H1070

0054368

NOV 2000
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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1070 was composed of four other solid samples designated under SAF No. B99-028 with a Project Designation of: 100-HR-3 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 25, 2000.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium 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 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Tritium Analyses

The LCS percent recovery (81%) was slightly below the 3σ limits (86 to 114%), but within the laboratory protocol limits of 80 to 120%. The MS percent recovery (81%) was also below the 3σ limits (86 to 114%), but within the laboratory protocol limits of 80 to 120%. No other problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

11/28/00
Date

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EDMC

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

SAMPLE SUMMARY

SDG 7516
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1070

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10F38	100-HR-3	SOLID		R010023-01	B99-028	B99-028-52	10/02/00 10:37
B10F39	100-HR-3	SOLID		R010023-02	B99-028	B99-028-52	10/02/00 10:49
B10F40	100-HR-3	SOLID		R010023-03	B99-028	B99-028-52	10/02/00 11:00
B10F41	100-HR-3	SOLID		R010023-04	B99-028	B99-028-52	10/02/00 11:10
Method Blank		SOLID		R010023-06	B99-028		
Lab Control Sample		SOLID		R010023-05	B99-028		
Duplicate (R010023-02)	100-HR-3	SOLID		R010023-07	B99-028		10/02/00 10:49
Spike (R010023-02)	100-HR-3	SOLID		R010023-08	B99-028		10/02/00 10:49

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

QC SUMMARY

SDG 7516
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1070

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
7516	B99-028-52	B10F38	SOLID	100.0			10/04/00	2	R010023-01	7516-001
		B10F39	SOLID	100.0			10/04/00	2	R010023-02	7516-002
		B10F40	SOLID	100.0			10/04/00	2	R010023-03	7516-003
		B10F41	SOLID	100.0			10/04/00	2	R010023-04	7516-004
		Method Blank	SOLID						R010023-06	7516-006
		Lab Control Sample	SOLID						R010023-05	7516-005
		Duplicate (R010023-02)	SOLID	100.0			10/04/00	2	R010023-07	7516-007
		Spike (R010023-02)	SOLID				10/04/00	2	R010023-08	7516-008

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

PREP BATCH SUMMARY

SDG 7516
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1070

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6955-150	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6955-150	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6955-150	10.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6955-150	10.0	4			1	1	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 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

WORK SUMMARY

SDG 7516
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1070

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10F38			R010023-01	7516-001	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00	7516-001	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
B99-028-52	B99-028		10/04/00	7516-001	TC		11/21/00	11/25/00	MCM	Technetium 99 in Soil
				7516-001	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
B10F39			R010023-02	7516-002	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00	7516-002	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
B99-028-52	B99-028		10/04/00	7516-002	TC		11/21/00	11/25/00	MCM	Technetium 99 in Soil
				7516-002	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
B10F40			R010023-03	7516-003	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00	7516-003	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
B99-028-52	B99-028		10/04/00	7516-003	TC		11/20/00	11/25/00	MCM	Technetium 99 in Soil
				7516-003	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
B10F41			R010023-04	7516-004	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00	7516-004	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
B99-028-52	B99-028		10/04/00	7516-004	TC		11/21/00	11/25/00	MCM	Technetium 99 in Soil
				7516-004	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
Method Blank			R010023-06	7516-006	H		11/02/00	11/25/00	MCM	Tritium in Soil
		SOLID		7516-006	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
	B99-028			7516-006	TC		11/20/00	11/25/00	MCM	Technetium 99 in Soil
				7516-006	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R010023-05	7516-005	H		11/02/00	11/25/00	MCM	Tritium in Soil
		SOLID		7516-005	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
	B99-028			7516-005	TC		11/22/00	11/25/00	MCM	Technetium 99 in Soil
				7516-005	U		11/02/00	11/25/00	MCM	Uranium, Isotopic in Soil
Duplicate (R010023-02)			R010023-07	7516-007	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00	7516-007	SR		11/01/00	11/25/00	MCM	Total Strontium in Soil
	B99-028		10/04/00	7516-007	TC		11/20/00	11/25/00	MCM	Technetium 99 in Soil
				7516-007	U		11/03/00	11/25/00	MCM	Uranium, Isotopic in Soil
Spike (R010023-02)			R010023-08	7516-008	H		11/02/00	11/25/00	MCM	Tritium in Soil
100-HR-3		SOLID	10/02/00							
	B99-028		10/04/00							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

SDG 7516
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1070

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
H	B99-028	Tritium in Soil	906.0_H3_LSC	4			1	1	1	1	8
SR	B99-028	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1		7
TC	B99-028	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1		7
U	B99-028	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1		7
TOTALS				16			4	4	4	1	29

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/25/00

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1070

R010023-06

Method Blank

METHOD BLANK

SDG	7516	Client/Case no	Hanford	SDG H1070	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010023-06	Client sample id	Method Blank		
Dept sample id	7516-006	Material/Matrix		SOLID	
		SAF No	B99-028		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.524	0.18	0.32	400	U	H
Total Strontium	SR-RAD	0.024	0.16	0.31	1.0	U	SR
Technetium 99	14133-76-7	-0.090	0.15	0.54	15	U	TC
Uranium 233	U-233/234	0	0.016	0.063	1.0	U	U
Uranium 235	15117-96-1	0	0.020	0.076	1.0	U	U
Uranium 238	U-238	0.008	0.017	0.063	1.0	U	U

100-HR-3 Pump & Treat - Resin Smp.

QC-BLANK 36331

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7516
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1070
Case no TRC-SBB-207925

Lab sample id R010023-05
Dept sample id 7516-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-028

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	10.1	0.37	0.34	400	J	H	12.5	0.50	81	86-114	80-120
Total Strontium	11.6	0.74	0.35	1.0		SR	11.0	0.44	106	80-120	80-120
Technetium 99	55.3	1.4	0.55	15		TC	54.6	2.2	101	83-117	80-120
Uranium 233	4.68	0.54	0.25	1.0		U	4.64	0.19	101	80-120	80-120
Uranium 235	3.53	0.45	0.069	1.0		U	3.77	0.15	94	80-120	80-120
Uranium 238	5.33	0.59	0.24	1.0		U	5.04	0.20	106	80-120	80-120

100-HR-3 Pump & Treat - Resin Smp.

QC-LCS 36330

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-07 B10F39

DUPLICATE

SDG	7516			Client/Case no	Hanford SDG H1070
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R010023-07	Lab sample id	R010023-02	Client sample id	B10F39
Dept sample id	7516-007	Dept sample id	7516-002	Location/Matrix	100-HR-3 SOLID
		Received	10/04/00	Collected	10/02/00 10:49
% solids	100.0	% solids	100.0	Custody/SAF No	B99-028-52 B99-028

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	2.61	0.19	0.23	400	J	H	2.04	0.15	0.19	J	25	26	
Total Strontium	-0.028	0.12	0.27	1.0	U	SR	0.116	0.15	0.27	U	-		
Technetium 99	0.128	0.39	1.2	15	U	TC	0.140	0.41	1.3	U	-		
Uranium 233	1.22	0.28	0.095	1.0		U	1.04	0.22	0.069		16	48	
Uranium 235	0.045	0.060	0.11	1.0	U	U	0.108	0.066	0.083	J	82	175	
Uranium 238	1.12	0.28	0.095	1.0		U	0.949	0.20	0.069	J	17	51	

100-HR-3 Pump & Treat - Resin Smp.

QC-DUP#2 36332

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-08 B10F39

MATRIX SPIKE

SDG	7516			Client/Case no	Hanford SDG H1070
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R010023-08	Lab sample id	R010023-02	Client sample id	B10F39
Dept sample id	7516-008	Dept sample id	7516-002	Location/Matrix	100-HR-3 SOLID
		Received	10/04/00	Collected	10/02/00 10:49
		% solids	100.0	Custody/SAF No	B99-028-52 B99-028

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	44.4	0.51	0.21	400	J	H	52.5	2.1	2.04	0.15	81	86-114	60-140

100-HR-3 Pump & Treat - Resin Smp.

QC-MS#2 36333

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	11/25/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-01 **B10F38**

DATA SHEET

SDG	7516	Client/Case no	Hanford	SDG H1070	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010023-01	Client sample id	B10F38		
Dept sample id	7516-001	Location/Matrix	100-HR-3	SOLID	
Received	10/04/00	Collected	10/02/00 10:37		
% solids	100.0	Custody/SAF No	B99-028-52	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2.65	0.19	0.24	400	J	H
Total Strontium	SR-RAD	0.240	0.15	0.26	1.0	U	SR
Technetium 99	14133-76-7	0.256	0.34	1.2	15	U	TC
Uranium 233	U-233/234	1.58	0.24	0.065	1.0		U
Uranium 235	15117-96-1	0.157	0.067	0.063	1.0	J	U
Uranium 238	U-238	1.20	0.20	0.065	1.0		U

100-HR-3 Pump & Treat - Resin Smp.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/25/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-02 **B10F39**

DATA SHEET

SDG	7516	Client/Case no	Hanford	SDG H1070	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010023-02	Client sample id	B10F39		
Dept sample id	7516-002	Location/Matrix	100-HR-3	SOLID	
Received	10/04/00	Collected	10/02/00 10:49		
% solids	100.0	Custody/SAF No	B99-028-52	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2.04	0.15	0.19	400	J	H
Total Strontium	SR-RAD	0.116	0.15	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.140	0.41	1.3	15	U	TC
Uranium 233	U-233/234	1.04	0.22	0.069	1.0		U
Uranium 235	15117-96-1	0.108	0.066	0.083	1.0	J	U
Uranium 238	U-238	0.949	0.20	0.069	1.0	J	U

100-HR-3 Pump & Treat - Resin Smp.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/25/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1070

R010023-03 B10F40

DATA SHEET

SDG	7516	Client/Case no	Hanford	SDG H1070	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010023-03	Client sample id	B10F40		
Dept sample id	7516-003	Location/Matrix	100-HR-3	SOLID	
Received	10/04/00	Collected	10/02/00 11:00		
% solids	100.0	Custody/SAF No	B99-028-52	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2.74	0.18	0.21	400	J	H
Total Strontium	SR-RAD	0.057	0.14	0.27	1.0	U	SR
Technetium 99	14133-76-7	-0.033	0.38	1.3	15	U	TC
Uranium 233	U-233/234	0.280	0.10	0.074	1.0	J	U
Uranium 235	15117-96-1	0.023	0.023	0.089	1.0	U	U
Uranium 238	U-238	0.106	0.059	0.074	1.0	J	U

100-HR-3 Pump & Treat - Resin Smp.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/25/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1070

R010023-04 **B10F41**

DATA SHEET

SDG	7516	Client/Case no	Hanford	SDG H1070	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R010023-04	Client sample id	B10F41		
Dept sample id	7516-004	Location/Matrix	100-HR-3	SOLID	
Received	10/04/00	Collected	10/02/00 11:10		
% solids	100.0	Custody/SAF No	B99-028-52	B99-028	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	2.83	0.19	0.23	400	J	H
Total Strontium	SR-RAD	-0.014	0.13	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.106	0.43	1.4	15	U	TC
Uranium 233	U-233/234	0.210	0.077	0.057	1.0	J	U
Uranium 235	15117-96-1	0.018	0.018	0.070	1.0	U	U
Uranium 238	U-238	0.173	0.076	0.057	1.0	J	U

100-HR-3 Pump & Treat - Resin Smp.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test	U
Matrix	SOLID
SDG	7516
Contact	Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1070

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6955-150											
B10F38	R010023-01			7516-001	1.58	0.157 J	1.20	132	30	13	6
B10F39	R010023-02			7516-002	1.04	0.108 J	0.949 J	110	33	11	7
B10F40	R010023-03			7516-003	0.280 J	U	0.106 J	264	175	22	25
B10F41	R010023-04			7516-004	0.210 J	U	0.173 J	121	69	10	11
BLK (QC ID=36331)	R010023-06			7516-006	U	U	U				
LCS (QC ID=36330)	R010023-05			7516-005	ok	ok	ok				
Duplicate (R010023-02)	R010023-07			7516-007	ok	ok U	ok	109	37	4	5
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-3 Pump & Treat - Resin Smp.							Averages	147		12	

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 6955-150	2σ prep error 5.0 %			Reference Lab Notebook 6955 pg. 150												
B10F38	R010023-01			0.065	1.10			84		179			31	10/28/00	11/02	SS-032
B10F39	R010023-02			0.083	1.07			66		179			31	10/28/00	11/02	SS-033
B10F40	R010023-03			0.089	1.00			65		179			31	10/28/00	11/02	SS-034
B10F41	R010023-04			0.070	1.07			81		179			31	10/28/00	11/02	SS-035
BLK (QC ID=36331)	R010023-06			0.076	1.00			81		179				10/28/00	11/02	SS-038
LCS (QC ID=36330)	R010023-05			0.25	1.00			92		179				10/28/00	11/02	SS-036
Duplicate (R010023-02) (QC ID=36332)	R010023-07			0.11	1.09			75		111			32	10/28/00	11/03	SS-034
Nominal values and limits from method				1.0	1.00			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES				
MDA	0.11	±	0.13
YIELD	78	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test SR Matrix SOLID
SDG 7516
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1070

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6955-150						
B10F38	R010023-01			7516-001	U	
B10F39	R010023-02			7516-002	U	
B10F40	R010023-03			7516-003	U	
B10F41	R010023-04			7516-004	U	
BLK (QC ID=36331)	R010023-06			7516-006	U	
LCS (QC ID=36330)	R010023-05			7516-005	ok	
Duplicate (R010023-02)	R010023-07			7516-007	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0
100-HR-3 Pump & Treat - Resin Smp.

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 6955-150	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 150															
B10F38	R010023-01			0.26	1.06			78		100			30	10/31/00	11/01	GRB-223
B10F39	R010023-02			0.27	1.07			81		100			30	10/31/00	11/01	GRB-218
B10F40	R010023-03			0.27	1.13			79		100			30	10/31/00	11/01	GRB-219
B10F41	R010023-04			0.27	1.11			78		100			30	10/31/00	11/01	GRB-220
BLK (QC ID=36331)	R010023-06			0.31	1.00			80		100				10/31/00	11/01	GRB-231
LCS (QC ID=36330)	R010023-05			0.35	1.00			81		100				10/31/00	11/01	GRB-207
Duplicate (R010023-02) (QC ID=36332)	R010023-07			0.27	1.10			81		100			30	10/31/00	11/01	GRB-232
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 2
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.29 ± 0.065
YIELD 80 ± 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test TC Matrix SOLID
SDG 7516
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1070

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6955-150						
B10F38	R010023-01			7516-001	U	
B10F39	R010023-02			7516-002	U	
B10F40	R010023-03			7516-003	U	
B10F41	R010023-04			7516-004	U	
BLK (QC ID=36331)	R010023-06			7516-006	U	
LCS (QC ID=36330)	R010023-05			7516-005	ok	
Duplicate (R010023-02)	R010023-07			7516-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
100-HR-3 Pump & Treat - Resin Smp.						

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 6955-150	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 150															
B10F38	R010023-01			1.2	1.05			40		50			50	11/10/00	11/21	GRB-221
B10F39	R010023-02			1.3	1.05			37		50			50	11/10/00	11/21	GRB-222
B10F40	R010023-03			1.3	1.03			40		50			49	11/10/00	11/20	GRB-217
B10F41	R010023-04			1.4	1.04			35		50			50	11/10/00	11/21	GRB-224
BLK (QC ID=36331)	R010023-06			0.54	1.00			92		50				11/10/00	11/20	GRB-220
LCS (QC ID=36330)	R010023-05			0.55	1.00			91		50				11/10/00	11/22	GRB-220
Duplicate (R010023-02) (QC ID=36332)	R010023-07			1.2	1.05			41		50			49	11/10/00	11/20	GRB-221
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test	TC
Matrix	SOLID
SDG	7516
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1070

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	1.1	±	0.73
FOR 7 SAMPLES	YIELD	54	±	52

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test H Matrix SOLID
SDG 7516
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1070

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6955-150						
B10F38	R010023-01			7516-001	2.65	J
B10F39	R010023-02			7516-002	2.04	J
B10F40	R010023-03			7516-003	2.74	J
B10F41	R010023-04			7516-004	2.83	J
BLK (QC ID=36331)	R010023-06			7516-006	U	
LCS (QC ID=36330)	R010023-05			7516-005	LOW	J
Duplicate (R010023-02)	R010023-07			7516-007	ok	J
Spike (R010023-02)	R010023-08			7516-008	LOW	J

Nominal values and limits from method RDLs (pCi/g) 400
100-HR-3 Pump & Treat - Resin Smp.

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 6955-150	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 150															
B10F38	R010023-01			0.24	20.0			51		120			31	11/01/00	11/02	LSC-006
B10F39	R010023-02			0.19	20.0			64		120			31	11/01/00	11/02	LSC-006
B10F40	R010023-03			0.21	20.0			57		120			31	11/01/00	11/02	LSC-006
B10F41	R010023-04			0.23	20.0			53		120			31	11/01/00	11/02	LSC-006
BLK (QC ID=36331)	R010023-06			0.32	20.0			37		120				11/01/00	11/02	LSC-006
LCS (QC ID=36330)	R010023-05			0.34	20.0			35		120				11/01/00	11/02	LSC-006
Duplicate (R010023-02) (QC ID=36332)	R010023-07			0.23	20.0			52		120			31	11/01/00	11/02	LSC-006
Spike (R010023-02) (QC ID=36333)	R010023-08			0.21	20.0			59		120			31	11/01/00	11/02	LSC-006
Nominal values and limits from method				400	20.0					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1070

Test H	Matrix SOLID
SDG 7516	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1070	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-060	Soil Preparation, rev 2
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 2

AVERAGES ± 2 SD	MDA	0.25	±	0.11
FOR 8 SAMPLES	YIELD	51	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/25/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-52	Page 1 of 1

Collector: T.M. Johansen	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3 H1070 (7516)	SAF No.: B99-028	
Ice Chest No.: ERC 99.042 (1 of 3)	Field Logbook No.: EL-1516	COA: R10HR3C570	Method of Shipment: FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A00335	Bill of Lading/Air Bill No.: 4235 1953 - 9529	

TMJ 10-2-00

POSSIBLE SAMPLE HAZARDS/REMARKS: Samples originated in non-rad controlled area. NOTA Required

Special Handling and/or Storage

SAMPLE ANALYSIS													
Preservation				None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)				1	1	1	1	1	1	1	1		
Volume				60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
				Isotopic Uranium	Strontium-89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time										
B10F38	OTHER SOLID	10-2-00	1037	X	X	X	X						B10F42
B10F39	OTHER SOLID	10-2-00	1049	X	X	X	X						B10F43
B10F40	OTHER SOLID	10-2-00	1100	X	X	X	X						B10F44
B10F41	OTHER SOLID	10-2-00	1110	X	X	X	X						B10F45

Project use only: TJTJ

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	TMJohansen	10-2-00 1330	RThoren	10/2/00 1330
Relinquished By	RThoren	10/2/00 1400	Stored in Ref 2A 3728	10/2/00 1400
Relinquished By	Removed from Ref 2A 3728	10/3/00 1000	RThoren	10/3/00 1000
Relinquished By	RThoren	10/3/00 1000	FED EX	10-3-00
Relinquished By	Fed Ex	10-4-00 10:00	JR Cerveu	10-4-00 10:00
Relinquished By			Received By	

RT 10/3/00

SPECIAL INSTRUCTIONS

** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichloromonofluoromethane}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel}

FAXED 10/4/00

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wi=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 10-4-00 10:10

CoC No. B99-028-52

Container I.D. No. ERC94-043 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: 4
7. Number of containers per sample: 4 (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 [signature] Date: 10-4-00 Time: 10:10

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

DEC 2000
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F38						
% SOLIDS	001	SO	00L%S163	10/02/00	10/16/00	10/17/00
% SOLIDS	001 REP	SO	00L%S163	10/02/00	10/16/00	10/17/00
NITRATE BY IC	001	SO	00LAC064	10/02/00	10/24/00	10/24/00
NITRATE BY IC	001 REP	SO	00LBC065	10/02/00	10/25/00	10/25/00
NITRATE BY IC	001 MS	SO	00LAC066	10/02/00	10/26/00	10/26/00
TCLP	001	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F39						
% SOLIDS	002	SO	00L%S163	10/02/00	10/16/00	10/17/00
NITRATE BY IC	002	SO	00LBC065	10/02/00	10/25/00	10/25/00
TCLP	002	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F40						
% SOLIDS	003	SO	00L%S163	10/02/00	10/16/00	10/17/00
NITRATE BY IC	003	SO	00LBC065	10/02/00	10/25/00	10/25/00
TCLP	003	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F41						
% SOLIDS	004	SO	00L%S163	10/02/00	10/16/00	10/17/00
NITRATE BY IC	004	SO	00LBC065	10/02/00	10/25/00	10/25/00
TCLP	004	SO	00LTO115	10/02/00	10/17/00	10/18/00

LAB QC:

NITRATE BY IC	MB1	S	00LAC064	N/A	10/24/00	10/24/00
NITRATE BY IC	MB1 BS	S	00LAC064	N/A	10/24/00	10/24/00
NITRATE BY IC	MB1	S	00LBC065	N/A	10/25/00	10/25/00
NITRATE BY IC	MB1 BS	S	00LBC065	N/A	10/25/00	10/25/00
NITRATE BY IC	MB1	S	00LAC066	N/A	10/26/00	10/26/00
NITRATE BY IC	MB1 BS	S	00LAC066	N/A	10/26/00	10/26/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-028 H1070
RFW# : 0010L863

W.O. # : 10985-001-001-9999-00
Date Received: 10-04-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 solid 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 temperature was recorded on the chain-of-custody.

5. The method blanks for Nitrate were within method criteria.

6. The Laboratory Control Samples (LCS) for Nitrate were within the laboratory control limits.

7. The matrix spike recovery for Nitrate was within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

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

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-3-00
Date

njp\i10-863

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 10 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	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ 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)
Oxygen 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 Preparation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate **Method:** EPA 300.0

Other: **Method**

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 12/01/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10F38	% Solids	49.3	%	0.01	1.0
		Nitrate by IC	44	MG/KG	2.5	1.0
-002	B10F39	% Solids	49.7	%	0.01	1.0
		Nitrate by IC	43	MG/KG	2.5	1.0
-003	B10F40	% Solids	47.3	%	0.01	1.0
		Nitrate by IC	27	MG/KG	2.6	1.0
-004	B10F41	% Solids	47.5	%	0.01	1.0
		Nitrate by IC	30	MG/KG	2.6	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/01/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LAC064-MB1	Nitrate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	00LBC065-MB1	Nitrate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	00LAC066-MB1	Nitrate by IC	1.2	u	MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/01/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10F38	Nitrate by IC	150	44	100	104.2	2.0
BLANK10	00LAC064-MB1	Nitrate by IC	25	1.2 u	25	99.0	1.0
BLANK10	00LBC065-MB1	Nitrate by IC	25	1.2 u	25	99.7	1.0
BLANK10	00LAC066-MB1	Nitrate by IC	25	1.2 u	25	99.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/01/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10F38	% Solids	49.3	49.1	0.33	1.0
		Nitrate by IC	44	42	5.3	1.0

RECRA LabNet Use Only
0010L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-028
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-4-00 Date Due: ~~9-3~~ 11-3-00 TK 1040
Account #:

		A	B								C	D				
Refrigerator #		1	4								4	4				
#/Type Container	Liquid															
	Solid	1AG	1AG								1AG	1AG				
Volume	Liquid															
	Solid	250	250								250	500				
Preservatives		-	-								-	-				
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		0L24Y	0L25X						Meth(1)		ICP03	ITCLP				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0L24Y	0L25X	Meth(1)	ICP03	ITCLP
B - Soil	001	B10F38			So	10-2-00	1037	✓	✓		✓	✓
SE - Sediment	002	39					1049	✓	✓		✓	✓
SO - Solid	003	40					1100	✓	✓		✓	✓
SL - Sludge	004	41					1110	✓	✓		✓	✓
W - Water	005	B10F38 tclp of 001			L	*	-			✓		
O - Oil	006	39 002					-			✓		
A - Air	007	40 003					-			✓		
DS - Drum Solids	008	41 004					-			✓		
DL - Drum Liquids												
L - EP/TCLP Leachate												
WI - Wipe												
X - Other												
F - Fish												

Special Instructions: Saf B99-028

Run Matrix QC

DATE/REVISIONS:

Meth(1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
* 2. See lab chron
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	JBoppel	10-4-00	0915

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # See back
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. 2.9 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
423579539551

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-52	Page 1 of 1

Collector: T.M. Johansen	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	
Ice Chest No.: ERC-96-036 (10FZ)	Field Logbook No.: EL-1516	COA: R10HR3C570	Method of Shipment: FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A00345	Bill of Lading/Air Bill No.: 4235 7953-9551	

TMJ 10-2-00

POSSIBLE SAMPLE HAZARDS/REMARKS: Samples originated in non-Rad Controlled area. <2000pCi/g NO TA required.

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Strontium 89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions		TID:
B10F38	OTHER SOLID	10-2-00	1037					X	X	X	X		B10F42
B10F39	OTHER SOLID	10-2-00	1049					X	X	X	X		B10F43
B10F40	OTHER SOLID	10-2-00	1100					X	X	X	X		B10F44
B10F41	OTHER SOLID	10-2-00	1110					X	X	X	X		B10F45

Project only

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10-2-00 1330	R Thoren [signature]	10-2-00 1330
R Thoren [signature]	10/2/00 1400	R.T. 10/2/00 Stored in Ref 2A 3728 10/2/00	1400
Removed from Ref 2A 3728 10/3/00 (R.T. 10/3/00)	1000	R Thoren [signature]	10/3/00 1000
R Thoren [signature]	10/3/00 1000	FEDEX	
FedEx	10-4-00 0915	JKoppel	10-4-00 0915

SPECIAL INSTRUCTIONS

** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)

(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/99)

DEC 2000
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F38						
TCLP	001	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F39						
TCLP	002	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F40						
TCLP	003	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F41						
TCLP	004	SO	00LTO115	10/02/00	10/17/00	10/18/00
B10F38						
SILVER, TCLP LEACHAT	005	W	99L1642	10/18/00	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	005	W	99L1642	10/18/00	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	005	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	005	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	005	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	005	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	005	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	005	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	005	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	005	W	99L1642	10/18/00	10/20/00	10/22/00
B10F39						
SILVER, TCLP LEACHAT	006	W	99L1642	10/18/00	10/20/00	10/22/00
SILVER, TCLP LEACHAT	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
SILVER, TCLP LEACHAT	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	006	W	99L1642	10/18/00	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TCLP LEACHAT	006	W	99L1642	10/18/00	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	006	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	006	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	006	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	006	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	006	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	006	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	006	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	006 REP	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	006 MS	W	99L1642	10/18/00	10/20/00	10/22/00
B10F40						
SILVER, TCLP LEACHAT	007	W	99L1642	10/18/00	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	007	W	99L1642	10/18/00	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	007	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	007	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	007	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	007	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	007	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	007	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	007	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	007	W	99L1642	10/18/00	10/20/00	10/22/00
B10F41						
SILVER, TCLP LEACHAT	008	W	99L1642	10/18/00	10/20/00	10/22/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	008	W	99L1642	10/18/00	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	008	W	99L1642	10/18/00	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	008	W	99L1642	10/18/00	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	008	W	99L1642	10/18/00	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	008	W	99L1642	10/18/00	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	008	W	99L1642	10/18/00	10/20/00	10/22/00
LEAD, TCLP LEACHATE	008	W	99L1642	10/18/00	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	008	W	99L1642	10/18/00	10/20/00	10/22/00
SELENIUM, TCLP LEACH	008	W	99L1642	10/18/00	10/20/00	10/22/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
SILVER, TCLP LEACHAT	MB1	W	99L1642	N/A	10/20/00	10/22/00
SILVER, TCLP LEACHAT	MB2	W	99L1642	N/A	10/20/00	10/22/00
SILVER, TCLP LEACHAT	MB3	W	99L1642	N/A	10/20/00	10/22/00
ARSENIC LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	MB1	W	99L1642	N/A	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	MB2	W	99L1642	N/A	10/20/00	10/22/00
ARSENIC, TCLP LEACHA	MB3	W	99L1642	N/A	10/20/00	10/22/00
BARIUM LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	MB1	W	99L1642	N/A	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	MB2	W	99L1642	N/A	10/20/00	10/22/00
BARIUM, TCLP LEACHAT	MB3	W	99L1642	N/A	10/20/00	10/22/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1642	N/A	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1642	N/A	10/20/00	10/22/00
BERYLLIUM, TCLP LEAC	MB3	W	99L1642	N/A	10/20/00	10/22/00
CADMIUM LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	MB1	W	99L1642	N/A	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	MB2	W	99L1642	N/A	10/20/00	10/22/00
CADMIUM, TCLP LEACHA	MB3	W	99L1642	N/A	10/20/00	10/22/00
CHROMIUM LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	MB1	W	99L1642	N/A	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	MB2	W	99L1642	N/A	10/20/00	10/22/00
CHROMIUM, TCLP LEACH	MB3	W	99L1642	N/A	10/20/00	10/22/00
NICKEL LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	MB1	W	99L1642	N/A	10/20/00	10/22/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	MB2	W	99L1642	N/A	10/20/00	10/22/00
NICKEL, TCLP LEACHAT	MB3	W	99L1642	N/A	10/20/00	10/22/00
LEAD LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
LEAD, TCLP LEACHATE	MB1	W	99L1642	N/A	10/20/00	10/22/00
LEAD, TCLP LEACHATE	MB2	W	99L1642	N/A	10/20/00	10/22/00
LEAD, TCLP LEACHATE	MB3	W	99L1642	N/A	10/20/00	10/22/00
ANTIMONY LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	MB1	W	99L1642	N/A	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	MB2	W	99L1642	N/A	10/20/00	10/22/00
ANTIMONY, TCLP LEACH	MB3	W	99L1642	N/A	10/20/00	10/22/00
SELENIUM LABORATORY	LC1 BS	W	99L1642	N/A	10/20/00	10/22/00
SELENIUM, TCLP LEACH	MB1	W	99L1642	N/A	10/20/00	10/22/00
SELENIUM, TCLP LEACH	MB2	W	99L1642	N/A	10/20/00	10/22/00
SELENIUM, TCLP LEACH	MB3	W	99L1642	N/A	10/20/00	10/22/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW#: 0010L863
SDG/SAF#: H1070/B99-028

W.O.#: 10985-001-001-9999-00
Date Received: 10-04-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 TCLP leachate samples.

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

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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 80-120% control limits. Refer to form 7.

10. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

11. The TCLP extract from sample B10F39 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

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

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

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

gmb/m10-863

12-6-00
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00101L863

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B10F38	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	30.7		UG/L	2.3	1.0
		Barium, TCLP Leachate	42.4		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30		UG/L	0.30	1.0
		Chromium, TCLP Leachate	1850		UG/L	0.60	1.0
		Nickel, TCLP Leachate	5.2		UG/L	1.2	1.0
		Lead, TCLP Leachate	2.9	u	UG/L	2.9	1.0
		Antimony, TCLP Leachate	11.4		UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0
-006	B10F39	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	2.3	u	UG/L	2.3	1.0
		Barium, TCLP Leachate	45.7		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1930		UG/L	0.60	1.0
		Nickel, TCLP Leachate	3.7		UG/L	1.2	1.0
		Lead, TCLP Leachate	10.3		UG/L	2.9	1.0
		Antimony, TCLP Leachate	1.9	u	UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B10F40	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	31.1		UG/L	2.3	1.0
		Barium, TCLP Leachate	7.4		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	4040		UG/L	0.60	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	3.6		UG/L	2.9	1.0
		Antimony, TCLP Leachate	1.9	u	UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0
-008	B10F41	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	43.3		UG/L	2.3	1.0
		Barium, TCLP Leachate	7.6		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	4570		UG/L	0.60	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	4.4		UG/L	2.9	1.0
		Antimony, TCLP Leachate	1.9	u	UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1642-MB1	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	2.3	u	UG/L	2.3	1.0
		Barium, TCLP Leachate	0.20	u	UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	1.9		UG/L	0.30	1.0
		Chromium, TCLP Leachate	0.60	u	UG/L	0.60	1.0
		Nickel, TCLP Leachate	2.9		UG/L	1.2	1.0
		Lead, TCLP Leachate	2.9	u	UG/L	2.9	1.0
		Antimony, TCLP Leachate	14.7		UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0
BLANK2	99L1642-MB2	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	31.6		UG/L	2.3	1.0
		Barium, TCLP Leachate	1.6		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	2.3		UG/L	0.60	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	2.9	u	UG/L	2.9	1.0
		Antimony, TCLP Leachate	1.9	u	UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0
BLANK3	99L1642-MB3	Silver, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Arsenic, TCLP Leachate	19.3		UG/L	2.3	1.0
		Barium, TCLP Leachate	0.41		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	0.82		UG/L	0.60	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	2.9	u	UG/L	2.9	1.0
		Antimony, TCLP Leachate	1.9	u	UG/L	1.9	1.0
		Selenium, TCLP Leachate	4.7	u	UG/L	4.7	1.0

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INORGANICS ACCURACY REPORT 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-006	B10F39	Silver, TCLP Leachate	3210	1.4 u	5000	64.3	1.0
		Arsenic, TCLP Leachate	4910	2.3 u	5000	98.2	1.0
		Barium, TCLP Leachate	97100	45.7	100000	97.0	1.0
		Beryllium, TCLP Leacha	872	0.10u	1000	87.2	1.0
		Cadmium, TCLP Leachate	945	0.30u	1000	94.5	1.0
		Chromium, TCLP Leachat	6550	1930	5000	92.3	1.0
		Nickel, TCLP Leachate	947	3.7	1000	94.4	1.0
		Lead, TCLP Leachate	4850	10.3	5000	96.8	1.0
		Antimony, TCLP Leachat	670	1.9 u	1000	67.0	1.0
		Selenium, TCLP Leachat	954	4.7 u	1000	95.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-006REP	B10F39	Silver, TCLP Leachate	1.4 u	1.4 u	NC	1.0
		Arsenic, TCLP Leachate	2.3 u	30.4	~~NC~~ 200	1.0
		Barium, TCLP Leachate	45.7	48.7	6.4	1.0
		Beryllium TCLP Leachate	0.10u	0.10u	NC	1.0
		Cadmium, TCLP Leachate	0.30u	3.0	~~NC~~ 200	1.0
		Chromium, TCLP Leachate	1930	2000	3.6	1.0
		Nickel, Leachate	3.7	5.5	39.1	1.0
		Lead, TCLP Leachate	10.3	2.9 u	~~NC~~ 200	1.0
		Antimony, Leachate	1.9 u	13.7	~~NC~~ 200	1.0
		Selenium, TCLP Leachate	4.7 u	4.7 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/05/00

CLIENT: TNUHANFORD B99-028 H1070 RECRA LOT #: 0010L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1642-LC1	Silver, LCS	471	500	UG/L	94.3
		Arsenic, LCS	9730	10000	UG/L	97.3
		Barium, LCS	4560	5000	UG/L	91.2
		Beryllium, LCS	230	250	UG/L	91.8
		Cadmium, LCS	220	250	UG/L	88.1
		Chromium, LCS	465	500	UG/L	93.0
		Nickel, LCS	1940	2000	UG/L	97.2
		Lead, LCS	2420	2500	UG/L	96.7
		Antimony, LCS	2810	3000	UG/L	93.5
		Selenium, LCS	9530	10000	UG/L	95.3

RECRA LabNet Use Only
0010L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-028
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-4-00 Date Due: 9-3-11-3-00 TE 1040
Account #:

		A	B								C	D				
Refrigerator #		1	4								4	4				
#/Type Container	Liquid															
	Solid	1AG	1AG								1AG	1AG				
Volume	Liquid															
	Solid	250	250								250	500				
Preservatives		-	-								-	-				
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		OLA24V	OLA5X						Mcl(1)		ICP03	ITCLP				

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	OLA24V	OLA5X	Mcl(1)	ICP03	ITCLP
001	B10F38			SO	10-2-00	1037	✓	✓		✓	✓
002	39					1049	✓	✓		✓	✓
003	40					1100	✓	✓		✓	✓
004	41					1110	✓	✓		✓	✓
005	B10F38 tclp of 001			L	*	-			✓		
006	39 002					-			✓		
007	40 003					-			✓		
008	41 004					-			✓		

Special Instructions: SAF B99-028

Run Matrix QC

DATE/REVISIONS:
Mcl(1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
* 2. See lab chron
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See back
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. 2.9 °C

Relinquished by	Received by	Date	Time
FedEx	JBrand	10-4-00	0915

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL!

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235795395 51

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-52	Page 1 of 1
Collector: T.M. Johansen	Company Contact: T Pickett; Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N; Air Quality ☐
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	Data Turnaround: 45 Days
Ice Chest No.: ERC-96-036 (1 of 2)	Field Logbook No.: EL-1516; COA: R10HR3C570	Method of Shipment: FED EX	
Shipped To: TMA/RECRA	Offsite Property No.: A000345	Bill of Lading/Air Bill No.: 4235 7953-9551	

TMD 10-2-00

POSSIBLE SAMPLE HAZARDS/REMARKS: Samples originated in non-Rad Controlled area. <2000pCi/g NO TA required.

Special Handling and/or Storage:

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium 89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time							
B10F38	OTHER SOLID	10-2-00	1037				X	X	X	X		B10F42
B10F39	OTHER SOLID	10-2-00	1049				X	X	X	X		B10F43
B10F40	OTHER SOLID	10-2-00	1100				X	X	X	X		B10F44
B10F41	OTHER SOLID	10-2-00	1110				X	X	X	X		B10F45

project only → TIOD:

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	T.M. Johansen	10-2-00 1330	R Thoren	1330 10-2-00
Relinquished By	R Thoren	10/2/00 1400	Received By: 10/2/00	1400
Relinquished By	Remained from Ref 2A 3728	10/3/00 1000	Stored in Ref 2A 3728 10/2/00 / R Thoren	10/3/00 1000
Relinquished By	R Thoren	10/3/00 1000	Received By	
Relinquished By	FedEx	10-4-00 0915	Received By: FEDEX	
Relinquished By			Received By: Thoppel	10-4-00 0915

R+ 10/3/00

SPECIAL INSTRUCTIONS

** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichlorotrifluoromethane)

(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F38	001	SO	00LE1269	10/02/00	10/05/00	11/10/00
B10F38	001 MS	SO	00LE1269	10/02/00	10/05/00	11/11/00
B10F38	001 MSD	SO	00LE1269	10/02/00	10/05/00	11/11/00
B10F39	002	SO	00LE1269	10/02/00	10/05/00	11/10/00
B10F40	003	SO	00LE1269	10/02/00	10/05/00	11/10/00
B10F41	004	SO	00LE1269	10/02/00	10/05/00	11/10/00
LAB QC:						
SBLKCR	MB1	S	00LE1269	N/A	10/05/00	10/10/00
SBLKCR	MB1 BS	S	00LE1269	N/A	10/05/00	10/11/00

DEC 2000
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW #: 0010L863
SDG/SAF #: H1070/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 10-04-00

SEMIVOLATILE

The set of samples consisted of four (4) solid samples collected on 10-02-00.

The samples and their associated QC samples were extracted on 10-05-00 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for client specified Bis(2-ethylhexyl) phthalate on 10-10,11-00 and 11-10,11-00.

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 temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. All surrogate recoveries were within EPA QC limits.

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

   Four (4) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

   The target compound is not in the spiking solution. A CLP form 3 is included in the data package. Pentachlorophenol and 4-nitrophenol were not recovered in the matrix spike analyses; however all recoveries were within criteria in the blank spiked analysis, indicating a probable matrix effect.

5. The method blank contained the target compound Bis(2-Ethylhexyl)phthalate at levels less than the CRQL.

6. Manual integrations are performed according to OP L-QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in Section III ("Technical Flags For Manual Integration"); hard copies of the integrations have been included with the quantitation data.

7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

By _____ 11-27-00
J. Michael Taylor — Date
VP, Laboratory General Manager
Lionville Laboratory

pef\group\data\bna\tnu-hanford-10-874.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 10 pages.

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

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

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Special List

Report Date: 11/19/00 12:42

RFW Batch Number: **0010L863** Client: **TNUHANFORD B99-028 H1070** Work Order: 10985001001 Page: 1a

	Cust ID:	B10F38		B10F38		B10F38		B10F39		B10F40		B10F41	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	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	75	%	78	%	81	%	80	%	77	%	70	%
	2-Fluorobiphenyl	67	%	70	%	72	%	72	%	68	%	68	%
	p-Terphenyl-d14	86	%	88	%	83	%	101	%	88	%	91	%
bis(2-Ethylhexyl)phthalate		72	JB	47	JB	38	JB	69	JB	700	U	49	JB

	Cust ID:	SBLKCR		SBLKCR BS	
Sample Information	RFW#:	00LE1269-MB1		00LE1269-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	77	%	82	%
	2-Fluorobiphenyl	82	%	87	%
	p-Terphenyl-d14	93	%	100	%
bis(2-Ethylhexyl)phthalate		31	J	46	JB

*= Outside of EPA CLP QC limits.

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet Contract: 0985-01-01

Case No.: TNUHANFORD B99-028 H1070 RFW Lot No.: 0010L863-001

MATRIX Spike - Sample No.: B10F38

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC.
Phenol	5060	0	3040	60	26 - 90
2-Chlorophenol	5060	0	3100	61	25 -102
1,4-Dichlorobenzene	3370	0	1860	55	28 -104
N-Nitroso-di-n-prop.(1)	3370	0	2150	64	41 -126
1,2,4-Trichlorobenzene	3370	0	2160	64	38 -107
4-Chloro-3-methylphenol	5060	0	3390	67	26 -103
Acenaphthene	3370	0	2190	65	31 -137
4-Nitrophenol	5060	0	0	0 *	11 -114
2,4-Dinitrotoluene	3370	0	2450	73	28 - 89
Pentachlorophenol	5060	0	0	0 *	17 -109
Pyrene	3370	0	2210	66	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	5070	3360	66	9	35	26 - 90
2-Chlorophenol	5070	3430	68	10	50	25 -102
1,4-Dichlorobenzene	3380	2240	66	18	27	28 -104
N-Nitroso-di-n-prop.(1)	3380	2270	67	4	38	41 -126
1,2,4-Trichlorobenzene	3380	2450	72	11	23	38 -107
4-Chloro-3-methylphenol	5070	3480	69	2	33	26 -103
Acenaphthene	3380	2250	66	1	19	31 -137
4-Nitrophenol	5070	0	0 *	0	50	11 -114
2,4-Dinitrotoluene	3380	2520	74	1	47	28 - 89
Pentachlorophenol	5070	0	0 *	0	47	17 -109
Pyrene	3380	2030	60	9	36	35 -142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: _____

3D

SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet Contract: ONE

Case No.: TNUHANFORD B99-028 H1070 RFW Lot No.: 0010L863

BLANK Spike - Sample No.: SBLKCRLE1269-MB1 Level (low/med): LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC.
Phenol	2500	0	2130	85	26 - 90
2-Chlorophenol	2500	0	2100	84	25 -102
1,4-Dichlorobenzene	1670	0	1190	71	28 -104
N-Nitroso-di-n-prop.(1)	1670	0	1230	74	41 -126
1,2,4-Trichlorobenzene	1670	0	1260	75	38 -107
4-Chloro-3-methylphenol	2500	0	2090	84	26 -103
Acenaphthene	1670	0	1260	76	31 -137
4-Nitrophenol	2500	0	2030	81	11 -114
2,4-Dinitrotoluene	1670	0	1330	80	28 - 89
Pentachlorophenol	2500	0	1460	59	17 -109
Pyrene	1670	0	1380	83	35 -142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

RECRA LabNet Use Only
0010L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-028
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-4-00 Date Due: 9-3-11-3-00 TR 10-4-00
Account #:

		A	B								C	D				
Refrigerator #		1	1								1	1				
#/Type Container	Liquid															
	Solid	1AG	1AG								1AG	1AG				
Volume	Liquid															
	Solid	250	250								250	500				
Preservatives		-	-								-	-				
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		OLC24V	OLC25X						Met(1)		ICP03	ITCLP				

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	OLC24V	OLC25X						Met(1)		ICP03	ITCLP				
001	B10F38			SO	10-2-00	1037	✓	✓								✓	✓				
002	39					1049	✓	✓								✓	✓				
003	40					1100	✓	✓								✓	✓				
004	41					1110	✓	✓								✓	✓				
005	B10F38 tclp of 001			L	*	-								✓							
006	39 002					-								✓							
007	40 003					-								✓							
008	41 004					-								✓							

Special Instructions: SAF B99-028

Run Matrix QC

DATE/REVISIONS:
Met(1) 1. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
* 2. See lab chron
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	TBapp	10-4-00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRAPPED		

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N
Cooler Temp. 2.9 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
423579539551

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-52	Page 1 of 1

Collector: T.M. Johansen	Company Contact: T Pickett	Telephone No.: 373-4630	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	
Ice Chest No.: ERC-96-036 (10F2)	Field Logbook No.: EL-1516	COA: R10HR3C570	Method of Shipment: FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A000345		Bill of Lading/Air Bill No.: 4235 7953-9551

TMD 10-2-00

POSSIBLE SAMPLE HAZARDS/REMARKS
Samples originated in non-Rad Controlled area. <2000pCi/g
NO TA required.

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium 89,90 -- Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC Anions - 300.0 (Nitrate)	See item (2) in Special Instructions		TICID:

Sample No.	Matrix *	Sample Date	Sample Time										
B10F38	OTHER SOLID	10-2-00	1037					X	X	X	X		B10F42
B10F39	OTHER SOLID	10-2-00	1049					X	X	X	X		B10F43
B10F40	OTHER SOLID	10-2-00	1100					X	X	X	X		B10F44
B10F41	OTHER SOLID	10-2-00	1110					X	X	X	X		B10F45

Project use only

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	10-2-00 1330	R. Thoren	10-2-00 1330
R Thoren	10/2/00 1400	RT 10/2/00	1400
Remained from Ref 2A 3728	10/3/00 1000	Stored in Ref 2A 3728	10/2/00
R Thoren	10/3/00 1000	R. Thoren	10/3/00 1000
R Thoren	10/3/00 1000	FEDEX	
FedEx	10-4-00 0915	T Koppel	10-4-00 0915

Ref spl

SPECIAL INSTRUCTIONS
** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)

Matrix *
S=Soil
SE=Sediment
SD=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-028 H1070

DATE RECEIVED: 10/04/00 RFW LOT # :0010L863

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10F38	001	SO	00LVH440	10/02/00	N/A	10/11/00
B10F38	001 R1	SO	00LVH443	10/02/00	N/A	10/12/00
B10F39	002	SO	00LVH440	10/02/00	N/A	10/11/00
B10F39	002 R1	SO	00LVH443	10/02/00	N/A	10/12/00
B10F40	003	SO	00LVH440	10/02/00	N/A	10/11/00
B10F40	003 R1	SO	00LVH443	10/02/00	N/A	10/12/00
B10F41	004	SO	00LVH440	10/02/00	N/A	10/11/00
B10F41	004 MS	SO	00LVH443	10/02/00	N/A	10/12/00
B10F41	004 MSD	SO	00LVH443	10/02/00	N/A	10/12/00

LAB QC:

VBLKTR	MB1	S	00LVH440	N/A	N/A	10/11/00
VBLKTR	MB1 BS	S	00LVH440	N/A	N/A	10/11/00
VBLKXD	MB1	S	00LVH443	N/A	N/A	10/12/00
VBLKXD	MB1 BS	S	00LVH443	N/A	N/A	10/12/00

DEC 2000
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-028
RFW #: 0010L863
SDG/SAF #: H1070/B99-028

W.O. #: 10985-001-001-9999-00
Date Received: 10-04-00

GC/MS VOLATILE

The set of samples consisted of four (4) solids samples collected on 10-02-00.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified target compounds on 10-11,12-00.

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 temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were analyzed within required holding time.

4. Ten (10) of thirty-nine (39) surrogate recoveries were outside EPA QC limits. All samples were re-analyzed and reported with the exception of Sample B10F41. For Sample B10F41 the associated matrix spike analyses fulfilled the re-analysis requirement.

5. All matrix spike recoveries were within EPA QC limits. However, the target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

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

7. The method blanks contained the common laboratory contaminant Methylene Chloride.

8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

By _____ 11-28-00
J. Michael Taylor — Date
VP, Laboratory General Manager
Lionville Laboratory

pef\group\data\voa\tnu-hanford-10-863.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 119 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.

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 11/22/00 10:07

RFW Batch Number: **0010L863** Client: **TNUHANFORD B99-028 H1070** Work Order: 10985001001 Page: 1a

	Cust ID:	B10F38	B10F38	B10F39	B10F39	B10F40	B10F40
Sample Information	RFW#:	001	001	002	002	003	003
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.04	1.02	1.09	1.06	1.11	1.06
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
			REPREP		REPREP		REPREP
Surrogate Recovery	1,2-Dichloroethane-d4	114 %	70 %	124 %	76 %	111 %	79 %
	Toluene-d8	150 * %	136 %	142 * %	138 %	139 %	136 %
	Bromofluorobenzene	75 %	64 * %	74 %	66 %	72 %	61 * %
		fl	fl	fl	fl	fl	fl
Trichlorofluoromethane		3 J	10 U	4 J	10 U	3 J	2 J
Methylene Chloride		37 B	57 B	43 B	59 B	40 B	46 B
Chloroform		12	4 J	14	6 J	10 J	6 J

	Cust ID:	B10F41	B10F41	B10F41	VBLKTR	VBLKTR BS	VBLKXD
Sample Information	RFW#:	004	004 MS	004 MSD	00LVH440-MB1	00LVH440-MB1	00LVH443-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL	SOIL
	D.F.:	1.09	0.980	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	107 %	86 %	86 %	98 %	95 %	78 %
	Toluene-d8	148 * %	143 * %	146 * %	104 %	99 %	96 %
	Bromofluorobenzene	65 * %	57 * %	54 * %	87 %	85 %	74 %
		fl	fl	fl	fl	fl	fl
Trichlorofluoromethane		3 J	2 J	2 J	5 U	5 U	5 U
Methylene Chloride		54 B	50 B	56 B	7	7 B	14
Chloroform		12	8 J	8 J	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 11/22/00 10:07

RFW Batch Number: **0010L863** Client: **TNUHANFORD B99-028 H1070** Work Order: 10985001001 Page: 2a

Cust ID: **VBLKXD BS**

Sample Information		
RFW#:	**00LVH443-MB1**	
Matrix:	SOIL	
D.F.:	1.00	
Units:	UG/KG	

Surrogate Recovery	1,2-Dichloroethane-d4	81	%
	Toluene-d8	95	%
	Bromofluorobenzene	75	%

==========fl==========fl==========fl==========fl==========fl==========fl

Trichlorofluoromethane	5	U
Methylene Chloride	7	B
Chloroform	5	U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only
0010L863

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B99-028
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-4-00 Date Due: 9-3-11-3-00 TK 1040
Account #:

	A	B	C	D
Refrigerator #	1	4	4	4
#/Type Container: Liquid				
#/Type Container: Solid	1AG	1AG	1AG	1AG
Volume: Liquid				
Volume: Solid	250	250	250	500
Preservatives	-	-	-	-
ANALYSES REQUESTED (ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN)				
RECRA LabNet Use Only	OLC24V	OLC25X	Met(1)	ICP03 / ITCLP

MATRIX CODES: B - 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	OLC24V	OLC25X	Met(1)	ICP03	ITCLP
001	B10F38			SO	10-2-00	1037	✓	✓		✓	✓
002	39					1049	✓	✓		✓	✓
003	40					1100	✓	✓		✓	✓
004	41					1110	✓	✓		✓	✓
005	B10F38 trip of 001			L	*	-			✓		
006	39 002					-			✓		
007	40 003					-			✓		
008	41 004					-			✓		

Special Instructions: SAF B99-028
Run Matrix QC

DATE/REVISIONS:
1. Met(1) As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
2. * See lab chron
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # See below
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. 2.9 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 423579539551

Relinquished by	Received by	Date	Time
FedEx	TRapp	10-4-00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRAPPED	

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-028-52	Page 1 of 1

Collector: T.M. Johansen	Company Contact: T Pickett — Telephone No.: 373-4630	Project Coordinator: TRENT, SJ	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100-HR-3 Pump & Treat - Resin Sampling	Sampling Location: 100-HR-3	SAF No.: B99-028	Air Quality ☐
Ice Chest No.: ERC-96-036 (10F2)	Field Logbook No.: EL-1516 — COA: R10HR3C570	Method of Shipment: FED EX	
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A00034S	Bill of Lading/Air Bill No.: 4235 7953-9551	

TMJ 10-2-00

POSSIBLE SAMPLE HAZARDS/REMARKS: Samples originated in non-Rad Controlled area. <2000pCi/g NO TA required.

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	250mL	60mL	125mL	250mL	250mL	250mL	500mL		
SAMPLE ANALYSIS	Isotopic Uranium	Strontium 89,90 -- Total Sr	Radioactive 99	Tritium - H3	Semi-VOA - 8270A (TCL) {Bis(2-ethylhexyl) phthalate}	See item (1) in Special Instructions	IC Anions - 300.0 {Nitrate}	See item (2) in Special Instructions		

HOLD for RECORE

project us only → TICID:

Sample No.	Matrix *	Sample Date	Sample Time											
B10F38	OTHER SOLID	10-2-00	1037					X	X	X	X			B10F42
B10F39	OTHER SOLID	10-2-00	1049					X	X	X	X			B10F43
B10F40	OTHER SOLID	10-2-00	1100					X	X	X	X			B10F44
B10F41	OTHER SOLID	10-2-00	1110					X	X	X	X			B10F45

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	[signature]	10-2-00 1330	RThoren [signature]	10-2-00 1330
Relinquished By	RThoren [signature]	10/2/00 1400	Received By RT 10/2/00	Date/Time 1400
Relinquished By	Remained from Ref 2A 3728	10/3/00 1000	Stored in Ref 2A 3728	10/3/00
Relinquished By	RThoren [signature]	10/3/00 1000	Received By RThoren [signature]	Date/Time 10/3/00 1000
Relinquished By	RThoren [signature]	10/3/00 1000	Received By FEDEX	Date/Time
Relinquished By	FedEx	10-4-00 0915	Received By TKoppel	10-4-00 0915
Relinquished By		Date/Time	Received By	Date/Time

Ref 2A 3728

SPECIAL INSTRUCTIONS

** If a limited quantity of sample material is received, perform analyses in order listed on the FSR.

(1) VOA - 8260A (TCL) {Chloroform, Methylenechloride}; VOA - 8260A (Add-On) {Trichloromonofluoromethane}
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel}

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/99)