0.818 J	0.291 J
B0WKX6	N910046-06			7229-006	0.565 J	1.00	0.516 J
B0WKX7	N910046-07			7229-007	0.567 J	0.968 J	0.618 J
BLK (QC ID=32135)	N910046-09			7229-009	U	U	U
LCS (QC ID=32134)	N910046-08			7229-008		ok	
Duplicate (N910046-01)	N910046-10			7229-010	ok J	ok J	ok J
Duplicate (N910046-07)	N910046-17			7229-017	ok J	ok	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source chrctztn-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 6904-068	2σ prep error 5.0 %			Reference Lab Notebook 6904 pg. 068												
B0WKX1	N910046-01			0.23	0.250			49		708			50	11/24/99	11/24	SS-027
B0WKX2	N910046-02			0.17	0.250			72		708			50	11/24/99	11/24	SS-031
B0WKX3	N910046-03			0.20	0.250			39		708			50	11/24/99	11/24	SS-032
B0WKX4	N910046-04			0.32	0.250			38		708			50	11/24/99	11/24	SS-033
B0WKX5	N910046-05			0.26	0.250			38		871			52	11/24/99	11/26	SS-048
B0WKX6	N910046-06			0.30	0.250			42		708			50	11/24/99	11/24	SS-036
B0WKX7	N910046-07			0.31	0.250			40		871			52	11/24/99	11/26	SS-049
BLK (QC ID=32135)	N910046-09			0.51	0.250			27		705				11/24/99	11/24	SS-041
LCS (QC ID=32134)	N910046-08			0.18	0.250			46		871				11/24/99	11/26	SS-050
Duplicate (N910046-01) (QC ID=32136)	N910046-10			0.17	0.250			91		401			53	11/24/99	11/27	SS-027
Duplicate (N910046-07) (QC ID=32309)	N910046-17			0.39	0.250			42		401			53	11/24/99	11/27	SS-031
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 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test	TH
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

PROCEDURES	REFERENCE	THPLATE
	EP-000	Data Entry and Document Preparation, rev 0
	EP-001	Q.C. Preparation, rev 0
	EP-003	Tracing, rev 0
	EP-008	Heavy Elements Electroplating, rev 0
	EP-070	Soil Dissolution, rev 0
	RP-901	Thorium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA	0.28	±	0.21
FOR 11 SAMPLES	YIELD	48	±	36

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test SR Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6904-068						
B0WKX1	N910046-01			7229-001	U	
B0WKX2	N910046-02			7229-002	U	
B0WKX3	N910046-03			7229-003	2.94	
B0WKX4	N910046-04			7229-004	2.19	
B0WKX5	N910046-05			7229-005	2.43	
B0WKX6	N910046-06			7229-006	10.0	
B0WKX7	N910046-07			7229-007	39.5	
BLK (QC ID=32135)	N910046-09			7229-009	U	
LCS (QC ID=32134)	N910046-08			7229-008	ok	
Duplicate (N910046-01)	N910046-10			7229-010	-	U
Duplicate (N910046-07)	N910046-17			7229-017	ok	
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source chrctztn-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 6904-068	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 068															
B0WKX1	N910046-01			0.15	1.00			90		200			50	11/20/99	11/24	GRB-218
B0WKX2	N910046-02			0.27	1.00			55		400			50	11/20/99	11/24	GRB-208
B0WKX3	N910046-03			0.18	1.00			92		200			50	11/20/99	11/24	GRB-203
B0WKX4	N910046-04			0.18	1.00			89		200			50	11/20/99	11/24	GRB-218
B0WKX5	N910046-05			0.13	1.00			95		200			50	11/20/99	11/24	GRB-219
B0WKX6	N910046-06			0.35	1.00			90		400			50	11/20/99	11/24	GRB-229
B0WKX7	N910046-07			1.2	1.00			91		400			50	11/20/99	11/24	GRB-230
BLK (QC ID=32135)	N910046-09			0.20	1.00			76		200				11/20/99	11/24	GRB-224
LCS (QC ID=32134)	N910046-08			0.19	1.00			83		400				11/20/99	11/24	GRB-232
Duplicate (N910046-01) (QC ID=32136)	N910046-10			0.25	1.00			64		200			50	11/20/99	11/24	GRB-228
Duplicate (N910046-07) (QC ID=32309)	N910046-17			0.79	1.00			96		400			50	11/20/99	11/24	GRB-216
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 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	SR
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

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	0.35	±	0.67
FOR 11 SAMPLES	YIELD	84	±	27

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	TC
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-137						
B0WKX6	N910046-06			7229-006	1.42	J
B0WKX7	N910046-07			7229-007	1.30	J
BLK (QC ID=32272)	N910152-05			7247-005	1.28	J
LCS (QC ID=32271)	N910152-04			7247-004	ok	
Duplicate (N910046-07)	N910046-18			7229-018	ok	J

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

200 Area Source chrctztn-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 6904-137	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 137															
B0WKX6	N910046-06			0.62	1.00			55		101			48	11/18/99	11/22	GRB-218
B0WKX7	N910046-07			0.57	1.00			59		101			50	11/18/99	11/24	GRB-203
BLK (QC ID=32272)	N910152-05			1.0	1.02			41		200				11/18/99	11/24	GRB-215
LCS (QC ID=32271)	N910152-04			0.51	1.02			72		101				11/18/99	11/22	GRB-204
Duplicate (N910046-07) (QC ID=32471)	N910046-18			0.53	1.00			63		101			48	11/18/99	11/22	GRB-220
Nominal values and limits from method				15	1.00			20-105		50			180			

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

AVERAGES ± 2 SD				
FOR 5 SAMPLES	MDA	0.65	±	0.40
	YIELD	58	±	23

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	GAM
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6904-068								
B0WKX1	N910046-01			7229-001	U		7.78	
B0WKX2	N910046-02			7229-002	U		7.40	
B0WKX3	N910046-03			7229-003	U		0.562	
B0WKX4	N910046-04			7229-004	U		U	
B0WKX5	N910046-05			7229-005	U		0.748	
B0WKX6	N910046-06			7229-006	U		U	
B0WKX7	N910046-07			7229-007	U		0.028	J
BLK (QC ID=32135)	N910046-09			7229-009	U		U	
LCS (QC ID=32134)	N910046-08			7229-008	ok		ok	
Duplicate (N910046-01)	N910046-10			7229-010	-	U	ok	
Duplicate (N910046-07)	N910046-17			7229-017	-	U	ok	J
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source chrctztn-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 6904-068	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 068															
B0WKX1	N910046-01			0.048	733					488			21	10/20/99	10/26	MB,05,00
B0WKX2	N910046-02			0.076	693					203			46	10/20/99	11/20	MB,05,00
B0WKX3	N910046-03			0.13	636					209			23	10/20/99	10/28	02,01,00
B0WKX4	N910046-04			0.066	613					218			24	10/20/99	10/29	02,04,00
B0WKX5	N910046-05			0.078	667					218			24	10/20/99	10/29	MB,05,00
B0WKX6	N910046-06			0.060	701					228			36	10/20/99	11/10	02,04,00
B0WKX7	N910046-07			0.071	830					228			36	10/20/99	11/10	MB,05,00
BLK (QC ID=32135)	N910046-09			0.032	696					202				10/20/99	11/20	MB,07,00
LCS (QC ID=32134)	N910046-08			0.024	696					246				10/20/99	10/29	01,03,00
Duplicate (N910046-01) (QC ID=32136)	N910046-10			0.12	733					220			25	10/20/99	10/30	02,01,00
Duplicate (N910046-07) (QC ID=32309)	N910046-17			0.045	830					220			37	10/20/99	11/11	02,04,00
Nominal values and limits from method				0.050	696					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Test	GAM
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

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

AVERAGES ± 2 SD	MDA	0.068	±	0.066
FOR 11 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test U T Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium	
Preparation batch 6904-068						
B0WKX1	N910046-01			7229-001	1.25	
B0WKX2	N910046-02			7229-002	1.31	
B0WKX3	N910046-03			7229-003	0.563	J
B0WKX4	N910046-04			7229-004	0.524	J
B0WKX5	N910046-05			7229-005	0.618	J
B0WKX6	N910046-06			7229-006	0.275	J
B0WKX7	N910046-07			7229-007	0.390	J
BLK (QC ID=32101)	N910046-14			7229-014	0	J
LCS (QC ID=32100)	N910046-13			7229-013	ok	X
Duplicate (N910046-01)	N910046-15			7229-015	ok	
Duplicate (N910046-06)	N910046-16			7229-016	ok	J
Nominal values and limits from method				RDLs (ug/g)	1.0	
200 Area Source chrctztn-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 6904-068	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 068												
B0WKX1	N910046-01			0.004	0.0500								21	10/26/99	10/26	KPA-001
B0WKX2	N910046-02			0.004	0.0500								21	10/26/99	10/26	KPA-001
B0WKX3	N910046-03			0.004	0.0500								21	10/26/99	10/26	KPA-001
B0WKX4	N910046-04			0.004	0.0500								21	10/26/99	10/26	KPA-001
B0WKX5	N910046-05			0.004	0.0500								21	10/26/99	10/26	KPA-001
B0WKX6	N910046-06			0.004	0.0500								37	11/11/99	11/11	KPA-001
B0WKX7	N910046-07			0.005	0.0500								37	11/11/99	11/11	KPA-001
BLK (QC ID=32101)	N910046-14			0	0.0500									10/26/99	10/26	KPA-001
LCS (QC ID=32100)	N910046-13			0.002	0.0500									10/26/99	10/26	KPA-001
Duplicate (N910046-01) (QC ID=32102)	N910046-15			0.004	0.0500								21	10/26/99	10/26	KPA-001
Duplicate (N910046-06) (QC ID=32308)	N910046-16			0.005	0.0500								37	11/11/99	11/11	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 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test	U T
Matrix	SOLID
SDG	7229
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0559

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

AVERAGES ± 2 SD	MDA	0.004	±	0.003
FOR 11 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test H Matrix SOLID
SDG 7229
Contact Kevin C. Johnson

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-068						
B0WKX6	N910046-06			7229-006	U	
B0WKX7	N910046-07			7229-007	U	
BLK (QC ID=32135)	N910046-09			7229-009	U	
LCS (QC ID=32134)	N910046-08			7229-008	ok	J
Duplicate (N910046-06)	N910046-11			7229-011	-	U
Spike (N910046-07)	N910046-12			7229-012	ok	JX

Nominal values and limits from method RDLs (pCi/g) 400
200 Area Source chrctztn-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 6904-068 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 068																
B0WKX6	N910046-06			0.072	20.2			100		120			32	11/06/99	11/06	LSC-007
B0WKX7	N910046-07			0.072	20.1			100		120			32	11/06/99	11/06	LSC-007
BLK (QC ID=32135)	N910046-09			0.071	20.2			100		120				11/06/99	11/06	LSC-007
LCS (QC ID=32134)	N910046-08			0.072	20.2			100		120				11/06/99	11/06	LSC-007
Duplicate (N910046-06) (QC ID=32137)	N910046-11			0.071	20.0			100		120			32	11/06/99	11/06	LSC-007
Spike (N910046-07) (QC ID=32138)	N910046-12			0.071	20.1			100		120			32	11/06/99	11/06	LSC-007
Nominal values and limits from method				400	20.2					25			180			

PROCEDURES	REFERENCE	EPA906.0
	EP-060	Soil Preparation, rev 0
	EP-211	Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD MDA 0.072 ± 0.001
FOR 6 SAMPLES YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/02/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0559

Test NI L Matrix SOLID	Client Hanford
SDG 7229	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG H0559

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-068						
B0WKX6	N910046-06			7229-006	U	
B0WKX7	N910046-07			7229-007	U	
BLK (QC ID=32135)	N910046-09			7229-009	U	
LCS (QC ID=32134)	N910046-08			7229-008	ok	
Duplicate (N910046-06)	N910046-11			7229-011	-	U

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

200 Area Source chrctztn-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 6904-068	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 068											
B0WKX6	N910046-06			2.2	0.500			87		100			45	11/18/99	11/19	LSC-007
B0WKX7	N910046-07			2.1	0.500			89		100			45	11/18/99	11/19	LSC-007
BLK (QC ID=32135)	N910046-09			2.0	0.500			93		100				11/18/99	11/19	LSC-007
LCS (QC ID=32134)	N910046-08			2.0	0.500			95		100				11/18/99	11/19	LSC-007
Duplicate (N910046-06) (QC ID=32137)	N910046-11			2.2	0.500			83		100			45	11/18/99	11/19	LSC-007
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	2.1	±	0.20
FOR 5 SAMPLES	YIELD	89	±	10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/02/99

SDG 7229
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 12/02/99

SDG 7229
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0559

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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REPORT GUIDE

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Case no SDG H0559

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

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DATA SHEET

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

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

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

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REPORT GUIDE

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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REPORT GUIDE

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

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

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

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

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

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REPORT GUIDE

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MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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MATRIX SPIKE

for the recovery.

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

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

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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

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METHOD SUMMARY

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-0359	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RCRA 10-5-99	Offsite Property No.: A990286		Bill of Lading/Air Bill No.: 4235795301 86
			COA: B20CW1 671C

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

Sample No.	Matrix *	Sample Date	Sample Time									
BOWKX1	Soil	10-5-99	0745	X						X		BOW8C1
BOWKX2	Soil	10-5-99	0755	X						X		BOW8C1
BOWKX3	Soil	10-5-99	0810	X						X		
BOWKX4	Soil	10-5-99	0820	X						X		
BOWKX5	Soil	10-5-99	0833	X						X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Ref #18	Date/Time: 10/5/99 1330
Relinquished By: Ref 18	Date/Time: 10/6/99	Received By: Nielson/R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: Nielson/R. Nielson	Date/Time: 10/6/99 1430	Received By: FedEx	Date/Time: 10/6/99
Relinquished By: FedEx	Date/Time: 10/7/99 10:00	Received By: TNV M. Goldenberg	Date/Time: 10/7/99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

COLLECTOR UNAVAILABLE TO SIGN COC

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 2

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond		SAF No. B99-078
Ice Chest No. ERC96-039	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA TMA	Offsite Property No. A9910286		Bill of Lading/Air Bill No. 4235753018 6
			COA B20CW167IC

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX6	Soil	10/5/99	0850	X	X	X	X	X					
BOWKX7	Soil	10/5/99	0913	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Trice	10/5/99 1330	Rel #1B	10/5/99 1330
for 1B	10/6/99	Renee Nielson / R. Nielson	10/6/99 1230
Renee Nielson / R. Nielson	10/6/99 1430	Fed Ex	10/6/99
Fed Ex	10/7/99 10:00	TNV M. Goldenberg	10/7/99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN COL

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 2 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC96-039	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA TMA	Offsite Property No.: A9910286		Bill of Lading/Air Bill No.: 4235795301 86
			COA: B20CW1 671C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX6	Soil	10/5/99	0850	X									
BOWKX7	Soil	10/5/99	0913	X									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time		Date/Time
Relinquished By	Chris	10/5/99 1330	Received By	10/5/99 1330
Relinquished By	Bel 1B	10/6/99	Received By	1230
Relinquished By			Received By	10/6/99
Relinquished By	FedEx	10/7/99 10:00	Received By	TNV McGoldenberg 10/7/99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

COLLECTOR UNAVAILABLE TO SIGN 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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford INC Date/Time received 10-7-99 10:00

CoC No. B99-078-135, 136

Container I.D. No. ERC96-039 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: 9
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 10-7-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L305
SDG/SAF #: H0559/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-07-99

SEMIVOLATILE

Seven (7) soil samples were collected on 10-05-99.

The samples and their associated QC samples were extracted on 10-12-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-14,15-99.

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. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.

6. One (1) of eleven (11) blank spike recoveries was outside 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\tnu10305.doc

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

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

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

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

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 11/02/99 11:52 Page: 1a

	Cust ID:	B0WKX1		B0WKX2		B0WKX3		B0WKX4		B0WKX5		B0WKX6	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	84	%	82	%	78	%	83	%	86	%	82	%
	2-Fluorobiphenyl	74	%	79	%	67	%	74	%	82	%	83	%
	Terphenyl-d14	73	%	78	%	66	%	76	%	85	%	85	%
	Phenol-d5	74	%	78	%	71	%	72	%	81	%	80	%
	2-Fluorophenol	68	%	68	%	62	%	61	%	71	%	73	%
	2,4,6-Tribromophenol	84	%	81	%	82	%	71	%	84	%	79	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	350	U	350	U	360	U	350	U	350	U
bis(2-Chloroethyl)ether		350	U	350	U	350	U	360	U	350	U	350	U
2-Chlorophenol		350	U	350	U	350	U	360	U	350	U	350	U
1,3-Dichlorobenzene		350	U	350	U	350	U	360	U	350	U	350	U
1,4-Dichlorobenzene		350	U	350	U	350	U	360	U	350	U	350	U
1,2-Dichlorobenzene		350	U	350	U	350	U	360	U	350	U	350	U
2-Methylphenol		350	U	350	U	350	U	360	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	360	U	350	U	350	U
4-Methylphenol		350	U	350	U	350	U	360	U	350	U	350	U
N-Nitroso-di-n-propylamine		350	U	350	U	350	U	360	U	350	U	350	U
Hexachloroethane		350	U	350	U	350	U	360	U	350	U	350	U
Nitrobenzene		350	U	350	U	350	U	360	U	350	U	350	U
Isophorone		350	U	350	U	350	U	360	U	350	U	350	U
2-Nitrophenol		350	U	350	U	350	U	360	U	350	U	350	U
2,4-Dimethylphenol		350	U	350	U	350	U	360	U	350	U	350	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	360	U	350	U	350	U
2,4-Dichlorophenol		350	U	350	U	350	U	360	U	350	U	350	U
1,2,4-Trichlorobenzene		350	U	350	U	350	U	360	U	350	U	350	U
Naphthalene		350	U	350	U	350	U	360	U	350	U	350	U
4-Chloroaniline		350	U	350	U	350	U	360	U	350	U	350	U
Hexachlorobutadiene		350	U	350	U	350	U	360	U	350	U	350	U
4-Chloro-3-methylphenol		350	U	350	U	350	U	360	U	350	U	350	U
2-Methylnaphthalene		350	U	350	U	350	U	360	U	350	U	350	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	360	U	350	U	350	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	360	U	350	U	350	U
2,4,5-Trichlorophenol		860	U	860	U	870	U	900	U	880	U	880	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WKX1		B0WKX2		B0WKX3		B0WKX4		B0WKX5		B0WKX6	
RFW#:	001		002		003		004		005		006	
2-Chloronaphthalene	350	U	350	U	350	U	360	U	350	U	350	U
2-Nitroaniline	860	U	860	U	870	U	900	U	880	U	880	U
Dimethylphthalate	350	U	350	U	350	U	360	U	350	U	350	U
Acenaphthylene	350	U	350	U	350	U	360	U	350	U	350	U
2,6-Dinitrotoluene	350	U	350	U	350	U	360	U	350	U	350	U
3-Nitroaniline	860	U	860	U	870	U	900	U	880	U	880	U
Acenaphthene	350	U	350	U	350	U	360	U	350	U	350	U
2,4-Dinitrophenol	860	U	860	U	870	U	900	U	880	U	880	U
4-Nitrophenol	860	U	860	U	870	U	900	U	880	U	880	U
Dibenzofuran	350	U	350	U	350	U	360	U	350	U	350	U
2,4-Dinitrotoluene	350	U	350	U	350	U	360	U	350	U	350	U
Diethylphthalate	350	U	350	U	350	U	360	U	350	U	350	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	360	U	350	U	350	U
Fluorene	350	U	350	U	350	U	360	U	350	U	350	U
4-Nitroaniline	860	U	860	U	870	U	900	U	880	U	880	U
4,6-Dinitro-2-methylphenol	860	U	860	U	870	U	900	U	880	U	880	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	360	U	350	U	350	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	360	U	350	U	350	U
Hexachlorobenzene	350	U	350	U	350	U	360	U	350	U	350	U
Pentachlorophenol	860	U	860	U	870	U	900	U	880	U	880	U
Phenanthrene	350	U	350	U	350	U	360	U	350	U	350	U
Anthracene	350	U	350	U	350	U	360	U	350	U	350	U
Carbazole	350	U	350	U	350	U	360	U	350	U	350	U
Di-n-butylphthalate	350	U	350	U	350	U	360	U	350	U	350	U
Fluoranthene	350	U	350	U	350	U	360	U	350	U	350	U
Pyrene	350	U	350	U	350	U	360	U	350	U	350	U
Butylbenzylphthalate	350	U	350	U	350	U	360	U	350	U	350	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	360	U	350	U	350	U
Benzo(a)anthracene	350	U	350	U	350	U	360	U	350	U	350	U
Chrysene	350	U	350	U	350	U	360	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	360	U	350	U	350	U
Di-n-octyl phthalate	350	U	350	U	350	U	360	U	350	U	350	U
Benzo(b)fluoranthene	350	U	350	U	350	U	360	U	350	U	350	U
Benzo(k)fluoranthene	350	U	350	U	350	U	360	U	350	U	350	U
Benzo(a)pyrene	350	U	350	U	350	U	360	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	360	U	350	U	350	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	360	U	350	U	350	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	360	U	350	U	350	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 11/02/99 11:52 Page: 2a

	Cust ID:	B0WKX7		B0WKX7		B0WKX7		SBLKEN		SBLKEN BS	
Sample Information	RFW#:	007		007 MS		007 MSD		99LE1243-MB1		99LE1243-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	87	%	85	%	89	%	86	%	88	%
	2-Fluorobiphenyl	79	%	81	%	69	%	86	%	89	%
	Terphenyl-d14	79	%	76	%	65	%	98	%	101	%
	Phenol-d5	82	%	70	%	71	%	84	%	88	%
	2-Fluorophenol	71	%	68	%	71	%	85	%	87	%
	2,4,6-Tribromophenol	81	%	82	%	92	%	83	%	95	%
Phenol		340	U	66	%	62	%	330	U	83	%
bis(2-Chloroethyl)ether		340	U	340	U	340	U	330	U	330	U
2-Chlorophenol		340	U	66	%	62	%	330	U	88	%
1,3-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
1,4-Dichlorobenzene		340	U	78	%	74	%	330	U	87	%
1,2-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
2-Methylphenol		340	U	340	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	340	U	330	U	330	U
4-Methylphenol		340	U	340	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	97	%	109	%	330	U	98	%
Hexachloroethane		340	U	340	U	340	U	330	U	330	U
Nitrobenzene		340	U	340	U	340	U	330	U	330	U
Isophorone		340	U	340	U	340	U	330	U	330	U
2-Nitrophenol		340	U	340	U	340	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	340	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	90	%	83	%	330	U	92	%
Naphthalene		340	U	340	U	340	U	330	U	330	U
4-Chloroaniline		340	U	340	U	340	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	75	%	79	%	330	U	87	%
2-Methylnaphthalene		340	U	340	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	340	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	340	U	340	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	860	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WKX7		B0WKX7		B0WKX7		SBLKEN		SBLKEN BS	
RFW#:	007		007 MS		007 MSD		99LE1243-MB1		99LE1243-MB1	
2-Chloronaphthalene	340	U	340	U	340	U	330	U	330	U
2-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Dimethylphthalate	340	U	340	U	340	U	330	U	330	U
Acenaphthylene	340	U	340	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	340	U	330	U	330	U
3-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Acenaphthene	340	U	86	%	75	%	330	U	89	%
2,4-Dinitrophenol	860	U	860	U	860	U	840	U	840	U
4-Nitrophenol	860	U	53	%	103	%	840	U	62	%
Dibenzofuran	340	U	340	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	83	%	95 *	%	330	U	93 *	%
Diethylphthalate	340	U	340	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Fluorene	340	U	340	U	340	U	330	U	330	U
4-Nitroaniline	860	U	860	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	340	U	330	U	330	U
Pentachlorophenol	860	U	81	%	84	%	840	U	86	%
Phenanthrene	340	U	340	U	340	U	330	U	330	U
Anthracene	340	U	340	U	340	U	330	U	330	U
Carbazole	340	U	340	U	340	U	330	U	330	U
Di-n-butylphthalate	340	U	340	U	340	U	330	U	330	U
Fluoranthene	340	U	340	U	340	U	330	U	330	U
Pyrene	340	U	84	%	67	%	330	U	99	%
Butylbenzylphthalate	340	U	340	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	340	U	330	U	330	U
Chrysene	340	U	340	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	340	U	330	U	330	U
Di-n-octyl phthalate	340	U	340	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	340	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	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.

B0WKX1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101405

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	8.589	90	JA
2.	ALKANE	27.19	70	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101406

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101407

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

FORM 1 SV-TIC 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101408

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101409

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.80	80	J
2.	UNKNOWN	13.65	200	J
3.	UNKNOWN	15.98	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-006

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A101410

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.80	100	J
2.	UNKNOWN	13.65	100	J
3.	UNKNOWN	15.98	80	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKX7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A101411

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/14/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKEN

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1243-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D101506

Level: (low/med) LOW Date Received: 10/12/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/12/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/15/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1	001	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX2	002	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX3	003	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX4	004	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX5	005	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX6	006	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX7	007	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX7	007 MS	S	99LE1243	10/05/99	10/12/99	10/14/99
B0WKX7	007 MSD	S	99LE1243	10/05/99	10/12/99	10/15/99
LAB QC:						
SBLKEN	MB1	S	99LE1243	N/A	10/12/99	10/15/99
SBLKEN	MB1 BS	S	99LE1243	N/A	10/12/99	10/15/99

RECRA LabNet Use Only: 99IOC305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TRU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-7-99 Date Due: 11/6/99
Account #:

Refrigerator #		1	2							2							
#/Type Container	Liquid																
	Solid	1PG	1PG							1PG		1PG	1PG				
Volume	Liquid																
	Solid	250ml	500ml							500ml		250ml	500ml				
Preservatives		—	—							—		—	—	—			

Warranted

ANALYSES REQUESTED	ORGANIC							INORG						
	VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	IC anions		
RECRA LabNet Use Only	0024H 06CSC	0025H	ODRO OPCB					Met①	ICN10	iPH	IN3N2	Ang①		

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 06CSC	0025H	ODRO OPCB					Met①	ICN10	iPH	IN3N2	Ang①		
001	BOWKX1			S	10599	0745	✓	✓	✓					✓	✓	✓	✓	—		
002	BOWKX2					0755	✓	✓	✓					✓	✓	✓	✓	—		
003	BOWKX3					0810	✓	✓	✓					✓	✓	✓	✓	—		
004	BOWKX4					0820	✓	✓	✓					✓	✓	✓	✓	—		
005	BOWKX5					0833	✓	✓	✓					✓	✓	✓	✓	—		
006	BOWKX6					0850	✓	✓	✓					✓	✓	✓	✓	—		
007	BOWKX7					0913	✓	✓	✓					✓	✓	✓	✓	—		

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

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:
1. Run matrix QC
2. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, IN H3N
4. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6
6.

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	Murray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006, Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 10-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301633.1 4235795301422.7
			COA: B20CW167/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X				BOW891
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X				
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X				
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X				
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Ref. #1B	Date/Time: 10/5/99 1330
Relinquished By: Ref 1B 10/6/99	Date/Time: 1230	Received By: K. Nielson / R. Nielson 10/6/99	Date/Time: 1230
Relinquished By: K. Nielson / R. Nielson 10/6/99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-7-99 0945	Date/Time:	Received By: T Murray 10-7-99 0945	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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	B99-078-136	Page 1 of 1 RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time											
BOW KX6	Soil	10/5/99	0850						X	X	X	X	X	BOW SC1
BOW KX7	Soil	10/5/99	0913						X	X	X	X	X	BOW SC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/5/99 1330	Received By: Rel 1B	Date/Time: 10/5/99 1330
Relinquished By: Rel 1B	Date/Time: 10/6/99	Received By: K. Nielson / R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: K. Nielson / R. Nielson	Date/Time: 10/6/99 1230	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 10/7/99 0945	Received By: TMurray	Date/Time: 10/7/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN 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# : 9910L305
SDG/SAF #: H0559/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-07-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 10-05-99.

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 10-19-99.

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 contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

som\group\data\voa\tnu10305.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 22 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/11/99 21:14

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WKX1		B0WKX2		B0WKX3		B0WKX4		B0WKX5		B0WKX6	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.02		1.02		0.926		0.962		1.06		0.909	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	106	%	97	%	97	%	102	%	92	%	105	%
	Bromofluorobenzene	102	%	92	%	92	%	94	%	86	%	99	%
	1,2-Dichloroethane-d4	101	%	91	%	85	%	92	%	80	%	94	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	10	U	10	U	11	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	11	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	11	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	11	U	10	U
Methylene Chloride		8	B	8	B	7	B	8	B	7	B	7	B
Acetone		11	U	11	U	10	U	10	U	11	U	10	U
Carbon Disulfide		6	U	6	U	5	U	5	U	6	U	5	U
1,1-Dichloroethene		6	U	6	U	5	U	5	U	6	U	5	U
1,1-Dichloroethane		6	U	6	U	5	U	5	U	6	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	6	U	5	U
Chloroform		6	U	6	U	5	U	5	U	6	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	6	U	5	U
2-Butanone		11	U	11	U	10	U	10	U	11	U	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	6	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	6	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	6	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	6	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	6	U	5	U
Trichloroethene		6	U	6	U	5	U	5	U	6	U	5	U
Dibromochloromethane		6	U	6	U	5	U	5	U	6	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	6	U	5	U
Benzene		6	U	6	U	5	U	5	U	6	U	5	U
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	6	U	5	U
Bromoform		6	U	6	U	5	U	5	U	6	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	11	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	11	U	10	U
Tetrachloroethene		6	U	6	U	5	U	5	U	6	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	6	U	5	U
Toluene		6	U	6	U	5	U	5	U	6	U	5	U

*= Outside of EPA CLP QC limits.

AV 11-12-99

RFW Batch Number: 9910L305 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WKX1	B0WKX2	B0WKX3	B0WKX4	B0WKX5	B0WKX6
RFW#:	001	002	003	004	005	006
Chlorobenzene	6 U	6 U	5 U	5 U	6 U	5 U
Ethylbenzene	6 U	6 U	5 U	5 U	6 U	5 U
Styrene	6 U	6 U	5 U	5 U	6 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/11/99 21:14

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0WKX7		B0WKX7		B0WKX7		VBLKXE		VBLKXE BS		VBLKXF	
Sample Information	RFW#:	007		007 MS		007 MSD		99LVK440-MB1		99LVK440-MB1		99LVK441-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.943		1.02		0.909		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	107	%	97	%	106	%	108	%	104	%	101	%
	Bromofluorobenzene	99	%	88	%	100	%	109	%	105	%	105	%
	1,2-Dichloroethane-d4	100	%	91	%	91	%	97	%	100	%	102	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	9	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	9	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	9	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	9	U	10	U	10	U	10	U
Methylene Chloride		7	B	7	B	6	B	8		7	B	6	
Acetone		5	JB	3	JB	2	JB	8	J	8	JB	5	J
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	99	%	107	%	5	U	94	%	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	9	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	92	%	101	%	5	U	98	%	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	106	%	111	%	5	U	107	%	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	9	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	9	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	99	%	109	%	5	U	104	%	5	U

*= Outside of EPA CLP QC limits.

11-12-99

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0WKX7	B0WKX7	B0WKX7	VBLKXE	VBLKXE BS	VBLKXF
RFW#:	007	007 MS	007 MSD	99LVK440-MB1	99LVK440-MB1	99LVK441-MB1
Chlorobenzene	5 U	94 %	102 %	5 U	104 %	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 11/11/99 21:14

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 3a

Cust ID: **VBLKXF BS**

Sample Information	RFW#:	**99LVK441-MB1**
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate Recovery	Toluene-d8	100	%
	Bromofluorobenzene	101	%
	1,2-Dichloroethane-d4	95	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	8	B
Acetone	4	JB
Carbon Disulfide	5	U
1,1-Dichloroethene	101	%
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	98	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	107	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U
Toluene	103	%

*= Outside of EPA CLP QC limits.

gw 11-12-99

Cust ID: **VBLKXF BS**

RFW#: **99LVK441-MB1**

Chlorobenzene	102	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX1

Lab Name: Recra LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: k101829

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 4 Date Analyzed: 10/19/99

Column: (pack/cap) CAP Dilution Factor: 1.02

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-002

Sample wt/vol: 4.90 (g/mL) G Lab File ID: k101830

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 4 Date Analyzed: 10/19/99

Column: (pack/cap) CAP Dilution Factor: 1.02

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.169	7	JB

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX3

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-003

Sample wt/vol: 5.40 (g/mL) G Lab File ID: k101822

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 4 Date Analyzed: 10/19/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX4

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-004

Sample wt/vol: 5.20 (g/mL) G Lab File ID: k101823

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 8 Date Analyzed: 10/19/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX5

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-005

Sample wt/vol: 4.70 (g/mL) G Lab File ID: k101907

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 5 Date Analyzed: 10/19/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.162	7	JB

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX6

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-006

Sample wt/vol: 5.50 (g/mL) G Lab File ID: k101825

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 6 Date Analyzed: 10/19/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.099	5	JB

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WKX7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L305-007

Sample wt/vol: 5.30 (g/mL) G Lab File ID: k101826

Level: (low/med) LOW Date Received: 10/07/99

% Moisture: not dec. 3 Date Analyzed: 10/19/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	17.129	5	JB

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKXE

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVK440-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: k101820

Level: (low/med) LOW Date Received: 10/18/99

% Moisture: not dec. 0 Date Analyzed: 10/19/99

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	17.133	10	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKXF

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVK441-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: k101905

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

% Moisture: not dec. 0 Date Analyzed: 10/19/99

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	17.158	20	J

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1	001	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX2	002	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX3	003	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX4	004	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX5	005	S	99LVK441	10/05/99	N/A	10/19/99
B0WKX6	006	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX7	007	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX7	007 MS	S	99LVK440	10/05/99	N/A	10/19/99
B0WKX7	007 MSD	S	99LVK440	10/05/99	N/A	10/19/99

LAB QC:

VBLKXE	MB1	S	99LVK440	N/A	N/A	10/19/99
VBLKXE	MB1 BS	S	99LVK440	N/A	N/A	10/19/99
VBLKXF	MB1	S	99LVK441	N/A	N/A	10/19/99
VBLKXF	MB1 BS	S	99LVK441	N/A	N/A	10/19/99

gwj 11-12-99

RECRA LabNet Use Only

99IOC305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TRU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2						2				
#/Type Container	Liquid												
	Solid	1AG	1AG						1AG	w/preserv	1AG	1AG	
Volume	Liquid												
	Solid	250ml	500ml						500ml		250ml	500ml	
Preservatives		—	—						—		—	—	—

ANALYSES REQUESTED →

ORGANIC				INORG				
VOA	BNA	Pest/PCB	Herb	Metal	CN	pH	NO3 NO2	TC anions

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0625H	0625H	ODRO OPCB					Met(1)	ICNTD	IPH	IN3N2	Ang(1)			
001	BOWKX1			S	10-5-99	0745	✓	✓	✓					✓	✓	✓	✓	—			
002	BOWKX2					0755	✓	✓	✓					✓	✓	✓	✓	—			
003	BOWKX3					0810	✓	✓	✓					✓	✓	✓	✓	—			
004	BOWKX4					0820	✓	✓	✓					✓	✓	✓	✓	—			
005	BOWKX5					0833	✓	✓	✓					✓	✓	✓	✓	—			
006	BOWKX6					0850	✓	✓	✓					✓	✓	✓	✓	—			
007	BOWKX7					0913	✓	✓	✓					✓	✓	✓	✓	—			

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

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:

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

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

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

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No. Shipping Van 96-006, Shipping Van 96-002	**Field Logbook No.** EL-1511		**Method of Shipment** Fed Ex
Shipped To ~~TMA~~/RECRA DTB 10-5-99	**Offsite Property No.** A990287		**Bill of Lading/Air Bill No.** 4235795301533.1 4235795301422.7
			COA B20CW167/C

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

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X				BOW8C1
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X				
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X				
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X				
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Trice	10/5/99 1330	Ref. #1B	10/5/99 1330
Relinquished By	Date/Time	Received By	Date/Time
Ref 1B 10/6/99	1230	[illegible]/R. Nielson 10/6/99	1230
Relinquished By	Date/Time	Received By	Date/Time
[illegible]/R. Nielson 10/6/99	1430	Fed Ex	
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex 10-7-99	0945	TMurray 10-7-99	0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 2 RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping van 96-006	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions
Sample No.	Matrix * / Sample Date / Sample Time										
BOW KX6	Soil 10/5/99 0850						X	X	X	X	X BOW SC1
BOW KX7	Soil 10/5/99 0913						X	X	X	X	X BOW SC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris 10/5/99 1330	Received By: Rel IB 10/5/99 1330		
Relinquished By: Rel IB 10/6/99	Received By: R.Nielson/R.Nielson 10/6/99 1230		
Relinquished By: R.Nielson/R.Nielson 10/6/99 1430	Received By: FedEx		
Relinquished By: FedEx 10-7-99 0945	Received By: TMurray 10-7-99 0945		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L305
SDG/SAF#: H0559/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-07-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 10-05-99.

The samples and their associated QC samples were prepared on 10-19-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-26,27-99. 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.

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

R:\SHARE\LC\GCSCAN\10-305d.doc

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

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

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 11/04/99 18:28

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WKX1	B0WKX1	B0WKX1	B0WKX2	B0WKX3	B0WKX4
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	107 %	97 %	93 %	95 %	83 %	92 %
Diesel Range Organics		4.1 U	85 %	83 %	4.1 U	4.2 U	4.3 U

	Cust ID:	B0WKX5	B0WKX6	B0WKX7	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1267-MB1	99LE1267-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	101 %	97 %	96 %	98 %	96 %
Diesel Range Organics		4.2 U	4.2 U	4.0 U	4.0 U	93 %

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

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1	001	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX1	001 MS	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX1	001 MSD	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX2	002	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX3	003	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX4	004	S	99LE1267	10/05/99	10/19/99	10/26/99
B0WKX5	005	S	99LE1267	10/05/99	10/19/99	10/27/99
B0WKX6	006	S	99LE1267	10/05/99	10/19/99	10/27/99
B0WKX7	007	S	99LE1267	10/05/99	10/19/99	10/27/99

LAB QC:

BLK	MB1	S	99LE1267	N/A	10/19/99	10/26/99
BLK	MB1 BS	S	99LE1267	N/A	10/19/99	10/26/99

11/8/99

RECRA LabNet Use Only

9910C305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TRU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2						2						
#/Type Container	Liquid														
	Solid	1PG	1PG						1PG		1PG	1PG			
Volume	Liquid														
	Solid	250mL	500mL						500mL		250mL	500mL			
Preservatives		—	—						—		—	—	—		
ANALYSES REQUESTED		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	IC anions		
		RECRA LabNet Use Only													
		8024H 8015C SC	8025H	8RO 8PCB					Met(1)	ICNTO	IPH	IN3N2	Ang(2)		

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Metal	CN	pH	NO3 NO2	IC anions
001	BOWKX1			S	10-5-99	0745	✓	✓	✓	✓	✓	✓	✓	—
002	BOWKX2					0755	✓	✓	✓	✓	✓	✓	✓	—
003	BOWKX3					0810	✓	✓	✓	✓	✓	✓	✓	—
004	BOWKX4					0820	✓	✓	✓	✓	✓	✓	✓	—
005	BOWKX5					0833	✓	✓	✓	✓	✓	✓	✓	—
006	BOWKX6					0850	✓	✓	✓	✓	✓	✓	✓	—
007	BOWKX7					0913	✓	✓	✓	✓	✓	✓	✓	—

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:

1. Run matrix QC
2. Ang(2) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, IWH3N
4. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6
6.

RECRA LabNet Use Only

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

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

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

Cooler Temp. * °C

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006 Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 270 B-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301533.1 4235795301427
			COA: B20CW167/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X				BOWSC1
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X				
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X				
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X				
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Ref. #1B	Date/Time: 10/5/99 1330
Relinquished By: Ref 1B 10/6/99	Date/Time: 1230	Received By: Nielson/R. Nielson 10/6/99	Date/Time: 1230
Relinquished By: Nielson/R. Nielson 10/6/99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-7-99 0945	Date/Time:	Received By: Murray 10-7-99 0945	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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	B99-078-136	Page 1 of 1 RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-026	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time											
BOW KX6	Soil	10/5/99	0850						X	X	X	X	X	BOW SC1
BOW KX7	Soil	10/5/99	0913						X	X	X	X	X	BOW SC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/5/99 1330	Received By: Rel 1B	Date/Time: 10/5/99 1330
Relinquished By: Rel 1B	Date/Time: 10/6/99	Received By: R. Nielson	Date/Time: 1230 10/6/99
Relinquished By: R. Nielson / R. Nielson	Date/Time: 1430 10/6/99	Received By: FedEx	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-7-99 0945	Received By: TMurray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN 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#: 9910L305
SDG/SAF#: H0559/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-07-99

PCB

The set of samples consisted of seven (7) soil samples collected on 10-05-99.

The samples and their associated QC samples were extracted on 10-18-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-02-99. 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 sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Thirteen (13) of twenty-two (22) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

pef\r:\group\data\pest\10L-305.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.

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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 #: 99GC209

Initiator: B Pastor RFW Batch: 99IOL 305, 313 Parameter: OPCB
Date: 11/10/99 Samples: 305-005, 007, 313-004, BS Matrix:
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 99LE1265
H0559 + H0562

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)

Sampler 305-005 had high surr. of 135% + 125%
305-007 " " " " 145% + 123%
313-004 " " " " 138% + 123%
99LE1265-MB15 " " " " 145% + 134%
for TCX+DCB respectively
TCX QC limit = 118%
DCB QC limit = 122%

2. Known or Probable Causes(s) All BS, MS, + MSD recoveries were acceptable
No hits were found in these samples

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)

Report + narrate

4. Project Manager Instructions...signature/date: Arlette G. Johnson 11/10/99

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted: Date/Person Kevin Johnson 11/10/99
__ Add
__ Cancel

5. Final Action...signature/date: Bette Pastor Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/10/99 17:17

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

005

	Cust ID:	B0WKX1	B0WKX1	B0WKX1	B0WKX2	B0WKX3	B0WKX4
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	125 * %	128 * %	128 * %	132 * %	118 %	132 * %
	Decachlorobiphenyl	119 %	115 %	114 %	116 %	111 %	120 %
Aroclor-1016		35 U	34 U	34 U	35 U	35 U	36 U
Aroclor-1221		69 U	68 U	68 U	69 U	69 U	72 U
Aroclor-1232		35 U	34 U	34 U	35 U	35 U	36 U
Aroclor-1242		35 U	34 U	34 U	35 U	35 U	36 U
Aroclor-1248		35 U	34 U	34 U	35 U	35 U	36 U
Aroclor-1254		35 U	106 %	101 %	35 U	35 U	36 U
Aroclor-1260		35 U	34 U	34 U	35 U	35 U	36 U

	Cust ID:	B0WKX5	B0WKX6	B0WKX7	PBLKXI	PBLKXI BS
Sample Information	RFW#:	005	006	007	99LE1265-MB1	99LE1265-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	135 * %	128 * %	142 * %	120 * %	145 * %
	Decachlorobiphenyl	125 * %	118 %	123 * %	113 %	134 * %
Aroclor-1016		35 U	35 U	33 U	33 U	33 U
Aroclor-1221		70 U	70 U	67 U	67 U	67 U
Aroclor-1232		35 U	35 U	33 U	33 U	33 U
Aroclor-1242		35 U	35 U	33 U	33 U	33 U
Aroclor-1248		35 U	35 U	33 U	33 U	33 U
Aroclor-1254		35 U	35 U	33 U	33 U	96 %
Aroclor-1260		35 U	35 U	33 U	33 U	33 U

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

11-17-99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1	001	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX1	001 MS	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX1	001 MSD	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX2	002	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX3	003	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX4	004	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX5	005	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX6	006	S	99LE1265	10/05/99	10/18/99	11/02/99
B0WKX7	007	S	99LE1265	10/05/99	10/18/99	11/02/99

LAB QC:

PBLKXI	MB1	S	99LE1265	N/A	10/18/99	11/02/99
PBLKXI	MB1 BS	S	99LE1265	N/A	10/18/99	11/02/99

11-11-99

RECRA LabNet Use Only: 9910C305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-7-99 Date Due: 11/6/99
Account #:

Refrigerator #		1	2							2								
#/Type Container	Liquid																	
	Solid	1AG	1AG							1AG		1AG	1AG					
Volume	Liquid																	
	Solid	250ml	500ml							500ml		250ml	100ml					
Preservatives		–	–							–		–	–	–				
ANALYSES REQUESTED		ORGANIC								INORG								
		VOA	BNA	Pest/PCB	Herb					Metal	CN	pH	NO3 NO2	IC anions				
		RECRA LabNet Use Only																
		0624H 0624SC	0625H	0DRO 0PCB						Met①	ICNTD	IPH	IN3N2	Ang②				

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 0624SC	0625H	0DRO 0PCB					Met①	ICNTD	IPH	IN3N2	Ang②				
001	BOWKX1			S	10599	0745	✓	✓	✓					✓	✓	✓	✓	–				
002	BOWKX2					0755	✓	✓	✓					✓	✓	✓	✓	–				
003	BOWKX3					0810	✓	✓	✓					✓	✓	✓	✓	–				
004	BOWKX4					0820	✓	✓	✓					✓	✓	✓	✓	–				
005	BOWKX5					0833	✓	✓	✓					✓	✓	✓	✓	–				
006	BOWKX6					0850	✓	✓	✓					✓	✓	✓	✓	–				
007	BOWKX7					0913	✓	✓	✓					✓	✓	✓	✓	–				

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:
1. Run matrix QC
2. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, IN H3N
4. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6
6.

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping van 96-006, Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 10-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301533.1 4235795301422.7
			COA: B20CW167/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X				BOW8C1
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X				
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X				
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X				
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Fed. #1B	Date/Time: 10/5/99 1330
Relinquished By: Fed 1B 10/6/99	Date/Time: 1230	Received By: R. Nielson 10/6/99	Date/Time: 1230
Relinquished By: R. Nielson 10/6/99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-7-99 0945	Date/Time:	Received By: T Murray 10-7-99 0945	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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	B99-078-136	Page 1 of 4

RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time											
BOW KX6	Soil	10/5/99	0850						X	X	X	X	X	BOW SC1
BOW KX7	Soil	10/5/99	0913						X	X	X	X	X	BOW SC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris 10/5/99 1330	Received By: Rel 1B 10/5/99 1330		
Relinquished By: Rel 1B 10/6/99	Received By: [illegible]/R. Nielson 10/6/99 1230		
Relinquished By: [illegible]/R. Nielson 10/6/99 1230	Received By: FedEx		
Relinquished By: FedEx 10-7-99 0945	Received By: TMurray 10-7-99 0945		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9910L305
SDG/SAF#: H0559/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-07-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 10-05-99.

The samples and their associated QC samples were prepared on 10-14-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 10-15-99.

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

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

6. The blank spike recovery was within advisory control limits of 50%-150%.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-5-99
Date

r:\share\lc\gcscan\10-305.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

GC SCAN

Report Date: 11/03/99 13:09

RFW Batch Number: **9910L305** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WKX1	B0WKX1	B0WKX1	B0WKX2	B0WKX3	B0WKX4
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
		fl	fl	fl	fl	fl	fl
n-Propyl Alcohol		5.0 U	103 %	95 %	5.0 U	4.8 U	4.1 U
Ethanol		5.0 U	4.8 U	4.9 U	5.0 U	4.8 U	4.1 U

	Cust ID:	B0WKX5	B0WKX6	B0WKX7	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LLC155-MB1	99LLC155-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		fl	fl	fl	fl	fl
n-Propyl Alcohol		3.9 U	4.2 U	4.0 U	5.0 U	106 %
Ethanol		3.9 U	4.2 U	4.0 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.

11/3/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1	001	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX1	001 MS	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX1	001 MSD	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX2	002	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX3	003	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX4	004	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX5	005	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX6	006	S	99LLC155	10/05/99	10/14/99	10/15/99
B0WKX7	007	S	99LLC155	10/05/99	10/14/99	10/15/99

LAB QC:

BLK	MB1	S	99LLC155	N/A	10/14/99	10/15/99
BLK	MB1 BS	S	99LLC155	N/A	10/14/99	10/15/99

11/3/99

RECRA LabNet Use Only

99IOC305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

0005

Client: TRU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2	1					2	1						
#/Type Container	Liquid															
	Solid	1AG	1AG	1					1AG		1AG	1AG	1			
Volume	Liquid															
	Solid	250mL	500mL	1					500mL	w/ornanics	250mL	500mL	1			
Preservatives		–	–						–		–	–	–			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	IC anions			
		RECRA LabNet Use Only														
		0024H 06CSC	0025H	0DRO 0PCB					3metQ	1CNTD	1pH	1N3N2	3AngQ			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	IC anions			
001	BOWKX1			S	10599	0745	✓	✓	✓					✓	✓	✓	✓	1			
002	BOWKX2					0755	✓	✓	✓					✓	✓	✓	✓	1			
003	BOWKX3					0810	✓	✓	✓					✓	✓	✓	✓	1			
004	BOWKX4					0820	✓	✓	✓					✓	✓	✓	✓	1			
005	BOWKX5					0833	✓	✓	✓					✓	✓	✓	✓	1			
006	BOWKX6					0850	✓	✓	✓					✓	✓	✓	✓	1			
007	BOWKX7					0913	✓	✓	✓					✓	✓	✓	✓	1			

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:

1. Run matrix QC
2. Ang1 = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, INH3N
4. Met1 = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6
6.

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006, Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 270 B-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301633.1 4235795301422 27
			COA: B20CW167/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions			
Sample No.	Matrix * / Sample Date / Sample Time										
BOWKX1	Soil / 10-5-99 / 0745		X	X	X	X	X				BOWSC1
BOWKX2	Soil / 10-5-99 / 0755		X	X	X	X	X				
BOWKX3	Soil / 10-5-99 / 0810		X	X	X	X	X				
BOWKX4	Soil / 10-5-99 / 0820		X	X	X	X	X				
BOWKX5	Soil / 10-5-99 / 0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Ref. #1B	Date/Time: 10/5/99 1330
Relinquished By: Ref 1B 10/6/99	Date/Time: 1230	Received By: [illegible]/R. Nielson 10/6/99	Date/Time: 1230
Relinquished By: [illegible]/R. Nielson 10/6/99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-7-99	Date/Time: 0945	Received By: TMurray 10-7-99	Date/Time: 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 2 RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions
Sample No.	Matrix * / Sample Date / Sample Time										
BOW KX6	Soil 10/5/99 0850						X	X	X	X	X BOW SC1
BOW KX7	Soil 10/5/99 0913						X	X	X	X	X BOW SC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris 10/5/99 1330	Received By: Rel IB 10/5/99 1330		
Relinquished By: Rel IB 10/6/99	Received By: R. Nielson 10/6/99 1230		
Relinquished By: R. Nielson/R. Nielson 10/6/99 1230	Received By: FedEx		
Relinquished By: FedEx 10-7-99 0945	Received By: TMurray 10-7-99 0945		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

COLLECTOR UNAVAILABLE TO SIGN 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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L305
SDG/SAF# : H0559/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-07-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

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

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

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

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

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

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

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

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

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 020 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 meaningful concentration levels, due to high concentrations of the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WKX1	Vanadium	500	111.5
	Antimony	500	105.8

12. The duplicate analyses for 10 analytes were outside the 20% Relative Percent Difference (RPD) control limits. The large number of RPDs outside 20% is probably due to the non-homogeous nature of the sample matrix. Refer to the Inorganics Precision Report.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

mld/m10-305r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L305

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 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WKX1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.0	MG/KG	0.24	1.0
		Barium, Total	49.5	MG/KG	0.02	1.0
		Beryllium, Total	0.18	MG/KG	0.007	1.0
		Cadmium, Total	0.40	MG/KG	0.02	1.0
		Chromium, Total	5.6	MG/KG	0.06	1.0
		Copper, Total	9.5	MG/KG	0.09	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Nickel, Total	7.5	MG/KG	0.09	1.0
		Lead, Total	4.5	MG/KG	0.15	1.0
		Antimony, Total	0.18 u	MG/KG	0.18	1.0
		Selenium, Total	0.27 u	MG/KG	0.27	1.0
		Thallium, Total	0.53	MG/KG	0.38	1.0
		Vanadium, Total	35.2	MG/KG	0.04	1.0
		Zinc, Total	34.7	MG/KG	0.06	1.0
-002	B0WKX2	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	4.1	MG/KG	0.34	1.0
		Barium, Total	68.5	MG/KG	0.03	1.0
		Beryllium, Total	0.30	MG/KG	0.01	1.0
		Cadmium, Total	0.79	MG/KG	0.03	1.0
		Chromium, Total	8.0	MG/KG	0.08	1.0
		Copper, Total	12.5	MG/KG	0.12	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Nickel, Total	9.3	MG/KG	0.12	1.0
		Lead, Total	6.6	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Thallium, Total	1.0	MG/KG	0.55	1.0
		Vanadium, Total	57.1	MG/KG	0.06	1.0
		Zinc, Total	54.7	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WKX3	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	4.0	MG/KG	0.34	1.0
		Barium, Total	83.4	MG/KG	0.03	1.0
		Beryllium, Total	0.28	MG/KG	0.01	1.0
		Cadmium, Total	0.37	MG/KG	0.03	1.0
		Chromium, Total	7.7	MG/KG	0.08	1.0
		Copper, Total	9.9	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.6	MG/KG	0.12	1.0
		Lead, Total	5.5	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Thallium, Total	0.59	MG/KG	0.55	1.0
		Vanadium, Total	42.8	MG/KG	0.06	1.0
		Zinc, Total	41.9	MG/KG	0.08	1.0
-004	B0WKX4	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	7.8	MG/KG	0.35	1.0
		Barium, Total	88.2	MG/KG	0.03	1.0
		Beryllium, Total	0.32	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	9.6	MG/KG	0.08	1.0
		Copper, Total	13.9	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.5	MG/KG	0.13	1.0
		Lead, Total	7.5	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.75	MG/KG	0.56	1.0
		Vanadium, Total	54.3	MG/KG	0.06	1.0
		Zinc, Total	50.4	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0WKX5	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	4.5	MG/KG	0.31	1.0
		Barium, Total	59.0	MG/KG	0.03	1.0
		Beryllium, Total	0.23	MG/KG	0.009	1.0
		Cadmium, Total	0.25	MG/KG	0.03	1.0
		Chromium, Total	6.1	MG/KG	0.07	1.0
		Copper, Total	9.2	MG/KG	0.11	1.0
		Mercury, Total	0.04	MG/KG	0.01	1.0
		Nickel, Total	7.2	MG/KG	0.11	1.0
		Lead, Total	4.8	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.91	MG/KG	0.49	1.0
		Vanadium, Total	44.2	MG/KG	0.06	1.0
		Zinc, Total	40.9	MG/KG	0.07	1.0
-006	B0WKX6	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	6.9	MG/KG	0.34	1.0
		Barium, Total	69.1	MG/KG	0.03	1.0
		Beryllium, Total	0.25	MG/KG	0.01	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Chromium, Total	6.7	MG/KG	0.08	1.0
		Copper, Total	13.1	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.6	MG/KG	0.12	1.0
		Lead, Total	5.2	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.52	MG/KG	0.38	1.0
		Thallium, Total	0.87	MG/KG	0.55	1.0
		Vanadium, Total	54.0	MG/KG	0.06	1.0
		Zinc, Total	47.6	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0WKX7	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	4.3	MG/KG	0.33	1.0
		Barium, Total	55.3	MG/KG	0.03	1.0
		Beryllium, Total	0.19	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	5.7	MG/KG	0.08	1.0
		Copper, Total	12.9	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.6	MG/KG	0.12	1.0
		Lead, Total	4.7	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	0.69	MG/KG	0.53	1.0
		Vanadium, Total	47.3	MG/KG	0.06	1.0
		Zinc, Total	38.9	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0707-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	0.37	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.08 u	MG/KG	0.08	1.0
		Copper, Total	0.26	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.22	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	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.55	MG/KG	0.08	1.0
BLANK1	99C0300-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WKX1	Silver, Total	4.5	0.07u	5.0	90.0	1.0
		Arsenic, Total	197	3.0	202	96.4	1.0
		Barium, Total	259	49.5	202	103.8	1.0
		Beryllium, Total	5.1	0.18	5.0	98.5	1.0
		Cadmium, Total	5.4	0.40	5.0	100	1.0
		Chromium, Total	27.1	5.6	20.2	106.4	1.0
		Copper, Total	36.0	9.5	25.2	105.2	1.0
		Mercury, Total	0.23	0.05	0.16	109.3	1.0
		Nickel, Total	56.0	7.5	50.4	96.2	1.0
		Lead, Total	53.5	4.5	50.4	97.2	1.0
		Antimony, Total	28.0	0.18u	50.4	55.6	1.0
		Selenium, Total	187	0.27u	202	92.8	1.0
		Thallium, Total	187	0.53	202	92.3	1.0
		Vanadium, Total	102	35.2	50.4	132.3	1.0
		Zinc, Total	94.4	34.7	50.4	118.5	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD		DILUTION FACTOR(REP)
-001REP	B0WKX1	Silver, Total	0.07u	0.10u	NC		1.0
		Arsenic, Total	3.0	4.0	28.6		1.0
		Barium, Total	49.5	66.1	28.7		1.0
		Beryllium, Total	0.18	0.25	33.5		1.0
		Cadmium, Total	0.40	0.51	23.0		1.0
		Chromium, Total	5.6	7.3	26.4		1.0
		Copper, Total	9.5	13.2	32.6		1.0
		Mercury, Total	0.05	0.05	4.0		1.0
		Nickel, Total	7.5	8.2	8.9		1.0
		Lead, Total	4.5	5.5	20.0		1.0
		Antimony, Total	0.18u	0.26u	NC		1.0
		Selenium, Total	0.27u	0.55	~~NC~~	LOO aem 11/9/99	1.0
		Thallium, Total	0.53	0.74	33.4		1.0
		Vanadium, Total	35.2	52.8	40.0		1.0
		Zinc, Total	34.7	46.2	28.4		1.0

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Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0707-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Arsenic, LCS	969	1000	MG/KG	96.9
		Barium, LCS	496	500	MG/KG	99.1
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	50.4	50.0	MG/KG	100.8
		Copper, LCS	124	125	MG/KG	99.1
		Nickel, LCS	197	200	MG/KG	98.3
		Lead, LCS	245	250	MG/KG	97.9
		Antimony, LCS	291	300	MG/KG	97.0
		Selenium, LCS	935	1000	MG/KG	93.5
		Thallium, LCS	981	1000	MG/KG	98.1
		Vanadium, LCS	255	250	MG/KG	102.0
		Zinc, LCS	96.8	100	MG/KG	96.8
LCS1	99C0300-LC1	Mercury, LCS	1.1	1.0	MG/KG	105.8

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1						
SILVER, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
SILVER, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
SILVER, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	001	S	99C0300	10/05/99	10/18/99	10/19/99
MERCURY, TOTAL	001 REP	S	99C0300	10/05/99	10/18/99	10/19/99
MERCURY, TOTAL	001 MS	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
NICKEL, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
NICKEL, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	001	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	001 REP	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	001 MS	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX2						
SILVER, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	002	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	002	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX3						
SILVER, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	003	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX4						
SILVER, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	004	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	004	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX5						
SILVER, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	005	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	005	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX6						
SILVER, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	006	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
SELENIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	006	S	99L0707	10/05/99	10/20/99	10/20/99
B0WKX7						
SILVER, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
ARSENIC, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
BARIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
BERYLLIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
CADMIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
CHROMIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
COPPER, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
MERCURY, TOTAL	007	S	99C0300	10/05/99	10/18/99	10/19/99
NICKEL, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
LEAD, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
ANTIMONY, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
THALLIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
VANADIUM, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99
ZINC, TOTAL	007	S	99L0707	10/05/99	10/20/99	10/20/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
SILVER, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
ARSENIC LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
ARSENIC, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
BARIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
BARIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
BERYLLIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
CADMIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
CADMIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
CHROMIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
CHROMIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
COPPER LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
COPPER, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
MERCURY LABORATORY	LC1 BS	S	99C0300	N/A	10/18/99	10/19/99
MERCURY, TOTAL	MB1	S	99C0300	N/A	10/18/99	10/19/99
NICKEL LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
NICKEL, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
LEAD LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
LEAD, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
ANTIMONY LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
ANTIMONY, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
SELENIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
SELENIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
THALLIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
THALLIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
VANADIUM LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
VANADIUM, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99
ZINC LABORATORY	LC1 BS	S	99L0707	N/A	10/20/99	10/20/99
ZINC, TOTAL	MB1	S	99L0707	N/A	10/20/99	10/20/99

RECRA LabNet Use Only

9910C305

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: spec Del: std TAT: 30 day
Date Rec'd: 10-7-99 Date Due: 11/6/99
Account #:

Refrigerator #		1	2						2							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG				
Volume	Liquid															
	Solid	250ml	500ml						500ml		250ml	100ml				
Preservatives		–	–						–		–	–	–			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	TC anions			
		RECRA LabNet Use Only														
		8024H 8015C	8025H	8DRO 8PCB					Met①	ICN①	IPH	IN3N2	Ang①			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	NO3 NO2	TC anions			
001	BOWKX1			S	10-5-99	0745	✓	✓	✓					✓	✓	✓	✓	–			
002	BOWKX2					0755	✓	✓	✓					✓	✓	✓	✓	–			
003	BOWKX3					0810	✓	✓	✓					✓	✓	✓	✓	–			
004	BOWKX4					0820	✓	✓	✓					✓	✓	✓	✓	–			
005	BOWKX5					0833	✓	✓	✓					✓	✓	✓	✓	–			
006	BOWKX6					0850	✓	✓	✓					✓	✓	✓	✓	–			
007	BOWKX7					0913	✓	✓	✓					✓	✓	✓	✓	–			

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:

1. Run matrix QC
2. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, IN H3N
4. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6, Sb, Tl
6.

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

010

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping van 96-006 Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~ RECRA ATP 10-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301533.1 4235795301422.7
			COA: B20CW167/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X		BOW801
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X		
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X		
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X		
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Trice	Date/Time: 10/5/99 1330	Received By: Ref. #1B	Date/Time: 10/5/99 1330
Relinquished By: Ref 1B	Date/Time: 10/6/99 1230	Received By: Nielson/R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: Nielson/R. Nielson	Date/Time: 10/6/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: FedEx	Date/Time: 10-7-99 0945	Received By: Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

010

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 2 DN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping van 96-006	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301 42
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time											
BOW KX6	Soil	10/5/99	0850						X	X	X	X	X	BC1
BOW KX7	Soil	10/5/99	0913						X	X	X	X	X	BC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/5/99 1330	Received By: Rel 1B	Date/Time: 10/5/99 1330
Relinquished By: Rel 1B	Date/Time: 10/6/99	Received By: R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: R. Nielson	Date/Time: 10/6/99 1230	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 10-7-99 0945	Received By: TMurray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN 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

UCU

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L305
SDG# : H0559
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-07-99

INORGANIC CASE NARRATIVE

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

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

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

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicate for Sulfide was within the 20% RPD control limit.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-16-99
Date

njp\i10-305

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.

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: Ammonia **Method:** EPA 350.3

Other: Nitrate Nitrite **Method** EPA 353.2

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

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 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WKX1	% Solids	96.3		%	0.01	1.0
		Chloride by IC	6.5		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	18		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	83.3		MG/KG	6.5	5.0
		Nitrate Nitrite	4.6		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		PH UNITS	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-002	B0WKX2	% Solids	96.2		%	0.01	1.0
		Chloride by IC	8.8		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	18		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	95.7		MG/KG	6.5	5.0
		Nitrate Nitrite	4.5		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		PH UNITS	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-003	B0WKX3	% Solids	95.9		%	0.01	1.0
		Chloride by IC	6.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	20		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.6		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	25.2		MG/KG	1.3	1.0
		Nitrate Nitrite	4.5		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.8		PH UNITS	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WKX3	Sulfide	4.0		MG/KG	2.1	1.0
-004	B0WKX4	% Solids	92.1		%	0.01	1.0
		Chloride by IC	10.3		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	51		MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.7		MG/KG	1.4	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	20.6		MG/KG	1.4	1.0
		Nitrate Nitrite	10.8		MG/KG	0.22	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.2		PH UNITS	0.01	1.0
		Sulfide	2.2	u	MG/KG	2.2	1.0
-005	B0WKX5	% Solids	94.6		%	0.01	1.0
		Chloride by IC	10.4		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	34		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	89.0		MG/KG	6.6	5.0
		Nitrate Nitrite	7.7		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.1		PH UNITS	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-006	B0WKX6	% Solids	94.4		%	0.01	1.0
		Chloride by IC	5.9		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	34		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.7		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	58.5		MG/KG	2.6	2.0
		Nitrate Nitrite	7.8		MG/KG	0.20	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0WKX6	Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.4		PH UNITS	0.01	1.0
		Sulfide	2.1	u	MG/KG	2.1	1.0
-007	B0WKX7	% Solids	97.2		%	0.01	1.0
		Chloride by IC	2.0		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	39		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	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	11.6		MG/KG	1.3	1.0
		Nitrate Nitrite	8.9		MG/KG	0.19	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.5		PH UNITS	0.01	1.0
		Sulfide	3.8		MG/KG	2.1	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICA88-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	99LC117-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI071-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	99LAM041-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD053-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WKX1	Chloride by IC	34.0	6.5	26.0	106.2	1.0
		Fluoride by IC	58.0	0.73	51.9	110.2	1.0
		Nitrite by IC	26	1.3 u	26	101.8	1.0
		Nitrate by IC	46	18	26	106.2	1.0
		Cyanide, Total	5.1	0.52u	5.2	98.0	1.0
		Cyanide, Total MSD	5.0	0.52u	5.2	96.6	1.0
		Phosphate by IC	27.3	1.3	26.0	100.1	1.0
		Sulfate by IC	220	83.3	130	105.3	5.0
		Nitrate Nitrite	9.0	4.6	4.9	90.5	1.0
		Ammonia, as N	97.9	1.3 u	96.7	101.2	1.0
-007	B0WKX7	Soluble Chromium VI	4.1	0.41u	4.1	100.2	1.0
		Insoluble Chromium VI	1180	0.41u	1180	100.2	100
		Sulfide	378	3.8	410	91.2	1.0
		Sulfide MSD	380	3.8	410	91.7	1.0
BLANK10	99LICA88-MB1	Chloride by IC	24.3	1.2 u	25.0	97.1	1.0
		Fluoride by IC	53.3	2.5 u	50.0	106.5	1.0
		Nitrite by IC	25	1.2 u	25	99.2	1.0
		Nitrate by IC	24	1.2 u	25	96.1	1.0
		Phosphate by IC	24.8	1.2 u	25.0	99.2	1.0
		Sulfate by IC	23.6	1.2 u	25.0	94.4	1.0
BLANK10	99LVI071-MB1	Soluble Chromium VI	4.1	0.40u	4.0	101.4	1.0
		Insoluble Chromium VI	1090	0.40u	1160	93.3	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	99LAM041-MB1	Ammonia, as N	52.2	1.2 u	50.0	104.5	1.0
		Ammonia, as N MSD	51.0	1.2 u	50.0	102.0	1.0
BLANK10	99LSD053-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0WKX1	Cyanide, Total	98.0	96.6	1.4
-007	B0WKX7	Sulfide	91.2	91.7	0.51
BLANK10	99LN3052-MB1	Nitrate Nitrite	103.4	107.6	4.0
BLANK10	99LAM041-MB1	Ammonia, as N	104.5	102.0	2.4

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WKX1	% Solids	96.3	96.3	0.073	1.0
		Chloride by IC	6.5	6.7	2.8	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	18	19	5.2	1.0
		Cyanide, Total	0.52u	0.52u	NC	1.0
		Phosphate by IC	1.3	1.3 u	NC	1.0
		Sulfate by IC	83.3	84.9	1.9	5.0
		Nitrate Nitrite	4.6	4.5	2.2	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0
		pH	8.4	8.3	0.2	1.0
-007REP	B0WKX7	Chromium VI	0.41u	0.41u	NC	1.0
		Sulfide	3.8	3.6	5.9	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L305

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC117-LC1	Cyanide, Total LCS	2.1	2.0	MG/KG	103.1
LCS2	99LC117-LC2	Cyanide, Total LCS	9.9	10	MG/KG	98.5

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX1						
% SOLIDS	001	S	99L%S133	10/05/99	10/12/99	10/13/99
% SOLIDS	001 REP	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
CHLORIDE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
CHLORIDE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	001	S	99LC117	10/05/99	10/12/99	10/12/99
TOTAL CYANIDE	001 REP	S	99LC117	10/05/99	10/12/99	10/12/99
TOTAL CYANIDE	001 MS	S	99LC117	10/05/99	10/12/99	10/12/99
TOTAL CYANIDE	001 MSD	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
PHOSPHATE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
PHOSPHATE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	001	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	001	S	99LICA88	10/05/99	10/28/99	10/28/99
SULFATE BY IC	001 REP	S	99LICA88	10/05/99	10/28/99	10/28/99
SULFATE BY IC	001 MS	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	001	S	99LN3052	10/05/99	11/04/99	11/04/99
NITRATE NITRITE	001 REP	S	99LN3052	10/05/99	11/04/99	11/04/99
NITRATE NITRITE	001 MS	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	001	S	99LAM041	10/05/99	10/26/99	10/26/99
AMMONIA	001 REP	S	99LAM041	10/05/99	10/26/99	10/26/99
AMMONIA	001 MS	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	001	S	99LPH109	10/05/99	10/12/99	10/12/99
PH	001 REP	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	001	S	99LSD053	10/05/99	10/12/99	10/12/99
B0WKX2						
% SOLIDS	002	S	99L%S133	10/05/99	10/12/99	10/13/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	002	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	002	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	002	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	002	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	002	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	002	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	002	S	99LSD053	10/05/99	10/12/99	10/12/99
B0WKX3						
% SOLIDS	003	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	003	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	003	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	003	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	003	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	003	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	003	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	003	S	99LSD053	10/05/99	10/12/99	10/12/99
B0WKX4						
% SOLIDS	004	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	004	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	004	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	004	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	004	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	004	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	004	S	99LSD053	10/05/99	10/12/99	10/12/99
B0WKX5						
% SOLIDS	005	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	005	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	005	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	005	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	005	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	005	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	005	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	005	S	99LSD053	10/05/99	10/12/99	10/12/99
B0WKX6						
% SOLIDS	006	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	006	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	006	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	006	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	006	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	006	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	006	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	006	S	99LSD053	10/05/99	10/12/99	10/12/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WKX7						
% SOLIDS	007	S	99L%S133	10/05/99	10/12/99	10/13/99
CHLORIDE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
FLUORIDE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRITE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
TOTAL CYANIDE	007	S	99LC117	10/05/99	10/12/99	10/12/99
PHOSPHATE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
CHROMIUM VI	007	S	99LVI071	10/05/99	10/10/99	10/10/99
CHROMIUM VI	007 REP	S	99LVI071	10/05/99	10/10/99	10/10/99
CHROMIUM VI	007 MS	S	99LVI071	10/05/99	10/10/99	10/10/99
CHROMIUM VI	007 MSD	S	99LVI071	10/05/99	10/10/99	10/10/99
SULFATE BY IC	007	S	99LICA88	10/05/99	10/28/99	10/28/99
NITRATE NITRITE	007	S	99LN3052	10/05/99	11/04/99	11/04/99
AMMONIA	007	S	99LAM041	10/05/99	10/26/99	10/26/99
PH	007	S	99LPH109	10/05/99	10/12/99	10/12/99
SULFIDE	007	S	99LSD053	10/05/99	10/12/99	10/12/99
SULFIDE	007 REP	S	99LSD053	10/05/99	10/12/99	10/12/99
SULFIDE	007 MS	S	99LSD053	10/05/99	10/12/99	10/12/99
SULFIDE	007 MSD	S	99LSD053	10/05/99	10/12/99	10/12/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
CHLORIDE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99
FLUORIDE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
FLUORIDE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99
NITRITE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
NITRITE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99
NITRATE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
NITRATE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99
TOTAL CYANIDE	LC1 L	S	99LC117	N/A	10/12/99	10/12/99
TOTAL CYANIDE	LC2 L	S	99LC117	N/A	10/12/99	10/12/99
TOTAL CYANIDE	MB1	S	99LC117	N/A	10/12/99	10/12/99
PHOSPHATE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
PHOSPHATE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99

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

DATE RECEIVED: 10/07/99 RFW LOT # :9910L305

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1	S	99LVI071	N/A	10/10/99	10/10/99
CHROMIUM VI	MB1 BS	S	99LVI071	N/A	10/10/99	10/10/99
CHROMIUM VI	MB1 BSD	S	99LVI071	N/A	10/10/99	10/10/99
SULFATE BY IC	MB1	S	99LICA88	N/A	10/28/99	10/28/99
SULFATE BY IC	MB1 BS	S	99LICA88	N/A	10/28/99	10/28/99
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	99LAM041	N/A	10/26/99	10/26/99
AMMONIA	MB1 BS	S	99LAM041	N/A	10/26/99	10/26/99
AMMONIA	MB1 BSD	S	99LAM041	N/A	10/26/99	10/26/99
SULFIDE	MB1	S	99LSD053	N/A	10/12/99	10/12/99
SULFIDE	MB1 BS	S	99LSD053	N/A	10/12/99	10/12/99

RECRA LabNet Use Only

9910C305

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

017

Client: TRU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: spec Del: std TAT: 30 day

Date Rec'd: 10-7-99 Date Due: 11/6/99

Account #:

Refrigerator #		1	2						2							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG	w/ Volatiles	1AG	1AG				
Volume	Liquid															
	Solid	250ml	500ml						500ml		250ml	100ml				
Preservatives		–	–						–		–	–	–			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb				Metal	CN	pH	NO3 NO2	TIC anions			
		RECRA LabNet Use Only														
		8024H 8260SC	8270H	ORO 8015B					Met①	ICN①	IPH	IN3N2	Ang①			

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	8024H 8260SC	8270H	ORO 8015B	Met①	ICN①	IPH	IN3N2	Ang①
001	BOWKX1			S	10-5-99	0745	✓	✓	✓	✓	✓	✓	✓	–
002	BOWKX2					0755	✓	✓	✓	✓	✓	✓	✓	–
003	BOWKX3					0810	✓	✓	✓	✓	✓	✓	✓	–
004	BOWKX4					0820	✓	✓	✓	✓	✓	✓	✓	–
005	BOWKX5					0833	✓	✓	✓	✓	✓	✓	✓	–
006	BOWKX6					0850	✓	✓	✓	✓	✓	✓	✓	–
007	BOWKX7					0913	✓	✓	✓	✓	✓	✓	✓	–

Special Instructions:

SAF# B99-078

COMPOSITE WASTE

*423579530153 - 3.1°C
423579530142 - 2.7°C

DATE/REVISIONS:

1. Run matrix QC
2. Ang① = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
3. ICSO4, ISFD, IN H3N
4. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
5. Cu, Ni, V, Zn, Hg, ICR6
6.

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-7-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: Shipping van 96-006, Shipping Van 96-002	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA DTB 10-5-99	Offsite Property No.: A990287		Bill of Lading/Air Bill No.: 4235795301533.1 4235795301427
			COA: B20CW167/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWKX1	Soil	10-5-99	0745		X	X	X	X	X				BOWSC1
BOWKX2	Soil	10-5-99	0755		X	X	X	X	X				
BOWKX3	Soil	10-5-99	0810		X	X	X	X	X				
BOWKX4	Soil	10-5-99	0820		X	X	X	X	X				
BOWKX5	Soil	10-5-99	0833		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Price	Date/Time: 10/5/99 1330	Received By: Ref. #1B	Date/Time: 10/5/99 1330
Relinquished By: Ref 1B	Date/Time: 10/6/99 1230	Received By: [illegible]/R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: [illegible]/R. Nielson	Date/Time: 10/6/99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-7-99 0945	Received By: T Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

018

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-136	Page 1 of 2 RJN 10/6/99

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond	SAF No.: B99-078	
Ice Chest No.: Shipping Van 96-006	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A990287	Bill of Lading/Air Bill No.: 4235796530142	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions
Sample No.	Matrix * / Sample Date / Sample Time										
BOW KX6	Soil / 10/5/99 / 0850						X	X	X	X	X
BOW KX7	Soil / 10/5/99 / 0913						X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris	Date/Time: 10/5/99 1330	Received By: Red IB	Date/Time: 10/5/99 1330
Relinquished By: Red IB	Date/Time: 10/6/99	Received By: Kenneth Nielson / R. Nielson	Date/Time: 10/6/99 1230
Relinquished By: Kenneth Nielson / R. Nielson	Date/Time: 10/6/99 1230	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 10-7-99 0945	Received By: TD Murray	Date/Time: 10-7-99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN 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