H1053

0054258

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1053 was composed of four other solid samples designated under SAF No. B99-029 with a Project Designation of: 100-KR-4 Pump & Treat-Resin Sampling.

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

RECEIVED
JAN 09 2000
EDMC

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 (71%) was below both the 3σ limits (88 to 112%) and the laboratory protocol limits (80 to 120%), but with BHI's limits of 70 to 130%. 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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1053

SAMPLE SUMMARY

SDG 7504
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1053

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0XC71	100-KR-4	SOLID		R009148-03	B99-029	B99-029-56	09/22/00 11:55
B0XC73	100-KR-4	SOLID		R009148-04	B99-029	B99-029-56	09/22/00 12:10
B10996	100-KR-4	SOLID		R009148-01	B99-029	B99-029-55	09/22/00 11:10
B10997	100-KR-4	SOLID		R009148-02	B99-029	B99-029-55	09/22/00 11:30
Method Blank		SOLID		R009148-06	B99-029		
Lab Control Sample		SOLID		R009148-05	B99-029		
Duplicate (R009148-01)	100-KR-4	SOLID		R009148-07	B99-029		09/22/00 11:10

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 H1053

QC SUMMARY

SDG 7504
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1053

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
7504	B99-029-55	B10996	SOLID	100.0			09/27/00	5	R009148-01	7504-001
		B10997	SOLID	100.0			09/27/00	5	R009148-02	7504-002
	B99-029-56	BOXC71	SOLID	100.0			09/27/00	5	R009148-03	7504-003
		BOXC73	SOLID	100.0			09/27/00	5	R009148-04	7504-004
		Method Blank	SOLID						R009148-06	7504-006
		Lab Control Sample	SOLID						R009148-05	7504-005
		Duplicate (R009148-01)	SOLID	100.0			09/27/00	5	R009148-07	7504-007

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 H1053

SDG 7504
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1053

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	6955-110	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6955-110	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6955-110	10.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6955-110	10.0	4			1	1	1/1		

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

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1053

WORK SUMMARY

SDG 7504
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1053

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0XC71			R009148-03	7504-003	H		11/06/00	11/24/00	MCM	Tritium in Soil
100-KR-4		SOLID	09/22/00	7504-003	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
B99-029-56	B99-029		09/27/00	7504-003	TC		11/08/00	11/24/00	MCM	Technetium 99 in Soil
				7504-003	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
B0XC73			R009148-04	7504-004	H		11/06/00	11/24/00	MCM	Tritium in Soil
100-KR-4		SOLID	09/22/00	7504-004	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
B99-029-56	B99-029		09/27/00	7504-004	TC		11/08/00	11/24/00	MCM	Technetium 99 in Soil
				7504-004	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
B10996			R009148-01	7504-001	H		11/06/00	11/24/00	MCM	Tritium in Soil
100-KR-4		SOLID	09/22/00	7504-001	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
B99-029-55	B99-029		09/27/00	7504-001	TC		11/03/00	11/24/00	MCM	Technetium 99 in Soil
				7504-001	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
B10997			R009148-02	7504-002	H		11/06/00	11/24/00	MCM	Tritium in Soil
100-KR-4		SOLID	09/22/00	7504-002	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
B99-029-55	B99-029		09/27/00	7504-002	TC		11/03/00	11/24/00	MCM	Technetium 99 in Soil
				7504-002	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
Method Blank			R009148-06	7504-006	H		11/05/00	11/24/00	MCM	Tritium in Soil
		SOLID		7504-006	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
	B99-029			7504-006	TC		11/03/00	11/24/00	MCM	Technetium 99 in Soil
				7504-006	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R009148-05	7504-005	H		11/06/00	11/24/00	MCM	Tritium in Soil
		SOLID		7504-005	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
	B99-029			7504-005	TC		11/03/00	11/24/00	MCM	Technetium 99 in Soil
				7504-005	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil
Duplicate (R009148-01)			R009148-07	7504-007	H		11/06/00	11/24/00	MCM	Tritium in Soil
100-KR-4		SOLID	09/22/00	7504-007	SR		10/26/00	11/24/00	MCM	Total Strontium in Soil
	B99-029		09/27/00	7504-007	TC		11/08/00	11/24/00	MCM	Technetium 99 in Soil
				7504-007	U		11/01/00	11/24/00	MCM	Uranium, Isotopic in Soil

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 H1053

SDG 7504
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1053

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-029	Tritium in Soil	TRITIUM_COX_LSC	4			1	1	1	7
SR	B99-029	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1	7
TC	B99-029	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1	7
U	B99-029	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				16			4	4	4	28

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 H1053

R009148-06 Method Blank

METHOD BLANK

SDG	7504	Client/Case no	Hanford		SDG H1053
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R009148-06	Client sample id	Method Blank		
Dept sample id	7504-006	Material/Matrix			SOLID
		SAF No	B99-029		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-19.1	4.8	8.8	400	U	H
Total Strontium	SR-RAD	-0.012	0.13	0.18	1.0	U	SR
Technetium 99	14133-76-7	0.150	0.15	0.37	15	U	TC
Uranium 233	U-233/234	-0.013	0.026	0.099	1.0	U	U
Uranium 235	15117-96-1	0.016	0.031	0.12	1.0	U	U
Uranium 238	U-238	0	0.026	0.099	1.0	U	U

100-KR-4 Pump & Treat - Resin Smp.

QC-BLANK 36275

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 H1053

R009148-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7504
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1053
Case no TRC-SBB-207925

Lab sample id R009148-05
Dept sample id 7504-005

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B99-029

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	1070	17	7.4	400		H	1500	60	71	88-112	80-120
Total Strontium	12.8	0.70	0.27	1.0		SR	12.2	0.49	105	81-119	80-120
Technetium 99	57.5	1.6	0.40	15		TC	56.7	2.3	101	83-117	80-120
Uranium 233	4.73	0.62	0.30	1.0		U	4.83	0.19	98	79-121	80-120
Uranium 235	3.84	0.53	0.086	1.0		U	3.92	0.16	98	78-122	80-120
Uranium 238	5.28	0.66	0.28	1.0		U	5.24	0.21	101	79-121	80-120

100-KR-4 Pump & Treat - Resin Smp.

QC-LCS 36274

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 H1053

R009148-07 B10996

DUPLICATE

SDG	7504			Client/Case no	Hanford SDG H1053
Contact	Melissa C. Mannion			Case no	TRC-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	R009148-07	Lab sample id	R009148-01	Client sample id	B10996
Dept sample id	7504-007	Dept sample id	7504-001	Location/Matrix	100-KR-4 SOLID
		Received	09/27/00	Collected	09/22/00 11:10
% solids	100.0	% solids	100.0	Custody/SAF No	B99-029-55 B99-029

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	-10.3	5.2	9.2	400	U	H	-6.95	5.3	9.2	U	-	
Total Strontium	-0.002	0.13	0.18	1.0	U	SR	-0.051	0.12	0.16	U	-	
Technetium 99	-0.106	0.28	0.66	15	U	TC	-0.012	0.25	0.71	U	-	
Uranium 233	0.057	0.049	0.062	1.0	U	U	0.062	0.075	0.095	U	-	
Uranium 235	0.010	0.020	0.075	1.0	U	U	0	0.030	0.11	U	-	
Uranium 238	0.033	0.033	0.062	1.0	U	U	0.050	0.050	0.095	U	-	

100-KR-4 Pump & Treat - Resin Smp.

QC-DUP#1 36276

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 H1053

R009148-03 B0XC71

DATA SHEET

SDG	7504	Client/Case no	Hanford	SDG H1053	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R009148-03	Client sample id	B0XC71		
Dept sample id	7504-003	Location/Matrix	100-KR-4	SOLID	
Received	09/27/00	Collected	09/22/00 11:55		
% solids	100.0	Custody/SAF No	B99-029-56	B99-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-11.4	4.5	8.1	400	U	H
Total Strontium	SR-RAD	-0.048	0.13	0.18	1.0	U	SR
Technetium 99	14133-76-7	0.571	0.30	0.70	15	U	TC
Uranium 233	U-233/234	5.70	0.70	0.12	1.0		U
Uranium 235	15117-96-1	0.317	0.12	0.087	1.0	J	U
Uranium 238	U-238	4.89	0.62	0.10	1.0		U

100-KR-4 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 H1053

R009148-04 B0XC73

DATA SHEET

SDG	7504	Client/Case no	Hanford	SDG H1053	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R009148-04	Client sample id	B0XC73		
Dept sample id	7504-004	Location/Matrix	100-KR-4	SOLID	
Received	09/27/00	Collected	09/22/00 12:10		
% solids	100.0	Custody/SAF No	B99-029-56	B99-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-13.1	4.7	8.4	400	U	H
Total Strontium	SR-RAD	-0.081	0.11	0.16	1.0	U	SR
Technetium 99	14133-76-7	0.632	0.30	0.71	15	U	TC
Uranium 233	U-233/234	4.60	0.64	0.11	1.0		U
Uranium 235	15117-96-1	0.109	0.083	0.10	1.0	J	U
Uranium 238	U-238	3.44	0.53	0.086	1.0		U

100-KR-4 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 H1053

R009148-01 B10996

DATA SHEET

SDG	7504	Client/Case no	Hanford	SDG H1053	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R009148-01	Client sample id	B10996		
Dept sample id	7504-001	Location/Matrix	100-KR-4	SOLID	
Received	09/27/00	Collected	09/22/00 11:10		
% solids	100.0	Custody/SAF No	B99-029-55	B99-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-6.95	5.3	9.2	400	U	H
Total Strontium	SR-RAD	-0.051	0.12	0.16	1.0	U	SR
Technetium 99	14133-76-7	-0.012	0.25	0.71	15	U	TC
Uranium 233	U-233/234	0.062	0.075	0.095	1.0	U	U
Uranium 235	15117-96-1	0	0.030	0.11	1.0	U	U
Uranium 238	U-238	0.050	0.050	0.095	1.0	U	U

100-KR-4 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 H1053

R009148-02 B10997

DATA SHEET

SDG	7504	Client/Case no	Hanford	SDG_H1053	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R009148-02	Client sample id	B10997		
Dept sample id	7504-002	Location/Matrix	100-KR-4	SOLID	
Received	09/27/00	Collected	09/22/00 11:30		
% solids	100.0	Custody/SAF No	B99-029-55	B99-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-3.99	5.0	8.6	400	U	H
Total Strontium	SR-RAD	-0.030	0.11	0.16	1.0	U	SR
Technetium 99	14133-76-7	0.036	0.26	0.67	15	U	TC
Uranium 233	U-233/234	0.022	0.043	0.082	1.0	U	U
Uranium 235	15117-96-1	0	0.026	0.10	1.0	U	U
Uranium 238	U-238	0.011	0.022	0.082	1.0	U	U

100-KR-4 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 H1053

Test U	Matrix SOLID
SDG 7504	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1053	

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 6955-110											
B0XC71	R009148-03			7504-003	5.70	0.317 J	4.89	117	21	6	3
B0XC73	R009148-04			7504-004	4.60	0.109 J	3.44	134	28	3	2
B10996	R009148-01			7504-001	U	U	U				
B10997	R009148-02			7504-002	U	U	U				
BLK (QC ID=36275)	R009148-06			7504-006	U	U	U				
LCS (QC ID=36274)	R009148-05			7504-005	ok	ok	ok				
Duplicate (R009148-01)	R009148-07			7504-007	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-KR-4 Pump & Treat - Resin Smp.								Averages 125		5	

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 6955-110	2σ prep error 5.0 %			Reference Lab Notebook 6955 pg. 110												
B0XC71	R009148-03			0.12	1.12			95		155			40	10/25/00	11/01	SS-021
B0XC73	R009148-04			0.11	1.01			93		155			40	10/25/00	11/01	SS-022
B10996	R009148-01			0.11	1.00			78		160			40	10/25/00	11/01	SS-019
B10997	R009148-02			0.10	1.02			89		160			40	10/25/00	11/01	SS-021
BLK (QC ID=36275)	R009148-06			0.12	1.00			78		155				10/25/00	11/01	SS-024
LCS (QC ID=36274)	R009148-05			0.30	1.00			97		155				10/25/00	11/01	SS-023
Duplicate (R009148-01) (QC ID=36276)	R009148-07			0.075	1.03			96		150			40	10/25/00	11/01	SS-041
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	MDA	0.13	± 0.15
FOR 7 SAMPLES	YIELD	89	± 16

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 H1053

Test	SR
Matrix	SOLID
SDG	7504
Contact	Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1053

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6955-110						
B0XC71	R009148-03			7504-003	U	
B0XC73	R009148-04			7504-004	U	
B10996	R009148-01			7504-001	U	
B10997	R009148-02			7504-002	U	
BLK (QC ID=36275)	R009148-06			7504-006	U	
LCS (QC ID=36274)	R009148-05			7504-005	ok	
Duplicate (R009148-01)	R009148-07			7504-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
100-KR-4 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 6955-110	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 110															
B0XC71	R009148-03			0.18	1.08			81		400			34	10/25/00	10/26	GRB-219
B0XC73	R009148-04			0.16	1.07			90		400			34	10/25/00	10/26	GRB-220
B10996	R009148-01			0.16	1.09			91		400			34	10/25/00	10/26	GRB-217
B10997	R009148-02			0.16	1.12			86		400			34	10/25/00	10/26	GRB-218
BLK (QC ID=36275)	R009148-06			0.18	1.00			87		400				10/25/00	10/26	GRB-222
LCS (QC ID=36274)	R009148-05			0.27	1.00			89		400				10/25/00	10/26	GRB-221
Duplicate (R009148-01) (QC ID=36276)	R009148-07			0.18	1.04			87		400			34	10/25/00	10/26	GRB-223
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	0.18	± 0.078
	YIELD	87	± 7

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 H1053

Test	TC
Matrix	SOLID
SDG	7504
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1053

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6955-110						
B0XC71	R009148-03			7504-003	U	
B0XC73	R009148-04			7504-004	U	
B10996	R009148-01			7504-001	U	
B10997	R009148-02			7504-002	U	
BLK (QC ID=36275)	R009148-06			7504-006	U	
LCS (QC ID=36274)	R009148-05			7504-005	ok	
Duplicate (R009148-01)	R009148-07			7504-007	-	U
Nominal values and limits from method 100-KR-4 Pump & Treat - Resin Smp.				RDLs (pCi/g)	15	

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 6955-110 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 110																
B0XC71	R009148-03			0.70	1.00			50		101			47	11/01/00	11/08	GRB-221
B0XC73	R009148-04			0.71	1.04			46		101			47	11/01/00	11/08	GRB-222
B10996	R009148-01			0.71	1.00			50		101			42	11/01/00	11/03	GRB-223
B10997	R009148-02			0.67	1.01			50		101			42	11/01/00	11/03	GRB-224
BLK (QC ID=36275)	R009148-06			0.37	1.00			93		101				11/01/00	11/03	GRB-232
LCS (QC ID=36274)	R009148-05			0.40	1.00			92		101				11/01/00	11/03	GRB-231
Duplicate (R009148-01) (QC ID=36276)	R009148-07			0.66	1.00			51		101			47	11/01/00	11/08	GRB-224
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 H1053

Test	TC
Matrix	SOLID
SDG	7504
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1053

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 FOR 7 SAMPLES				
MDA	0.60	±	0.30
YIELD	62	±	42

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	5.06
Report date	11/25/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1053

Test	H
Matrix	SOLID
SDG	7504
Contact	Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1053

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6955-110						
B0XC71	R009148-03			7504-003	U	
B0XC73	R009148-04			7504-004	U	
B10996	R009148-01			7504-001	U	
B10997	R009148-02			7504-002	U	
BLK (QC ID=36275)	R009148-06			7504-006	U	
LCS (QC ID=36274)	R009148-05			7504-005	LOW	
Duplicate (R009148-01)	R009148-07			7504-007	-	U

Nominal values and limits from method RDLs (pCi/g) 400

100-KR-4 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 6955-110	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 110															
B0XC71	R009148-03			8.1	0.217			100		100			45	11/03/00	11/06	LSC-006
B0XC73	R009148-04			8.4	0.216			100		100			45	11/03/00	11/06	LSC-006
B10996	R009148-01			9.2	0.204			100		100			45	11/03/00	11/06	LSC-006
B10997	R009148-02			8.6	0.204			100		100			45	11/03/00	11/06	LSC-006
BLK (QC ID=36275)	R009148-06			8.8	0.200			100		100				11/03/00	11/05	LSC-006
LCS (QC ID=36274)	R009148-05			7.4	0.200			100		100				11/03/00	11/06	LSC-006
Duplicate (R009148-01) (QC ID=36276)	R009148-07			9.2	0.208			100		100			45	11/03/00	11/06	LSC-006
Nominal values and limits from method				400	0.200					25			180			

PROCEDURES	REFERENCE	TRITIUM_COX_LSC
	CP-060	Soil Preparation, rev 2
	CP-251	Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD	MDA	8.5	±	1.3
FOR 7 SAMPLES	YIELD	100	±	0

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	B99-029-55	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4 H1053 (7504)	SAF No.: B99-029	
Ice Chest No.: 3m1-552 (1 of 1)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~	Offsite Property No.: A000338	Bill of Lading/Air Bill No.: 4235 7953 -9323	

TMD 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

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.	Anions - 300.0 (Nitrate)	See item (2) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time										
B10996	OTHER SOLID	9-22-00	1110	X	X	X	X						B10992
B10997	OTHER SOLID	9-22-00	1130	X	X	X	X						B10993

TIC TO:

For project use only

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: T Johansen	Date/Time: 9-22-00 1520	Received By: TMD 9-22-00 2B	Date/Time: 9-22-00 1520
Relinquished By: Removed from Ref 2B 3728	Date/Time: 9/26/00 0800	Received By: R Thoren	Date/Time: 9/26/00 0800
Relinquished By: R Thoren	Date/Time: 9/26/00 0800	Received By: FEDEX	Date/Time: 09/27/00
Relinquished By: FED EXPRESS	Date/Time: 9/27/00 16	Received By: T. Dagnino	Date/Time:
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 10/26/00

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00
Collector not available to relinquish samples on 9/26/00 for shipment.
RT 9/26/00

Matrix *
SS=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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-56	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4 H1053 (7504)	SAF No.: B99-029	
Ice Chest No.: Sml-552 (1OF1)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~ TMJ 9-22-00	Offsite Property No.: A000338	Bill of Lading/Air Bill No.: 4235 7953 - 9323	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	G	G/P	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	1000mL		

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.		
B0XC71	OTHER SOLID	9-22-00	1155	X	X	X	X						
B0XC73	other solid	9-22-00	1210	X	X	X	X						

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Thomas Anderson	9-22-00 1520	TMJ 9-22-00 Stored in Ref #2B	9-22-00 1520
Removed from Ref 3B 3728	9/26/00 0800	R Thoren	9/26/00 0800
R Thoren	9/26/00 0800	FEDEX	09/26/00 10:00
FED. EXPRESS	9/27/00 10:00	E. Degner	9/27/00

RT 9/26/00

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.#2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9-26-00

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)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL STANFORD INC. Date/Time received 09/27/00 10:00 AM

CoC No. B99-029-55

Container I.D. No. SM 1-55Z 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: 4x4
7. Number of containers per sample: 4 (EACH) (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 E. Segura Date: 09/27/00 Time: 10:AM

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Form SCP-01.2, 11-06-98

"50 years of quality nuclear services"

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10996						
% SOLIDS	001	SO	00L%S162	09/22/00	10/13/00	10/14/00
% SOLIDS	001 REP	SO	00L%S162	09/22/00	10/13/00	10/14/00
NITRATE BY IC	001	SO	00LAC064	09/22/00	10/24/00	10/24/00
NITRATE BY IC	001 REP	SO	00LAC064	09/22/00	10/24/00	10/24/00
NITRATE BY IC	001 MS	SO	00LAC064	09/22/00	10/24/00	10/24/00
TCLP	001	SO	00LTO113	09/22/00	10/10/00	10/11/00
B10997						
% SOLIDS	002	SO	00L%S162	09/22/00	10/13/00	10/14/00
NITRATE BY IC	002	SO	00LAC064	09/22/00	10/24/00	10/24/00
TCLP	002	SO	00LTO113	09/22/00	10/10/00	10/11/00
B0XC71						
% SOLIDS	003	SO	00L%S162	09/22/00	10/13/00	10/14/00
NITRATE BY IC	003	SO	00LAC064	09/22/00	10/24/00	10/24/00
TCLP	003	SO	00LTO113	09/22/00	10/10/00	10/11/00
B0XC73						
% SOLIDS	004	SO	00L%S162	09/22/00	10/13/00	10/14/00
NITRATE BY IC	004	SO	00LAC064	09/22/00	10/24/00	10/24/00
TCLP	004	SO	00LTO113	09/22/00	10/10/00	10/11/00

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

DEC 2000
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-029 H1053
RFW# : 0009L769

W.O. # : 10985-001-001-9999-00
Date Received: 09-27-00

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 blank for Nitrate was within method criteria.

6. The Laboratory Control Sample (LCS) for Nitrate was 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

11-20-00
Date

njp\i09-769

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 11 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ 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 7.3/9014	
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 7.3/9030B	
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(mod)

Other: **Method**

L-WI-034/B-2/00

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 11/20/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10996	% Solids	48.2	%	0.01	1.0
		Nitrate by IC	6.1	MG/KG	2.6	1.0
-002	B10997	% Solids	49.9	%	0.01	1.0
		Nitrate by IC	5.4	MG/KG	2.3	1.0
-003	B0XC71	% Solids	53.4	%	0.01	1.0
		Nitrate by IC	8.1	MG/KG	2.5	1.0
-004	B0XC73	% Solids	47.7	%	0.01	1.0
		Nitrate by IC	6.8	MG/KG	2.6	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/20/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/20/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10996	Nitrate by IC	56	6.1	52	96.3	1.0
BLANK10	00LAC064-MB1	Nitrate by IC	25	1.2 u	25	99.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/20/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10996	% Solids	48.2	49.4	2.4	1.0
		Nitrate by IC	6.1	6.3	3.7	1.0

RECRA LabNet Use Only
0009L769

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TN4 - Hanford B99-029
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: 9-27-00 Date Due: 10-27-00
Account #:

Refrigerator #		1	4						4		4						
#/Type Container	Liquid																
	Solid	1qg	1qg						1qg		1pg						
Volume	Liquid	0	0						0								
	Solid	250	250						500		250						
Preservatives		–	–						–		–						
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				icp Metal	CN	IC Anions		leachates				
		RECRA LabNet Use Only															
		OC24X	OC25X						ITCL7		ICN03		Met(1)				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OC24X	OC25X						ITCL7		ICN03		Met(1)			
001	B10996			SO	9/22/00	1110	X	X						X		X					
002	B10997					1130	X	X						X		X					
003	BOXC71					1155	X	X			(1L) →			X		X					
004	BOXC73					1210	X	X			(2/250) →			X		X					
005	B10996 tcp of 001			L	*	–												✓			
006	B10997 002					–												✓			
007	BOXC71 003					–												✓			
008	BOXC73 004					–												✓			

Special Instructions: Saf B99-029

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

Relinquished by	Received by	Date	Time
HeaEx	D. Smith	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 4235 7953 9345 →

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. 2.8 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-55	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4		SAF No.: B99-029
Ice Chest No.: ERC 96-058 (2 of 2)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RT 9/26/00	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 42357453-9345

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

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		

Sample No.	Matrix *	Sample Date	Sample Time										
B10996	OTHER SOLID	9-22-00	1110					X	X	X	X		
B10997	OTHER SOLID	9-22-00	1130					X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	9-22-00 1520	[signature] 9-22-00 2B	1520
Relinquished By: Removed from Ref 2B 3728	9/26/00 0800	Received By: Stored in Ref # 3 [signature]	9-22-00
Relinquished By: R Thoren [signature]	9/26/00 0800	Received By: R Thoren [signature]	9/26/00 0800
Relinquished By: R Thoren [signature]	9/26/00 0800	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	9.27.00/0930	Received By: D. [signature]	9.27.00/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 9/26/00

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment.
RT 9/26/00

00092769

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solid
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)

3.0

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-56	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC 99.041 (1 OF 3 ~~2 OF 2~~) RT 9/26/00	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 42357453-9334

TMD 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage: NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None	NONE	
Type of Container	aG	aG	aG	aG	aG	G	G/P	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	2	
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	1000mL	250	
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	See item (2) in Special Inst.	Tie To:

Sample No.	Matrix *	Sample Date	Sample Time										
B0XC71	OTHER SOLID	9-22-00	1155					X	X	X	X		B0XC72
B0XC73	OtherSolid	9-22-00	1210					X	X	X		X	B0XC74
											Project use only		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [illegible]	Date/Time: 9-22-00 1520	Received By: Stored in Ref# 2B	Date/Time: 9-22-00 1520
Relinquished By: Removed from REF 2B 3728	Date/Time: 9/26/00 0800	Received By: R Thoren	Date/Time: 9/26/00 0800
Relinquished By: R Thoren	Date/Time: 9/26/00 0800	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-27-00/0930	Received By: [illegible]	Date/Time: 9-27-00/0930
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

RT 9/26/00

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

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)

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DEC 2000
RECEIVED

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10996						
TCLP	001	SO	00LTO113	09/22/00	10/10/00	10/11/00
B10997						
TCLP	002	SO	00LTO113	09/22/00	10/10/00	10/11/00
B0XC71						
TCLP	003	SO	00LTO113	09/22/00	10/10/00	10/11/00
B0XC73						
TCLP	004	SO	00LTO113	09/22/00	10/10/00	10/11/00
B10996						
SILVER, TCLP LEACHAT	005	W	99L1626	10/11/00	10/13/00	10/14/00
SILVER, TCLP LEACHAT	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
SILVER, TCLP LEACHAT	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
ARSENIC, TCLP LEACHA	005	W	99L1626	10/11/00	10/13/00	10/16/00
ARSENIC, TCLP LEACHA	005 REP	W	99L1626	10/11/00	10/13/00	10/16/00
ARSENIC, TCLP LEACHA	005 MS	W	99L1626	10/11/00	10/13/00	10/16/00
BARIUM, TCLP LEACHAT	005	W	99L1626	10/11/00	10/13/00	10/14/00
BARIUM, TCLP LEACHAT	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
BARIUM, TCLP LEACHAT	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	005	W	99L1626	10/11/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	005	W	99L1626	10/11/00	10/13/00	10/16/00
CADMIUM, TCLP LEACHA	005 REP	W	99L1626	10/11/00	10/13/00	10/16/00
CADMIUM, TCLP LEACHA	005 MS	W	99L1626	10/11/00	10/13/00	10/16/00
CHROMIUM, TCLP LEACH	005	W	99L1626	10/11/00	10/13/00	10/14/00
CHROMIUM, TCLP LEACH	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
CHROMIUM, TCLP LEACH	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	005	W	99L1626	10/11/00	10/13/00	10/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	005	W	99L1626	10/11/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	005	W	99L1626	10/11/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	005	W	99L1626	10/11/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	005 REP	W	99L1626	10/11/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	005 MS	W	99L1626	10/11/00	10/13/00	10/14/00
B10997						
SILVER, TCLP LEACHAT	006	W	99L1626	10/11/00	10/13/00	10/14/00
ARSENIC, TCLP LEACHA	006	W	99L1626	10/11/00	10/13/00	10/16/00
BARIUM, TCLP LEACHAT	006	W	99L1626	10/11/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	006	W	99L1626	10/11/00	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	006	W	99L1626	10/11/00	10/13/00	10/16/00
CHROMIUM, TCLP LEACH	006	W	99L1626	10/11/00	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	006	W	99L1626	10/11/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	006	W	99L1626	10/11/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	006	W	99L1626	10/11/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	006	W	99L1626	10/11/00	10/13/00	10/14/00
B0XC71						
SILVER, TCLP LEACHAT	007	W	99L1626	09/22/00	10/13/00	10/14/00
ARSENIC, TCLP LEACHA	007	W	99L1626	09/22/00	10/13/00	10/16/00
BARIUM, TCLP LEACHAT	007	W	99L1626	09/22/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	007	W	99L1626	09/22/00	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	007	W	99L1626	09/22/00	10/13/00	10/16/00
CHROMIUM, TCLP LEACH	007	W	99L1626	09/22/00	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	007	W	99L1626	09/22/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	007	W	99L1626	09/22/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	007	W	99L1626	09/22/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	007	W	99L1626	09/22/00	10/13/00	10/14/00
B0XC73						
SILVER, TCLP LEACHAT	008	W	99L1626	10/11/00	10/13/00	10/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	008	W	99L1626	10/11/00	10/13/00	10/16/00
BARIUM, TCLP LEACHAT	008	W	99L1626	10/11/00	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	008	W	99L1626	10/11/00	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	008	W	99L1626	10/11/00	10/13/00	10/16/00
CHROMIUM, TCLP LEACH	008	W	99L1626	10/11/00	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	008	W	99L1626	10/11/00	10/13/00	10/14/00
LEAD, TCLP LEACHATE	008	W	99L1626	10/11/00	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	008	W	99L1626	10/11/00	10/13/00	10/14/00
SELENIUM, TCLP LEACH	008	W	99L1626	10/11/00	10/13/00	10/14/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
SILVER, TCLP LEACHAT	MB1	W	99L1626	N/A	10/13/00	10/14/00
SILVER, TCLP LEACHAT	MB2	W	99L1626	N/A	10/13/00	10/14/00
ARSENIC LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/16/00
ARSENIC, TCLP LEACHA	MB1	W	99L1626	N/A	10/13/00	10/16/00
ARSENIC, TCLP LEACHA	MB2	W	99L1626	N/A	10/13/00	10/16/00
BARIUM LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
BARIUM, TCLP LEACHAT	MB1	W	99L1626	N/A	10/13/00	10/14/00
BARIUM, TCLP LEACHAT	MB2	W	99L1626	N/A	10/13/00	10/14/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1626	N/A	10/13/00	10/14/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1626	N/A	10/13/00	10/14/00
CADMIUM LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	MB1	W	99L1626	N/A	10/13/00	10/14/00
CADMIUM, TCLP LEACHA	MB2	W	99L1626	N/A	10/13/00	10/14/00
CHROMIUM LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
CHROMIUM, TCLP LEACH	MB1	W	99L1626	N/A	10/13/00	10/14/00
CHROMIUM, TCLP LEACH	MB2	W	99L1626	N/A	10/13/00	10/14/00
NICKEL LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	MB1	W	99L1626	N/A	10/13/00	10/14/00
NICKEL, TCLP LEACHAT	MB2	W	99L1626	N/A	10/13/00	10/14/00
LEAD LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
LEAD, TCLP LEACHATE	MB1	W	99L1626	N/A	10/13/00	10/14/00
LEAD, TCLP LEACHATE	MB2	W	99L1626	N/A	10/13/00	10/14/00
ANTIMONY LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
ANTIMONY, TCLP LEACH	MB1	W	99L1626	N/A	10/13/00	10/14/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	MB2	W	99L1626	N/A	10/13/00	10/14/00
SELENIUM LABORATORY	LC1 BS	W	99L1626	N/A	10/13/00	10/14/00
SELENIUM, TCLP LEACH	MB1	W	99L1626	N/A	10/13/00	10/14/00
SELENIUM, TCLP LEACH	MB2	W	99L1626	N/A	10/13/00	10/14/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW#: 0009L769
SDG/SAF#: H1053/B99-029

W.O.#: 10985-001-001-9999-00
Date Received: 09-27-00

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) with the exception of the CCVs for Cadmium in file PS1014B. Therefore, all samples were rerun for Cadmium in file PS1016A. The batch QC was reported from the first run as the QC samples were surrounded by CCVs in control.

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 with the exception of the initial ISAB for Arsenic in file PS1014B. Arsenic was rerun and reported from file PS1016A.

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.

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 17 pages.

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

11. The TCLP extract from sample B10996 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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.

for

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

gmb/m09-769

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#: 00091769

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 B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B10996	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	57.0		UG/L	3.4	1.0
		Barium, TCLP Leachate	8.6		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.27		UG/L	0.10	1.0
		Cadmium, TCLP Leachate	1.4		UG/L	0.30	1.0
		Chromium, TCLP Leachate	4210		UG/L	0.90	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	15.4		UG/L	2.1	1.0
		Antimony, TCLP Leachate	7.0		UG/L	2.1	1.0
		Selenium, TCLP Leachate	4.3	u	UG/L	4.3	1.0
-006	B10997	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	45.1		UG/L	3.4	1.0
		Barium, TCLP Leachate	8.2		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.38		UG/L	0.10	1.0
		Cadmium, TCLP Leachate	2.8		UG/L	0.30	1.0
		Chromium, TCLP Leachate	4140		UG/L	0.90	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	3.1		UG/L	2.1	1.0
		Antimony, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Selenium, TCLP Leachate	18.0		UG/L	4.3	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/05/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0XC71	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	16.8		UG/L	3.4	1.0
		Barium, TCLP Leachate	14.7		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.13		UG/L	0.10	1.0
		Cadmium, TCLP Leachate	4.2		UG/L	0.30	1.0
		Chromium, TCLP Leachate	4670		UG/L	0.90	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Antimony, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Selenium, TCLP Leachate	11.1		UG/L	4.3	1.0
-008	B0XC73	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	32.2		UG/L	3.4	1.0
		Barium, TCLP Leachate	10.4		UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.19		UG/L	0.10	1.0
		Cadmium, TCLP Leachate	2.9		UG/L	0.30	1.0
		Chromium, TCLP Leachate	4300		UG/L	0.90	1.0
		Nickel, TCLP Leachate	7.2		UG/L	1.2	1.0
		Lead, TCLP Leachate	11.8		UG/L	2.1	1.0
		Antimony, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Selenium, TCLP Leachate	39.3		UG/L	4.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/05/00

CLIENT: TNUHANFORD B99-029 H1053

RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1626-MB1	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	3.4	u	UG/L	3.4	1.0
		Barium, TCLP Leachate	0.20	u	UG/L	0.20	1.0
		Beryllium,TCLP Leachate	0.14		UG/L	0.10	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1.9		UG/L	0.90	1.0
		Nickel, TCLP Leachate	1.2	u	UG/L	1.2	1.0
		Lead, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Antimony, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Selenium, TCLP Leachate	4.3	u	UG/L	4.3	1.0
BLANK2	99L1626-MB2	Silver, TCLP Leachate	1.1	u	UG/L	1.1	1.0
		Arsenic, TCLP Leachate	18.1		UG/L	3.4	1.0
		Barium, TCLP Leachate	2.3		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	6.4		UG/L	0.90	1.0
		Nickel, TCLP Leachate	2.2		UG/L	1.2	1.0
		Lead, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Antimony, TCLP Leachate	2.1	u	UG/L	2.1	1.0
		Selenium, TCLP Leachate	4.3	u	UG/L	4.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/05/00

CLIENT: TNUHANFORD B99-029 H1053

RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-005	B10996	Silver, TCLP Leachate	3910	1.1 u	5000	78.2	1.0
		Arsenic, TCLP Leachate	4830	57.0	5000	95.5	1.0
		Barium, TCLP Leachate	91200	8.6	100000	91.2	1.0
		Beryllium, TCLP Leacha	845	0.27	1000	84.4	1.0
		Cadmium, TCLP Leachate	932	1.4	1000	93.1	1.0
		Chromium, TCLP Leachat	8540	4210	5000	86.5	1.0
		Nickel, TCLP Leachate	902	1.2 u	1000	90.2	1.0
		Lead, TCLP Leachate	4750	15.4	5000	94.7	1.0
		Antimony, TCLP Leachat	649	7.0	1000	64.2	1.0
		Selenium, TCLP Leachat	941	4.3 u	1000	94.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/05/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
=======	==========	==========	========	=========	=======	==========
-005REP	B10996	Silver, TCLP Leachate	1.1 u	1.1 u	NC	1.0
		Arsenic, TCLP Leachate	57.0	50.9	11.3	1.0
		Barium, TCLP Leachate	8.6	7.5	13.7	1.0
		Beryllium TCLP Leachate	0.27	0.11	84.2	1.0
		Cadmium, TCLP Leachate	1.4	0.30u	~~NC~~ 200	1.0
		Chromium, TCLP Leachate	4210	3930	7.0	1.0
		Nickel, Leachate	1.2 u	8.8	~~NC~~ 200	1.0
		Lead, TCLP Leachate	15.4	2.8	138.5	1.0
		Antimony, Leachate	7.0	3.7	61.7	1.0
		Selenium, TCLP Leachate	4.3 u	4.3 u	NC	1.0

12/5/00

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/05/00

CLIENT: TNUHANFORD B99-029 H1053 RECRA LOT #: 0009L769

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1626-LC1	Silver, LCS	458	500	UG/L	91.7
		Arsenic, LCS	9550	10000	UG/L	95.5
		Barium, LCS	4510	5000	UG/L	90.1
		Beryllium, LCS	227	250	UG/L	90.6
		Cadmium, LCS	220	250	UG/L	88.1
		Chromium, LCS	457	500	UG/L	91.5
		Nickel, LCS	1880	2000	UG/L	93.8
		Lead, LCS	2350	2500	UG/L	93.9
		Antimony, LCS	2770	3000	UG/L	92.2
		Selenium, LCS	9180	10000	UG/L	91.8

RECRA LabNet Use Only
0009L769

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU - Hanford B99-029
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: 9-27-00 Date Due: 10-27-00
Account #:

Refrigerator #		1	4						4		4					
#/Type Container	Liquid															
	Solid	1pg	1pg						1pg		1pg					
Volume	Liquid	0	0						0							
	Solid	250	250						500		250					
Preservatives		–	–						–							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	IC Anions					
		RECRA LabNet Use Only														
		8260X	8270X						ITCL7		ICM03		Met(1)			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260X	8270X					ITCL7		ICM03		Met(1)		
001	B10996			SO	9/22/00	1110	X	X					X		X				
002	B10997					1130	X	X					X		X				
003	BOXC71					1155	X	X			(1L) →		X		X				
004	BOXC73					1210	X	X			(2/250) →		X		X				
005	B10996 tcp of 001			L	*	–											✓		
006	B10997 002					–											✓		
007	BOXC71 003					–											✓		
008	BOXC73 004					–											✓		

Special Instructions: Saf B99-029

DATE/REVISIONS:
1. * See lab chron
2. Met(1) AS, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
3. Run Matrix QC
4.
5.
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. 2.8 °C

Relinquished by	Received by	Date	Time
HeaEx	D. Smith	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL DRUM	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7953 9345 →

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-55	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC 96-058 (2 of 2)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~ RECRA	Offsite Property No.: A000343	Bill of Lading/Air Bill No.: 42357453-9345	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

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 - 100.0 (Nitrate)	See item (2) in Special Instructions		
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 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 - 100.0 (Nitrate)	See item (2) in Special Instructions		
B10996	OTHER SOLID	9-22-00	1110					X	X	X	X		
B10997	OTHER SOLID	9-22-00	1130					X	X	X	X		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: [signature]	9-22-00 1520	Received By: [signature] 9-22-00 2B	1520
Relinquished By: Removed from Ref 2B 3728	9/26/00 0800	Received By: R Thoren	9/26/00 0800
Relinquished By: R Thoren	9/26/00 0800	Received By: FED EX	
Relinquished By: Fed Ex	9.27.00/0930	Received By: D. Smith	9.27.00/0930
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment.

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-56	Page 1 of 1

Collector Johansen	Company Contact T Pickett	Telephone No. 373-4630	Project Coordinator TRENT, SJ
Project Designation 100-KR-4 Pump & Treat - Resin Sampling	Sampling Location 100-KR-4		SAF No. B99-029
Ice Chest No. ERC 99.041 (1 of 3) ~~2 of 2~~ RT 9/26/00	Field Logbook No. EL-1516	COA R10KR4C570	Method of Shipment Fed Ex
Shipped To ~~TMA~~/RECRA	Offsite Property No. A000343		Bill of Lading/Air Bill No. 4235 7953-9334

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

MD 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

NONE

Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None	NONE	
Type of Container	aG	aG	aG	aG	aG	G	G/P	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	2	
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	1000mL	250	
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.	see item (2) in special inst.	

Rec'd 9-22-00

Sample No.	Matrix *	Sample Date	Sample Time											
B0XC71	OTHER SOLID	9-22-00	1155					X	X	X	X		B0XC7
B0XC73	other solid	9-22-00	1210					X	X	X		X	B0XC7
											project use only		

TieTo

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	9-22-00 1520	[illegible] in Ref# 2B	9-22-00 1520
Removed from REF 2B 3728	9/26/00 0800	R. T. Thoren	9/26/00 0800
R. T. Thoren	9/26/00 0800	FED EX	
Fed Ex	9-27-00 0930	[illegible]	9-27-00 0930

RT 9/26/00

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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}

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

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)

017

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1053

DATE RECEIVED: 09/27/00 RFW LOT # :0009L769

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10996	001	SO	00LE1242	09/22/00	10/01/00	11/09/00
B10996	001 MS	SO	00LE1242	09/22/00	10/01/00	11/08/00
B10996	001 MSD	SO	00LE1242	09/22/00	10/01/00	11/08/00
B10997	002	SO	00LE1242	09/22/00	10/01/00	11/09/00
B0XC71	003	SO	00LE1242	09/22/00	10/01/00	11/09/00
B0XC73	004	SO	00LE1242	09/22/00	10/01/00	11/09/00
LAB QC:						
SBLKCC	MB1	S	00LE1242	N/A	10/01/00	10/05/00
SBLKCC	MB1 BS	S	00LE1242	N/A	10/01/00	10/05/00

DEC 2000
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0009L769
SDG/SAF #: H1053/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 09-27-00

SEMIVOLATILE

The set of samples consisted of four (4) solid samples collected on 09-22-00.

The samples and their associated QC samples were extracted on 10-01-00 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for client specified Bis(2-ethylhexyl) phthalate on 10-05-00 and 11-08,09-00.

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. Due to the matrix, less than the specified amount of sample volume was utilized for extraction.

4. All surrogate recoveries were within EPA QC limits.

5. 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.

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

7. The response for the target compound Di-n-octylphthalate did not meet continuing calibration criteria for the calibration performed on 11-08-00 on Instrument 5971A. The data reflected an increase in instrument response. The samples associated with this continuing calibration are the spike analyses for Sample B10996. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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 12 pages.

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8. 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.

9. "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 _____ 11-28-09

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

Date

pef\group\data\bna\tnu-hanford-09-769.doc

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: 11/18/00 14:25

RFW Batch Number: **0009L769** Client: **TNUHANFORD B99-029 H1053** Work Order: 10985001001 Page: 1a

	Cust ID:	B10996		B10996		B10996		B10997		B0XC71		B0XC73	
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	78	%	60	%	61	%	79	%	77	%	75	%
	2-Fluorobiphenyl	74	%	60	%	58	%	68	%	69	%	66	%
	p-Terphenyl-d14	89	%	82	%	88	%	93	%	89	%	85	%
		fl		fl		fl		fl		fl		fl	
bis(2-Ethylhexyl)phthalate		80	JB	160	JB	77	JB	110	JB	140	JB	150	JB

	Cust ID:	SBLKCC		SBLKCC BS	
Sample Information	RFW#:	00LE1242-MB1		00LE1242-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	76	%	70	%
	2-Fluorobiphenyl	79	%	68	%
	p-Terphenyl-d14	91	%	93	%
		fl		fl	
bis(2-Ethylhexyl)phthalate		17	J	25	JB

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only

0009L769

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TN4 - Hanford B99-029
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: 9-27-00 Date Due: 10-27-00
Account #:

Refrigerator #		1	4						4		4						
#/Type Container	Liquid																
	Solid	1pg	1pg						1pg		1pg						
Volume	Liquid	g	g														
	Solid	250	250						500		250						
Preservatives		–	–						–		–						
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	IC Anions		leachates				
		RECRA LabNet Use Only															
		0824X	0825X						ITCLP		ICNO3		Met(1)				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0824X	0825X						ITCLP		ICNO3		Met(1)				
001	B10996			SO	9/22/00	1110	X	X						X		X						
002	B10997					1130	X	X						X		X						
003	BOXC71					1155	X	X			(1L) →			X		X						
004	BOXC73					1210	X	X			(2/250) →			X		X						
005	B10996 tcp of 001			L	*	–												✓				
006	B10997 002					–												✓				
007	BOXC71 003					–												✓				
008	BOXC73 004					–												✓				

Special Instructions: Saf B99-029

DATE/REVISIONS:
* 1. See lab chron
Met(1) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
3. Run Matrix QC
4.
5.
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. 2.8 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7953 9345 →

Relinquished by	Received by	Date	Time
HeaEx	D. Smith	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-55	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC 96-058 (2 of 2) RT 9/26/00	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~FMA~~/RECRA TMS 9-22-00	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 42357453-9345

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

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										
B10996	OTHER SOLID	9-22-00	1110					X	X	X	X		
B10997	OTHER SOLID	9-22-00	1130					X	X	X	X		

TMS 9-22-00 Deleted RT 9/26/00

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 9-22-00 1520	Received By: TMS 9-22-00 2B	Date/Time: 9-22-00 1520
Relinquished By: Removed from Ref 2B 3728	Date/Time: 9/26/00 0800	Received By: R Thoren	Date/Time: 9/26/00 0800
Relinquished By: R Thoren	Date/Time: 9/26/00 0800	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9.27.00/0930	Received By: D. [signature]	Date/Time: 9.27.00/0930
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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}

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

000912769

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)

3.0

28

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-56	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC99.041 (1 OF 3 ~~2 OF 2~~) RT 9/26/00	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 4235 7953-9334

MJD 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage: NONE

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	see item (2) in special list.	
Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None	NONE	
Type of Container	aG	aG	aG	aG	aG	G	G/P	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	2	
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	1000mL	250	

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	see item (2) in special list.	
B0XC71	OTHER SOLID	9-22-00	1155					X	X	X	X		B0XC72
B0XC73	other solid	9-22-00	1210					X	X	X		X	B0XC74
											project use only		

Tie To:

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	9-22-00 1520	Stored in Ref# 2B	9-22-00 1520
Removed from BEF 2B 3728	9/26/00 0800	R.T. Thoren	9/26/00 0800
R Thoren	9/26/00 0800	FED EX	
Fed Ex	9-27-00/ 0930	[illegible]	9-27-00/ 0930

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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)

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

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)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-029
RFW #: 0009L769
SDG/SAF #: H1064/B01-019

W.O. #: 10985-001-001-9999-00
Date Received: 09-27-00

GC/MS VOLATILE

The set of samples consisted of four (4) solid samples collected on 09-22-00.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-30-00 and 10-03-00.

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.
3 Eight (8) of thirty-nine (39) surrogate recoveries were outside EPA QC limits. The samples were re-analyzed and reported.
4. One (1) of ten (10) matrix spike recoveries was outside EPA QC limits. . However, the target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)
5. Two (2) of five (5) RPDs were outside EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks contained the common laboratory contaminants Methylene Chloride at levels less than 2x the CRQL.
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 J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-08-00
Date

pef\group\data\voa\tnu-hanford-09-769.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 12 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, Special List

Report Date: 11/29/00 11:05

RFW Batch Number: **0009L769** Client: **TNUHANFORD B99-029 H1053** Work Order: 10985001001 Page: 1a

05

	Cust ID:	B10996	B10996	B10996	B10997	B10997	B0XC71
Sample Information	RFW#:	001	001 MS	001 MSD	002	002	003
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	0.980	1.09	1.04	1.06	1.11	1.11
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG REPREP	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	79 %	85 %	96 %	94 %	79 %	109 %
	Toluene-d8	153 * %	158 * %	142 * %	162 * %	129 %	161 * %
	Bromofluorobenzene	80 %	75 %	71 %	68 %	70 %	71 %
Trichlorofluoromethane		10 U	12 U	11 U	10 U	11 U	10 U
Methylene Chloride		52 B	71 B	69 B	70 B	46 B	66 B
Chloroform		21	23	20	22	15	19

	Cust ID:	B0XC71	B0XC73	B0XC73	VBLKWR	VBLKWR BS	VBLKSO
Sample Information	RFW#:	003	004	004	00LVH427-MB1	00LVH427-MB1	00LVH430-MB1
	Matrix:	SOLID	SOLID	SOLID	SOIL	SOIL	SOIL
	D.F.:	1.04	1.06	1.06	1.00	1.00	1.00
	Units:	UG/KG REPREP	UG/KG	UG/KG REPREP	UG/KG	UG/KG	UG/KG
Surrogate Recovery	1,2-Dichloroethane-d4	86 %	88 %	75 %	81 %	88 %	81 %
	Toluene-d8	140 %	151 * %	142 * %	93 %	102 %	102 %
	Bromofluorobenzene	65 * %	87 %	74 %	77 %	90 %	85 %
Trichlorofluoromethane		10 U	11 U	11 U	5 U	5 U	5 U
Methylene Chloride		25 B	66 B	34 B	7	6 B	6
Chloroform		17	27	25	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only

0009L769

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU - Hanford B99-029

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: CJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 9-27-00 Date Due: 10-27-00

Account #:

Refrigerator #		1	4						4		4					
#/Type Container	Liquid															
	Solid	1qg	1qg						1qg		1pg					
Volume	Liquid															
	Solid	250	250						500		250					
Preservatives		–	–						–		–					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				ICP Metal	CN	IC Anions		Leachates			

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 4X	8260 SX					ITCLP		ICP03		Met(1)			
001	B10996			SO	9/22/00	1110	X	X					X		X					
002	B10997					1130	X	X					X		X					
003	BOXC71					1155	X	X			(1L) →		X		X					
004	BOXC73					1210	X	X			(2/250) →		X		X					
005	B10996 tcp of 001			L	*	–											✓			
006	B10997 002					–											✓			
007	BOXC71 003					–											✓			
008	BOXC73 004					–											✓			

Special Instructions: Saf B99-029

DATE/REVISIONS:
1. * See lab chron
2. Met(1) AS, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni
3. Run Matrix QC
4.
5.
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. 2.8 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 4235 7953 9345 →

Relinquished by	Received by	Date	Time
HeaEx	D. Smith	9/27/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-55	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4		SAF No.: B99-029
Ice Chest No.: ERC 96-058 (2 of 2)	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA RT 9/26/00	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 42357453-9345

TMS 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage
NONE

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.		
Sample No. / Matrix * / Sample Date / Sample Time										
B10996 / OTHER SOLID / 9-22-00 / 1110					X	X	X	X		
B10997 / OTHER SOLID / 9-22-00 / 1120					X	X	X	X		

TMS 9-22-00 Deleted

RT 9/26

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
TMS 9-22-00	1520	TMS 9-22-00 2B	1520
Removed from Ref 2B 3728 9/26/00	0800	Stored in Ref # 2B 9-22-00	0800
R Thoren 9/26/00	0800	R Thoren 9/26/00	0800
Fed Ex	9-27-00/0930	D. Jones	9-27-00/0930

RT 9/26/00

SPECIAL INSTRUCTIONS
SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(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}

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00.
Collector not available to relinquish samples on 9/26/00 for shipment.

RT 9/26/00

0009L769

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)

3.0

2.8

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-029-56	Page 1 of 1

Collector: 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-KR-4 Pump & Treat - Resin Sampling	Sampling Location: 100-KR-4	SAF No.: B99-029	
Ice Chest No.: ERC99.041 (1 of 3 ~~2 of 2~~) RT 9/26/00	Field Logbook No.: EL-1516	COA: R10KR4C570	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A000343		Bill of Lading/Air Bill No.: 4235 7953-9334

MD 9-22-00

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage: NONE

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.	See item (2) in Special Inst.	TieID:
Preservation	None	None	None	None	Cool 4C	Cool 4C	None	None	NONE	
Type of Container	aG	aG	aG	aG	aG	G	G/P	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	2	
Volume	60mL	60mL	60mL	125mL	250mL	250mL	250mL	1000mL	250	

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.	See item (2) in Special Inst.	TieID:
B0XC71	OTHER SOLID	9-22-00	1155					X	X	X	X		B0XC72
B0XC73	other solid	9-22-00	1210					X	X	X		X	B0XC74
											project use only		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [illegible]	Date/Time: 9-22-00 1520	Received By: stored in Ref# 2B	Date/Time: 9-22-00 1520
Relinquished By: Removed from REF 2B 3728	Date/Time: 9/26/00 0800	Received By: R T Thoren	Date/Time: 9/26/00 0800
Relinquished By: R Thoren R T Thoren	Date/Time: 9/26/00 0800	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-27-00 0930	Received By: [illegible]	Date/Time: 9-27-00 0930
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ.

(1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane)
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Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/22/00
Collector not available to relinquish samples on 9/26/00 for shipment. RT 9/26/00

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)